ALASKA DOT
2017 - 2018

Manual #151532

01/19

NOTES:

ALASKA 2017-2018
MODEL: Dump Body, Spreader with Prewet System, Reversible Snow Plow, Hitch, Wing, Underbody Scraper, OWP
SERIAL #: _____

INSTRUCTIONS FOR ORDERING PARTS

Order parts from the authorized dealer covering your area.

DEALER:_____
Phone #: _____

ALWAYS GIVE THE MODEL AND SERIAL NUMBER.

To obtain parts promptly, give part name and part number.

Give post office address, town, and state where the parts are to be shipped. UPS (United Parcel Service) and other carriers will not ship to a post office box. You must use a street address. Also be sure to specify whether material is to be shipped by freight, express, parcel post, or UPS. All UPS shipments will be normal surface routing unless specified otherwise.

Confirm all telephone or FAX orders in writing.

Credit for new parts not needed must be obtained from the dealer from whom they were purchased.

Unless claims for shortages or errors are made immediately upon receipt of goods, they will not be considered.

Inspect all goods received immediately upon receipt. When damaged goods are received, insist that a full description of the damage be made by the carrier agent on the freight bill. If this description is insisted upon, full damage can be collected from the transportation company.

No responsibility is assumed for delay or damage to merchandise while in transit. Dealer's responsibility ceases upon delivery of shipment to the transportation company from whom a receipt is received showing that shipment was in good condition when delivered to them; therefore, claims (if any) should be filed with the transportation company and not with the dealer.

Customer Service
&
Parts Department

HENDERSON PRODUCTS, INC.

1085 S. Third St.
PO Box 40
Manchester, IA 52057

PH: (563) 927-2828
TF: (800) 359-4970
FX: (563) 927-2521

Email Sales: sales@hendersonproducts.com
Email Parts: parts@hendersonproducts.com
Email Service: service@hendersonproducts.com
Website: www.hendersonproducts.com

03/14

Table Of Contents

ALASKA DOT 2017 – 2018

Manual #151532

ALASKA DOT

DUMP BODY

Part Number - Description:

#132414.AR4 - 12’-6” MKE STANDARD BODY
#134172.AR4 - 13’-6” MKE ASPHALT BODY
#134749.AR4 - 13’-6” MKE HYD. TAILGATE BODY
#147486.AR4 - 13’-6” MKE D.A. ASPHALT BODY
#151829.AR4 - 16’ MKE STANDARD BODY

1/24/2019

NOTES:

Table Of Contents
ALASKA DOT 2017 - 2018
Dump Body

Page #

SAFETY &

GENERAL

OPERATING

INFORMATION

THIS PAGE

IS LEFT BLANK

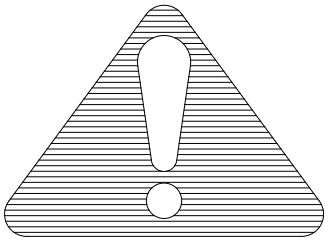
INTENTIONALLY.

SAFETY

The Safety-Alert Symbol.

This symbol is on safety signs on the equipment and in the manual.

This symbol indicates to you the potential for personal injury and/or property damage.



Hazard Seriousness Levels.

The DANGER signal word indicates - immediate hazards which WILL result in severe personal injury or death.

DANGER

The WARNING signal word indicates - hazards or unsafe practices which COULD result in severe personal injury or death.

WARNING

The CAUTION signal word indicates - hazards or unsafe practices which COULD result in minor personal injury or product or property damage.

CAUTION

Persons who install, mount, operate, or service this equipment must be properly instructed and warned. Do not let anyone operate equipment without instruction.

Read operator manuals completely before operating equipment. Learn how to operate controls properly.

Read decal instructions, cautions, and warnings. Read the safety messages in this manual and on safety signs on the spreader unit. Replace missing or damaged safety signs.

Check equipment to ensure that all shields and guards are in place.

 Use care when mounting and dismounting.

 Keep equipment in proper working condition.

 When traveling, especially fully loaded, this machine may have a high center of gravity, and care should be exercised when turning or driving on banked surfaces.

 Completely disengage all power to equipment, turn off the ignition, and remove key before leaving truck.

 Unauthorized modifications to equipment may impair the function and/or safety.

General Operating Instructions

I. General

IMPORTANT: Before this machine is operated, make certain that the operator(s) prior to operating:

1. Is instructed in safe and proper use.
2. Reviews and understands the manual(s) pertaining to the Henderson equipment.
3. Reviews and understands all other manual(s) pertaining to the chassis, any/all other equipment installed on the chassis and the electronic and/or hydraulic control systems equipped on the vehicle.

TO THE OPERATOR(S): Read this manual before you start the engine or operate the vehicle. If you need more information, see your supervisor, your local Henderson Dealer or contact Henderson Manufacturing, Inc.

NOTE: *When you are in the truck cab seat looking forward, the right hand and left hand of the truck equipment are the same as your right hand and left hand.*

II. BEFORE STARTING THE ENGINE

Before starting the truck for the first time and before each operating period after that, make these checks:

1. Make sure all persons that operate or do maintenance understand that clean fuel is important.
2. Check all lubrication points as shown in the Lubrication and Maintenance manual.
3. Check the oil level in the engine crankcase. Check the fluid level in the hydraulic reservoir.
4. Check that the fuel tank is filled with clean fuel that meets the specifications in the chassis manual.
   NOTE: Clean around the fuel tank cap before you remove the cap.
5. Check the fuel system, cooling system and engine oil pan for leaks.
6. Check the tension on all belts and chains.
7. Remove any water or sediment from the water separator filter (if so equipped).

III. DAILY WARM UP PROCEDURE:

IMPORTANT: Make sure all others are clear prior to engaging any / all power systems on the body.

1. Before operating, warm up the engine by running the engine as recommended in the chassis manual.
2. Once the engine is warm, engage power to all systems (ex. spinner disc(s), plow, wing), one at a time and check for hydraulic leaks.
3. Shut down all systems.

IMPORTANT: Check for sufficient lift clearance, absence of power lines / other obstructions prior to using body hoist system.

4. With body empty, engage body hoist system and lift body approximately 6 feet (at the front) off of chassis frame.

IMPORTANT: Check for sufficient rearward clearance for tailgate swing prior to engaging tailgate release latch.

5. Engage tailgate release latch to test operation.
6. Lower body and disengage tailgate release to secure tailgate.
7. Check that the tailgate latch jaws have locked on both side of the unit as they are independent. Contact your truck service department if the tailgate latch system malfunctions.

IV. END OF DAY SHUTDOWN PROCEDURE:

IMPORTANT: Make sure all others are clear prior to engaging any / all power systems on the body.

1. Empty the contents of the body (see the operating instructions for Dump Body).
2. Wash the body and conveyors out, if required, to remove any additional materials and extend the life of the unit.
3. Due to the complex components installed on the unit, it is recommended that the vehicle be stored in a shelter to avoid freezing temperatures.
4. Lower the body to the truck frame.

IMPORTANT: Carefully check for sufficient clearance all around vehicle when parking.

5. Move the truck to a level surface.
6. Lower all snow plow equipment or other truck equipment installed on the unit to their lowest point to remove any stored potential energy.
7. Disengage the hydraulic system by shutting off the pump if possible.
8. Shut off the truck engine, place the transmission in park (automatic transmission) or low/reverse (manual transmission) and engage the parking brake.
9. Remove the ignition key and lock the chassis cab doors.
10. Block all chassis wheels from movement in either direction.
11. Store the key in a secured location (ex. key lock box).

V. BODY CLEAN-OUT INSTRUCTIONS:

A. Lower the body to the truck frame.

IMPORTANT: Carefully check for sufficient clearance all around vehicle when parking.

B. Move the truck to a level surface.
C. Lower all snow plow equipment or other truck equipment installed on the unit to their lowest point to remove any stored potential energy.
D. Disengage the hydraulic system by shutting off the pump if possible.
E. Shut off the truck engine, place the transmission in park (automatic transmission) or low/reverse (manual transmission) and engage the parking brake.
F. Remove the ignition key.
G. Block the drive wheels from moving in both forward and reverse directions.
H. Store the key in a secured location (ex. key lock box).

I. Use water and an automotive type cleaning agent to thoroughly wash the inside and outside of the body as well as the underside of the body and the truck frame. The body must be in the "fully down" position or supported on the original equipment body props. **CAUTION:** Never work under an unsupported body in any raised position.

J. Use care when using high pressure wash around all electrical sensors, wires, etc.
K. Do not spray directly on any fluid filler or vent caps (ex. fuel, hydraulic oil, etc.).

VI. ADDITIONAL COLD TEMPERATURE OPERATION NOTES:

IMPORTANT: During cold ambient temperatures:

A. BATTERIES - Must have a full charge.
B. FUEL - Must be clean and with no water.
C. ENGINE OIL - Must have the correct viscosity for the ambient temperature range.
D. TRANSMISSION HYDRAULIC FLUID – See chassis operator's manual.
E. COOLING SYSTEM - – See chassis operator's manual.
F. STOPPING THE ENGINE - Permit the engine temperature to decrease before stopping.
G. CONDENSATION IN FUEL TANK - To prevent condensation in the fuel tank and water entering the fuel system, fill the fuel tank after each operating day.

During cold ambient temperatures, the chassis engine may not heat to or keep the rated operating temperature at slow engine speeds. Slow engine speeds in cold temperatures can cause damage to the engine. Properly warm the engine and hydraulic fluid prior to use and keep the correct operating temperatures.

THIS PAGE

IS LEFT BLANK

INTENTIONALLY.

DUMP BODY

OPERATING AND

MAINTENANCE

INFORMATION

THIS PAGE

IS LEFT BLANK

INTENTIONALLY.

Dump Body Operating Instructions

A. Do not exceed rated capacities of dump body, hoist or truck.
B. Keep the dump truck, traffic path, and the surrounding area clear of personnel and property when operating.
C. Do not allow riders on any part of the dump body or load during operation or hoisting.
D. When entering, maneuvering on, and leaving a site, check for, and stay clear of, overhead obstructions and electrical power lines.
E. Do not hoist a load near or under electrical power lines as electrocution may result.
F. Check and be sure dump truck tires are on a firm level dry surface prior to hoisting. Sloped, uneven and unstable ground or slippery surfaces may result in overturning the dump truck during the hoist cycle resulting in equipment damage and/or personal injury.
G. It is important to remember that the lift cylinders do not provide any restraining force to prevent tip-over of the body. Only the rear pivot hinges maintain the body in the upright position. Never raise the dump body when there is a possibility the center of gravity will move outside one of the hinge points.
H. Double check that the area is clear before dumping a load. The swinging tailgate and discharging load could cause damage or injury.
I. Completely lower the dump body prior to leaving an unloading site. Contact with electrical lines can result in electrocution. Contact with bridges, cables, trees, buildings or other obstructions can result in damage to property or injury.
J. In "off highway" conditions, keep the body and load down until completely stopped in order to dump the load. Do not move, drive, or especially back up during hoisting or with a hoisted load. Sloped, soft, or uneven surfaces, or a sudden turn, could damage or overturn the dump truck resulting in equipment failure or personal injury.
K. Know the material you are hauling and plan your haul to avoid "set up" or freezing of the load in the dump body. In the event that a load becomes stuck or frozen in the body, do not abuse, overload, or damage the truck, hoist, or body in efforts to quickly free the load. It may be necessary to thaw indoors to safely remove such a load. In the event that shoveling or mechanical means are used to free the stuck load, be sure the load is NOT hoisted and the tailgate, if opened, is secured properly before starting this effort. If hoisted, a stuck load, or portion, could release unexpectedly and cause injury to personnel or damage to the body, truck, or surroundings.
   Some materials such as mud, or sludge, may shift easily when wet, resulting in increased tendency to overturn the truck on curves, unstable ground, or side slope situations. Reduce load size, speeds, and side slopes, and use care and planning to avoid this potential occurrence.
L. Do not leave a raised body unattended. Completely lower the body and remove the ignition key before leaving the truck.
M. Unload the body and securely prop and block a raised body before any service, inspection, or repair work is started. This is especially important regarding hydraulic and control functions.
   Do not attempt any adjustment or maintenance of valves, levers, cables, electrical actuators, or hydraulic hoses and fittings without first unloading and securely blocking a raised body.

MAINTENANCE - GENERAL

The Henderson dump body was designed to reduce maintenance and to make required maintenance easier. Some instructions and guide points to observe include:

OBSERVE CAUTION AND SAFETY LABELS AND INSTRUCTIONS BEFORE STARTING AND DURING, ANY MAINTENANCE PROCEDURES.

Check the hydraulic reservoir sight gauge oil level daily during use to assure adequate oil to operate the hydraulic system. Inspect the breather to be sure it is clean and open. Before filling, clean the filler - breather cap and surrounding area of dirt and dust to keep the oil and reservoir clean. Oil poured into the reservoir should pass through a 100 mesh screen. Pour only clean oil, from clean containers, into the reservoir. System oil should be changed at least once a year.

Check the hydraulic system daily for any leaks or damaged hoses, lines, or fittings. Replace any worn or damaged parts immediately. Oil temperature in reservoir must not exceed 200°F (93.3°C), with a maximum temperature of 180°F (82.2°C) recommended. Higher temperatures will result in rapid oil deterioration.

Check the pump disengage cable weekly for proper tension adjustment. The cable should disengage the pump when the cylinder extension reaches 2" from full stroke. In the hoist lowered position, check to be sure the loose cable is supported away from moving parts and drive line components.

Change the oil filter element when the indicator shows, or seasonally.

Check and lubricate drive line components to remote mounted pump units monthly.

Check nuts, bolts, cotter pins, and control linkage parts for loose or worn parts weekly. Replace as needed.

Check the eight bolts on the hoist cylinder retaining blocks for any signs of loosening weekly and re-torque if needed.

DO NOT OIL OR GREASE COMPOSITE SELF LUBRICATING BUSHINGS in the rear hinge or hoist cylinder trunnions. Oiling may hold dust and grit and cause decreased service life. Monthly check these bushings to assure they are not loose or worn. Replace bushings when the inner black lining is worn. Be sure to re-torque the retaining bolts during re-assembly.

Clean grease fittings before lubricating with a high quality multi-purpose grease.

Monthly inspection of the cavities in the hinge assemblies beneath the hinge blocks is an essential part of the dump body maintenance procedure. These cavities house the hinge blocks when the body is down. When the body is raised, it is possible for debris to accumulate in these recesses, particularly during the washing process. Any dirt, sand, rocks or other material found in the cavities must be cleaned out periodically. Failure to do so will result in damage to the hinge and/or long sills.

Oil control and tailgate linkage pivot points and tailgate hinge pins monthly with an SAE30 or heavier grade oil to lubricate and reduce corrosion. Oil or grease the threads on adjustment yokes to prevent corrosion and freeze up.

Check safety and information decals and replace any that are worn, loose, or missing.

HYDRAULIC OIL RECOMMENDATIONS

All parts are lubricated by the hydraulic oil in the circuit. Particular attention must be paid to keep the oil in the system clean. Whenever there is a pump failure and there is reason to feel that metal particles may be in the system, the oil must be drained, the entire system flushed clean, and any filters or screens thoroughly cleaned or replaced. New oil should be supplied for the entire system. Oil suitable and recommended for use in circuits involving Commercial's pumps and motors should meet the following specifications.

viscosity:

50 SSU minimum @ operating temperature.
7500 SSU maximum @ starting temperature.
150 to 225 SSU @ 100°F (37.8°C) (generally).
44 to 48 SSU @ 210°F (98.9°C) (generally).

approximate SSU at...

Oil Grade	100°F (37.8°C)	21°F (-6.1°C)
SAE10	150	43
SAE20	330	51

viscosity index: 90 minimum

recommended additives:

Foam Depressant
Rust and Oxidation Inhibitors

other desirable characteristics:

Stability of physical and chemical characteristics.
High demulsibility (low emulsibility) for separation of water, air and contaminants.
Resistant to the formation of gums, sludges, acids, tars, and varnishes.
High lubricity and film strength.

THIS PAGE

IS LEFT BLANK

INTENTIONALLY.

cold weather operations:

Hydraulic oils for use in cold weather should have a viscosity not exceeding 7500 SSU at the minimum start-up temperature. A pour point of at least 20°F below start-up temperature is recommended. Start-up procedures should allow for a gradual warm-up until the oil reaches a reasonably fluid state.

the use of other oils:

Automatic Transmission Fluid (ATF): General experience has been satisfactory; however, ATF oils are sometimes too expensive for normal use in hydraulic systems.

Diesel Fuel or Kerosene (Coal Oil): Sometimes used as dilutants for cold weather operations but are not recommended as they are not sufficiently refined products.

Engine Oils are not recommended.

Fire Resistant Fluids and Non-petroleum Oils are not recommended as different equipment is required.

TAILGATE LATCH ADJUSTMENT – DOUBLE ACTING CYLINDER

GENERAL:

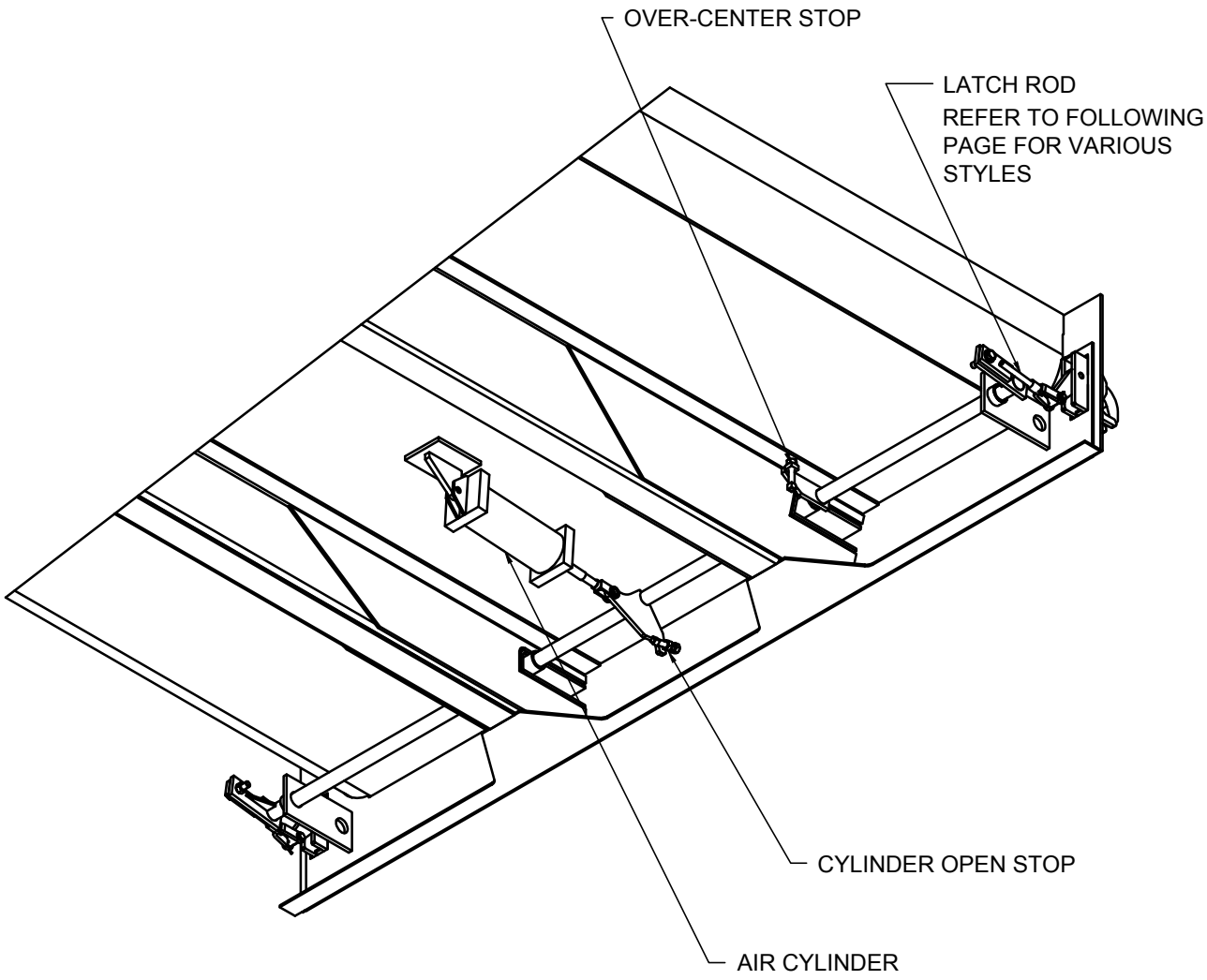
The air operated tailgate latch mechanism is designed for safety locking by over centering the linkage. The latch is activated by an air cylinder and requires air pressure to open and/or close the latch. The tailgate latch mechanism is pre-set from the factory, if adjustment is required use the following procedure.

ADJUSTMENTS:

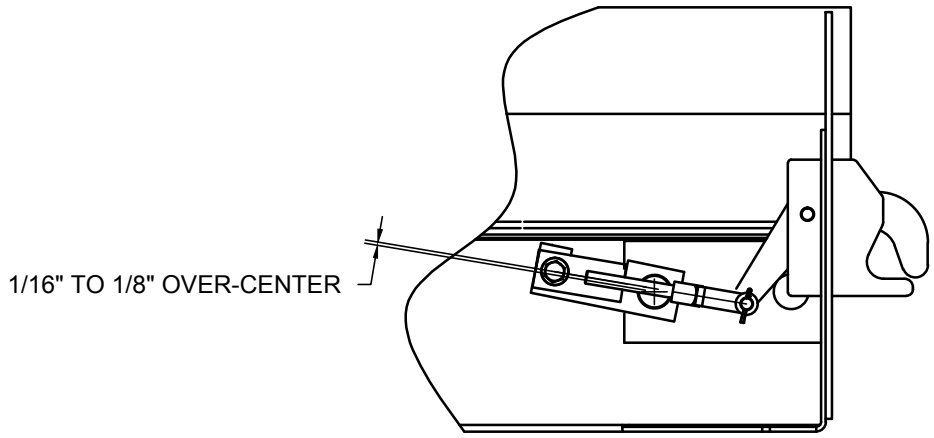
1. The air cylinder located between the longsills has been installed at the factory. When the stops are properly adjusted the closed linkage is toggled over center 1/16” - 1/8" as shown on the adjacent page. In this position the over center stops should contact the floor. This adjustment should be reset when replacing the air cylinder.

2. To adjust the latch jaw a few simple steps are required. Before adjusting however, check to be sure the air valve cannot be inadvertently actuated during the adjustment procedure. A tagging or lockout procedure is advisable since injury to fingers or hands could result from operation while adjustment is being done. To tighten the latch jaw against the tailgate pin proceed as follows:

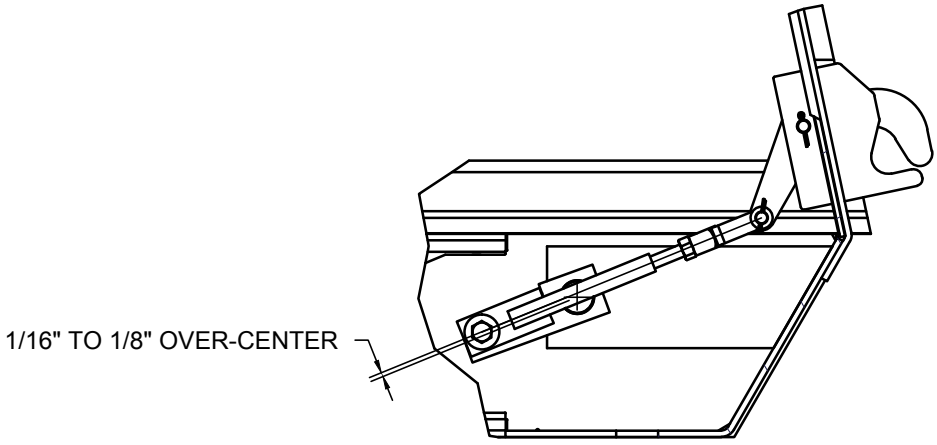
    a) Be sure the body is down and the tailgate is closed.
    b) Prepare for adjustment by loosening the latch rod jaw nut, and removing the cotter pin from the rod end pivot which connects to the latch jaw. This can be done on both sides if necessary to reduce repeating of steps C through F.
    c) Keep hands clear and air power the latch jaw "OPEN", and keep it open. This frees the rod end pivot pin for removal so the yoke can be turned.
    d) Adjust the latch rod length by turning the yoke, then replace the rod end pivot pin. Adjust CYLINDER OPEN STOP bolt tight against floor, turn an additional ½ turn after contact. With hands clear from the area, close the latch jaw to check the adjustment.
    e) If further adjustment is needed, repeat steps C, D and E until tailgate closes tightly and toggles over center.
    f) If the latch is too tight, the mechanism will not toggle over center. The latch rod adjustment will have to be loosened using steps C, D, & E.
    g) After over centering and tightness are achieved, the cotter pin should be replaced into the reinstalled rod end pivot pin and the jaw nut tightened on the latch rod.


OVER-CENTER STOP
LATCH ROD
REFER TO FOLLOWING PAGE FOR VARIOUS STYLES
CYLINDER OPEN STOP
AIR CYLINDER

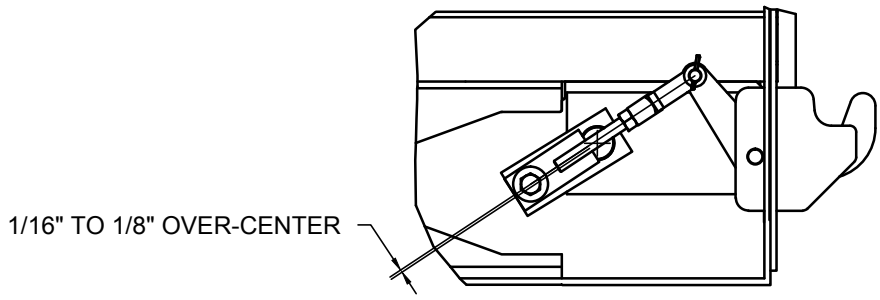
MKE□AK□1



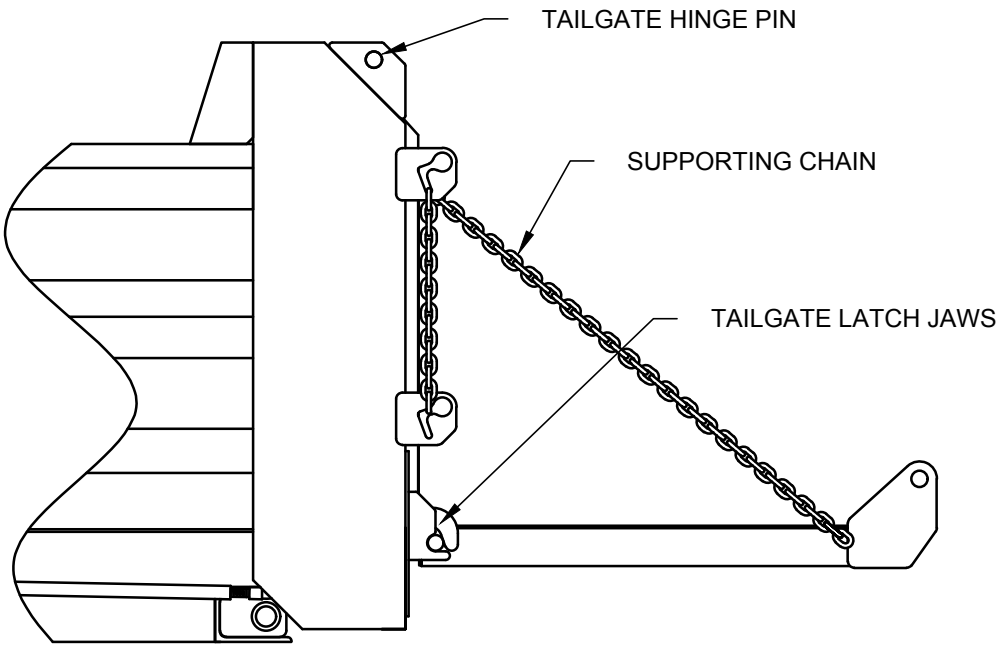
STANDARD VERTICAL TAILGATE



ASPHALT TAILGATE



HYDRAULIC LIFT TAILGATE



While the Dump Body standard tailgate can be used in the double acting position, (laying flat), as shown above, it requires extra care**.** The tailgate is easy to remove completely and doing so will remove most of the following special concerns**.** If you choose to use your tailgate in this manner, you must observe these items:

1. **CAUTION**: Tailgate latch jaws must be in the locked position before removing tailgate hinge pins. Failure to do so could result in serious injury. Tailgate will fall when hinge pins are removed and latch jaws not locked.

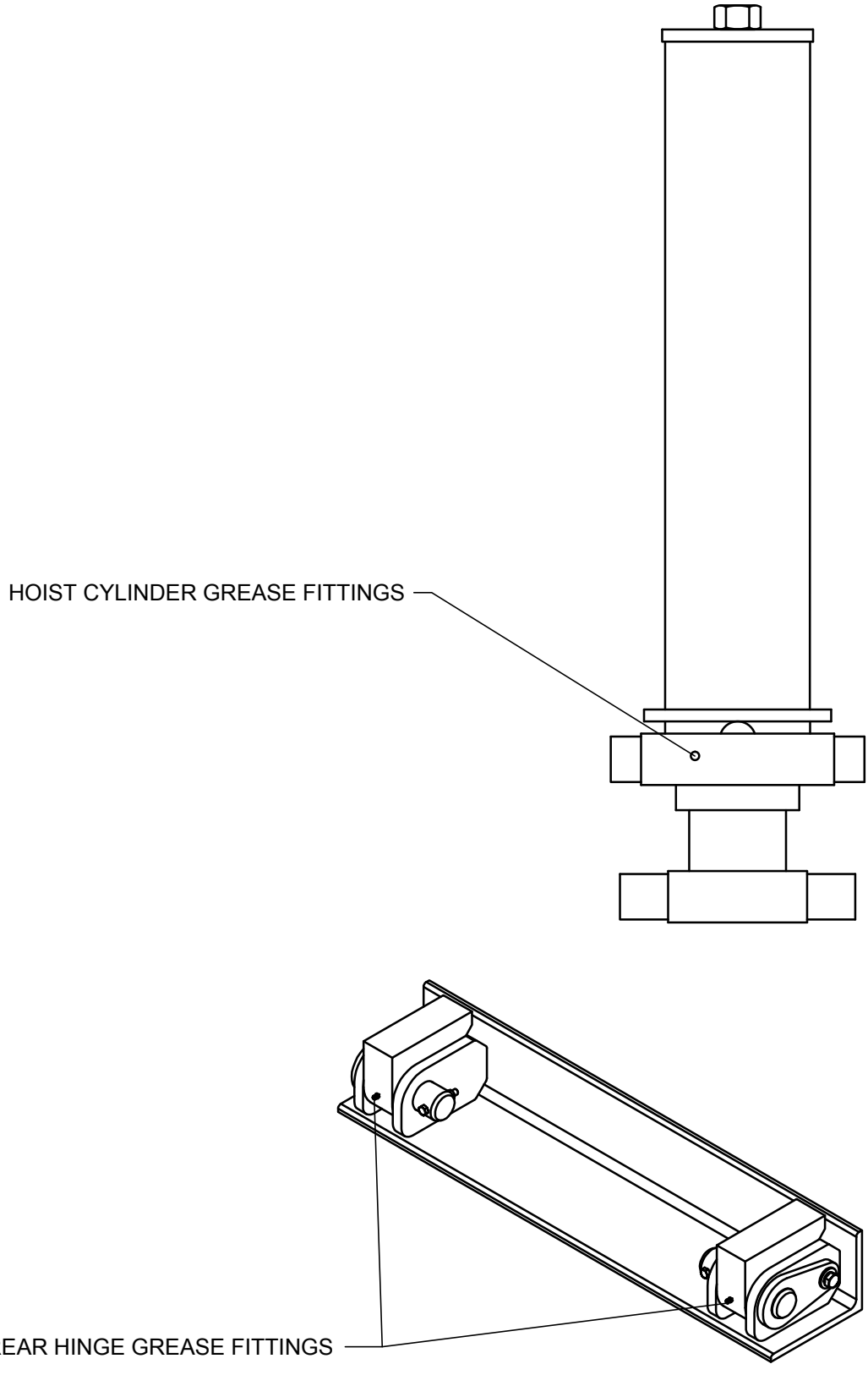
2. The tailgate is not intended to increase body capacity or to carry heavy loads in this manner, and is subject to damage if so used. This use is only intended for over-length items such as brush, limbs, etc.

3. Extra care is required when dumping loads over tailgate to avoid damage from loads, chain pull, or hitting the ground.

4. **CAUTION**: If you choose to haul without a tailgate, or with it laid flat, the load must be secured to prevent roll-out or dropping any of the load contents.

5. When the tailgate is laid flat, it must be included in the overall vehicle length dimension for roadability, traffic, and clearance concerns. If the tailgate extends beyond 48" from the body, a red flag or red light should be placed on each corner to identify the extended corners to following traffic, etc. These safety devices should not extend over 3" past the width of the body on each side.

6. Do not walk, work, or ride on a tailgate laid flat as a slip or fall would result in personal injury.


HOIST CYLINDER GREASE FITTINGS
REAR HINGE GREASE FITTINGS

DUMP BODY

PARTS

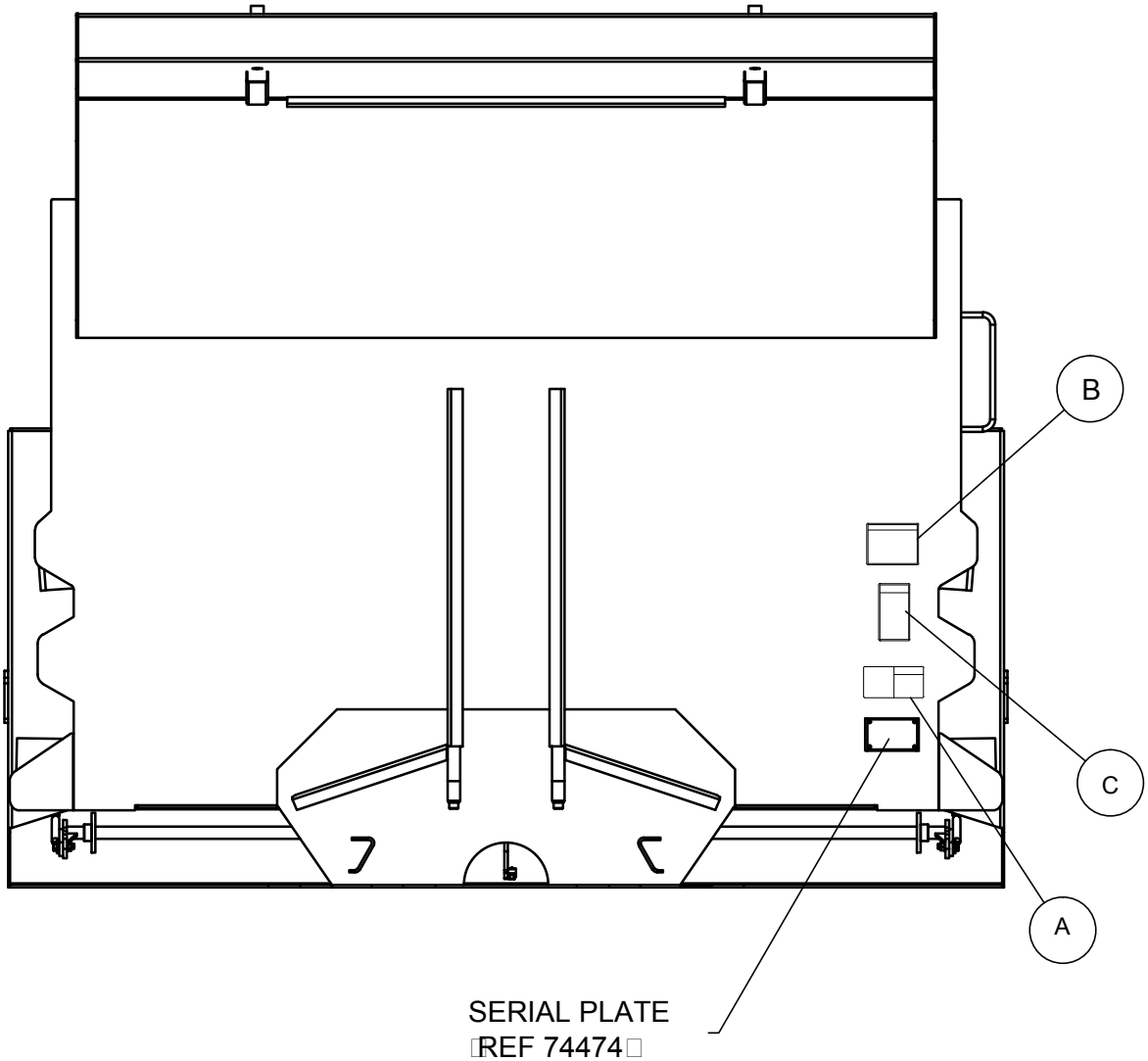
THIS PAGE

IS LEFT BLANK

INTENTIONALLY.

DECAL □ SERIAL PLATE LOCATIONS

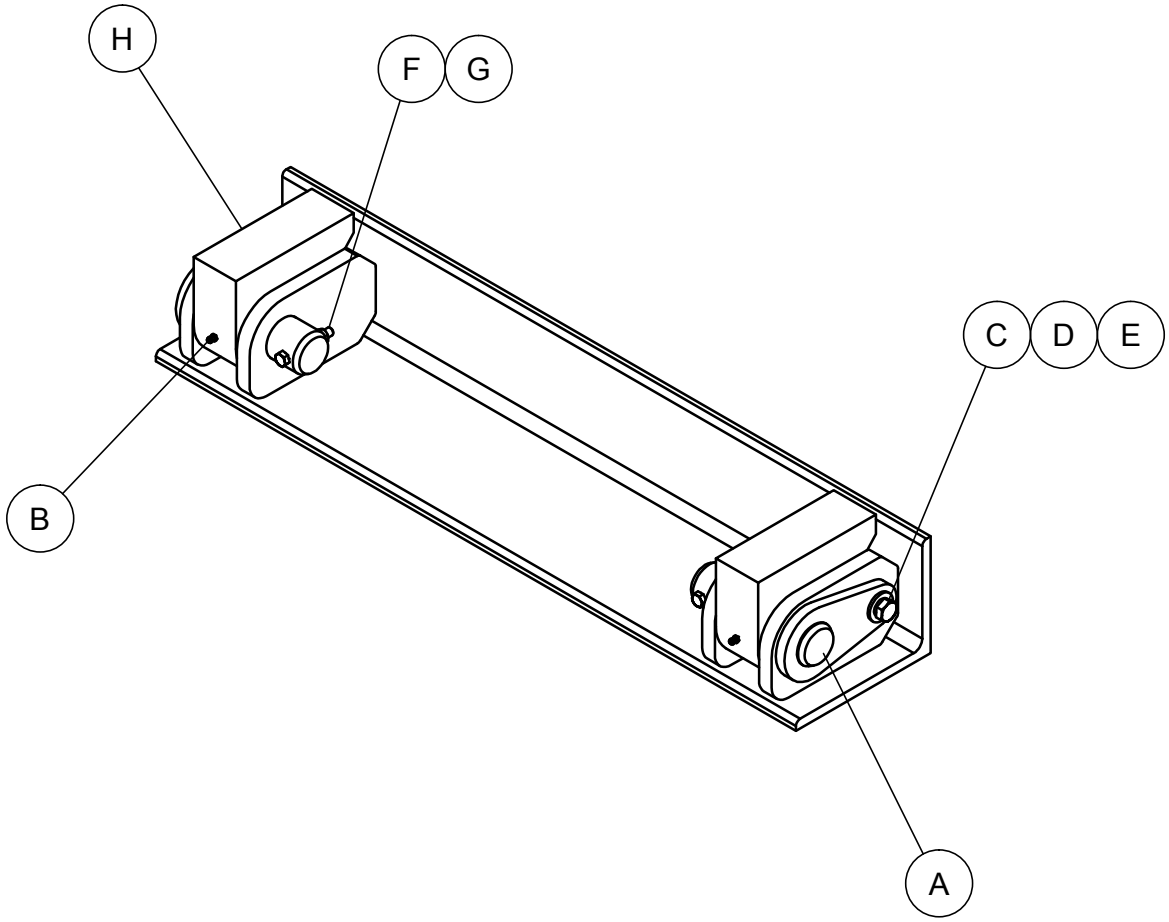
BILL OF MATERIALS			
ITEM	QTY.	PART NO.	DESCRIPTION
A	2	74476	DECAL, WARNING □3.00 X 7.00□
B	1	74477	DECAL, CAUTION □4.00 X 5.00□
C	1	74478	DECAL, SAFETY □DUMP BODY□□5.5 X 3□



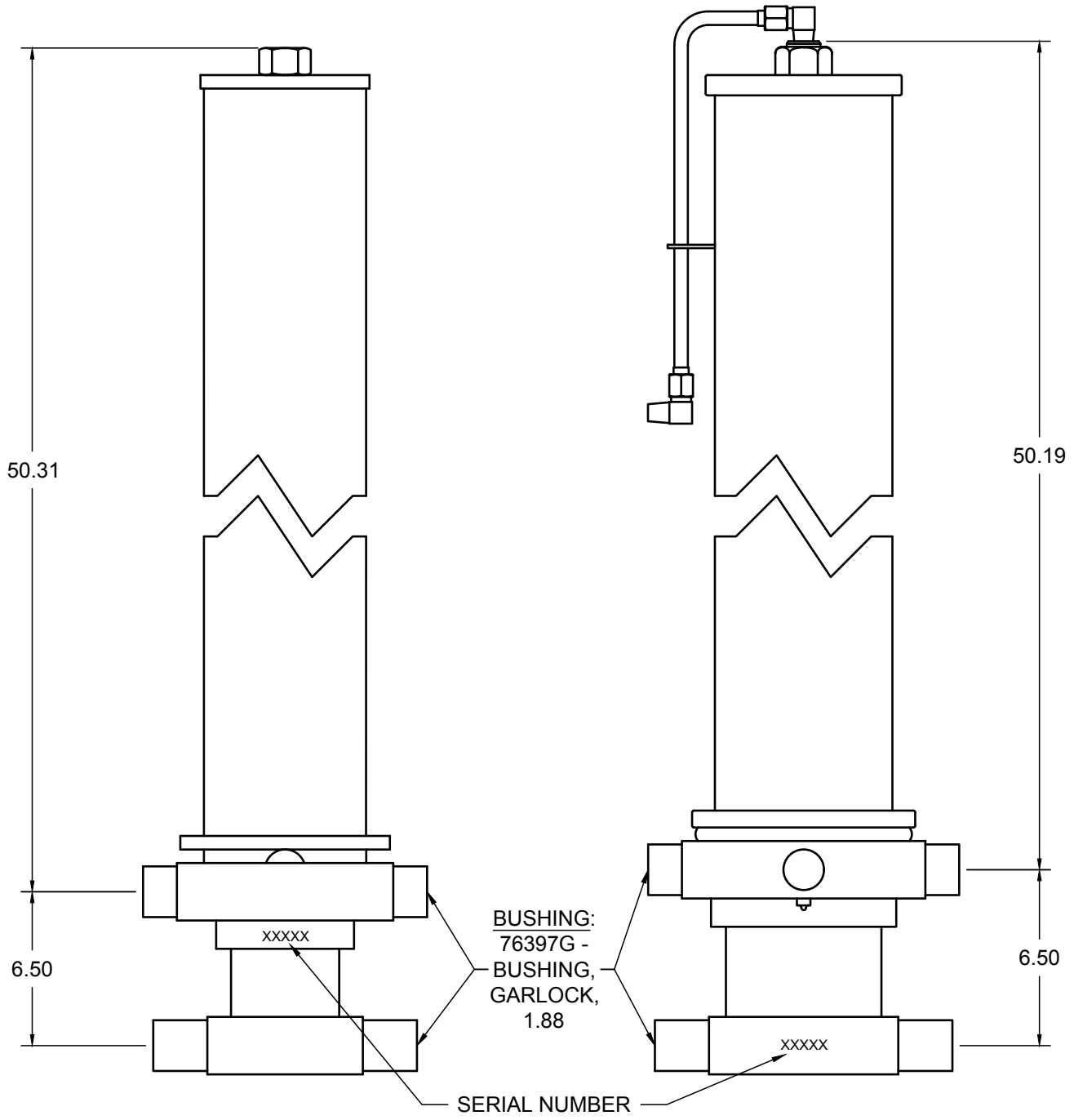
MKE□AK□14

REAR HINGE ASSEMBLY

PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
A	2	HX20630	PIN, WLDT, REAR HINGE
B	2	00155	ZERK,GREASE
C	2	50342	SCREW, CP, HX, 1/2NC □1 1/2
D	2	10550	WASHER, LOCK, 1/2 ID, SPRING, CP
E	2	10558	WASHER, FLAT, STD, 1/2 ID
F	2	10589	SCREW,CP,HX,3/8NC X 2 3/4
G	2	51385	NUT,CENTERLOCK,3/8-16NC
H	2	81425	REAR HINGE BLOCK,W/ZERK



MKE□AK□15



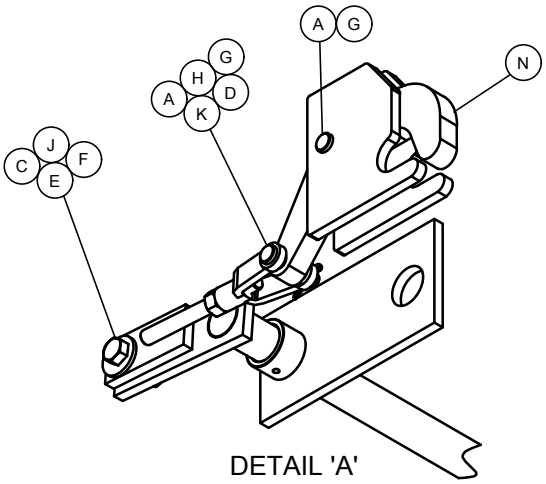
CYLINDER P/N 89183 (CS130-5-3)
ELBOW SWIVEL P/N 76471

CYLINDER P/N 82951 (CS130-5.5-3DA)
ELBOW SWIVEL P/N 76471

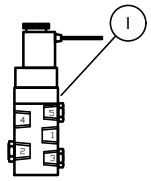
MKE_AK_3

TAILGATE LATCH - DA CYLINDER, VERTICAL TAILGATE

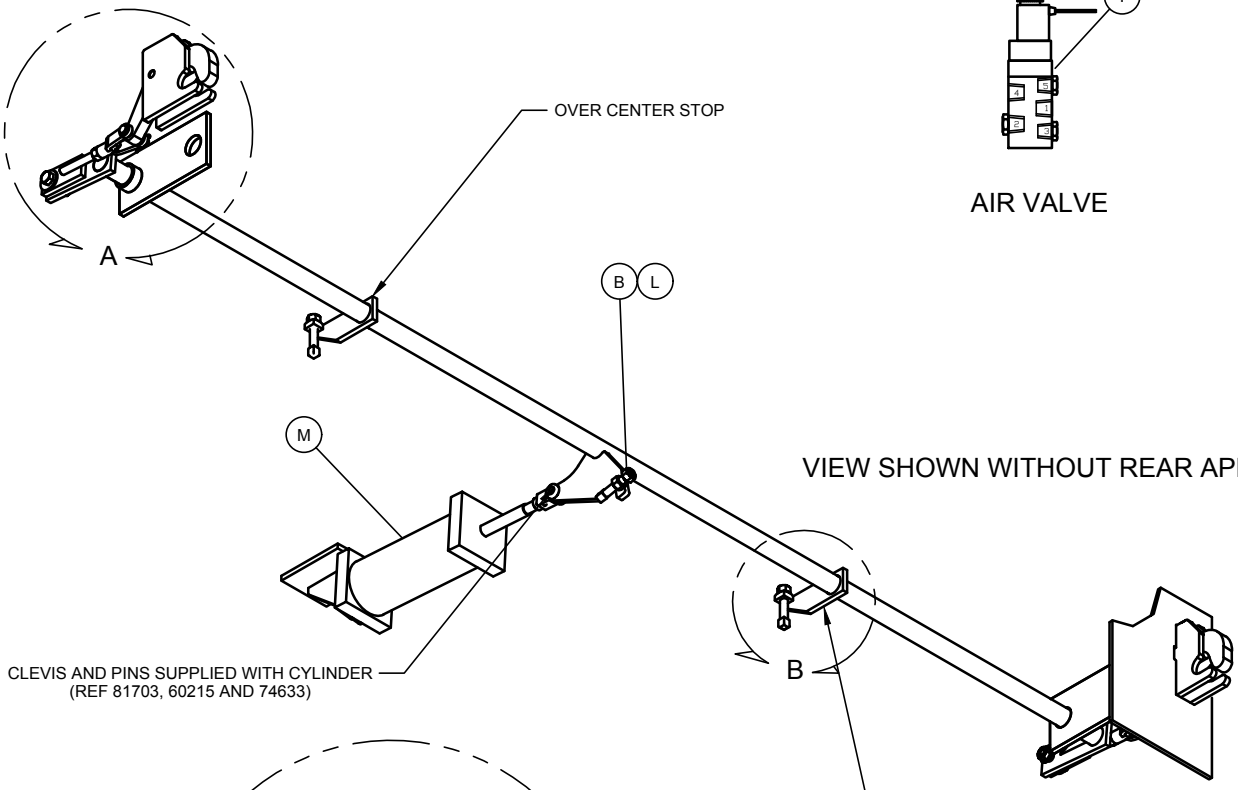
PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
A	4	00215	PIN, COTTER, 1/8 X 1
B	3	10560	NUT,HEX,1/2-13NC,ZNC PLTD
C	2	10558	WASHER, FLAT, STD, 1/2 ID
D	2	11110	NUT, HEX, 1/2-20NF, ZNC PLTD
E	2	50343	SCREW, CP, HX, 1/2NC X 1 3/4
F	2	50418	NUT, TOPLOCK, FLG, 1/2-13NC
G	4	74633	PIN, CLEVIS, 1/2 X 2
H	2	74642	YOKE, END, 1/2, ADJUSTABLE
I	1	86225	VALVE, SOLENOID, TG CONTROL
J	2	77196	SLEEVE, BUSHING
K	2	77201	LATCH ROD, WLDT
L	3	81233	SCREW,SET,SQHD,1/2-13 X 2 1/2
M	1	84175	CYLINDER,AIR,3 1/2 X 3/4 X 8
N	2	77181	LATCH, JAW



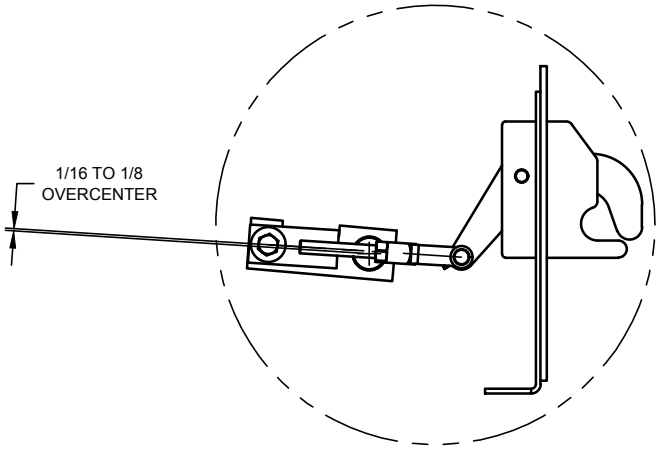
DETAIL 'A'



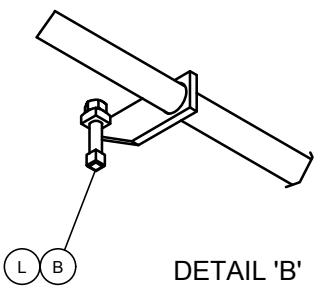
AIR VALVE



VIEW SHOWN WITHOUT REAR APRON



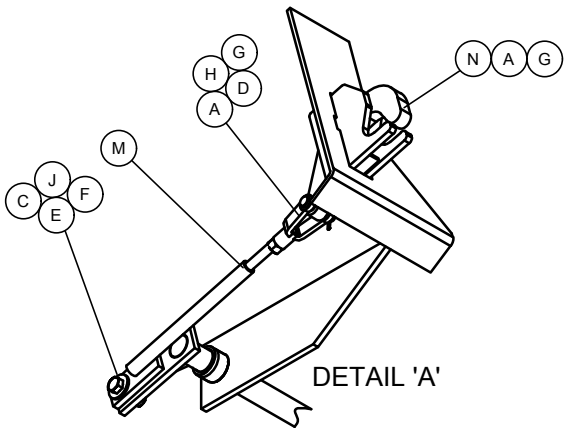
REFER TO "TAILGATE LATCH ADJUSTMENT"
INSTRUCTIONS FOR LATCH ADJUSTMENT



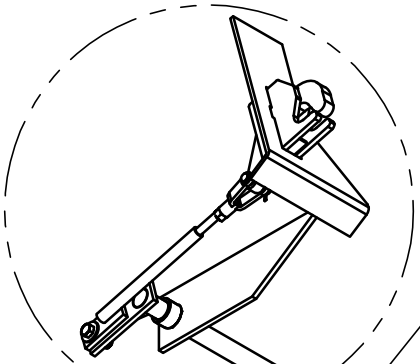
DETAIL 'B'

MKE_AK_4

PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
A	4	00215	PIN, COTTER, 1/8 X 1
B	3	10560	NUT,HEX,1/2-13NC,ZNC PLTD
C	2	10558	WASHER, FLAT, STD, 1/2 ID
D	2	11110	NUT, HEX, 1/2-20NF, ZNC PLTD
E	2	50343	SCREW, CP, HX, 1/2NC X 1 3/4
F	2	50418	NUT, TOPLOCK, FLG, 1/2-13NC
G	4	74633	PIN, CLEVIS, 1/2 X 2
H	2	74642	YOKE, END, 1/2, ADJUSTABLE
I	1	86225	VALVE, SOLENOID, TG CONTROL
J	2	77196	SLEEVE, BUSHING
K	3	81233	SCREW,SET,SQHD,1/2-13 X 2 1/2
L	1	84175	CYLINDER,AIR,3 1/2 X 3/4 X 8
M	2	87552	LATCH ROD, WLDT
N	2	77181	LATCH, JAW

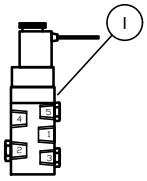


DETAIL 'A'

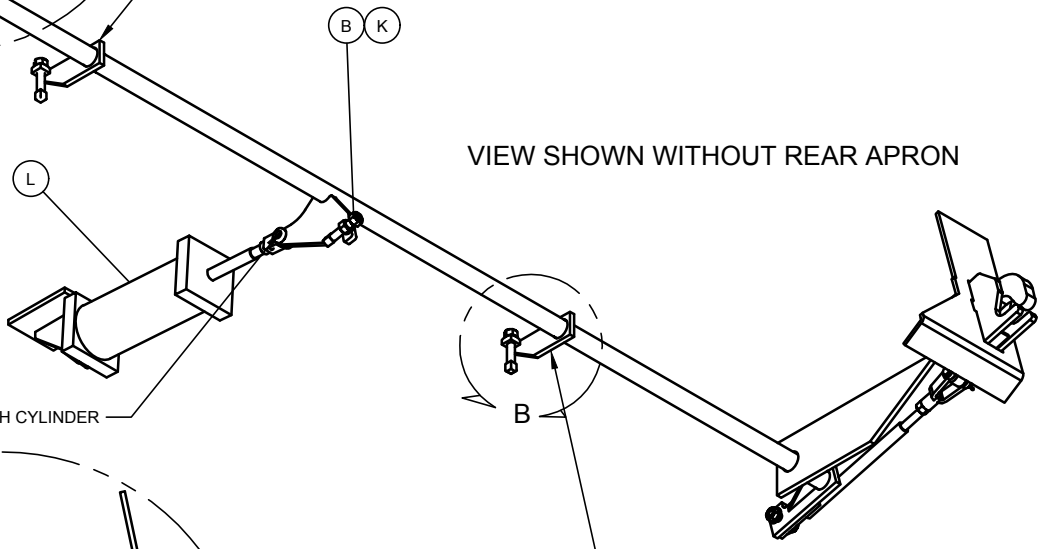


A

OVER CENTER STOP



AIR VALVE

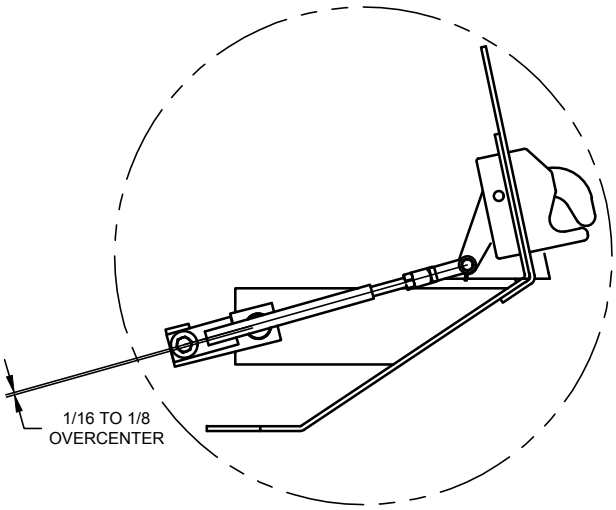


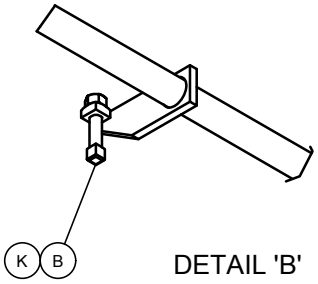
VIEW SHOWN WITHOUT REAR APRON

CLEVIS AND PINS SUPPLIED WITH CYLINDER

B

OVER CENTER STOP



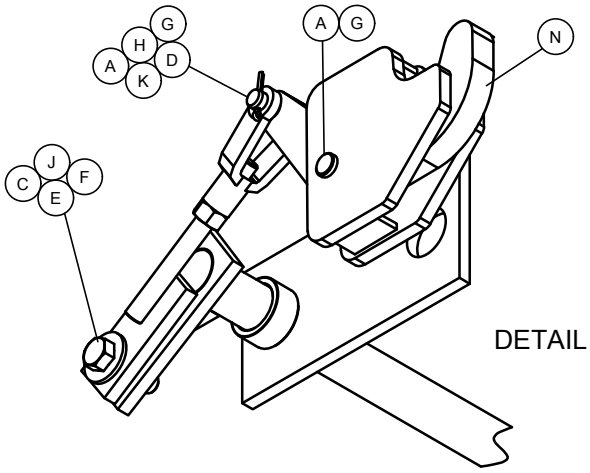


DETAIL 'B'

REFER TO "TAILGATE LATCH ADJUSTMENT"
INSTRUCTIONS FOR LATCH ADJUSTMENT

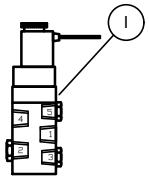
MKE_AK_5

TAILGATE LATCH - DA CYLINDER, HYDRAULIC LIFT TAILGATE

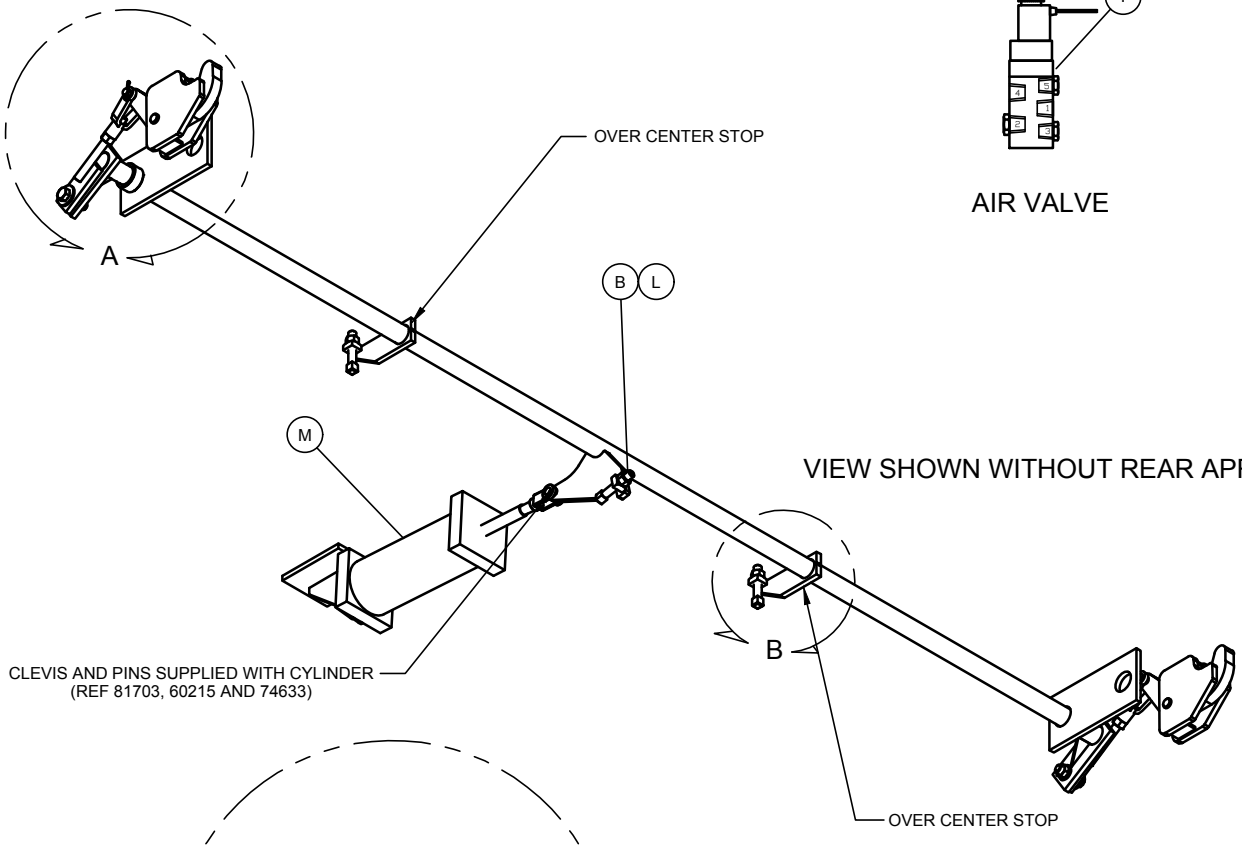


DETAIL 'A'

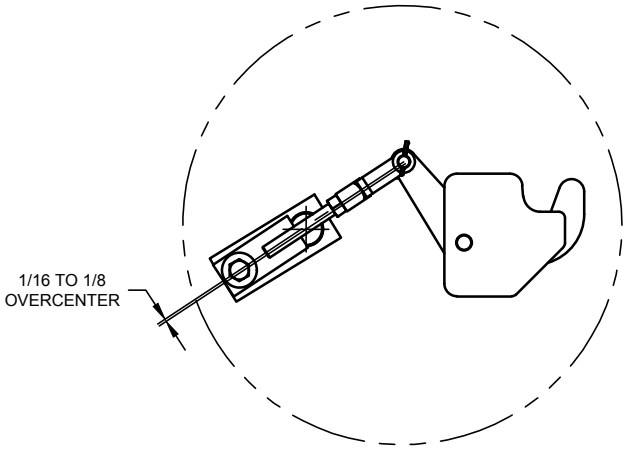
PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
A	4	00215	PIN, COTTER, 1/8 X 1
B	3	10560	NUT,HEX,1/2-13NC,ZNC PLTD
C	2	10558	WASHER, FLAT, STD, 1/2 ID
D	2	11110	NUT, HEX, 1/2-20NF, ZNC PLTD
E	2	50343	SCREW, CP, HX, 1/2NC X 1 3/4
F	2	50418	NUT, TOPLOCK, FLG, 1/2-13NC
G	4	74633	PIN, CLEVIS, 1/2 X 2
H	2	74642	YOKE, END, 1/2, ADJUSTABLE
I	1	86225	VALVE, SOLENOID, TG CONTROL
J	2	77196	SLEEVE, BUSHING
K	2	77201	LATCH ROD, WLDT
L	3	81233	SCREW,SET,SQHD,1/2-13 X 2 1/2
M	1	84175	CYLINDER,AIR,3 1/2 X 3/4 X 8
N	2	77181	LATCH, JAW



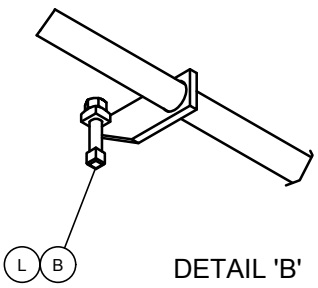
AIR VALVE



VIEW SHOWN WITHOUT REAR APRON



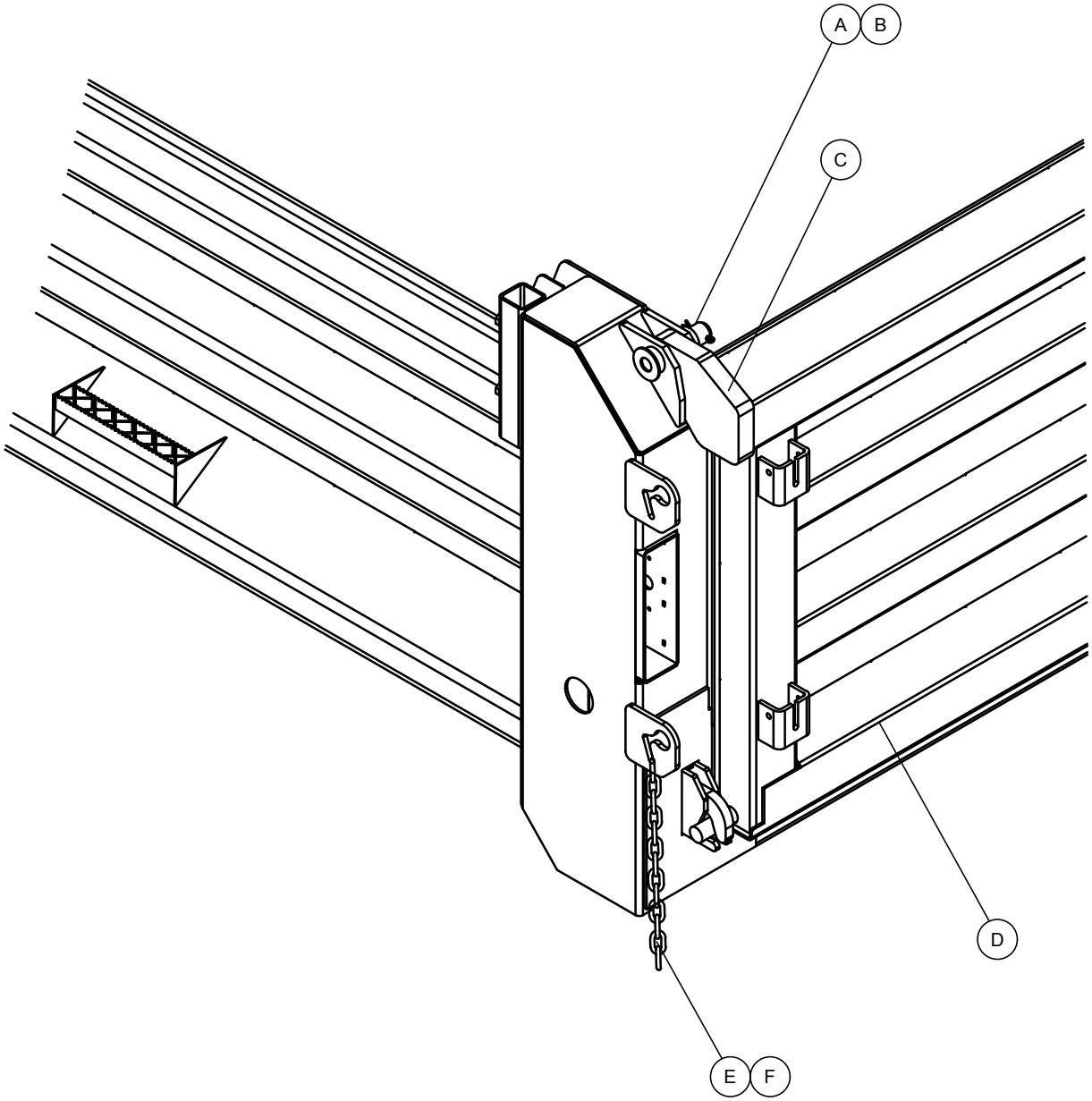
REFER TO "TAILGATE LATCH ADJUSTMENT"
INSTRUCTIONS FOR LATCH ADJUSTMENT



DETAIL 'B'

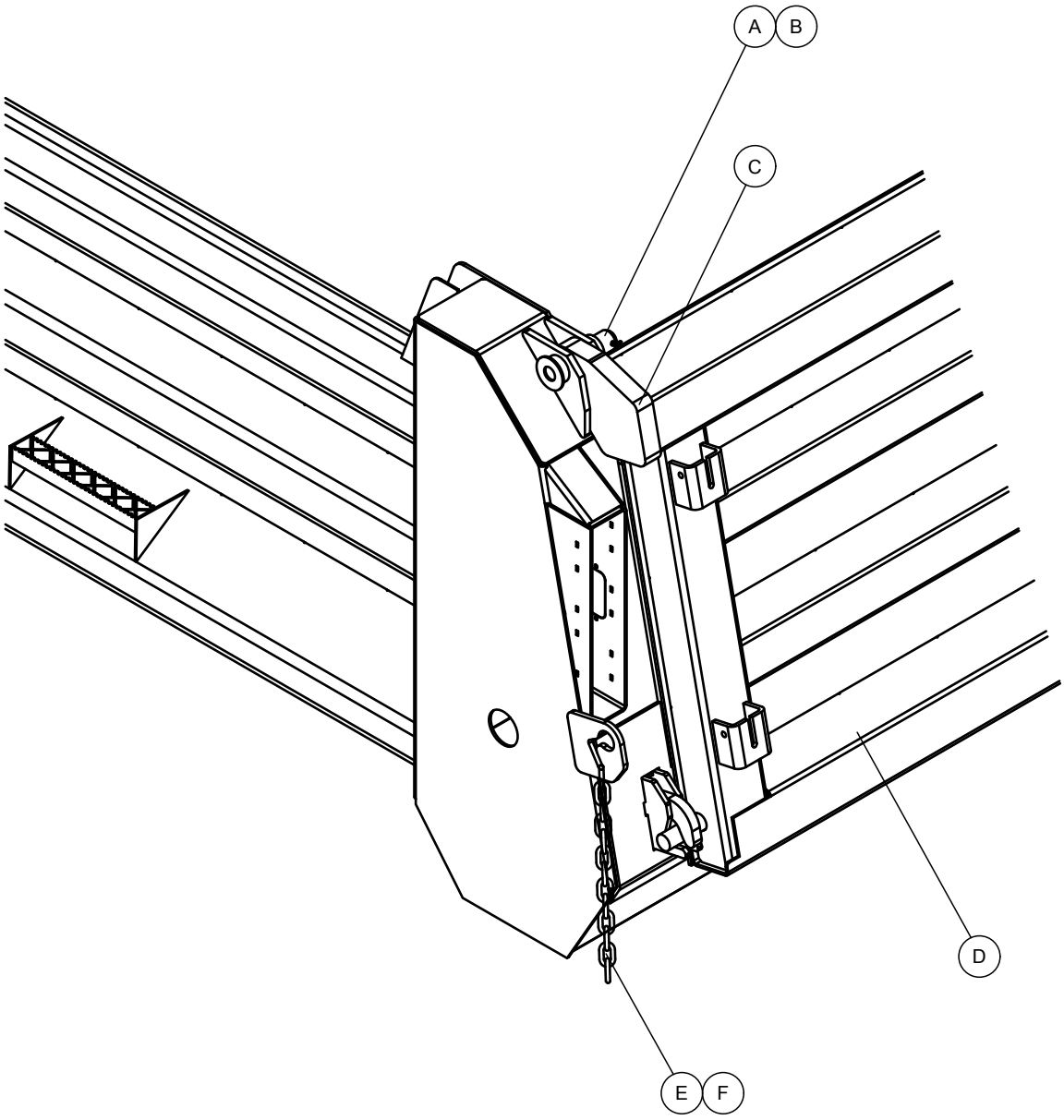
MKE_AK_6

PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
A	2	50601	PIN, COTTER, 1/4 X 2 1/4
B	2	85813	PIN,TG,PIVOT,WLDT,1.50
C	2	113485	PLATE,HINGE,TAILGATE,STR
D	1	132419	TAILGATE WLDT,38",1/4",MKE
E	2	74774	CHAIN,3/8 X 60"
F	2	83779	GUARD,CHAIN,NYLON-BLK



MKE_AK_7

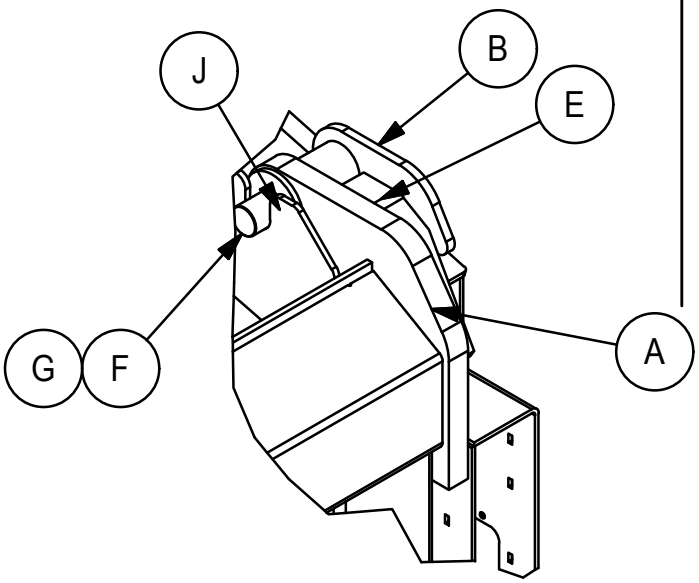
PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
A	2	50601	PIN, COTTER, 1/4 X 2 1/4
B	2	85813	PIN,TG,PIVOT,WLDT,1.50
C	2	113486	PLATE,HINGE,TAILGATE
D	1	134176	TAILGATE WLDT,38",1/4",MKE
D	1	147490	TAILGATE WLDT,38",1/4",MKEA,DA
E	2	74914	CHAIN,3/8 X 40"
F	8'	83779	GUARD,CHAIN,NYLON-BLK



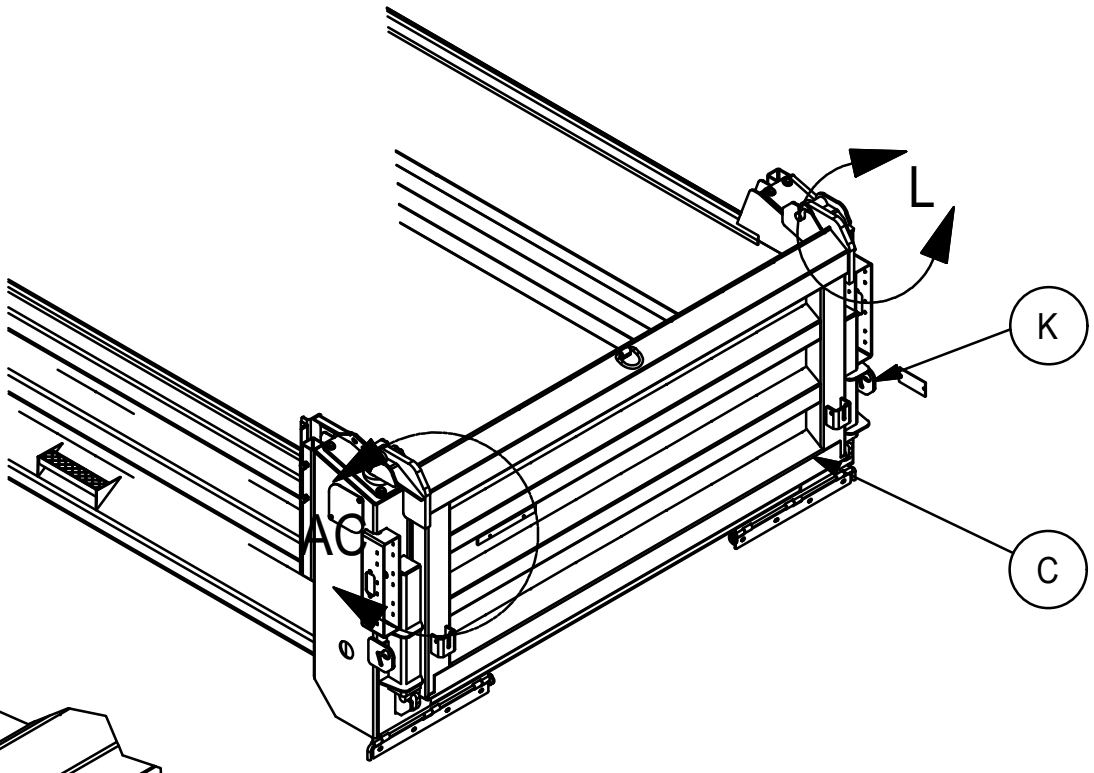
MKE_AK_10

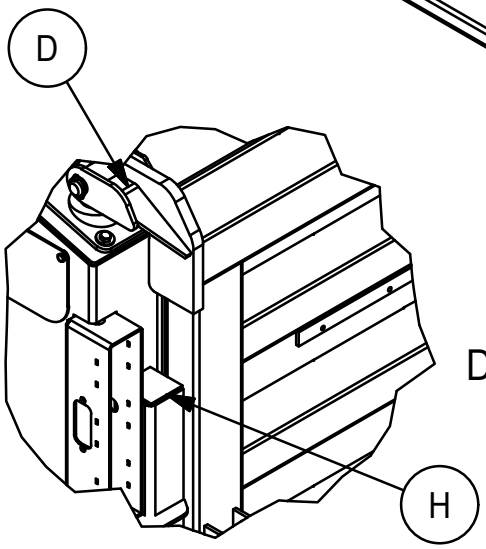
PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
A	2	134771	PLATE,HINGE,TAILGATE,AK
B	2	134772	PLATE,HINGE,OUTSIDE,TLGT,AK
C	1	134777.AR4	TAILGATE WLDT,38",1/4",MKE,HYD,AK
D	1	134780	GUSSET,PIVOT,TLGT,LH
E	1	134781	GUSSET,PIVOT,TLGT,RH
F	2	134784	PIN,WLDT,1.25 X 6.25
G	2	85761	PIN,LYNCH,1/4 X 1 9/16
H	2	134770	GUSSET,3.25 X 3.375,SQ,.25
J	2	134782	CRADLE,PIN,TAILGATE
K	2	74526	HOOK,CHAIN,BANJO
**	2	74774	CHAIN,3/8 X 60"
**	8'	83779	GUARD,CHAIN,NYLON-BLK

** NOT SHOWN. INCLUDED IN MOUNT PACK.



DETAIL L



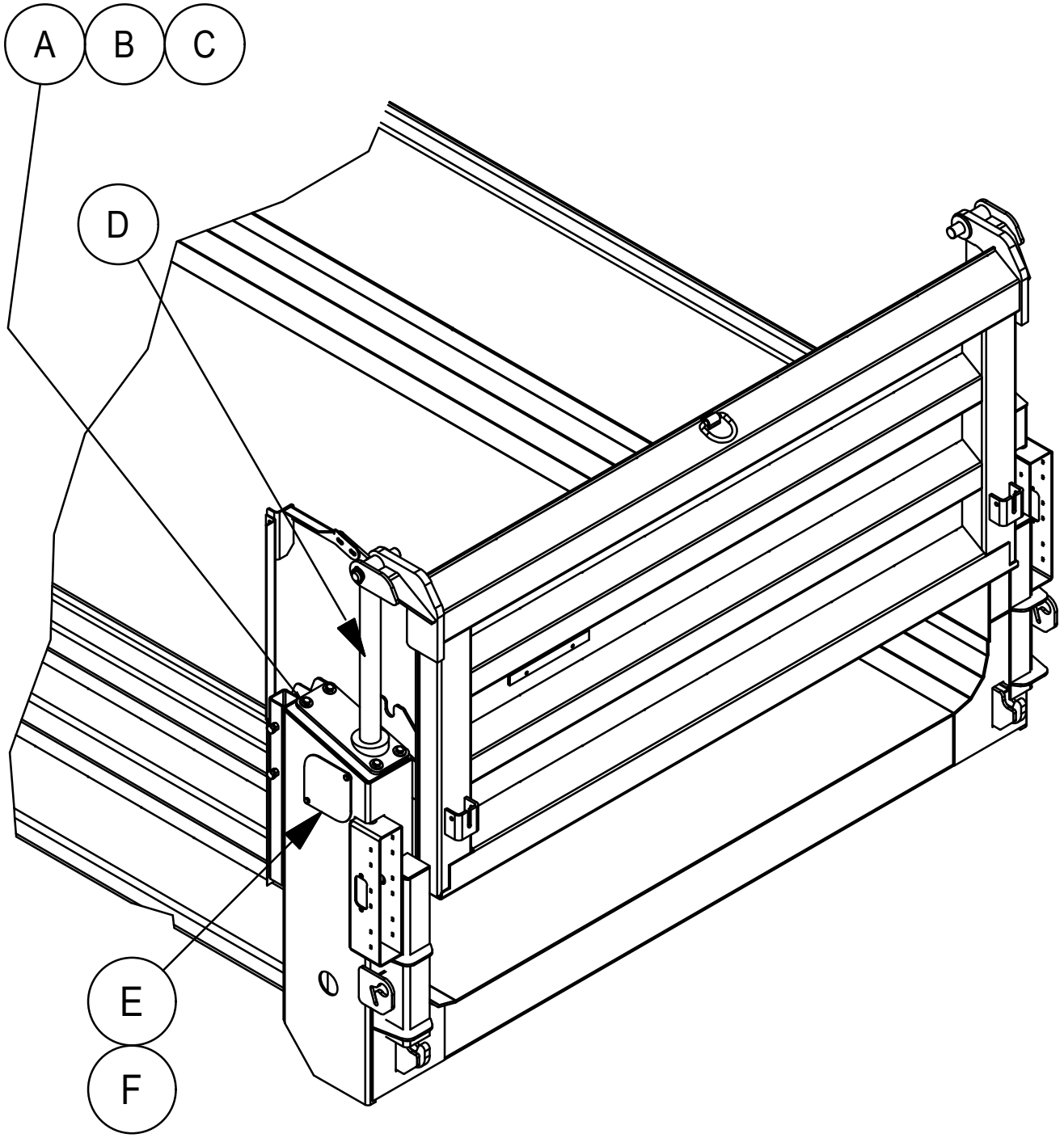


DETAIL AC

MKE_AK_8

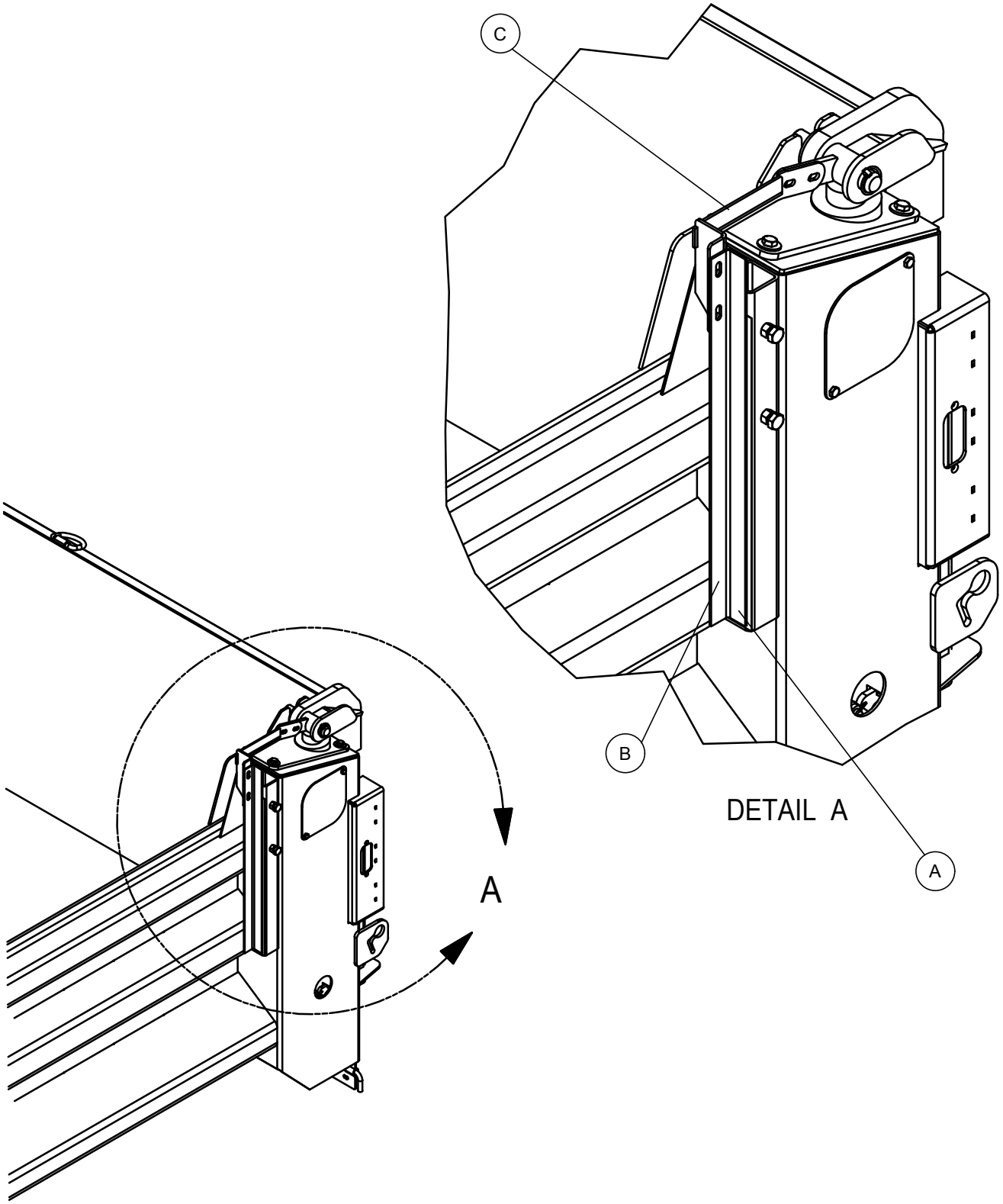
HYDRAULIC LIFT TAILGATE CYLINDER

PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
A	8	103658	SCREW,CP,HX,1/2NC X 1 1/2 G8
B	8	10558	WASHER,FLAT,STD,1/2 ID
C	8	11021	NUT,LOCK,NYLON INSERT,1/2-13NC
D	2	134643	CYLINDER,3.5-20.25,2.25,DA
E	4	50335	SCREW,CP,HX,3/8NC X 1 G5
F	2	78966	COVER,ACCESS,ASPHALT



MKE_AK_9

PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
A	1	134836	DECAL,SCALE,TAILGATE,ALASKA,
B	1	141103	INDICTOR,ANGLE,1.5 X 1.5,10GA
C	1	141104	INDICTOR,WLDT,AK DOT 2015



MKE_AK_11

THIS PAGE

IS LEFT BLANK

INTENTIONALLY.

REFERENCE

INFORMATION

THIS PAGE
IS LEFT
BLANK
INTENTIONALLY.

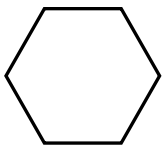
BOLT TORQUE DATA

The chart provided contains information concerning standard hardware used on this machine. It is recommended that all fasteners be tightened to the torque values specified. The grade of the bolt is identified by the markings on the head of the bolt.

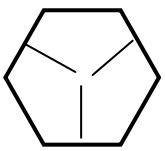
GENERAL BOLT TORQUE DATA IN FT/LB.

BOLT SIZE	SAE-GRADE 2 DRY	SAE-GRADE 2 LUB	SAE-GRADE 5 DRY	SAE-GRADE 5 LUB	SAE-GRADE 8 DRY	SAE-GRADE 8 LUB
1/4-20	5	4	8	6	12	9
1/4-28	6	5	9	7	13	10
5/16-18	11	8	17	13	25	18
5/16-24	12	9	19	14	25	20
3/8-16	20	15	30	23	45	35
3/8-24	23	17	35	25	50	40
7/16-14	30	24	50	35	70	50
7/16-20	35	25	55	40	80	60
1/2-13	50	35	75	55	110	80
1/2-20	55	40	90	65	120	90
9/16-12	70	55	110	80	150	110
9/16-18	80	60	120	90	170	130
5/8-11	100	75	150	110	220	170
5/8-18	110	85	170	130	240	180
3/4-10	175	130	260	200	380	280
3/4-16	195	145	300	220	420	320
7/8-9	165	125	430	320	600	460
7/8-14	185	140	470	350	660	500
1-8	250	190	800	600	900	680
1-14	270	200	700	530	1000	740

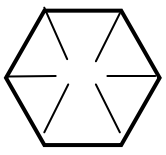
NOTE:
1. Multiply by 1.356 for metric N-M.
2. Do not use above values in place of those specified in other sections of this manual.



GRADE 2
(PLAIN)



GRADE 5
(3 MARKS)



GRADE 8
(6 MARKS)

DIMENSION CHART

DECIMALS OF AN INCH
For each 1/64 of an inch
With Millimeter Equivalents

Fraction	1/64	Decimal	Millimeters (Approx.)	Fraction	1/64	Decimal	Millimeters (Approx.)
- -	1	.015625	0.397	- -	33	.515625	13.097
1/32	2	.03125	0.794	17/32	34	.53125	13.494
- -	3	.046875	1.191	- -	35	.546875	13.891
1/16	4	.0625	1.588	9/16	36	.5625	14.288
- -	5	.078125	1.984	- -	37	.578125	14.684
3/32	6	.09375	2.381	19/32	38	.59375	15.081
- -	7	.109375	2.778	- -	39	.609375	15.478
1/8	8	.125	3.175	5/8	40	.625	15.875
- -	9	.140625	3.572	- -	41	.640625	16.272
5/32	10	.15625	3.969	21/32	42	.65625	16.669
- -	11	.171875	4.366	- -	43	.671875	17.066
3/16	12	.1875	4.763	11/16	44	.6875	17.463
- -	13	.203125	5.159	- -	45	.703125	17.859
7/32	14	.21875	5.556	23/32	46	.71875	18.256
- -	15	.234375	5.953	- -	47	.734375	18.653
1/4	16	.25	6.350	3/4	48	.750	19.050
- -	17	.265625	6.747	- -	49	.765625	19.447
9/32	18	.28125	7.144	25/32	50	.78125	19.844
- -	19	.296875	7.541	- -	51	.796875	20.241
5/16	20	.3125	7.938	13/16	52	.8125	20.638
- -	21	.328125	8.334	- -	53	.828125	21.034
11/32	22	.34375	8.731	27/32	54	.84375	21.431
- -	23	.359375	9.128	- -	55	.859375	21.828
3/8	24	.375	9.525	7/8	56	.875	22.225
- -	25	.390625	9.922	- -	57	.890625	22.622
13/32	26	.40625	10.319	29/32	58	.90625	23.019
- -	27	.421875	10.716	- -	59	.921875	23.416
7/16	28	.4375	11.113	15/16	60	.9375	23.813
- -	29	.453125	11.509	- -	61	.953125	24.209
15/32	30	.46875	11.906	31/32	62	.96875	24.606
- -	31	.484375	12.303	- -	63	.984375	25.003
1/2	32	.500	12.700	1	64	1.000	25.400

APPROXIMATE DENSITY OF COMMON MATERIALS

MATERIAL	$\#/FT^3$	KG/M^3	LBS/GAL
Ashes	35-40	560-640	
Cargill CG-90 surface saver			10.15-10.45
Cement	90-118	1440-1890	
Clay, damp	110	1,761	
Coal-anthracite, lumpy	50-54	800-860	
Coal-bituminous, lump	50-60	800-960	
Coal-lignite	78	1,250	
Coke	23-32	369-513	
Earth, moist	78	1,250	
Earth, mud	108	1,730	
Flue, dirt	100	1,600	
Fly ash	35, 45	560-720	
Granite, piled	96	1,579	
Gravel, wet	126	2,019	
Iron ore	325	5,206	
Iron slag	172	2,755	
Limestone, piled	95	1,572	
River mud	90	1,432	
Salt, deicing rock	66-72	1055-1150	
Salt, granulated, piled	48	769	
Salt, northern rock (deep mine)	74-82	1185-1310	
Sand, dry	100	1,602	
Sand, wet	126	2,019	
Shale, piled	92	1,474	
Snow, fresh fallen	8	128	
Riprap	105	1,681	
Wheat	48	770	
Wood Chips	18-20	290-320	
Pine	30-42	481-673	
Oak	45-54	673-866	

TABLE OF WEIGHTS AND MEASURES

Dry Measure

2 pints = 1 quart
1 quart = 67.2 cu. in.
1 British bushel = 1.032 U.S. bushel
8 quarts = 1 peck
4 pecks = 1 bushel
4 pecks = 1 bushel

Liquid Measure

4 gills = 1 pint
16 fluid ounces = 1 pint
2 pints = 1 quart
4 quarts = 1 gallon
1 British Imperial gallon = 1.2 U.S. gals.
1 cu. ft of water contains 7.48 gallons and weighs 62.321 lbs.
1 gallon = 231 cubic inches
31-1/2 gallons = 1 barrel
2 barrels = 1 hogshead

Weight of:

1 gal. water = approx. 8.33 lbs.
1 gal. gasoline = approx. 6.1 lbs.
1 gal. L.PG. = approx. 4.25 lbs.
1 gal. Diesel Fuel = approx. 7.0 lbs.

Linear Measure

1 mil. = 0.001 inch
12 inches = 1 foot
3 feet = 1 yard
5-1/2 yards = 1 rod
40 rods = 1 furlong
8 furlongs = 1 statute mile
5280 feet = 1 statute mile
3 miles = 1 league

Square Measure

1 circular mil. = 0.7854 square mils.
1,000,000 sq. mils. = 1 square inch
144 square inches = 1 sq. ft.
9 sq. ft. = 1 sq. yd.
30-1/4 sq. yds. - 1 sq. rod
40 sq. rods = 1 rood
4 roods - 1 acre = 43560 sq. ft.
640 acres = 1 sq. mile

Surveyor's Measure

7.92 inches = 1 link
25 links = 1 rod
4 rods = 1 chain
10 sq. chains or 160 sq. rods = 1 acre
36 sq. miles (6 miles square) = 1 township
43560 sq. ft. = 1 acre
640 acres = 1 sq. mile

Cubic Measure

1 cu. cm. = .061 cu. in.
27 cu. ft. = 1 cu. yd.
40 cu. ft. = 1 ton (shipping)
231 cu. in. = 1 U.S. gallon
1728 cu. in. = 1 cu. ft.
128 cu. ft. = 1 cord (wood)
2150.42 cu. in. = 1 std. bushel
1 cu. ft. = 4/5 of a bushel

Linear Measure

1 millimeter = 0.03937 inches
1 centimeter = 0.3937 inches
1 decimeter = 3.937 in. = 0.328 ft.
1 meter = 39.37 in. = 1.0936 yards
1 decameter = 1.9884 rods
1 kilometer = 0.62137 mile
1 inch = 2.54 centimeters
1 foot = 3.048 decimeters
1 rod = 9.5029 decameters
1 yard = .09144 meter
1 mile = 1.6093 kilometers

Square Measure

1 sq. cm. = 0.1550 sq. in.
1 sq. decimeter = 0.1076 sq. ft.
1 sq. meter = 1.196 sq. yds.
1 hectare = 2.47 acres
1 sq. kilometer = 0.386 sq. miles
1 sq. in. = 6.452 sq. cm.
1 sq. ft. = 9.2903 sq. decimeters
1 sq. yd. = 0.8361 sq. meter
1 sq. mile = 2.59 sq. kilometers

Weights

1 gram = 0.03527 ounces
1 kilogram = 2.2046 lbs.
1 metric ton = 2205 lbs.
1 pound = 0.4536 kilograms
1 metric ton = 1.1023 short tons
1 ounce = 28.35 grams = 437.5 grains

ALASKA 2017
ICE CONTROL SPREADER
MODEL: FSH, 12' SLIDE IN
SERIAL #: _____

INSTRUCTIONS FOR ORDERING PARTS

Order parts from the authorized dealer covering your area.

DEALER:_____
Phone #: _____

ALWAYS GIVE THE MODEL AND SERIAL NUMBER.

To obtain parts promptly, give part name and part number.

Give post office address, town, and state where the parts are to be shipped. UPS (United Parcel Service) and other carriers will not ship to a post office box. You must use a street address. Also be sure to specify whether material is to be shipped by freight, express, parcel post, or UPS. All UPS shipments will be normal surface routing unless specified otherwise.

Confirm all telephone or FAX orders in writing.

Credit for new parts not needed must be obtained from the dealer from whom they were purchased.

Unless claims for shortages or errors are made immediately upon receipt of goods, they will not be considered.

Inspect all goods received immediately upon receipt. When damaged goods are received, insist that a full description of the damage be made by the carrier agent on the freight bill. If this description is insisted upon, full damage can be collected from the transportation company.

No responsibility is assumed for delay or damage to merchandise while in transit. Dealer's responsibility ceases upon delivery of shipment to the transportation company from whom a receipt is received showing that shipment was in good condition when delivered to them; therefore, claims (if any) should be filed with the transportation company and not with the dealer.

ALASKA 2017 - 2018
TABLE OF CONTENTS
FSH SPREADER – 12’ SLIDE IN

Page No.

FSH

SAFETY

INFORMATION

THIS PAGE

IS LEFT BLANK

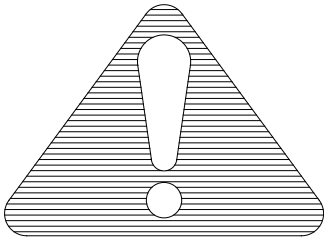
INTENTIONALLY.

SAFETY

The Safety-Alert Symbol.

This symbol is on safety signs on the equipment and in the manual.

This symbol indicates to you the potential for personal injury and/or property damage.



Hazard Seriousness Levels.

The DANGER signal word indicates - immediate hazards which WILL result in severe personal injury or death.

DANGER

The WARNING signal word indicates - hazards or unsafe practices which COULD result in severe personal injury or death.

WARNING

The CAUTION signal word indicates - hazards or unsafe practices which COULD result in minor personal injury or product or property damage.

CAUTION

Persons who install, mount, operate, or service this equipment must be properly instructed and warned. Do not let anyone operate equipment without instruction.

Read operator manuals completely before operating equipment. Learn how to operate controls properly.

Read decal instructions, cautions, and warnings. Read the safety messages in this manual and on safety signs on the spreader unit. Replace missing or damaged safety signs.

Check spreader to ensure that all shields and grates are in place.

Use care when mounting and dismounting.

* Work carefully and slowly when opening or closing a top screen. Control the screen section movement as it is lifted, rotated over center, and slowly lowered onto the opposite supporting surface.
* Never open more than one screen section at a time, as the closed screens maintain the closed walking surface necessary for opening the single screen section.
* Be sure the screen is cleared of stuck or frozen material and is in good repair to avoid jamming during opening.

Keep spreader unit and components in proper working condition.

The auger, drive shafts, conveyor and spinner assemblies transmit great amounts of power, and accordingly, are hazardous when in operation. All maintenance, inspections or operator adjustments must be made with all source power off.

Keep spreader and surrounding area clear of personnel and property when operating.

When traveling, especially fully loaded, this machine may have a high center of gravity, and care should be exercised when turning or driving on banked surfaces.

Completely disengage all power to the spreader, turn off the ignition, and remove key before leaving truck.

Unauthorized modifications to the spreader and related components may impair the function and/or safety.

Use care and follow separate instructions when raising or lowering the tilt-up spinner.

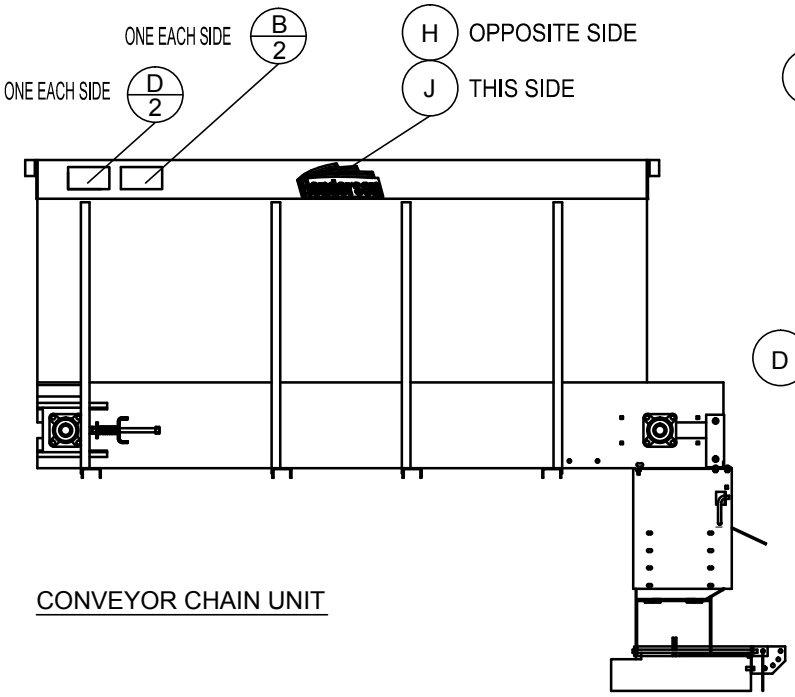
Do not operate spreader unit without all safety shields in place. Modification of safety screens and/or other safety devices is strictly prohibited without written authorization of Henderson Manufacturing.

If unit is equipped with a stand the hopper and tanks are to be completely empty prior to using the stand.

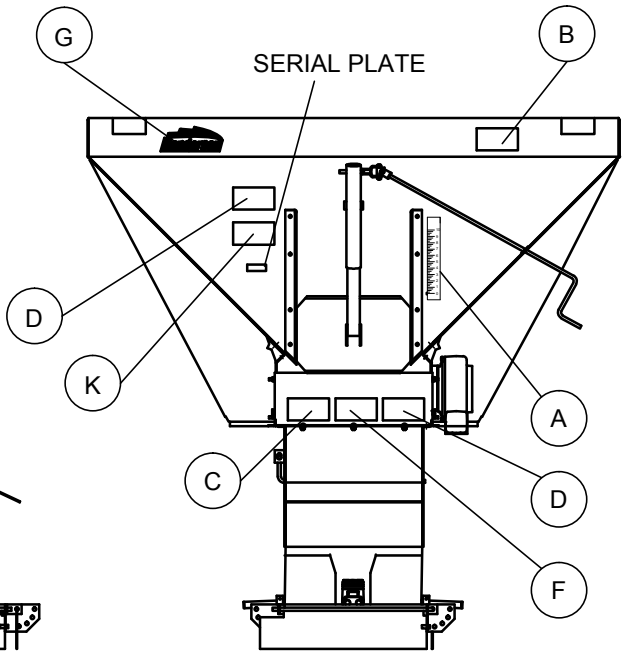
DECAL □ SERIAL PLATE LOCATION

PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
G	1	81227	DECAL,LOGO,4.4 X 13.2
H	3	81228	DECAL, LOGO,5.5 X 16.5,RH
J	1	81228L	DECAL, LOGO,5.5 X 16.6,LH
K	1	50986	DECAL, CAUTION,KEEP HANDS OUT

PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
A	1	07477	SCALE, FEEDGATE
B	3	50983	DECAL, CAUTION, MOUNT/DISMOUNT
C	1	52371	DECAL, WARNING,STAY CLEAR
D	4	52374	DECAL, WARNING ,CONVEYOR
E	-	- -	- - -
F	1	75250	DECAL, SAFETY,ICE



CONVEYOR CHAIN UNIT



24 DECALS

THIS PAGE

IS LEFT BLANK

INTENTIONALLY.

FSH

INSTALLATION

AND

OPERATION

THIS PAGE

IS LEFT BLANK

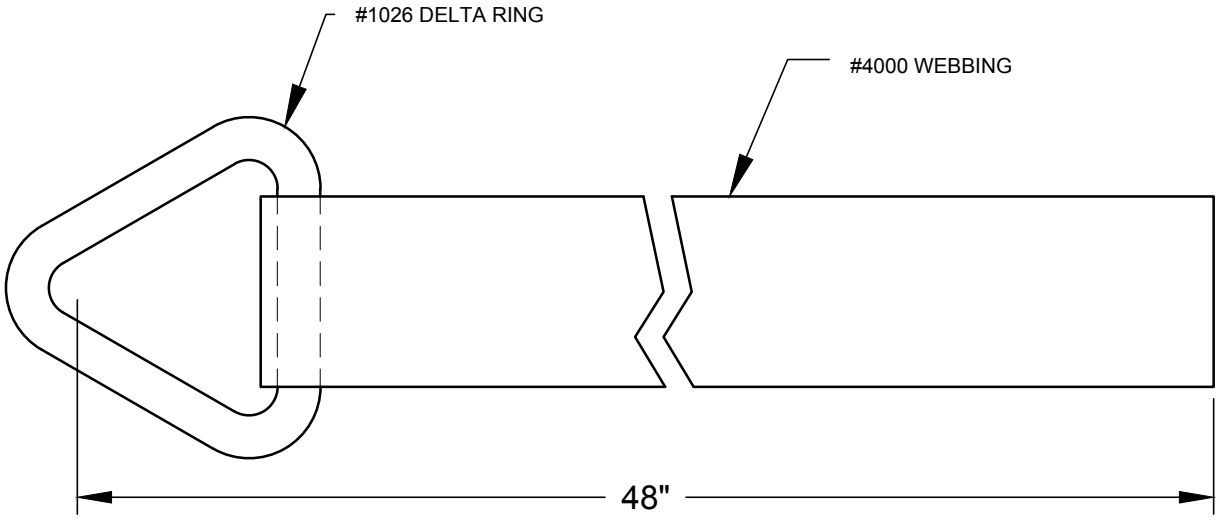
INTENTIONALLY.

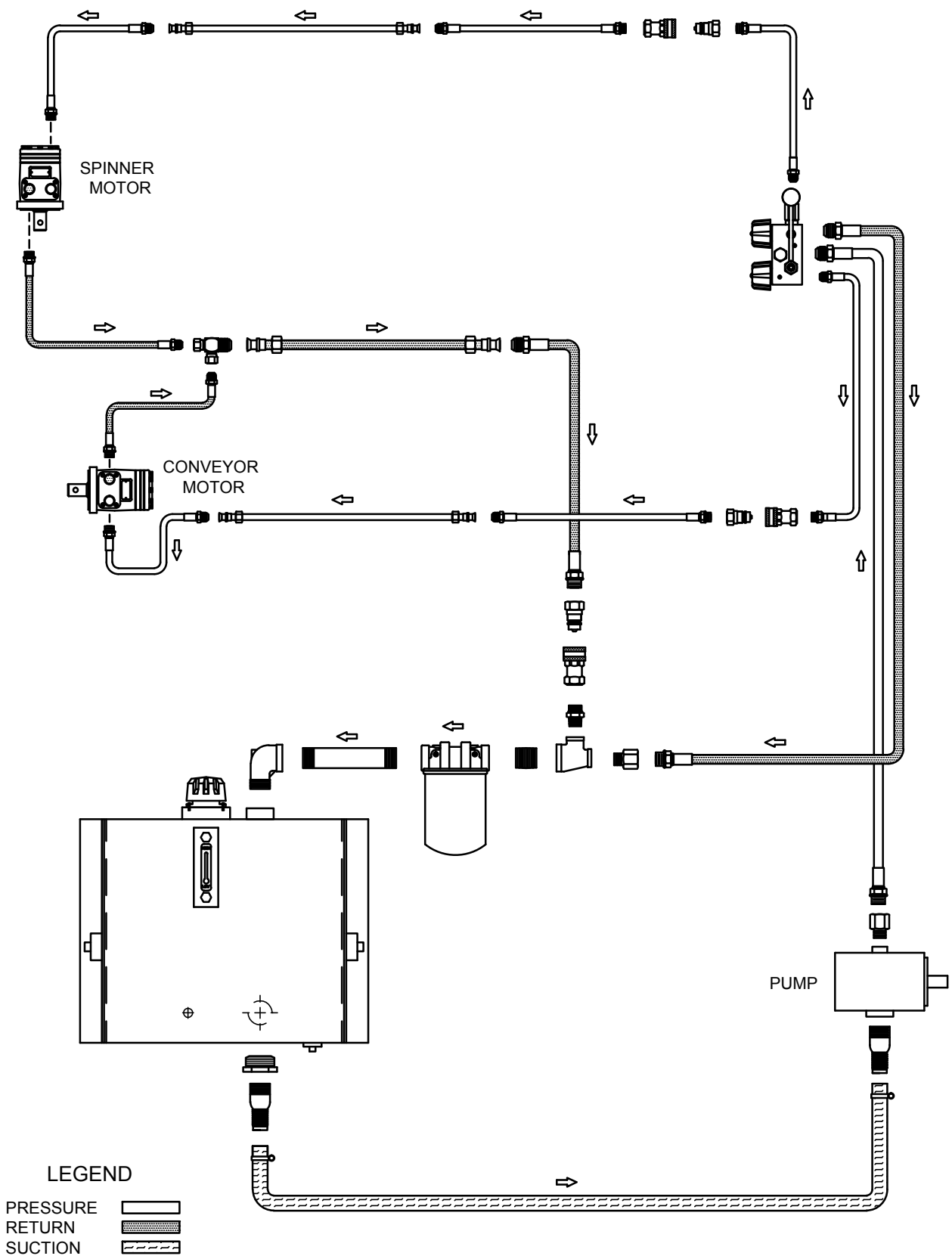
PART #138695

MFGR: KINEDYNE - WINCH STRAP, 4 INCH

4" WEBBING WITH 1026 DELTA RING & 4000 WEBBING, 4' LONG

WORKING LOAD LIMIT = 5400 LBS
ASSEMBLY BREAKING STRENGTH = 16,200 LBS




SPINNER
MOTOR
CONVEYOR
MOTOR
PUMP
LEGEND
PRESSURE
RETURN
SUCTION

INITIAL START-UP

Check over entire unit to be sure all fasteners are in place and properly tightened. Be sure On-Off" control in cab is in the "Off" position. Confirm both the conveyor and spinner speed controls are in the “Off” position. Do not load the spreader.

1. Check to see that no loose parts are in the body or on conveyor/auger or spinner. Be sure to remove any loose pieces.

2. Open feedgate until it is 1" to 2" clear of conveyor/auger.

3. Fill the hydraulic reservoir with oil. Refer to the "Lubrication Specification" section of this handout for proper oil.

4. Start truck engine and set throttle so engine runs at about 1000 RPM. Engage PTO driving pump. Allow pump to run and circulate oil for several minutes. In cold weather increase the warm-up time.

   CAUTION: Stand clear of moving machinery. Check to be sure that all personnel are clear from around the unit.

5. Place the cab "On-Off" control knob to the "On" position and move the spinner control knob to position #3. Let the unit run until the air is expelled from the circuit and the spinner is running smoothly. Turn the spinner control knob to the "Off" position.

   CAUTION: Prior to running **chain conveyors**, visually confirm proper conveyor chain travel direction by engaging conveyor hydraulic circuit at the slowest possible speed in short intervals (1-2 seconds) until proper direction (chain travels rearward) is confirmed. Significant damage to the spreader body and/or conveying system can occur if the chain is run in the wrong direction. Check to be sure that all personnel are clear from around the unit prior to this testing.

6. Open the conveyor/auger control knob to position #3 on the valve. Let the unit run for a few minutes until the conveyor/auger is running smoothly.

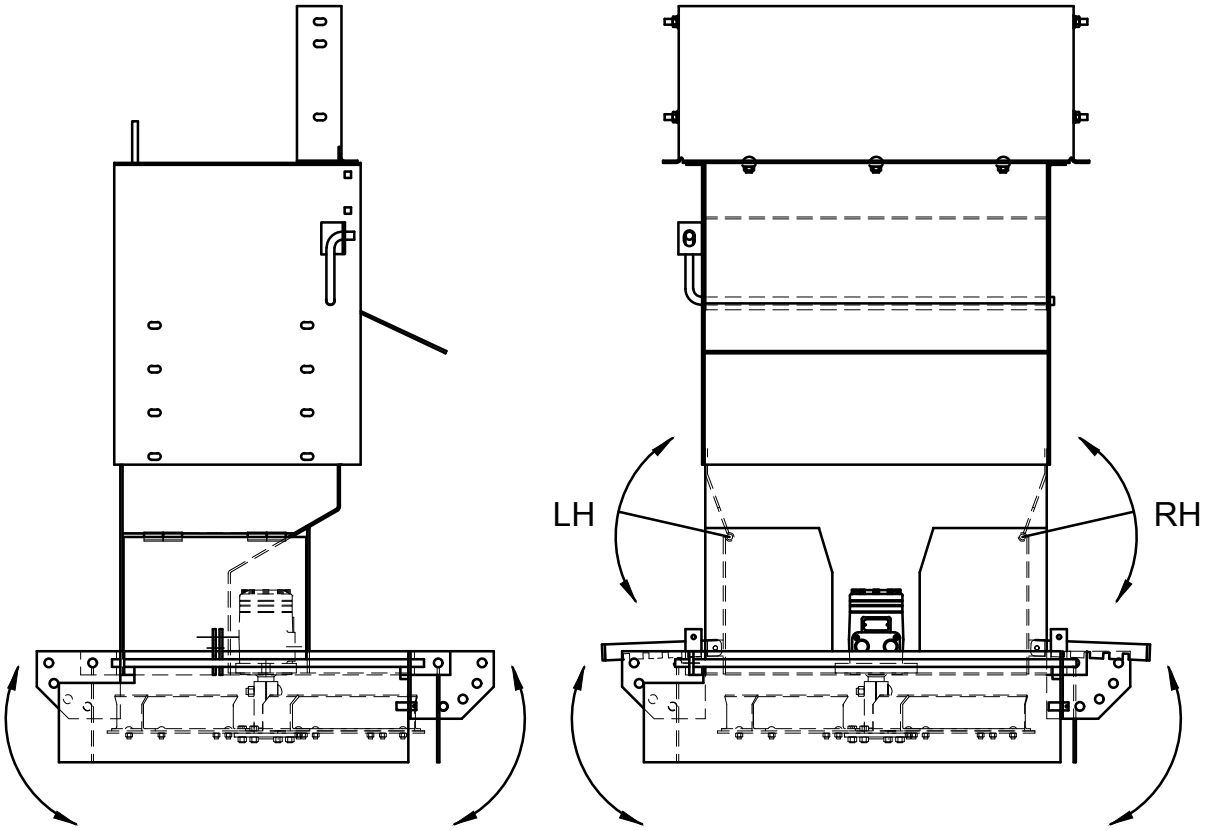
7. Move both the spinner and conveyor/auger knob to position #5 and allow both spinner and conveyor/auger to operate smoothly. Shut down system.

8. Check all connections in the hydraulic system to make sure that there are no leaks.

   CAUTION: Do not check for leaks with your hands while the system is operating, as high-pressure leaks can cause personal injury! Do not check for leaks adjacent to moving parts while the system is operating as there may be danger of entanglement.

9. Check hydraulic oil reservoir and refill to the "FULL" mark on dipstick. Unit is now ready for road testing

10. Check unit to be sure it is secure to truck body.



Note: Spinner direction is counterclockwise.

MATERIAL SPREAD PATTERN

Gate opening, internal baffle position and lower shroud baffle at the rear of the spreader, as well as the conveyor/auger speed and spinner speed, affect the material spread pattern. Use the following procedure for proper adjustment of the spreader spread pattern.

1. Choose the spread pattern desired.
2. Open the gate to the proper setting by turning the crank.
3. Set the internal baffle plate to the proper position for spread pattern desired.
4. Set the lower shroud baffles for desired spread width and direction.
5. Engage power take-off.

Sample adjustments indicated below are intended as a guide to acquire specific spread patterns. Changing any one adjustment can provide a variety of patterns.

Setting the right hand internal baffle in the up position and the left-hand internal baffle in the down position will result in heavy concentration to the center and left of the spreader.

Setting the left hand internal baffle in the up position and the right hand internal baffle in the down position will result in heavy concentration to the center and right of the spreader.

NOTE: FSH spread width and application rate are in direct relation with the spinner speed. As spinner RPM's slow down, the spread width decreases.

FSH

SERVICE AND MAINTENANCE

PROCEDURES

LUBRICATION AND MAINTENANCE

HYDRAULIC SYSTEM:

The use of proper oil in the hydraulic system is one of the most important factors for satisfactory operation. Utmost cleanliness in handling the oil can not be stressed enough. Keep the hydraulic oil in original closed containers, clean top of container before opening and pouring, and handle in thoroughly clean measures and funnels. Clean tank opening thoroughly before removing cover and use care to avoid dropping debris into opened tank.

Refer to the Lubricant and Hydraulic Oil Specifications section of the handout for selection of the proper hydraulic fluid for use in the hydraulic system.

SERVICE SCHEDULE:

1. Check the hydraulic oil daily. Add oil if required. Periodically inspect the hoses and fittings for leaks. Use care to avoid contamination of tank.

2. CHANGE THE HYDRAULIC OIL FILTER AFTER THE FIRST WEEK (OR NOT MORE THAN 50 HOURS) OF OPERATION ON A NEW UNIT.

3. After first filter change, replace filter when indicator reaches Red Zone.

4. The reservoir should be drained through drain plug (not through suction outlet), flushed, and refilled annually, or the oil should be changed if it shows any signs of contamination or breaking down under continued high-pressure operation. Discoloration of oil is one sign of breakdown.

CONVEYOR GEAR CASE:

The oil in a new unit should be drained at the end of the first two weeks (or not more than 100 hours) of operation and the case should be thoroughly flushed with light oil. Refer to the Lubricant Specifications section for the proper grade oil. Refill gear case with recommended lubricant. After the initial change, the oil should be changed every 2000 hours of operation or annually, whichever occurs first.

Check the level in the gear case monthly.

CONVEYOR CHAIN:

Hose down the machine, and remove any material build-up on the sprockets or beneath the chain. If material is allowed to build up, the chain may ride up and damage the body. NOTE: If material builds up under the chain, the chain will ride on the material instead of the bottom panel. The more material allowed to build, the closer the chain will come to the chain shields. If the chain should catch a chain shield, it could permanently distort the chain, the chain shields, or the body. In the same manner, if material is allowed to build up on the sprockets, the chain will have a larger diameter to follow. The more material allowed to build up, the closer the chain will run to the chain shields, until damage has occurred. Shut off all power to remove material buildup. **Do Not** remove material while conveyor or spinner is running.

Allow the chain to become dry before lubricating. The conveyor chain should be lubricated **at least once every month**. Use a mixture of 75% fuel oil and 25% SAE 10 oil in a pressurized hand spray can.

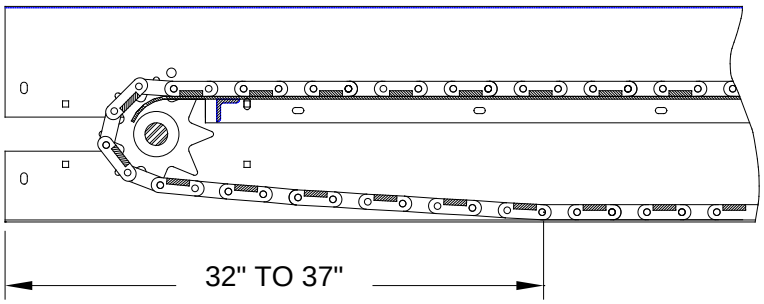
> **CAUTION!!** Be sure all persons are clear before powering the conveyor. When the conveyor is running stay out of the body and stay clear of all moving parts. Entanglement of clothes, or any part of your body or anything you have in your hands can cause serious injury. Do not use a bar, rod or hammer on conveyor while it is moving. If it gets caught it could cause personal injury. With the spinner shut down and the conveyor running slowly spray the mixture of oil onto the links of the chain through openings at rear ends of sill, or from front outside of the body when access clearance is adequate. Oil the chain after each time the machine is washed down.

If a chain oiler is used, the oiler reservoir should be filled daily with a mixture of 75% fuel oil and 25% SAE 10 oil. Before each filling of spreader with material to be spread, open petcock and run conveyor until full length of chain has been oiled, then shut petcock.

Proper chain tension is a main factor in chain and sprocket life. The proper chain tension is illustrated below. Be sure the chain is tensioned equally on both sides. This adjustment is made on each side of the unit at the idler bearings.

Conveyor chains that are too tight will tend to stretch. This will cause excess sprocket wear and eventually cause breakage. Excess slack presents the possibility of the chain catching on subframe parts. Chain following the sprocket around will twist shaft of gearcase. Bent or distorted chain bars will cause damage to the body also. Straighten or replace bent or distorted chain bars immediately.

CHAIN TENSION TO BE MEASURED FROM REAR OF SILL.
PROPER TENSION 32” TO 37”.



LUBRICATION OF BEARINGS:

Grease in a bearing acts to prevent excessive wear of parts, protects ball races and balls from corrosion and aids in preventing excessive heat within the bearing. It is very important the grease maintains its proper consistency during operation. It must not be fluid, and it must not channel.

Bearings should be lubricated by pumping grease in slowly until a slight bead forms around the seals. This bead indicates adequate lubrication and also provides additional protection against the entrance of dirt.

Be sure that all fittings are thoroughly cleaned before grease is injected.

Points to be lubricated by means of a grease gun have standard grease fittings.

CLEAN UP:

To achieve a minimum maintenance operation, this equipment should be thoroughly washed every two or three days during the operating season. Hose the unit down under pressure to free all sticky and frozen material. This washing process will remove material that could build up on pulleys and sprockets thus causing chain or belt wear, stretch, or tearing.

It is important that the machine be thoroughly cleaned and fully lubricated at the end of each operating season. All lubrications and maintenance instructions listed in this section should be closely followed. For longer body life, repaint worn spots to prevent formation of rust.

LUBRICATION MAINTENANCE SCHEDULE

WARNING: Shut off all power and allow all moving parts to come to rest before performing any maintenance operation.

FASTENERS:

Tighten all screw fasteners to recommended torque after first week of operation and annually thereafter. If loose fasteners are found at anytime, tighten to recommended torque. Replace any lost or damaged fasteners or other parts immediately upon finding such damage or loss. Check body mounting bolts every week.

LUBRICANT AND HYDRAULIC OIL SPECIFICATIONS:

IMPORTANT: The lubricant distributor and/or supplier are responsible for the results obtained from their products. Procure lubricants from distributors and/or suppliers of unquestioned integrity, supplying known and tested products. Do not jeopardize your equipment with inferior lubricants. No specific brands of oil are recommended. Use only products qualified under the following oil viscosity specifications and classifications and recommended by reputable oil companies.

HYDRAULIC SYSTEM:

The following are the recommended procedures for selecting the proper hydraulic fluid for use in the hydraulic system. Select major brand industrial PREMIUM QUALITY (anti-wear type) hydraulic oil to provide viscosity between 100 - 200 SSU at operating temperature. Premium hydraulic oils will provide the following temperature ranges:

INDUSTRY IDENTIFICATION VISCOSITY GRADE	OPERATING TEMPERATURE	VISCOSITY
150 SSU	122° F 84° F	100 SSU 200 SSU
225 SSU	140° F 107° F	100 SSU 200 SSU
300 SSU	150° F 116° F	100 SSU 200 SSU
450 SSU	165° F 130° F	100 SSU 200 SSU
6000 SSU	182° F 145° F	100 SSU 200 SSU

If, because of necessity or convenience it is desirable to use an automotive engine oil, multi-viscosity oils of SC rating which will provide between 100 and 200 SSU at operating temperature can be used. These will provide proper viscosity over a wide range. See example on next page.

SAE VISCOSITY GRADE	OPERATING TEMPERATURE	VISCOSITY
10W - 30	130° F 100° F	100 SSU 200 SSU
10W - 40	190° F 140° F	100 SSU 200 SSU

The above recommendations cover the normal system operating temperatures. For system temperatures above or below those shown in the charts above, contact the Service Department of Henderson Products, Inc. For additional information contact your Henderson dealer.

GEAR BOX LUBRICANT:

Lubricate these assemblies with a non-corrosive type SAE 90 E.P. (extreme pressure) gear oil.

PRESSURE GUN LUBRICANT:

Use a ball and roller bearing lithium base lubricant (NLG1#2) with a minimum melting point of 300° F. This lubricant should have a viscosity which assures easy handling in the pressure gun at prevailing atmospheric temperatures. The lubricant must be waterproof.

CHAIN OILER LUBRICANT:

Use a mixture of 75% No. 1 or No. 2 Diesel fuel or kerosene mixed with 25% SAE 10 engine oil.

CRANKSHAFT PTO GEAR BOX LUBRICANT:

Use a SAE 50 petroleum base oil.

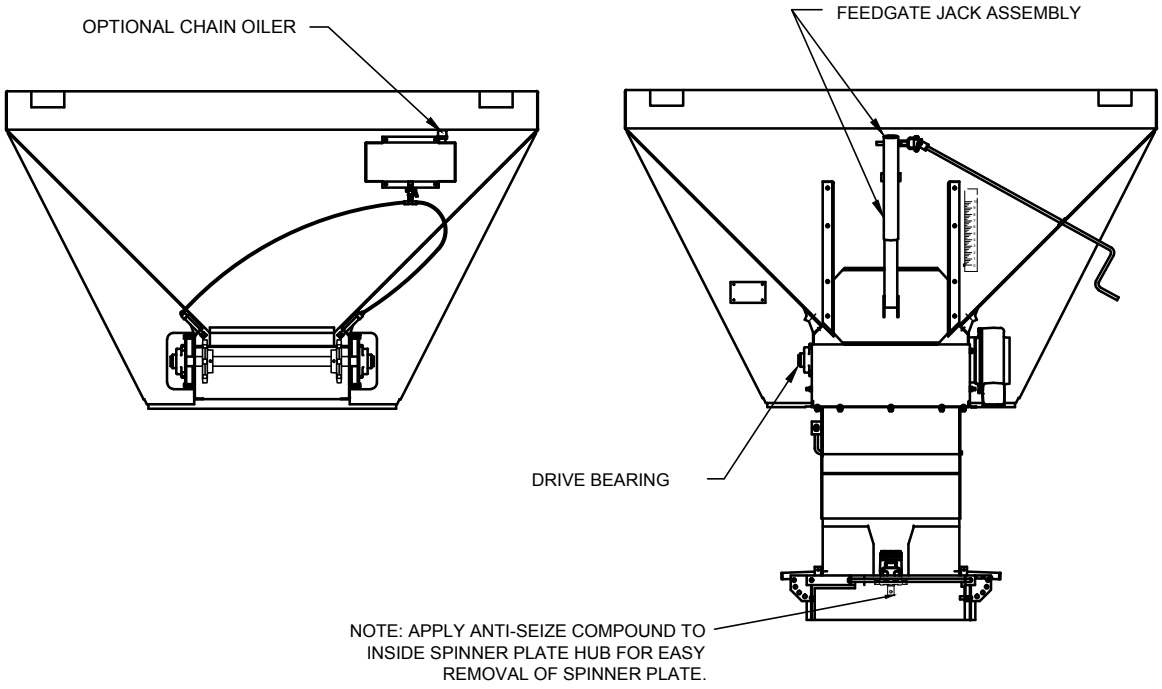
The spreader should be regularly lubricated with the lubricants recommended in this handout in accordance with the following chart:

LUBRICATION MAINTENANCE SCHEDULE

LUBRICATION CHART

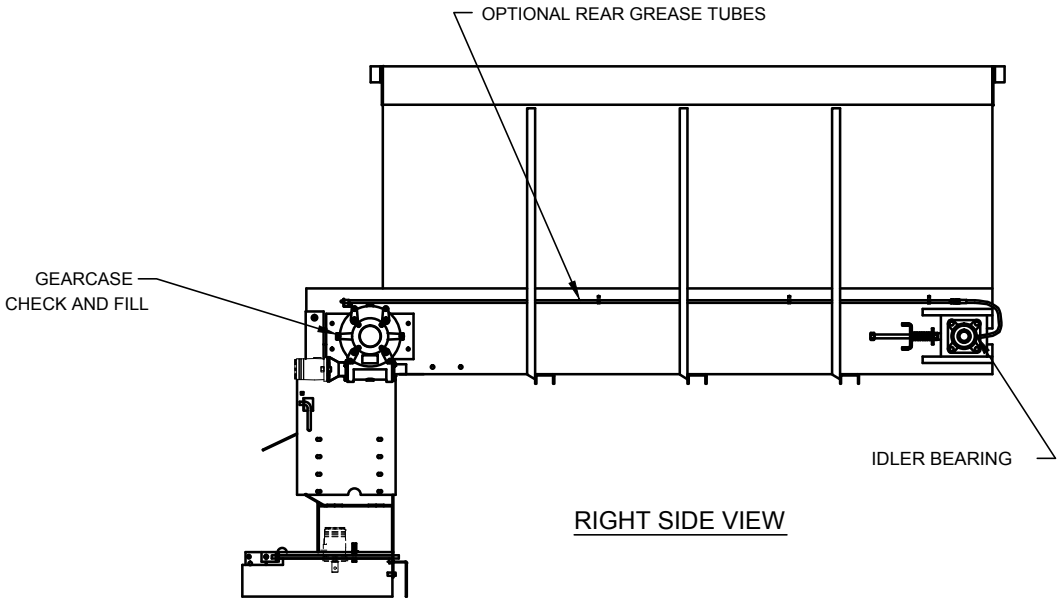
DESCRIPTION		LOCATION	NO. OF POINTS	METHOD OF LUBRICATION	FREQUENCY			
					DAILY	WEEKLY	MONTHLY	ANNUALLY
Pump Drive	Trans PTO	Slip Yoke	1	Grease Gun		X		
		Universal Joint	2	Grease Gun			X	
	Crankshaft PTO	Sliding Spline	1	Grease Gun		X		
		Universal Joint	2	Grease Gun			X	
	Reservoir		1		Check			Change
Hydraulic System	Filter		1		Change Element when indicated (RED).			
	Dual Control Valve	Hex Valve Stem (Under hand knob)	2	Hand Grease				Check
	Automatic Dual Control	Hex Valve Stem	2	Hand Grease				Check
		Speedometer "T" Drive Adapter	1	Hand Grease				X
Conveyor		Driveshaft Brgs.	1 or 2	Grease Gun		X		
		Idler Shaft Spkts.	2	Grease Gun	X			
		Take-up Screws	2	Hand Grease			X	
		Chain	2 Strands	Spray Oil			X	
		Chain Oiler (if so equipped)	1	Oil	X			
	Gear Case		1	Gear Oil			Check	Change
Feedgate	Jack Assembly	Gears	2	Grease Gun		X		
		Universal Joints	1	Hand Grease				X

NOTE: Unusual conditions such as excessive dust, temperature extremes or excessive moisture may require more frequent lubrication of specific parts.



FRONT VIEW

REAR VIEW



RIGHT SIDE VIEW

THIS PAGE

IS LEFT BLANK

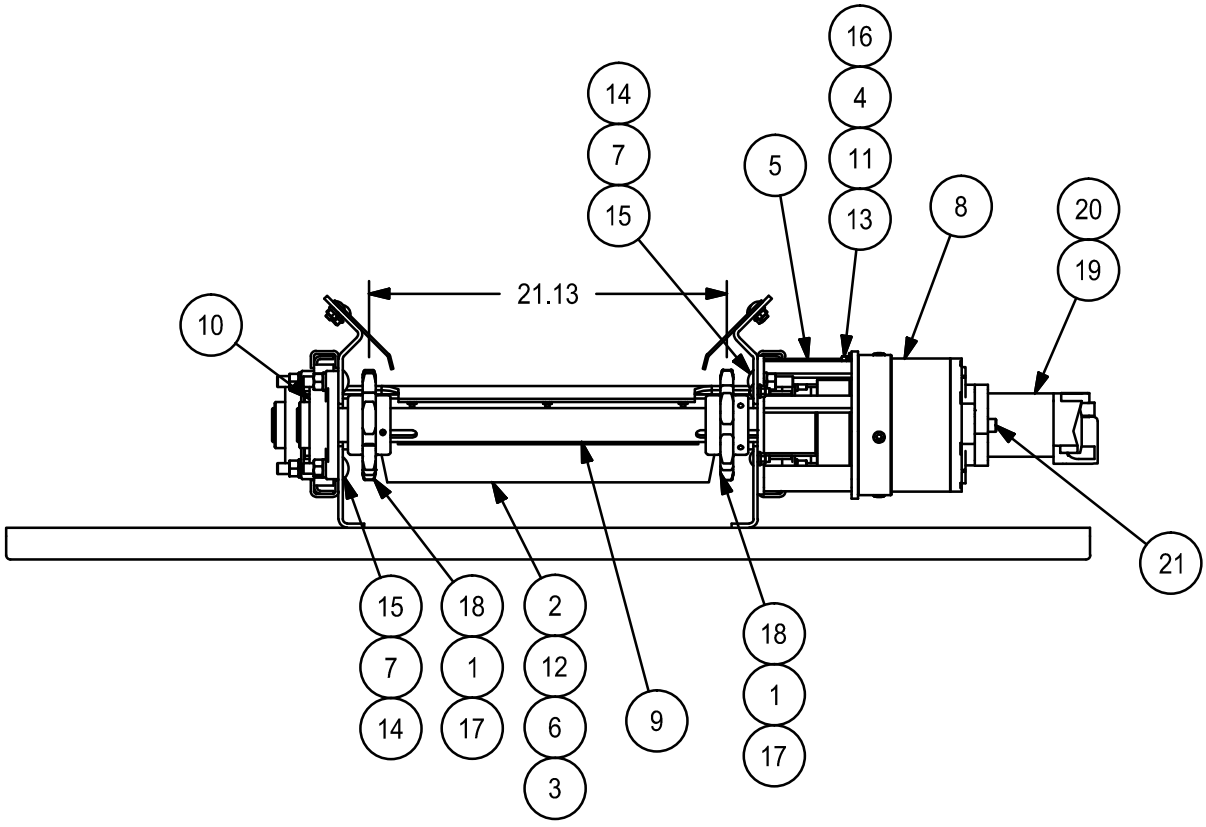
INTENTIONALLY.

FSH

VEE BOX SPREADER

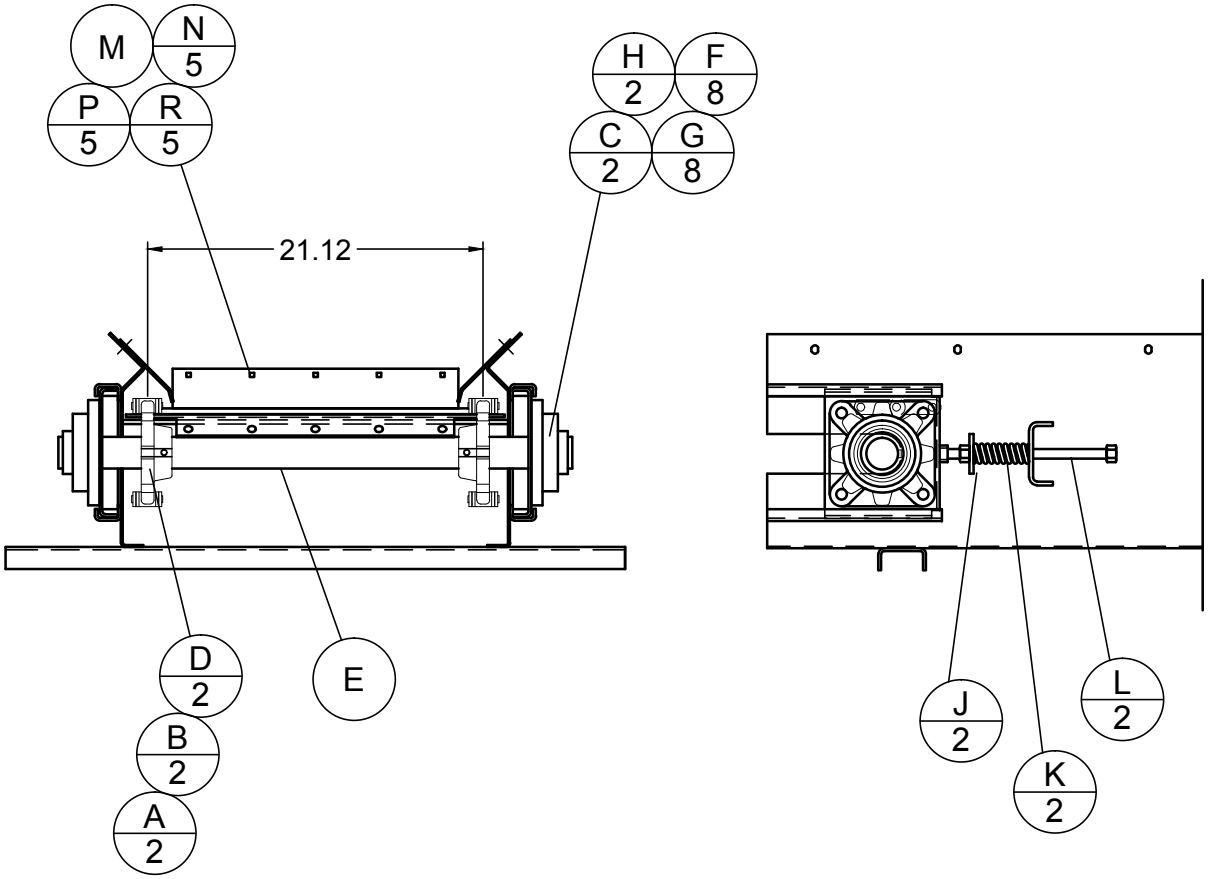
PARTS

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	00149	5	SCREW,SET,3/8NC X 3/8
2	07447	1	WIPER,FLOOR,FSH
3	07448.201	1	BAR,WIPER
4	106696.304	8	WASHER, .519 ID X 1.248 OD, .12
5	107223	1	BRACKET,WLDT,PLANETARY,FRONT
6	115730.304	5	NUT,HEX,1/4-20NC,SLFLKG,NYLON
7	11777	8	NUT,HEX,5/8-11NC,SS
8	118091	1	GEARCASE,25:1,PLANETARY
9	133808	1	SHAFT,DRIVE,PLANETARY,FSH,2"
10	50622	1	BEARING,FLANGE,2",4-BOLT
11	50791	8	WASHER,LOCK,1/2 ID,SPRING,SS
12	50805	5	SCREW,CP,HX,1/4NC X 1 G5,SS
13	50808	8	SCREW,CP HX,1/2NC X 1 1/2,SS
14	51237	8	WASHER,LOCK,5/8 ID,SPRING,SS
15	75097	8	BOLT,CRRG,5/8NC X 1 1/2,G8,SHRT NCK
16	77196	8	SLEEVE, BUSHING
17	78793	3	KEY,SQUARE,1/2 X 2 1/2
18	85257	2	SPROCKET,DRIVE,2",DOUBLE KEY
19	86774WSM	1	MOTOR,HYD, 4.9 CIR 2 BOLT #104-1216
20	86676	1	O-RING,4",I.D.,3/32 WIDE
21	89246	2	SCREW,SHCS,.50NC X 1.50



CONV□DRV□133796

PARTS LIST				
ITEM	QTY.	MILD PART □	SS PART □	DESCRIPTION
A	2	00149	82351	SCREW, SET, 3/8NC X 3/8
B	2	11052	11052	KEY, SQ, 3/8 X 1 1/2
C	2	50622	50622	BEARING, FLG, 2", 4-BOLT
D	2	27704	27704	SPROCKET, 2",8T
E	1	84547	84547	SHAFT, IDLER, 2" FSH
F	8	51389	51389	NUT, CNTRLK, 5/8NC
G	8	75097	75097	BOLT, CRRG, 5/8 X 2 SHRTNK
H	2	84613	84613 .304	TAKE-UP, BRG, WLDT, 2"
J	2	76560.409	76560.409	RETAINER, TAKE-UP, WLDT, 5/8
K	2	03072	03072	SPRING, IDLER
L	2	02386.304	02386.304	BOLT, TAKE-UP, WLDT, 5/8
M	1	07350	07350	WIPER,FRONT,FSH
N	5	10528	50799	BOLT,CRRG,1/4NC X 3/4 G2
P	5	50412	52360	NUT,TOPLOCK,FLG,1/4-13NC
R	5	50792	50792	WASHER,FLAT,1/4,SS



Idler 8 2

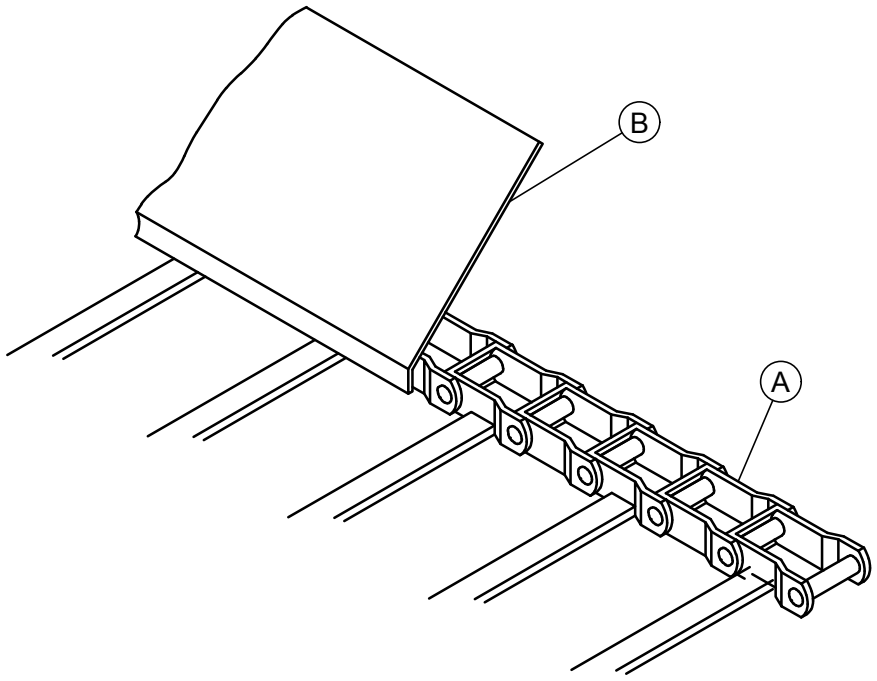
CONVEYOR CHAIN - PINTLE TYPE D667K

8 TOOTH - 3/8 " BARS

CONVEYOR LENGTH*		PARTS LIST	
ITEM	13'	PART NO.	DESCRIPTION
A	2	81058	CHAIN WLDT,D667K,22 L,21.13C,4.5" SPACING
	2	81060	CHAIN WLDT,D667K,50 L,21.13C,4.5" SPACING
	2	140014	CHAIN WLDT,D667K,22 L,21.13C,SS,9" SPACING
	2	140016	CHAIN WLDT,D667K,50 L,21.13C,SS 9" SPACING
B	2	332307.201	SHIELD, CHAIN,13',10GA

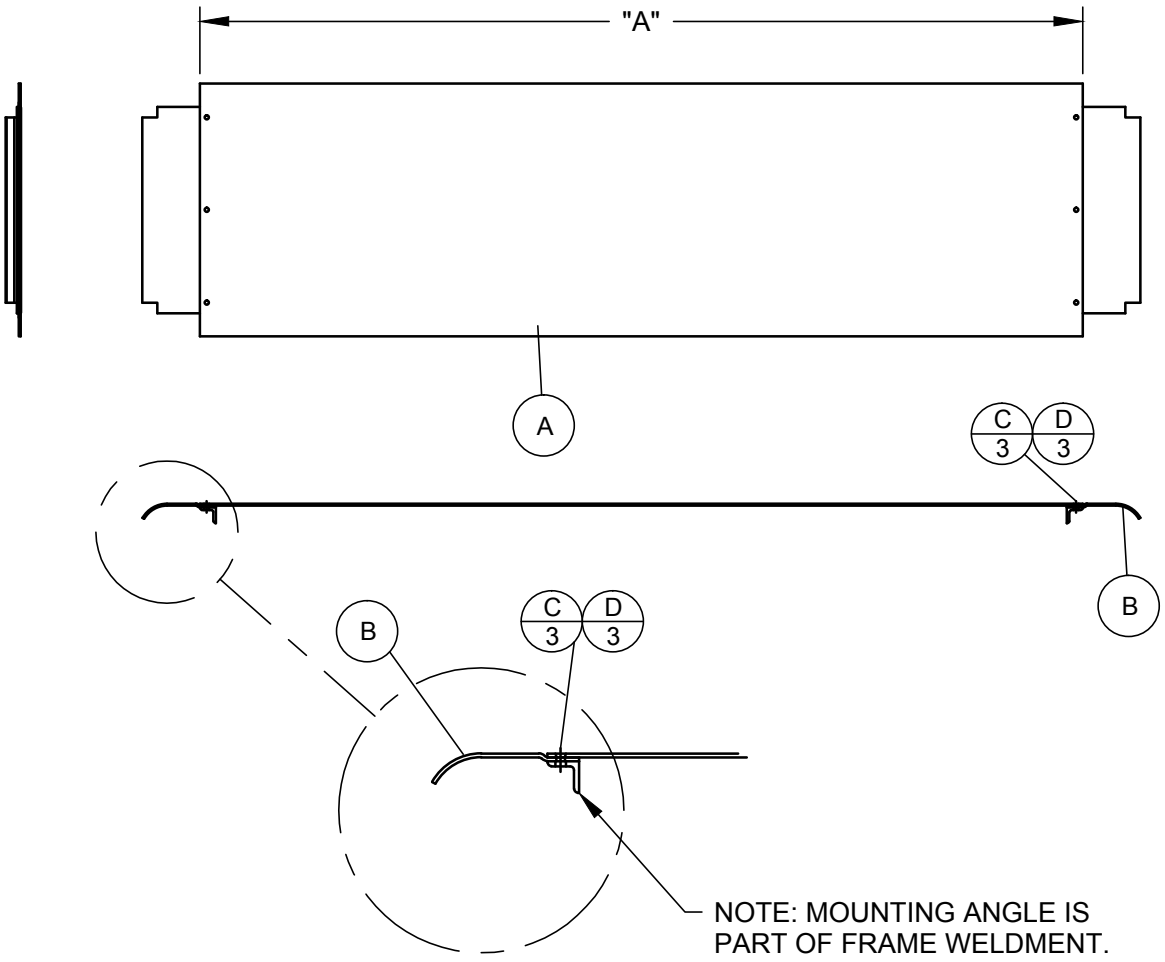
PINTLE CHAIN REPAIR PARTS: (MILD STEEL CHAIN)

PART NO.	DESCRIPTION
DRI240	CHAIN,COUPLER,LINK, D667K W/PIN & KEEPER INCLUDED
DRI241	PIN & KEEPER,D667K/D88K
DRI242	BAR,FLIGHT,WLDT,D667K,21.13"CL



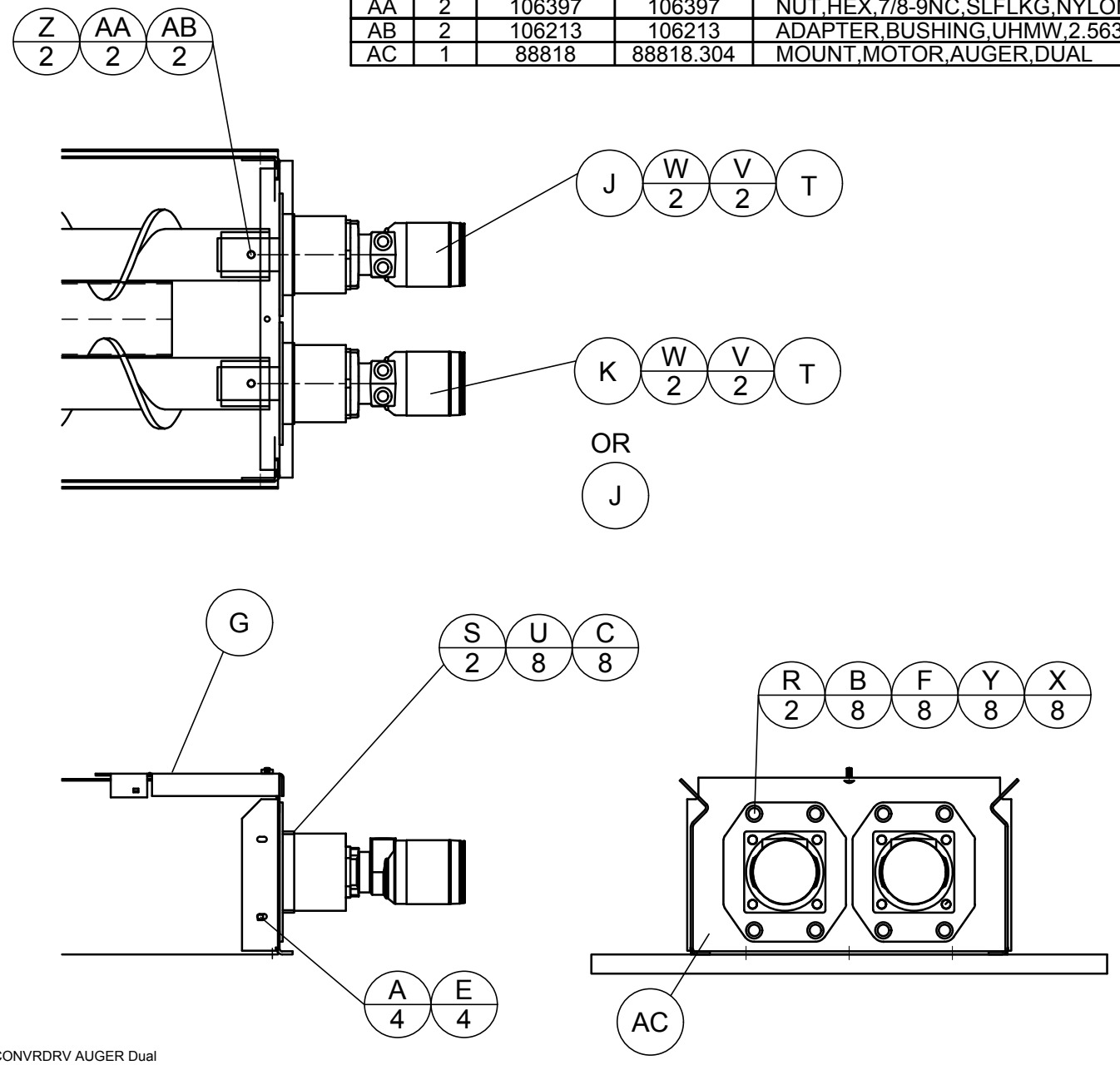
CHNPTL

PARTS LIST				
ITEM	QTY	304SS P/N	DESCRIPTION	"A"
A	1	134020.201	FLOOR,13□1/4"	143.38"
B	2	134021.201	FLOOR, EXTN, 1/4"	
C	6	50941	SCREW, FHMS, 1/4NC X 7/8	
D	6	52763	NUT, WHIZLOCK, FLG, 1/4NC	



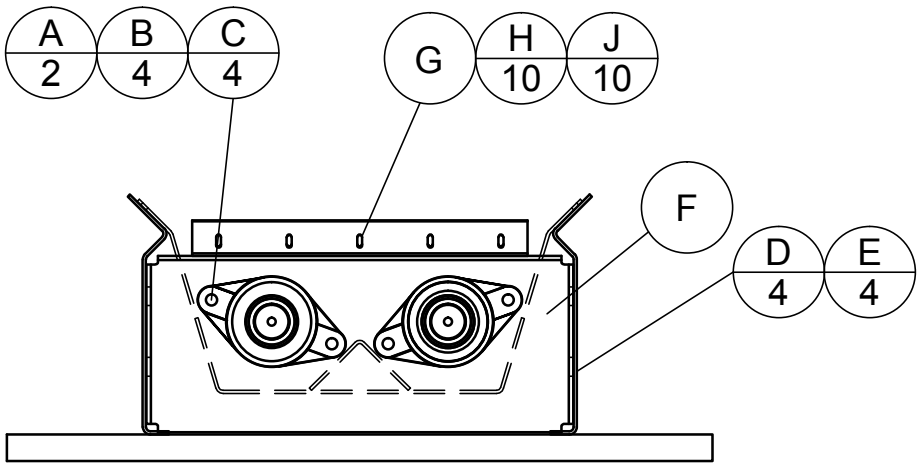
W/O FEEDGATE

ITEM	QTY	PART NO MILD	PART NO 304 SS	DESCRIPTION
A	4	10541	50801	BOLT,CRRG,3/8NC X 3/4
B	8	103658	50808	SCREW,CP,HX,1/2NC X 1 1/2
C	8	51389	88562	NUT,CENTERLOCK,5/8-11NC
D	--	--	--	--
E	8	74334	52765	NUT,WHIZLOCK,FLG,3/8-16NC
F	8	11021	11021.304	NUT,LOCK,NYLON INSERT,1/2-13NC
G	1	126155	126155.304	COVER,AUGER,WLDT,W/O FG
H	4	81640	88528	BOLT,CRRG,5/8NC X 2
J	1	106200	106200	MOTOR,HYD,24.7 CIR 2 BOLT
K	1	106200WSM	106200WSM	MOTOR,HYD,24.7 CIR 2 BOLT W/S
R	2	106695	106695.304	PLATE,MOTOR MOUNT,DUAL AUGER
S	2	118199	118199	GEARASE,3.6:1,PLANTARY
T	2	130656	130656	O-RING,3 1/4 ID,1/8 W
U	8	50348	88561	SCREW,CP,HX,5/8NC X 2
V	4	89246	89246	SCREW,SHCS,.50NC X 1.50
W	4	10550	50791	WASHER,LOCK,1/2 ID,SPRING
X	8	106696.304	106696.304	WASHER,.531 ID X 1.25 OD,10GA
Y	8	74613.304	74613.304	SLEEVE,PIVOT,TG LKG
Z	2	106396	106396	SCREW,CP,HX,7/8NC X 5
AA	2	106397	106397	NUT,HEX,7/8-9NC,SLFLKG,NYLON
AB	2	106213	106213	ADAPTER,BUSHING,UHMW,2.563/3.5
AC	1	88818	88818.304	MOUNT,MOTOR,AUGER,DUAL



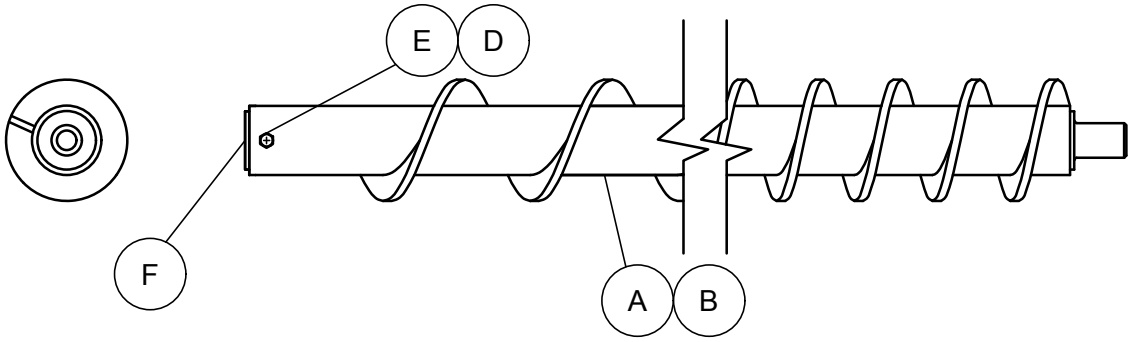
CONVRDRV AUGER Dual

PARTS LIST				
ITEM	QTY.	MILD STEEL P/N	STAIN. ST. P/N	DESCRIPTION
A	2	88616	88616	BEARING, FLANGE, 2", 2 BOLT
B	4	81640	88528	BOLT, CRRG, 5/8 NC X 2
C	4	51389	51389	NUT, LOCK, 5/8 NC
D	4	74334	52765	NUT, LOCK, 3/8 NC
E	4	10526	50800	BOLT, CRRG, 3/8 NC X 3/4
F	1	88815	88815.304	MOUNT,BRG,FRONT,AUGER,DUAL
G	1	87843	87843.304	BRACKET,ADJUSTER,AUGER V-BOX
H	10	10528	50799	BOLT,CRRG,1/4NC X 3/4 G2
J	10	50412	52360	NUT,LOCK,1/4-20NC



DUAL AUGER

		PARTS LIST				
		-	LENGTH	QTY.	PART NUMBER	DESCRIPTION
RIGHT SIDE DUAL AUGER	STANDARD AUGER FLIGHTING	A	13'	1	341207	AUGER,LH,13' X 7",VAR
LEFT SIDE DUAL AUGER	STANDARD AUGER FLIGHTING	B	13'	1	341007	AUGER,RH,13' X 7",VAR
		C	--	--	--	--
		D	ALL	1	106396	SCREW,CP,HX,7/8NC X 5
		E	ALL	1	106397	NUT,HEX,L7/8NC,SLFLK,NYLON
		F	ALL	1	129568	ADAPTER,BUSHING,UHMW,2.563/3.375"

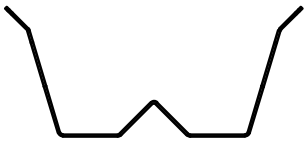


AUGER_2

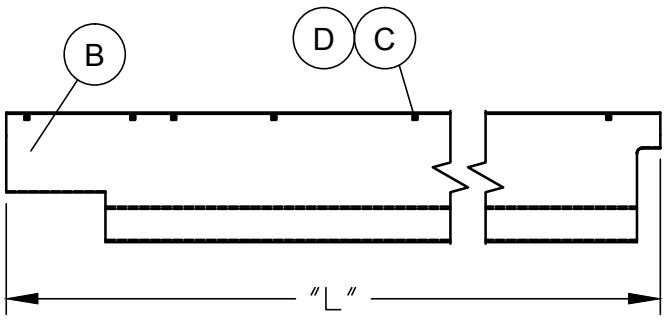
PARTS LIST - DUAL AUGER FLOOR					
ITEM	QTY	7GA MILD	7GA 304SS	DESCRIPTION	"L"
B	1	89479	89479.304	FLOOR, 7GA, 13□,DUAL AUGER	159.15"

FLOOR LENGTH		PARTS LIST	
ITEM	13□	PART NO.	DESCRIPTION
C	30	10526	BOLT, CRRG, 3/8NC X 3/4 ZC
	30	50800	BOLT, CRRG, 3/8NC X 3/4 SS
D	30	74334	NUT, WHIZLOCK, FLG, 3/8NC ZC
	30	52765	NUT, WHIZLOCK, FLG, 3/8NC SS

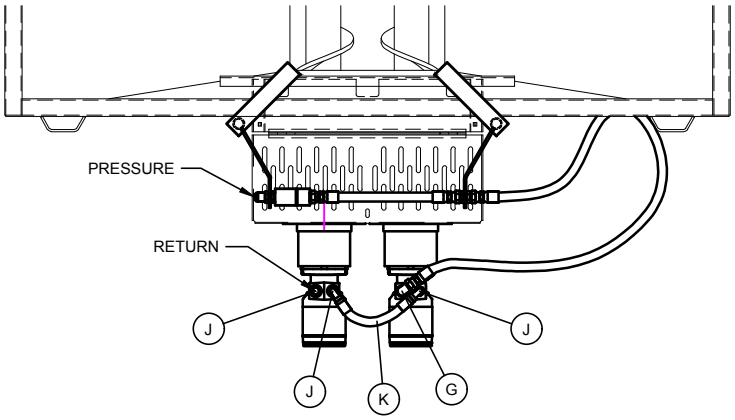
NOTE: SELECT EITHER SS OR ZINC PLATED HARDWARE FOR ITEMS B □ C.

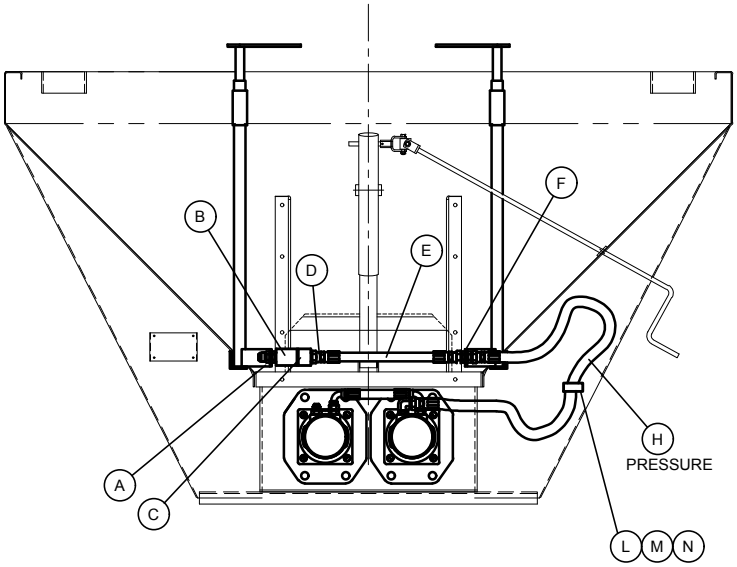


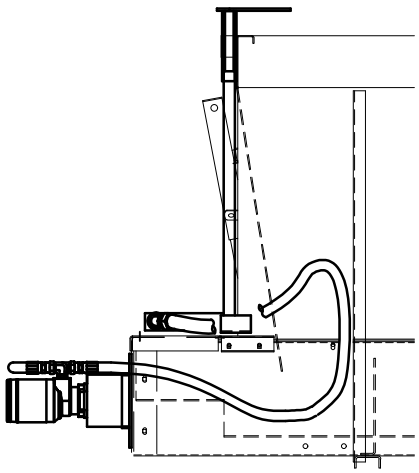
DUAL AUGER FLOOR



PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
A	1	85391	ADAPTER,BULKHEAD,12MP/12MJ
B	1	10729A	COUPLING,QD,FEMALE,12NPT
C	1	10729B	COUPLING,QD,MALE,12NPT
D	1	75786	ADAPTER,12MJ/12MP
E	1	85394	HOSE,12FJX/12FJX,12.00
F	1	85392	ADAPTER,BULKHEAD,12MJ/12MJ
G	1	73893	ELBOW,12MJ/10MB
H	1	HX23210	HOSE,ASM,12-12FJX/12FJX,72.00"
J	3	73903	ADAPTER.10MB/10MJ
K	1	320401	HOSE ASM,10-10FJX90/10FJX90-25.5
L	1	96470	CLAMP,VINYL COATED,1.125
M	1	50806	SCREW,CP,HX,3/8NC X 3/4 G5,SS
N	1	111430.304	NUT,LOCK,NYLON INSERT,3/8-16NC







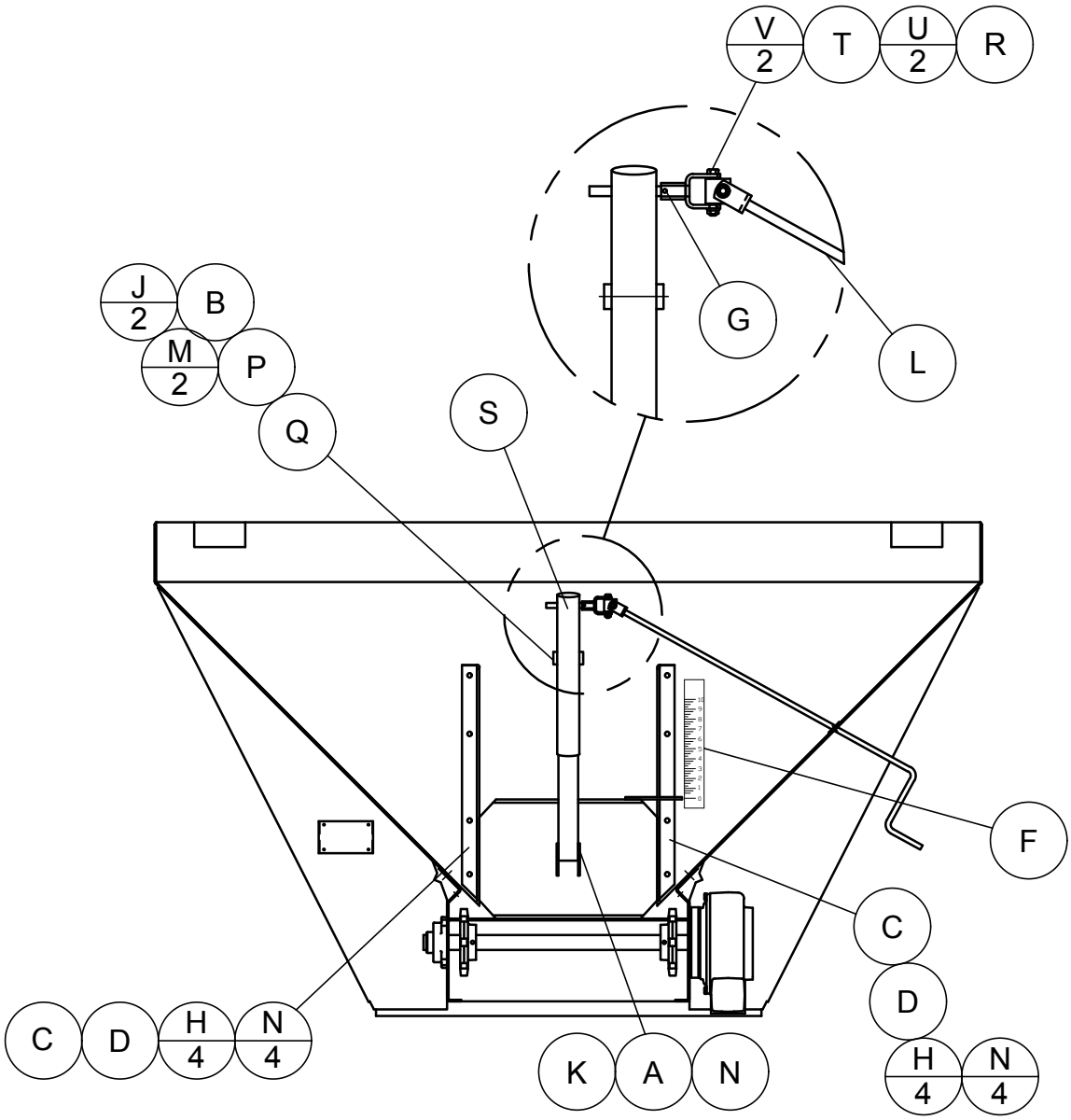
THIS PAGE

IS LEFT BLANK

INTENTIONALLY.

CONVEYOR FEEDGATE ASSEMBLY

PARTS LIST				
ITEM	QTY.	MILD ST. P/N	STAIN. ST. P/N	DESCRIPTION
A	1	00101	51228	SCREW, CP, HX, 3/8NC X 3
B	1	00408	52359	SCREW, CP, HX 1/2NC X 4
C	2	07149	07149.201	SPACER, DOOR SLIDE
D	2	07150	07150.201	ANGLE, DOOR, SLIDE
E	*	*	*	*
F	1	07477	07477	SCALE, FEEDGATE
G	1	10265	52358	PIN, EXPNSN, 3/16 X 1
H	8	10540	50802	BOLT, CRRG, 3/8NC X 1 1/4
J	2	11322	50943	BOLT, CRRG, 5/16NC X 5/8
K	1	60197	60197.201	FEEDGATE,WELDMENT,CHAIN
L	1	84105	84105.201	HANDLE, JACK
M	2	74333	52764	NUT, WHIZLOCK, FLG, 5/16-18NC
N	9	74334	52765	NUT, WHIZLOCK, FLG, 3/8-16NC
P	1	74335	82285	NUT, WHIZLOCK, FLG, 1/2-13NC
Q	1	75128	75128.201	BRACKET, MOUNT, JACK
R	1	84101	84101	BLOCK,FDGT,JACK HANDLE
S	1	75208	75208	JACK, FEEDGATE
T	1	84104	84104.201	BRACKET,WLD,JACK HANDLE
U	2	00333	52915	SCREW,CP,HX,5/16NC X 2
V	2	52770	52770	NUT,CENTERLOCK,5/16NC



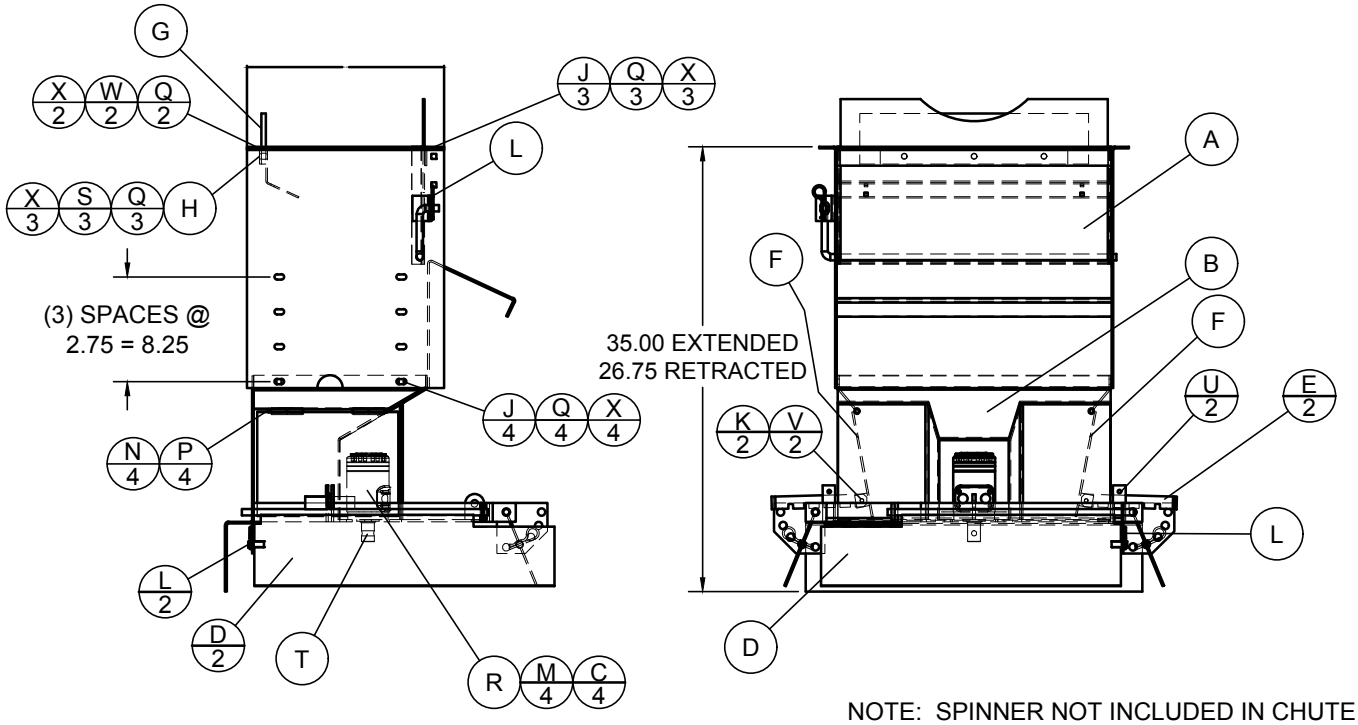
Conveyor Feedgate

CHUTE SPINNER ASSEMBLY WITH DUMP OVER

COMPLETE CHUTE
ASSEMBLY # 133998.201

PARTS LIST				
ITEM	QTY.	PART NO. MLD	PART NO. 201SS	DESCRIPTION
A	1	133997	133997.201	CHUTE,WLDT,UPPER
B	1	118209	118209.201	CHUTE,WLDT,LOWER
C	4	--	50790	WASHER,LOCK,.38,SPRING
D	3	86544	86544.201	BAFFLE,WLDT,CHUTE,LOWER
E	2	86550.409	86550.201	ADJUSTER,BAFFLE
F	2	86551	86551.201	BAFFLE,WLDT,CHUTE
G	1	86559	86559	WIPER,RUBBER,CHUTE
H	1	86560.409	86560.201	BAR,BACKING,WIPER
J	7	10541	50801	BOLT,CRRG, 3/8NC x 1 G2
K	2	50326	50804	SCREW,CP,HX, 1/4NC x 3/4
L	4	10824	52843	PIN,HAIR, 1/8 x 2 11/16
M	4	75249	50806	SCREW,FLG,WHZLK,3/8NC X 3/4
N	4	51849	52842	PIN,CLEVIS, 5/16 x 2 3/4
P	4	52775	52776	PIN,COTTER, 1/8 x 3/4
Q	12	111430	111430.201	NUT,LOCK,NYLON INSERT, 3/8-16NC
R	1	118163	118163	MOTOR,HYD,3.0 CIR, 4 BOLT
S	3	50337	52845	SCREW,CP,HX, 3/8NC x 1 1/2 G5
T	1	75982	75982	CAP, PLASTIC, 1"
U	2	80643	80643	PIN,LYNCH, 3/16 x 1 9/16
V	2	51383	52360	NUT,CNTRLOCK, 1/4-20NC
W	2	10540	50802	BOLT,CRRG, 3/8NC x 1 1/4 G2
X	12	10538	50794	WASHER,FLAT,STD,3/8 ID

NOTE: SEE SAFETY INFORMATION
FOR REQUIRED DECAL LOCATIONS.



NOTE: SPINNER NOT INCLUDED IN CHUTE ASSEMBLY, SEE TABLE OF CONTENTS UNDER SPINNER ASSEMLBY FOR OPTIONS AVAILABLE.

133998

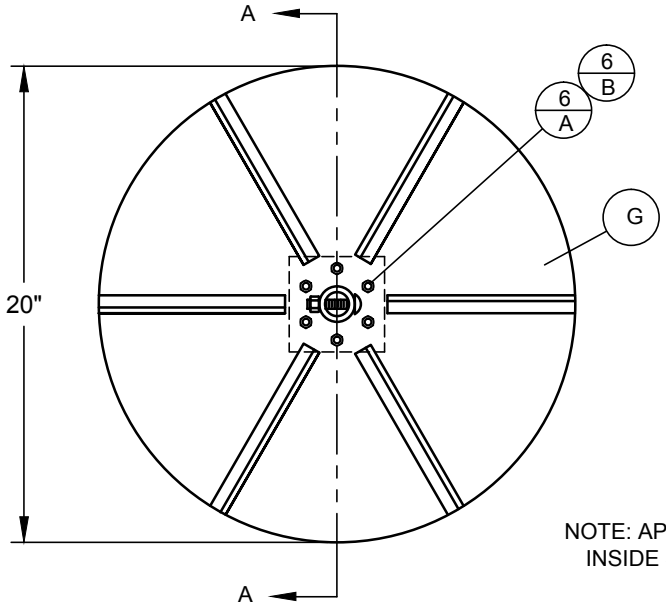
TOP MOUNT SPINNER PLATE ASSEMBLY

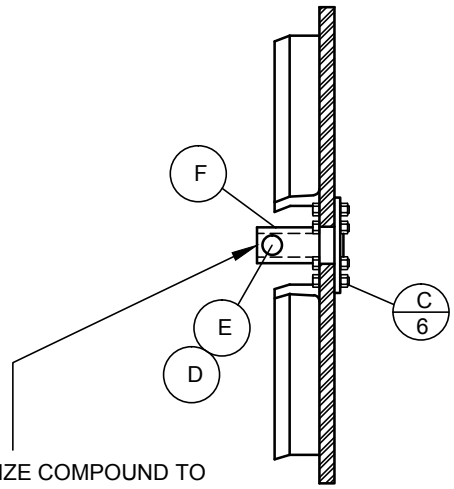
COMPLETE SPINNER ASSEMBLY NUMBERS:

74367

PARTS LIST

ITEM	QTY.	PART NO.	DESCRIPTION
A	6	51238	WASHER, FLAT, STD, 5/16 SS
B	6	52844	SCREW, CP, HX, 5/16 X 1 1/4 SS
C	6	52770	NUT, CENTERLOCK, FLG, 5/16-18NC SS
D	1	52768	NUT, CENTERLOCK, 3/8-16NC,SS
E	1	52769	SCREW, CP, HX, 3/8NC X 2, SS
F	1	60795	HUB, WLDT
G	1	74366	PLATE, SPINNER, 20", POLY, CCW, W/H





NOTE: APPLY ANTI-SEIZE COMPOUND TO INSIDE SPINNER PLATE HUB FOR EASY REMOVAL OF SPINNER PLATE.

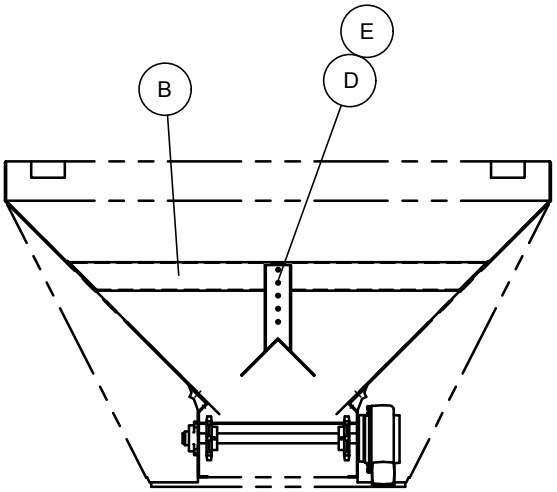
SECTION A-A

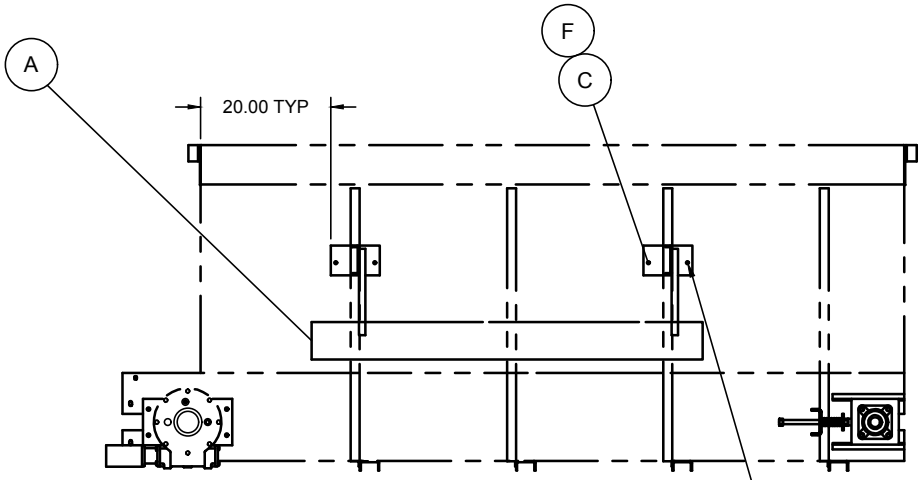
POLY 20" SPINNER ASSEMBLY

PARTS LIST

ITEM	12'	MILD P/N	SS P/N	DESCRIPTION
A	1	333905	333905.201	VEE WELDMENT, 12'
B	2	62437	62437.201	HANGER WELDMENT
C	8	10526	50800	BOLT, CRRG, 3/8NC X 3/4
D	4	50340	50944	SCREW, CP, HX, 1/2NC X 1
E	4	74335	82285	NUT, WHIZLOCK, FLG, 1/2-13NC
F	8	74334	52765	NUT, WHIZLOCK, FLG, 3/8-16NC

*AVAILABLE IN MILD, 304SS. AND 409SS
MUST SPECIFY WHEN ORDERING.

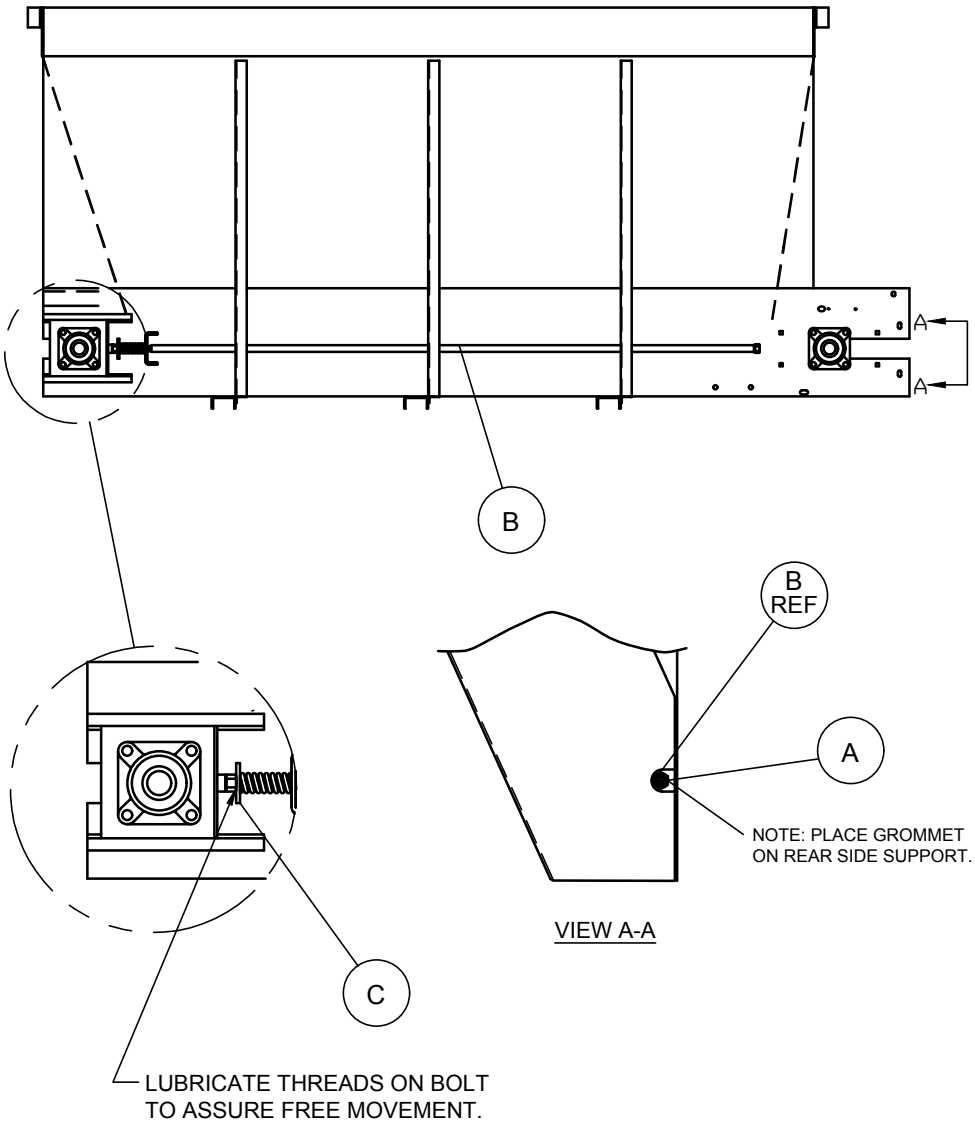




SET VEE IN PLACE AFTER ASSEMBLING.
DRILL 13/32 DIA. HOLES THROUGH HOPPER
SIDES, USING PADS FOR TEMPLATES.
BOLT IN PLACE.

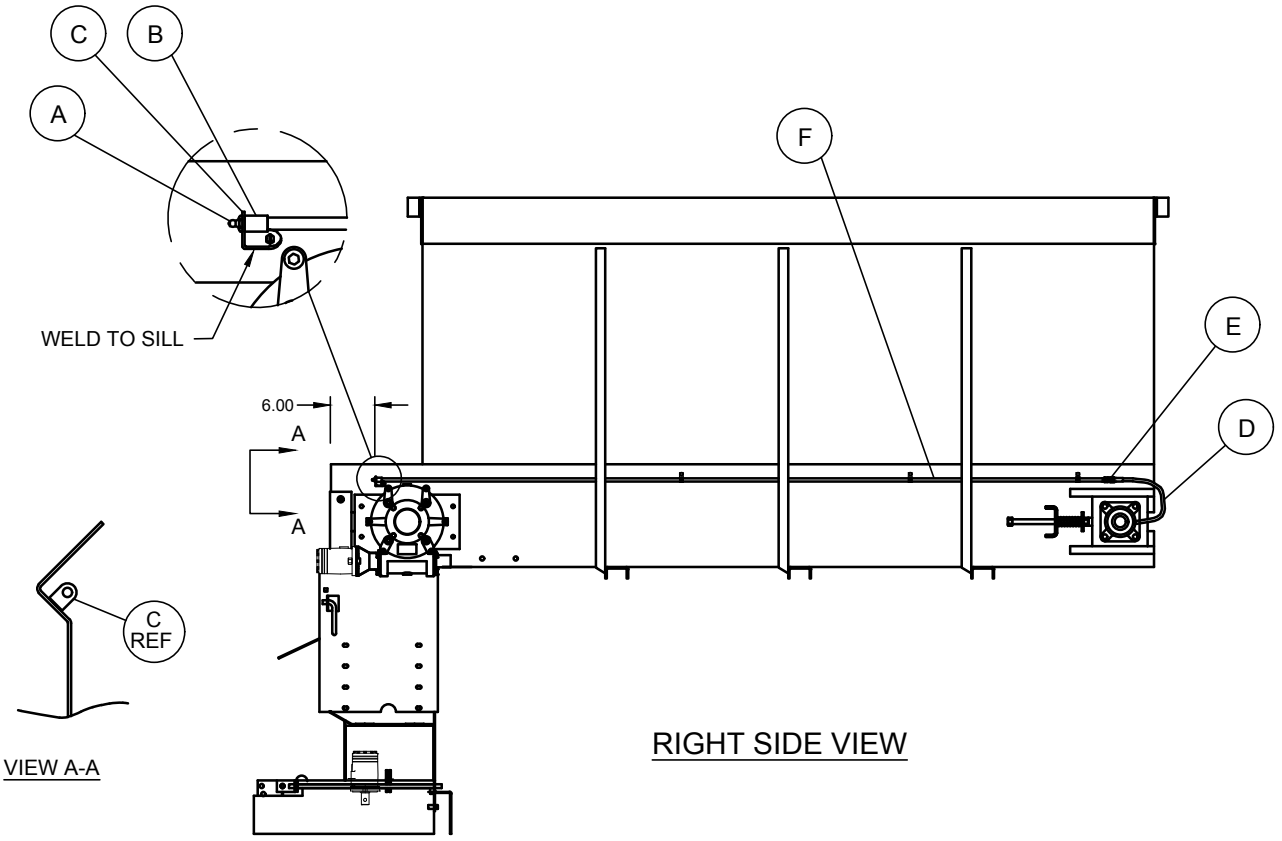
ITEM	13'	PARTS LIST	
		PART NO.	DESCRIPTION
A	2	122730	GROMMET,RUBBER
B	2	76553	ROD, TAKE UP, WLDT, 13'
C	2	76560.409	RETAINER, TAKE-UP, 5/8

NOTE: WHEN ADJUSTING TAKE-UP TENSION, BE SURE TO ADJUST BOTH SIDES EQUALLY TO MAINTAIN PROPER SHAFT TO CONVEYOR ALIGNMENT.

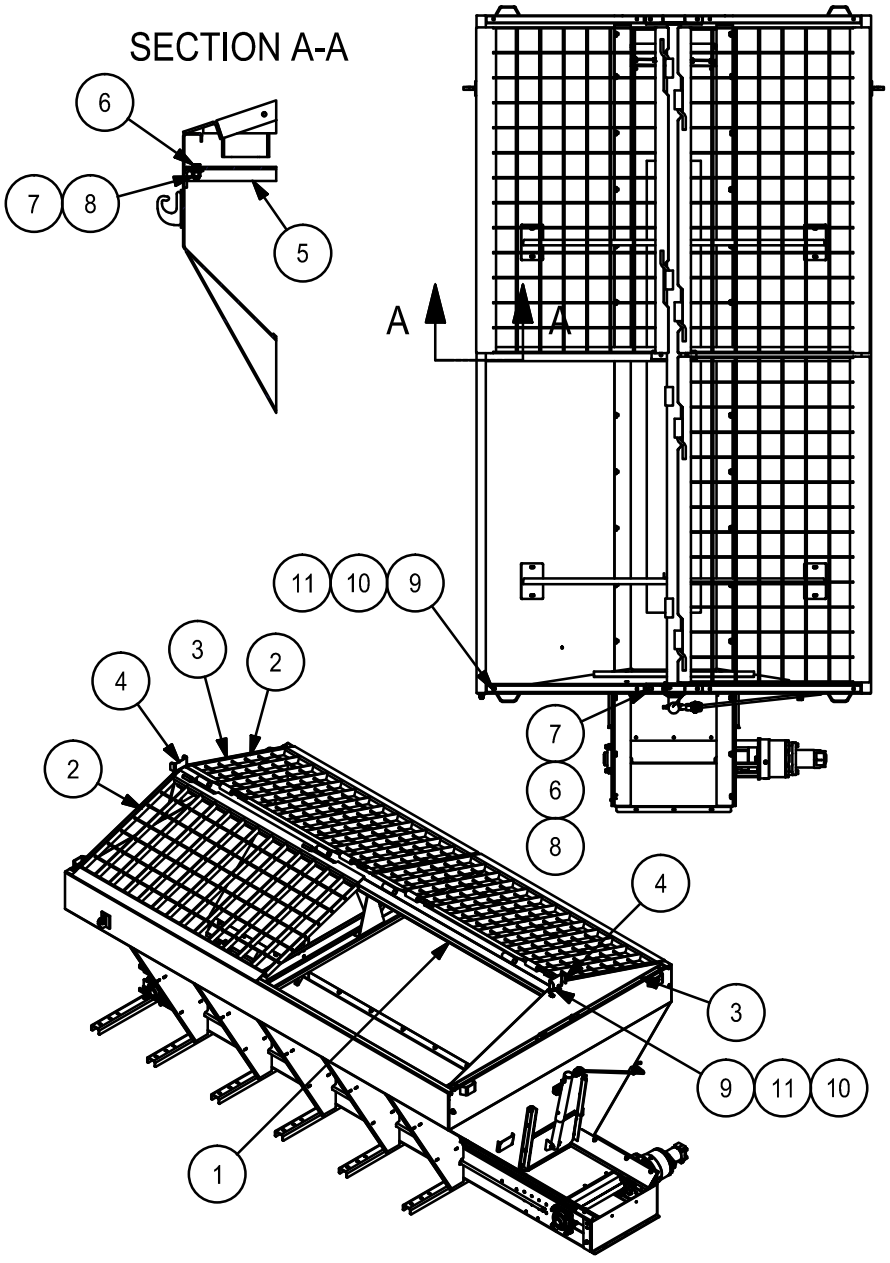


RridIrad

ITEM	13' QTY	PARTS LIST		
		MILD	304SS	DESCRIPTION
A	2	00306	00306	ZERK,GREASE,1/8 NPT,STR
B	2	00496	00496.304	COUPLING,PIPE,1/8 NPT
C	2	74042	74042.201	BRACKET,GREASE TUBE
D	2	76534	76534	HOSE,GREASE,1/8 NPT X 20.0
E	2	77041	77041	ADAPTER,02FP/02FPX
F	2	76531	76531.304	PIPE,GREASE,13'

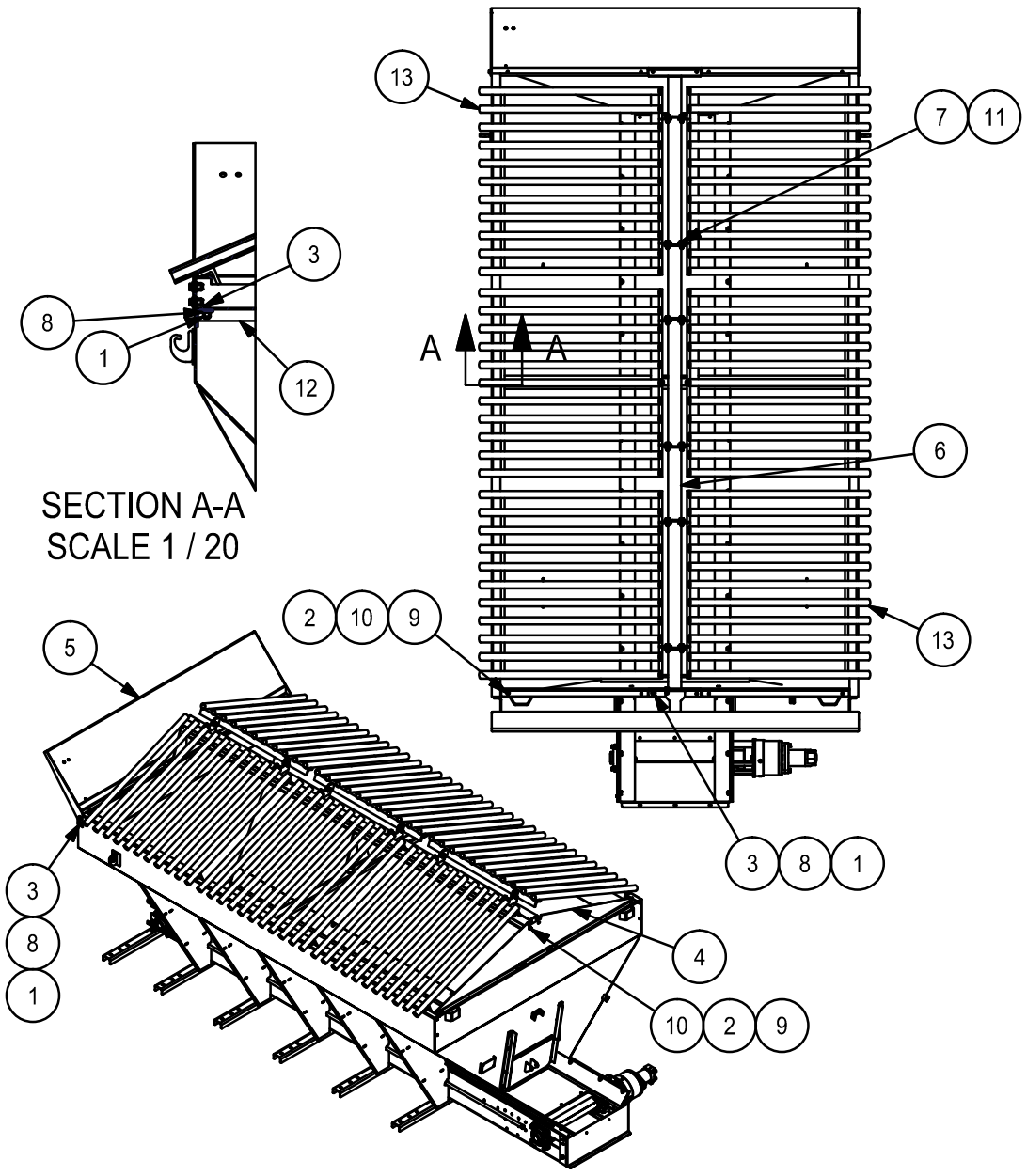


PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	133893	1	SUPPORT,SCREEN,WLDT,12',AK
2	133874	4	SCREEN,WLDT,6',HD,AK
3	133920.201	2	ENDPLATE,SCREEN,AK
4	77587	2	PLATE, STOP
5	84686.201	1	CHANNEL,CROSS,SUPPORT
6	11413	8	SCREW, CP, HX, 1/2 X 1 1/4NC, SS
7	50793	8	WASHER,FLAT, 1/2", SS
8	11021.304	8	NUT.LOCK,NYLON INSERT,1/2-13NC,SS
9	51227	12	SCREW,CP,HX,3/8NC X 1 1/4,SS
10	50794	12	WASHER,FLAT,3/8,SS
11	111430.304	12	NUT,HEX,3/8-16NC,SLFLKG,NYLON



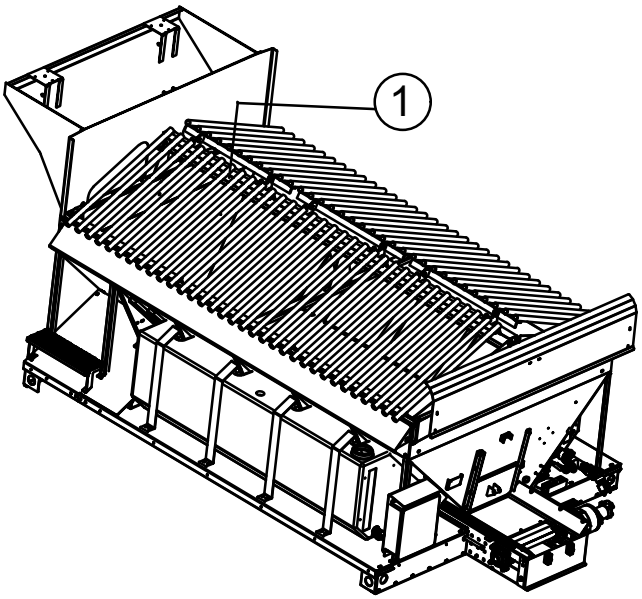
133798-S□ree□□

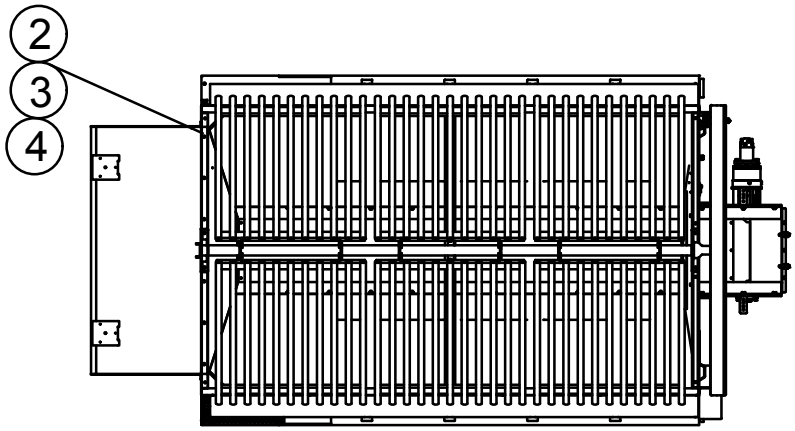
PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	11021.304	10	NUT.LOCK,NYLON INSERT,1/2-13NC,SS
2	111430.304	12	NUT,HEX,3/8-16NC,SLFLKG,NYLON
3	11413	10	SCREW, CP, HX, 1/2 X 1 1/4NC, SS
4	133920.201	1	ENDPLATE,SCREEN,AK
5	141814.201	1	CABSHIELD,WLDT,AK
6	135582	1	SUPPORT,SCREEN,WLDT,12',GRZLY,AK
7	50342	12	SCREW,CP,HX,1/2NC X 1 1/2 G5
8	50793	14	WASHER,FLAT, 1/2", SS
9	50794	12	WASHER,FLAT,3/8,SS
10	51227	12	SCREW,CP,HX,3/8NC X 1 1/4,SS
11	51387	12	NUT,CENTERLOCK,1/2-13NC
12	84686.201	1	CHANNEL,CROSS,SUPPORT
13	HX16054	6	GRATE,WLDT,4',ALASKA

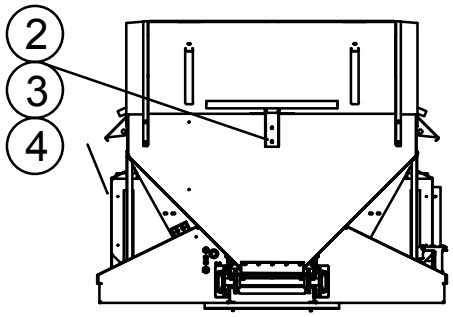


135579□gr□□l□□ree□□

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	143296	1	CABSHIELD,WLDT,AK
2	11413	12	SCREW,CP,HX,1/2NC X 1 1/4,SS
3	51387	12	NUT,CENTERLOCK,1/2-13NC
4	50793	12	WASHER,FLAT,1/2,SS







CBSHLD_Chassis_Mount

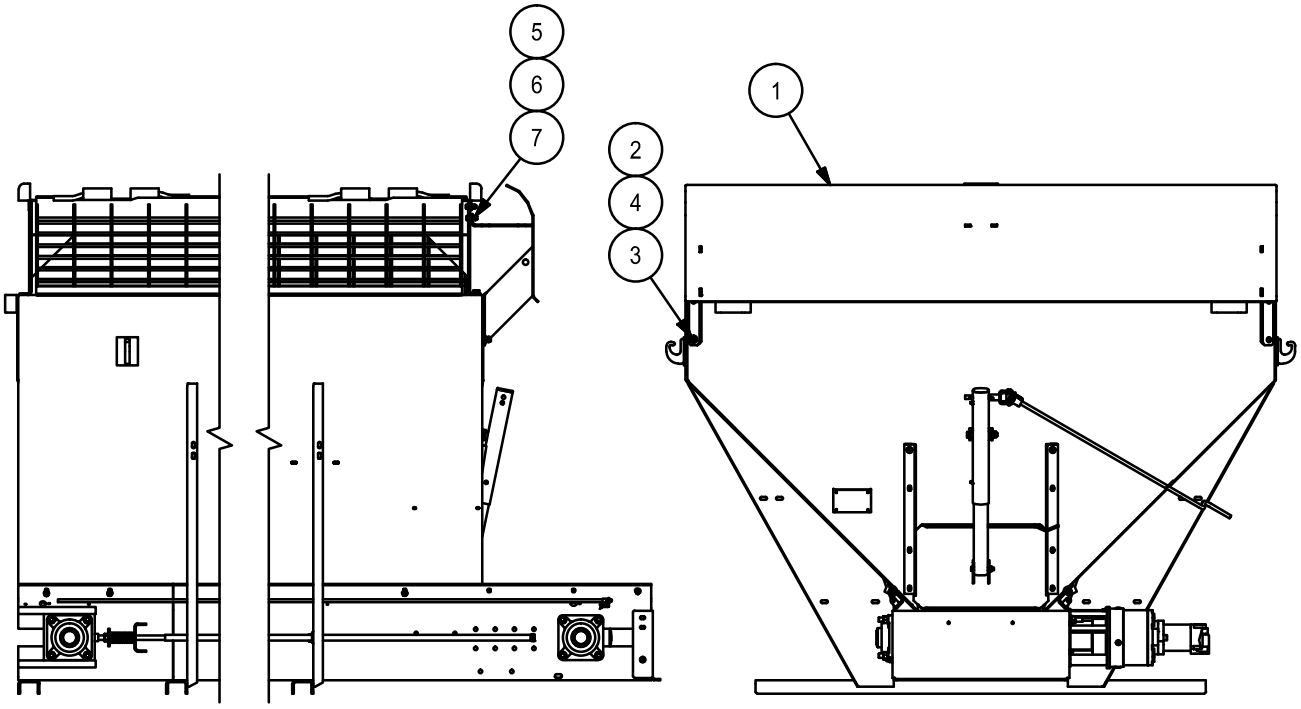
THIS PAGE

IS LEFT BLANK

INTENTIONALLY.

REAR AIR DEFLECTOR

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	133937.201	1	DEFLECTOR,AIRFLOW,WLDT,AK
2	11413	4	SCREW, CP, HX, 1/2 X 1 1/4NC, SS
3	50793	4	WASHER,FLAT, 1/2", SS
4	11021.304	4	NUT.LOCK,NYLON INSERT,1/2-13NC,SS
5	51227	2	SCREW,CP,HX,3/8NC X 1 1/4,SS
6	50794	4	WASHER,FLAT,3/8,SS
7	111430.304	2	NUT,HEX,3/8-16NC,SLFLKG,NYLON

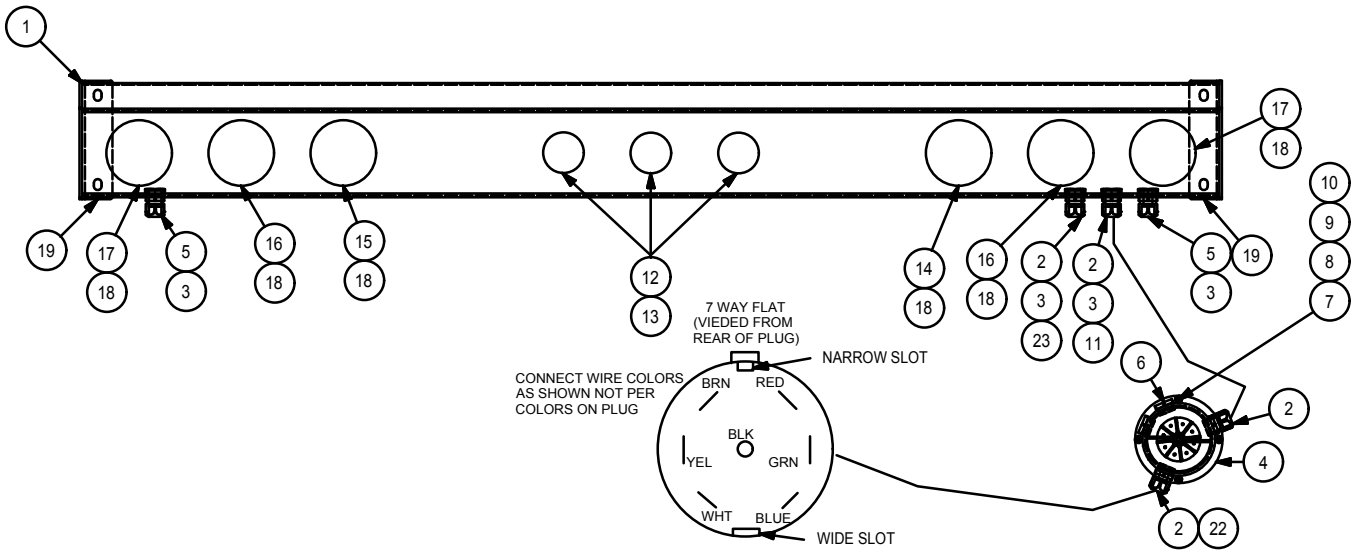


133798-A□de□e□□r

BILL OF MATERIALS			
ITEM	PART NO	QTY	DESCRIPTION
18	77808	6	GROMMET,LIGHT,4"
19	137288	2	LIGHT,WORK,ROUND,4.5,LED,9-36V
20	88913	6	CONNECTOR,BUTT,16-14GA,SOLDER
21	143301	1	PLUG,7 PIN,PLASTIC,FLAT BLADES
22	143302	8	WIRE,7 CONDUCTOR,14GA
23	146799	1	HARNESS,LIGHT,AK,SLIP-IN
24	129511	3	RECEPTACLE,2POS,DT
25	129498	6	PIN,14AWG,DT
26	129521	3	WEDGE,2POS,FOR RECEPT,DT,A-KEY
27	129514	3	PLUG,2POS,DT
28	129501	8	SOCKET,14AWG,DT
29	129523	3	WEDGE,2POS,FOR PLUG,DT,A-KEY
30	129516	1	PLUG,6POS,DT06-6S
31	129528	1	WEDGE,6POS,FOR PLUG,DT
32	143306	1	RECEPTACLE,6POS,DT,BRIDGED
33	125687	5	WIRE,4 CONDUCTOR,14GA,JACKETED

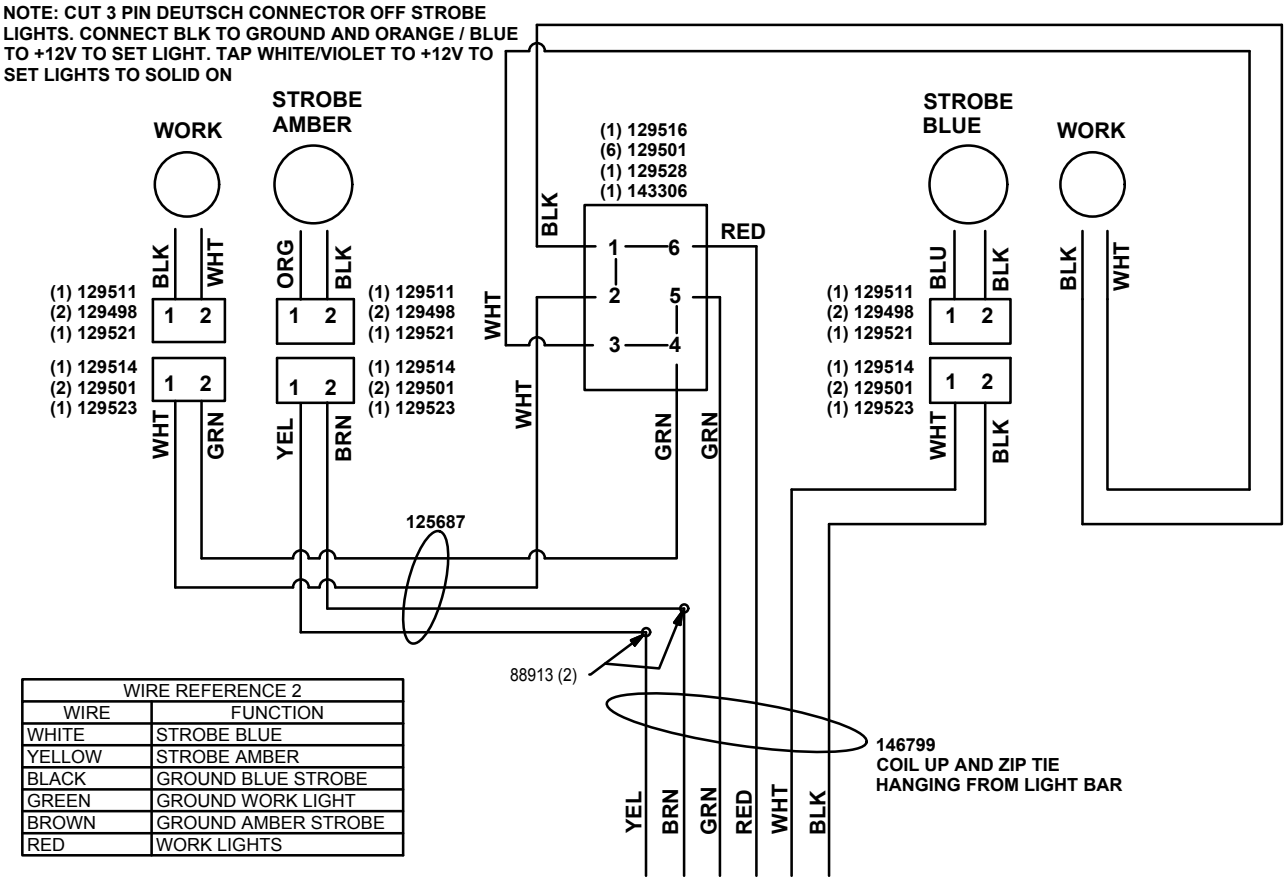
BILL OF MATERIALS			
ITEM	PART NO	QTY	DESCRIPTION
1	140406	1	LIGHT BAR,WLDT,AK DOT
2	77627	4	FITTING,COMPRESSION, 3/4 ID
3	77518	4	NUT, JAM, COMP, PLASTIC
4	80344	1	JUNCTION BOX,ASSY,SURFACE MTG
5	80249	2	FITTING,COMP,3/8 ID
6	HX03407	2	PLUG,FILLER,50830,NYS
7	82355	4	SCREW,RHMS,#10NC X 3/4,SS
8	50948	4	WASHER,FLAT,STD,#10,SS
9	50946	4	NUT,HEX,#10-24NC,SS
10	82357	4	WASHER,LOCK,#10,SPRING,SS
11	140505	1	HARNESS,LIGHT BAR,AK
12	86696	3	LIGHT,MARKER,RED,2.5,LED
13	112320	3	GROMMET,LIGHT,2.5,CLOSED BACK
14	140041	1	LIGHT,STROBE,BLUE,RND,4",LED
15	140040	1	LIGHT,STROBE,AMBER,RND,4",LED
16	114617	2	LIGHT,BACKUP,4",LED,54 DIODE
17	114611	2	LIGHT,RED,STT,4",LED,42 DIODE

COMPLETE ASSEMBLY #140506.201



WIRE REFERENCE		
WIRE	TERMINAL	FUNCTION
WHITE	WHITE	GROUND
YELLOW	YELLOW	LT. SIGNAL
BLACK	BLACK	REVERSE
BLUE	BLUE	TOW PLOW BLUE STROBE
GREEN	GREEN	RT. SIGNAL
BROWN	BROWN	TAIL
RED	RED	TOW PLOW AMBER STROBE

140506_Sheet_1



WIRE REFERENCE 2	
WIRE	FUNCTION
WHITE	STROBE BLUE
YELLOW	STROBE AMBER
BLACK	GROUND BLUE STROBE
GREEN	GROUND WORK LIGHT
BROWN	GROUND AMBER STROBE
RED	WORK LIGHTS

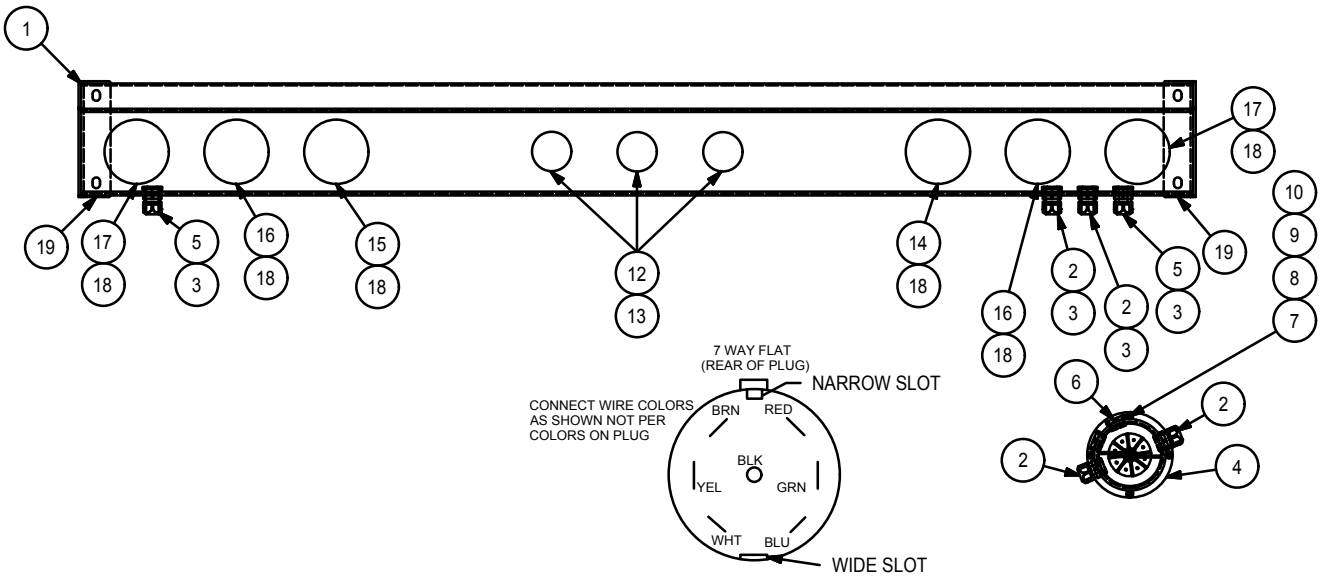
140506_Sheet_2

LIGHT BAR,ASSEMBLY,ALASKA,CHASSIS MOUNT,REAR

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
17	114611	2	LIGHT,RED,STT,4",LED,42 DIODE
18	77808	6	GROMMET,LIGHT,4"
19	137288	2	LIGHT,WORK,ROUND,4.5,LED,9-36V
20	88913	2	CONNECTOR,BUTT,16-14GA,SOLDER
21	10683	18	WIRE, 6 CONDUCTOR,14 GA
22	125687	5	WIRE, 4 CONDUCTOR,14 GA
23	129498	6	PIN,14AWG,DT
24	129501	12	SOCKET,14AWG,DT
25	129511	3	RECEPTACLE,2 POS,DT
26	129514	3	PLUG,2 POS,DT
27	129516	1	PLUG,6 POS,DT06-6S
28	129521	3	WEDGE,2 POS,FOR RECPT,DT,A KEY
29	129523	3	WEDGE,2 POS,FOR PLUG,DT,A KEY
30	129528	1	WEDGE,6 POS,FOR PLUG,DT
31	143306	1	RECEPTACLE,6 POS,DT,BRIDGED

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	140406	1	LIGHT BAR,WLDT,AK DOT
2	77627	4	FITTING,COMPRESSION, 3/4 ID
3	77518	4	NUT, JAM, COMP, PLASTIC
4	80344	1	JUNCTION BOX,ASSY,SURFACE MTG
5	80249	2	FITTING,COMP,3/8 ID
6	HX03407	2	PLUG,FILLER,50830,NYS
7	82355	4	SCREW,RHMS,#10NC X 3/4,SS
8	50948	4	WASHER,FLAT,STD,#10,SS
9	50946	4	NUT,HEX,#10-24NC,SS
10	82357	4	WASHER,LOCK,#10,SPRING,SS
11	140505	1	HARNESS,LIGHT BAR,AK
12	86696	3	LIGHT,MARKER,RED,2.5,LED
13	112320	3	GROMMET,LIGHT,2.5,CLOSED BACK
14	140041	1	LIGHT,STROBE,BLUE,RND,4",LED
15	140040	1	LIGHT,STROBE,AMBER,RND,4",LED
16	114617	2	LIGHT,BACKUP,4",LED,54 DIODE

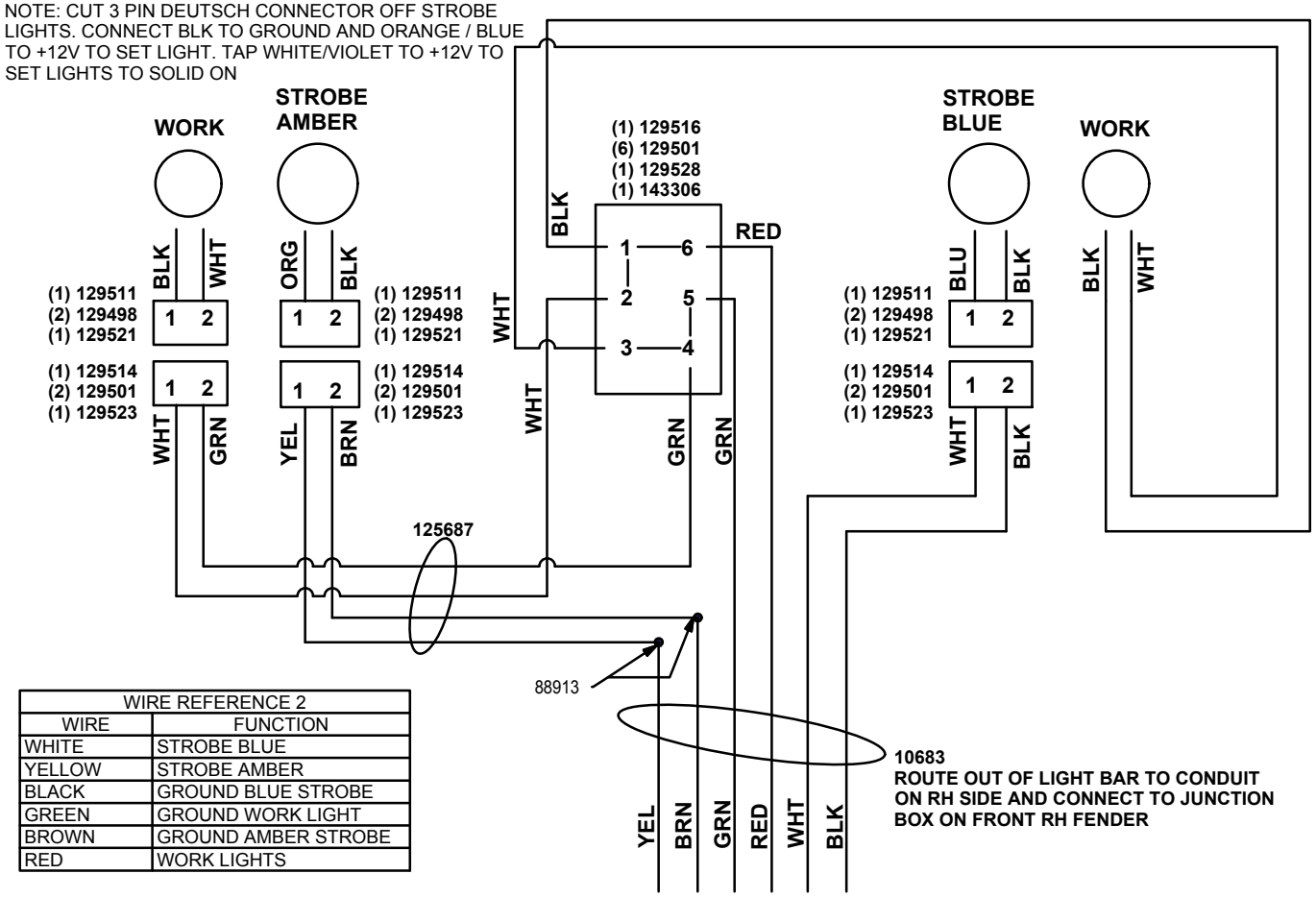
SEE PAGE 2 FOR
ITEMS 20-31



WIRE REFERENCE			
WIRE	TERMINAL	FUNCTION	HARNESS PLUG
WHITE	WHITE	GROUND	WHITE
YELLOW	YELLOW	LT. SIGNAL	YELLOW
BLACK	BLACK	REVERSE	BLACK
BLUE	BLUE	TOW PLOW BLUE STROBE	BLUE
GREEN	GREEN	RT. SIGNAL	GREEN
BROWN	BROWN	TAIL/MARKER	BROWN
RED	RED	TOW PLOW AMBER STROBE	RED

143300_Sheet_1

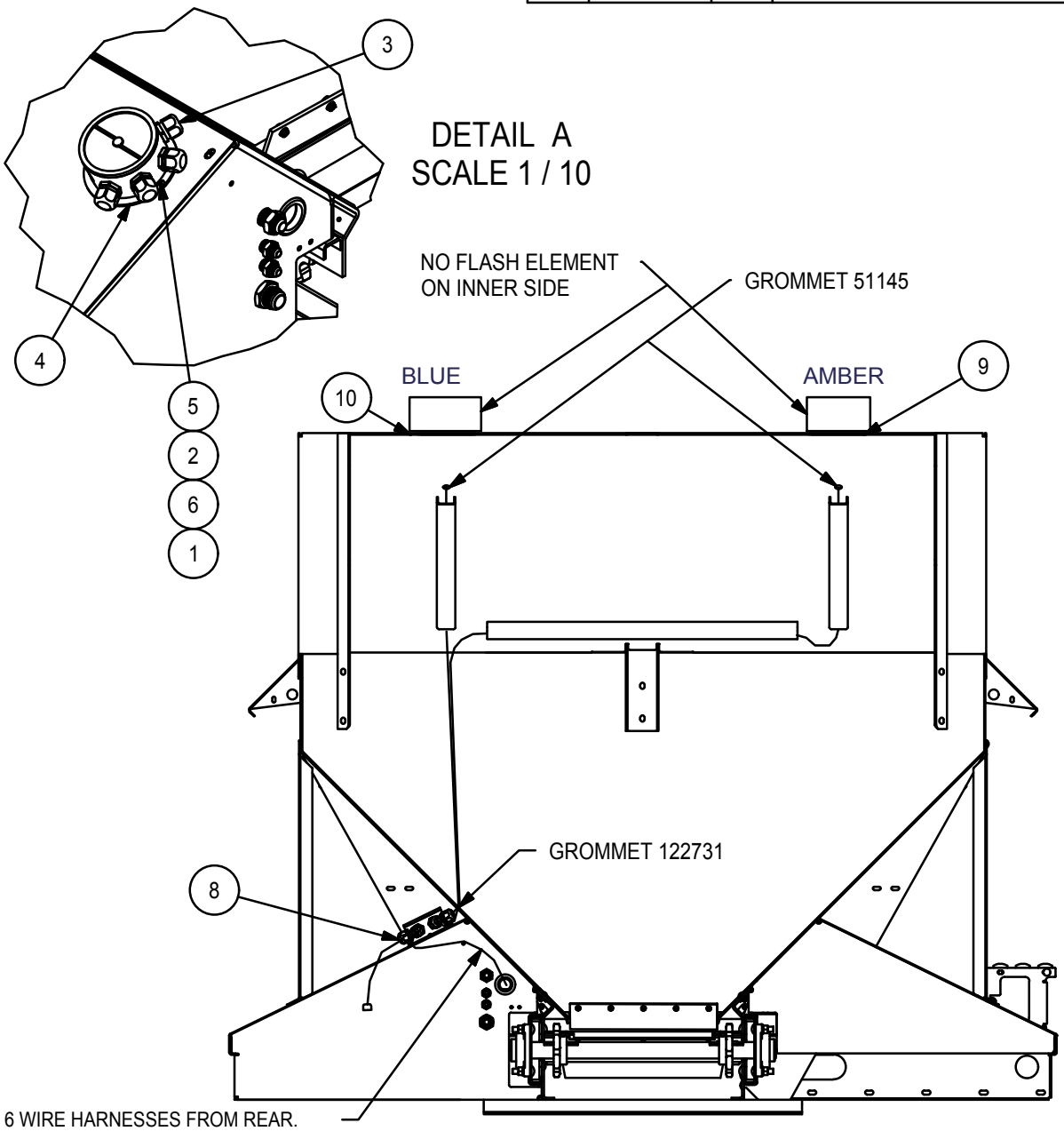
NOTE: CUT 3 PIN DEUTSCH CONNECTOR OFF STROBE LIGHTS. CONNECT BLK TO GROUND AND ORANGE / BLUE TO +12V TO SET LIGHT. TAP WHITE/VIOLET TO +12V TO SET LIGHTS TO SOLID ON



WIRE REFERENCE 2	
WIRE	FUNCTION
WHITE	STROBE BLUE
YELLOW	STROBE AMBER
BLACK	GROUND BLUE STROBE
GREEN	GROUND WORK LIGHT
BROWN	GROUND AMBER STROBE
RED	WORK LIGHTS

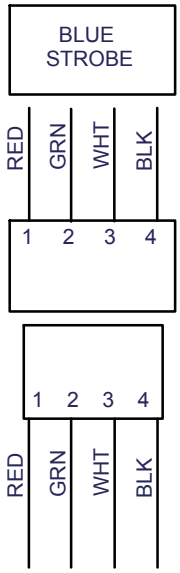
143300_Sheet_2

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	50946	4	NUT,HEX,#10-24NC,SS
2	50948	4	WASHER,FLAT,STD,#10,SS
3	77517	4	FITTING,COMPRESSION, 1/2"
4	80344	1	JUNCTION BOX,ASSY,SURFACE MTG
5	82355	4	SCREW,RHMS,#10NC X 3/4,SS
6	82357	4	WASHER,LOCK,#10,SPRING,SS
7	143729	1	HARNESS,LIGHT,AK
8	88852	12	TERMINAL,RING,#10,CRIMP/SOLDER
9	143814	1	LIGHT,AMBER,WIRING,KIT
10	143815	1	LIGHT,BLUE,WIRING,KIT



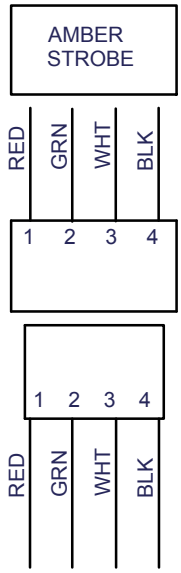
143299_Sheet-1

143815 - LIGHT,BLUE,WIRING,KIT



TO JUNCTION BOX
ON FRONT FENDER

143814 - LIGHT,AMBER,WIRING,KIT



TO JUNCTION BOX
ON FRONT FENDER

NOTE: FOR STROBE LIGHTS
OPPOSITE CORNERS FLASH
AT THE SAME TIME
(BLUE FRONT AND REAR AMBER
SHOULD FLASH TOGETHER)

FRONT JUNCTION BOX					
REAR 6 WIRE	FRNT STROBE BLU	FRNT STROBE AMB	TERMINAL	FUNCTION	6 WIRE PLUG
WHITE		RED & GREEN	BLUE	STROBE	WHITE (F)
YELLOW	RED & GREEN		YELLOW	STROBE	YELLOW (B)
			BLACK		
BLACK	BLACK & WHITE		WHITE	GROUND	BLACK (D)
GREEN			GREEN	GROUND WL	GREEN (E)
BROWN		BLACK & WHITE	BROWN	GROUND	BROWN (C)
RED			RED	WORK LIGHTS	RED (A)

NOTE: REMOVE, RED YEL,BRN
AND GRN WIRES ON 6 WIRE
DEUTSCH PLUG AND RELOCATE
TO CORRECT LETTER ON BACK
OF PLUG, USING PLASTIC
DEUTSCH PIN REMOVAL TOOL
CUT PINS OFF OTHER END AND
INSTALL TERMINAL RINGS

143299_Sheet_2

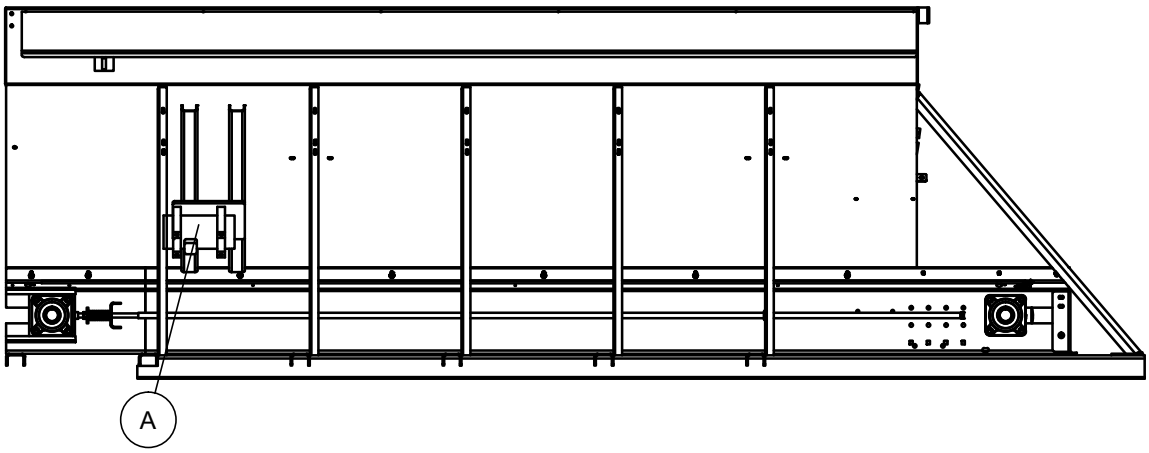
THIS PAGE

IS LEFT BLANK

INTENTIONALLY.

PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
A	2	88560	VIBRATOR,VIBCO

INSTALLATION HARDWARE PROVIDED WITH VIBRATOR



RETIGHTEN THE BOLTS AFTER 10-15 MINUTES OF RUNNING.
THEN CHECK THEM PERIODICALLY FOR TIGHTNESS.

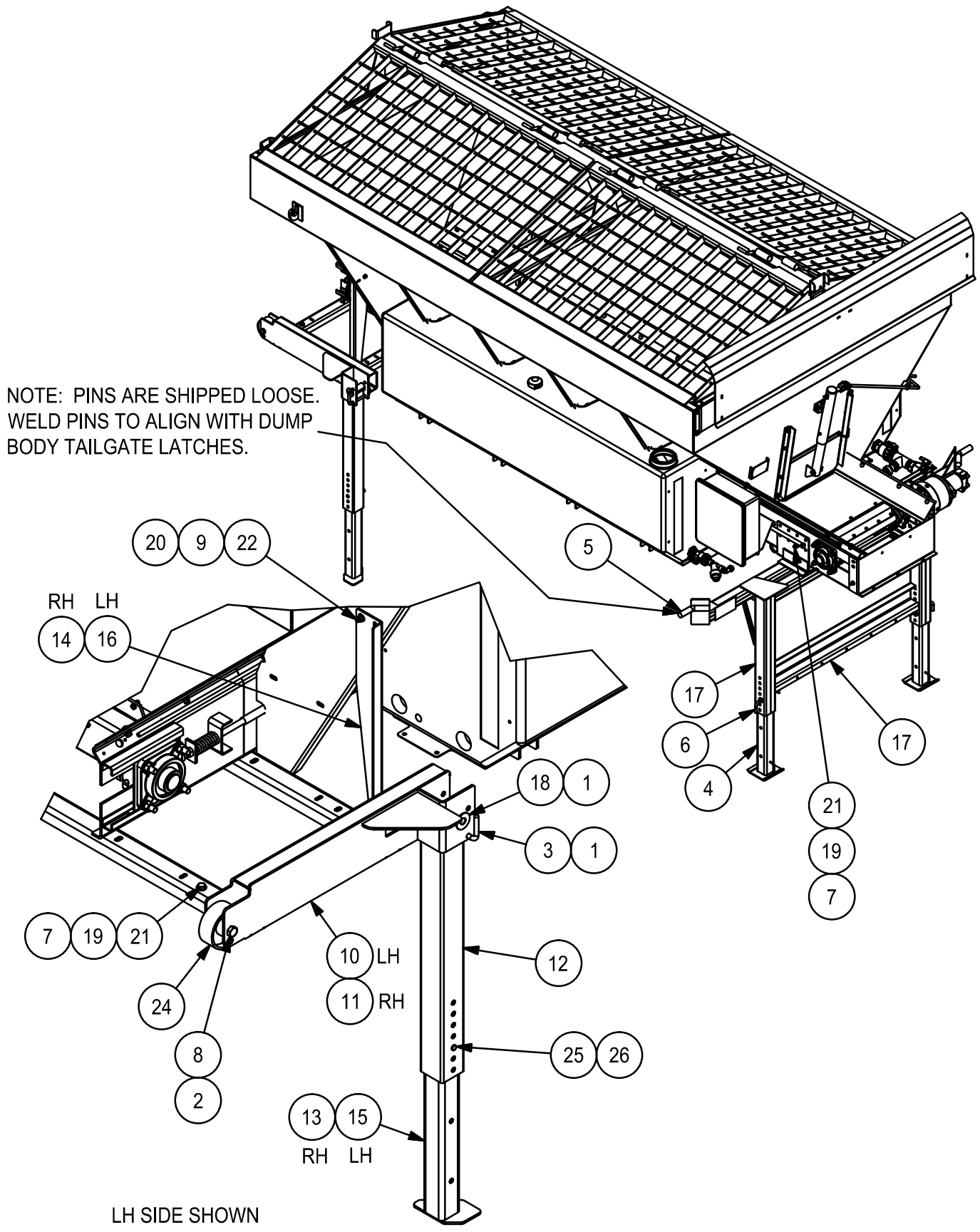
V□ra□r

COMPLETE ASSEMBLY #134019

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	00373	4	PIN,HAIR,.188
2	105410	2	NUT,LOCK,NYLON INSERT,5/8-11NC,SS
3	105906.304	2	PIN,.5X6.50,FORMED
4	108970	2	LEG,LOWER,WLDT,STAND
* 5	109008.304	2	PIN,TG LATCH,FORMED,STAND
6	109020	2	PIN, ASSY, STAND, SS
7	11021.304	28	NUT.LOCK,NYLON INSERT,1/2-13NC,SS
8	110702	2	SCREW, CP, HX, 5/8NC X 4, GR5, SS
9	111430.304	4	NUT,HEX,3/8-16NC,SLFLKG,NYLON
10	133943	1	SUPPORT,STAND,WLDT,LH,AK
11	133944	1	SUPPORT,STAND,WLDT,RH,AK
12	133954	2	LEG,WLDT,FRONT,UPPER,AK
13	133958	1	LEG,LOWER,WLDT,STAND,RH
14	133963	1	BRACKET,STAND,FRONT,RH,AK
15	133964	1	LEG,LOWER,WLDT,STAND,LH
16	133965	1	BRACKET,STAND,FRONT,LH,AK
17	133966	1	STAND,REAR,WLDT,ALASKA
18	134034.304	2	PIN,CLEVIS,1.00 X 4.75
19	50793	36	WASHER,FLAT, 1/2", SS
20	50794	8	WASHER,FLAT,3/8,SS
21	50808	28	SCREW,CP HX,1/2NC X 1 1/2,SS
22	51227	4	SCREW,CP,HX,3/8NC X 1 1/4,SS
23	89919	2	DECAL,WARNING,STAND
24	HX24230	2	WHEEL,CASTER,5"
25	125399	2	PIN,CLEVIS,1/2 X 4.00,SS
26	52843	2	PIN,HAIR,.148 X 2.688,SS

* NOT INCLUDED WITH STAND

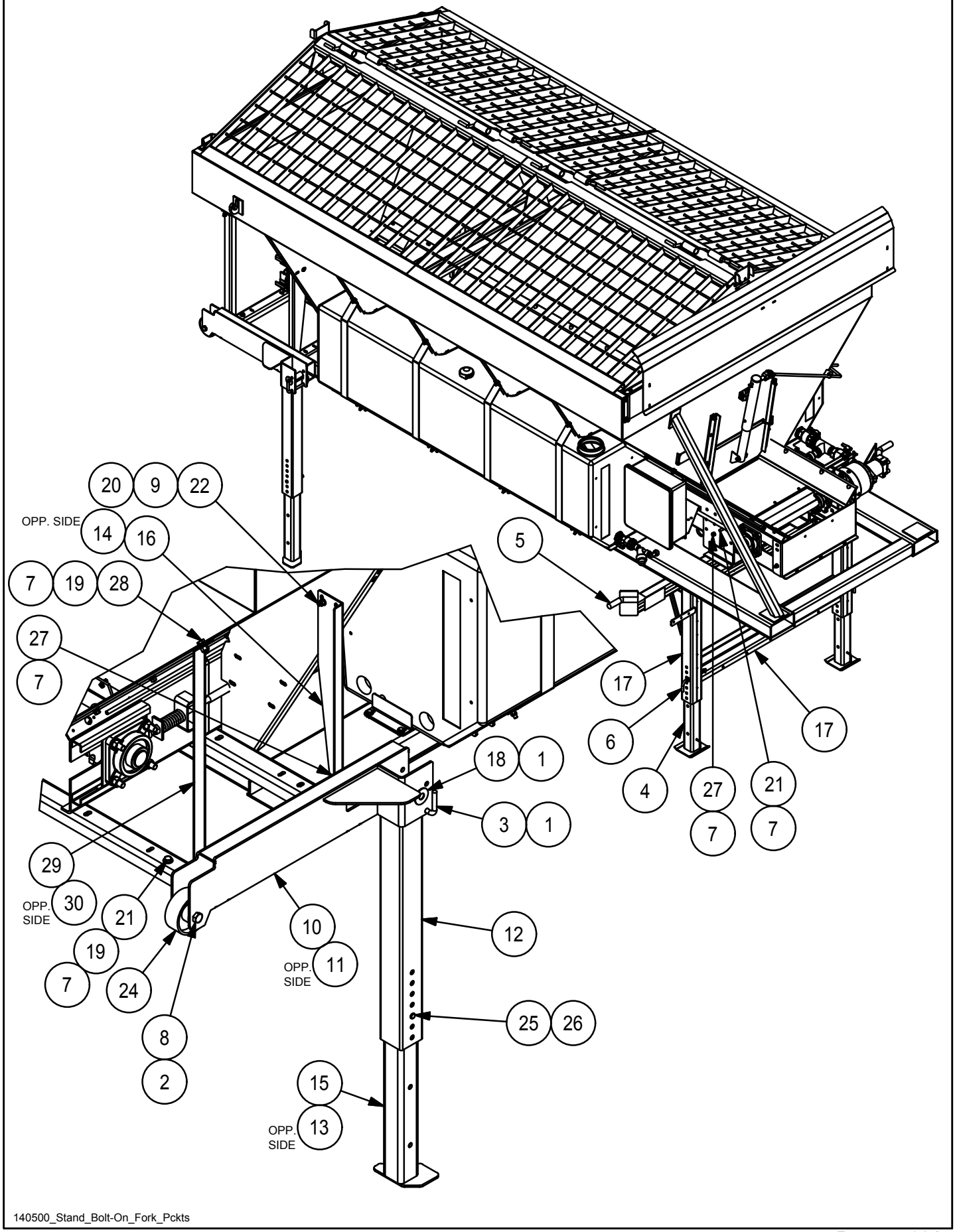
134019


NOTE: PINS ARE SHIPPED LOOSE.
WELD PINS TO ALIGN WITH DUMP
BODY TAILGATE LATCHES.
20
9
22
RH
LH
14
16
5
17
6
4
17
21
19
7
18
1
3
1
7
19
21
10 LH
11 RH
12
24
8
2
25
26
13
15
RH
LH
LH SIDE SHOWN

Ma□ual.DWG

COMPLETE ASSEMBLY
#140500

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	00373	4	PIN,HAIR,.188
2	105410	2	NUT,LOCK,NYLON INSERT,5/8-11NC,SS
3	105906.304	2	PIN,.5X6.50,FORMED
4	108970	2	LEG,LOWER,WLDT,STAND
5	109008.304	2	PIN,TG LATCH,FORMED,STAND
6	109020	2	PIN, ASSY, STAND, SS
7	11021.304	34	NUT.LOCK,NYLON INSERT,1/2-13NC,SS
8	110702	2	SCREW, CP, HX, 5/8NC X 4, GR5, SS
9	111430.304	4	NUT,HEX,3/8-16NC,SLFLKG,NYLON
10	140494	1	SUPPORT,STAND,WLDT,LH,AK
11	140495	1	SUPPORT,STAND,WLDT,RH,AK
12	133954	2	LEG,WLDT,FRONT,UPPER,AK
13	133958	1	LEG,LOWER,WLDT,STAND,RH
14	133963	1	BRACKET,STAND,FRONT,RH,AK
15	133964	1	LEG,LOWER,WLDT,STAND,LH
16	133965	1	BRACKET,STAND,FRONT,LH,AK
17	133966	1	STAND,REAR,WLDT,ALASKA
18	134034.304	2	PIN,CLEVIS,1.00 X 4.75
19	50793	18	WASHER,FLAT, 1/2", SS
20	50794	8	WASHER,FLAT,3/8,SS
21	50808	20	SCREW,CP HX,1/2NC X 1 1/2,SS
22	51227	4	SCREW,CP,HX,3/8NC X 1 1/4,SS
23	89919	2	DECAL,WARNING,STAND
24	HX24230	2	WHEEL,CASTER,5"
25	125399	2	PIN,CLEVIS,1/2 X 4.00,SS
26	52843	2	PIN,HAIR,.148 X 2.688,SS
27	82368	12	BOLT,CRRG,1/2NC X 1 1/4,SS
28	11413	2	SCREW, CP, HX, 1/2 X 1 1/4NC, SS
29	141237	1	ANGLE,FRONT SUPPORT,LH
30	141238	1	ANGLE,FRONT SUPPORT,RH


20
9
22
OPP. SIDE
14
16
7
19
28
27
7
5
17
6
4
27
7
21
7
17
18
1
3
1
29
OPP. SIDE
30
21
19
7
24
10
OPP. SIDE
11
12
25
26
8
2
15
OPP. SIDE
13
140500_Stand_Bolt-On_Fork_Pckts

THIS PAGE

IS LEFT BLANK

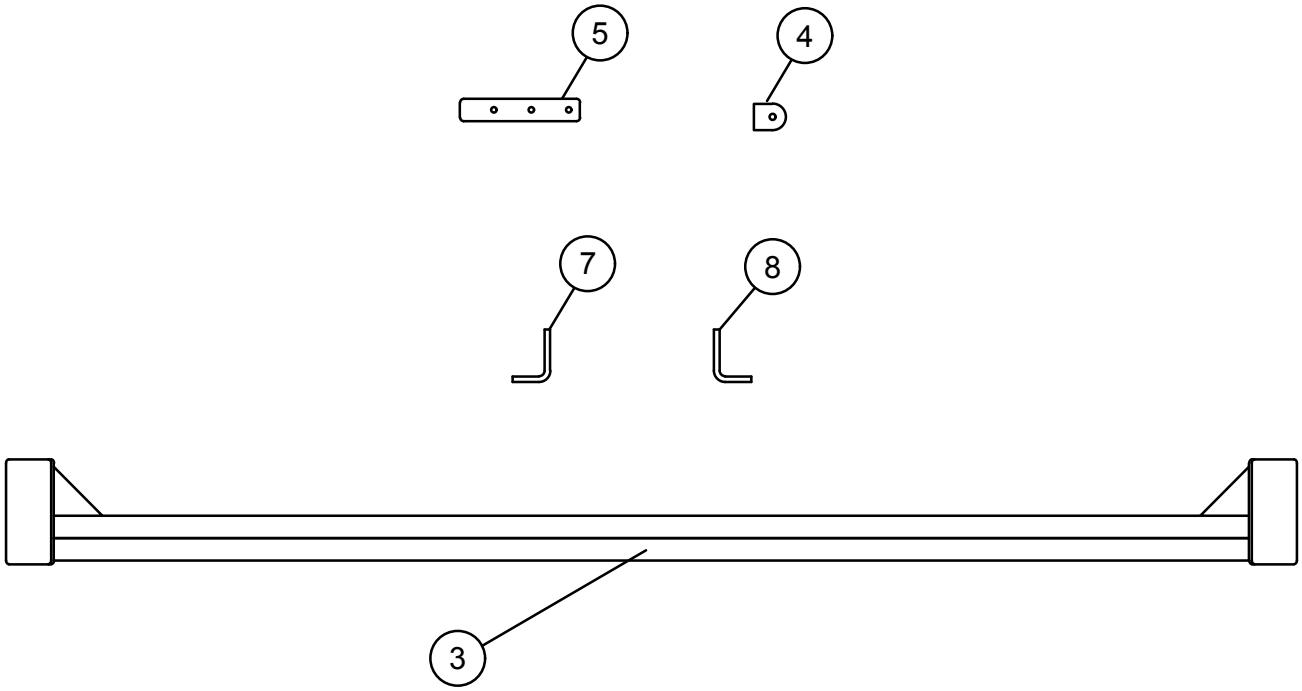
INTENTIONALLY.

COMPLETE PACK # 134971.201

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1*	11021.304	4	NUT,LOCK,NYLON INSERT,1/2-13NC
2*	11413	4	SCREW,CP,HX,1/2NC X 1 1/4,SS
3	134970.201	1	TUBE,TRUNNION,WLDT
4	136209.201	1	LUG,LADDER/BUMPER,1/4 "
5	138694.201	2	PLATE,MOUNT,LIGHT
6*	50793	4	WASHER,FLAT,1/2,SS
7	80850.201	1	TRUNNION,ANGLE,RH,FSH
8	80851.201	1	TRUNNION,ANGLE,LH,FSH

* HARDWARE NOT SHOWN

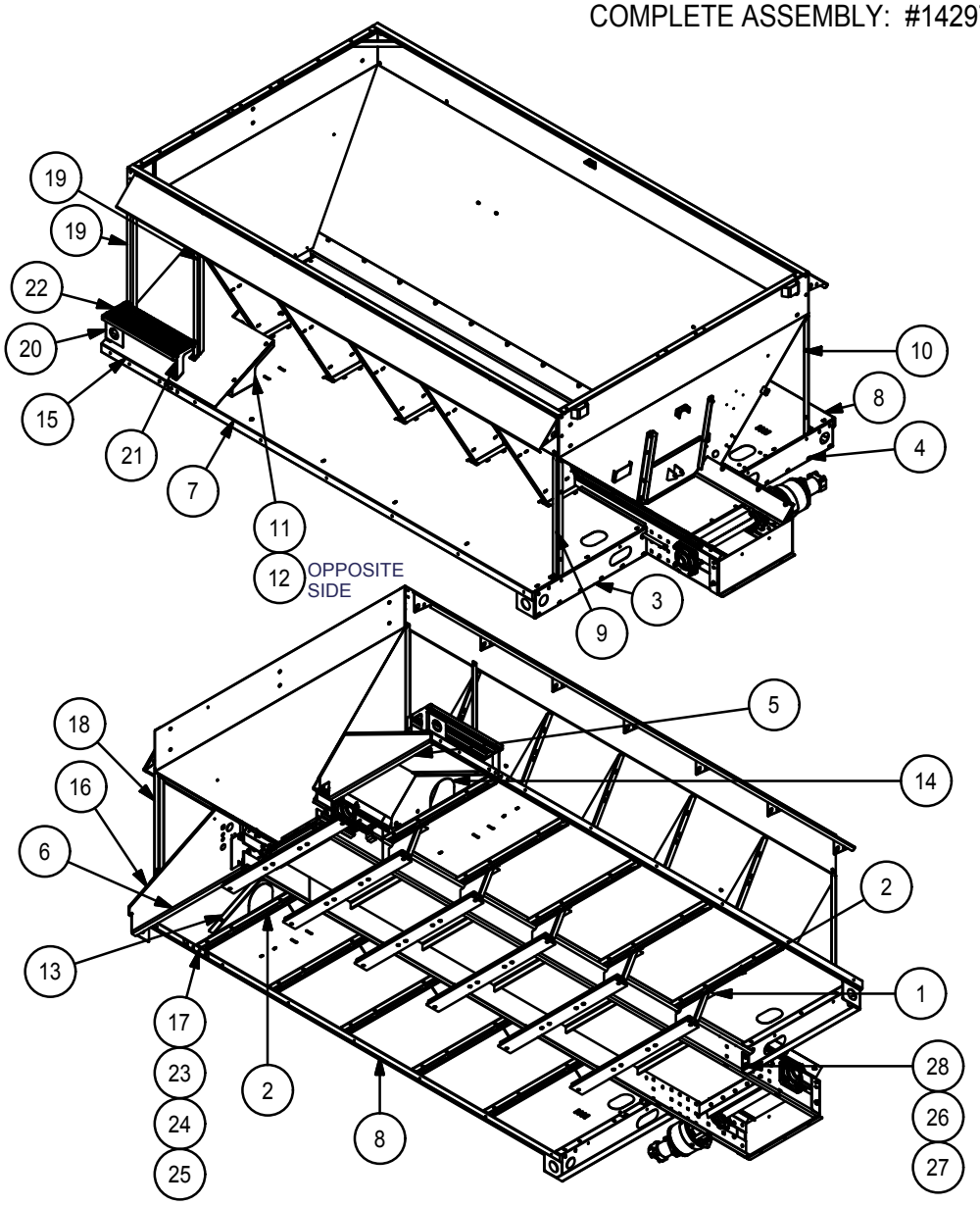
NOTE: INSTALL TRUNNION ANGLES ON SPREADER SILLS WITH PROVIDED HARDWARE. PLACE TRUNNION BAR IN PLACE IN LINE WITH TAIL GATE LATCHES AND WELD TRUNNION ANGLES TO THE TRUNNION BAR. WELD PINS (PN 109008.304) TO TRUNNION ANGLE ENDS TO ALIGN WITH TAILGATE LATCHES. WELD ITEMS #4 & #5 WHERE NEEDED.



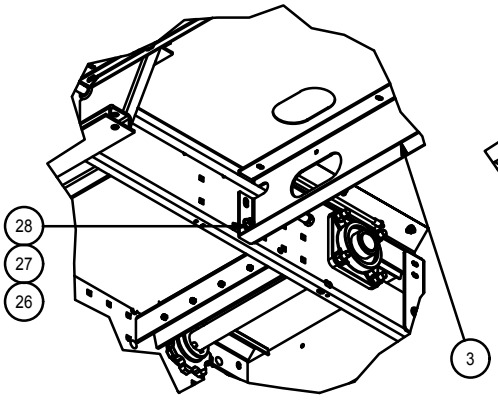
CATWALKS

PARTS LIST				PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION	ITEM	PART NO	QTY	DESCRIPTION
1	140828	10	SUPPORT,BLANKOFF,CATWALK	15	140815	1	FENDER,LH,SLOPED
2	140770	10	BRACE,SKIRTING,TANK,AK	16	140814	1	FENDER,RH,SLOPED
3	140767	1	SUPPORT,LH,CATWALK,REAR	17	140917	2	STRAP,FENDER SKIRTING,AK
4	140766	1	SUPPORT,RH,CATWALK,REAR	18	140812	2	STRAP,RH,FRONT,CATWALK
5	140774	1	SUPPORT,LH,CATWALK,FRONT	19	140813	2	STRAP,LH,FRONT,CATWALK
6	140816	1	SUPPORT,RH,CATWALK,FRONT	20	140832	1	MOUNT,CATWALK, SLOPED FENDER
7	140768	1	SKIRTING,LH,AK,PW,200 GAL,CHAS. MT.	21	140836	1	MOUNT,CATWALK,SLOPED FENDER
8	140769	1	SKIRTING,RH,AK,PW,200 GAL,CHAS. MT.	22	140831	1	CATWALK,WLDT,2', SLOPED FENDERS
9	140777	1	STRAP,LH,REAR,CATWALK	23	50801	140	BOLT,CRRG,3/8NC X 1,SS
10	140776	1	STRAP.RH,REAR,CATWALK	24	50794	140	WASHER,FLAT,3/8,SS
11	140820	1	SUPPORT,LH,FENDER,SLOPED	25	111430	140	NUT,HEX,3/8-16NC,SLFLKG,NYLON
12	140821	1	SUPPORT,RH,FENDER,SLOPED	26	82368	4	BOLT,CRRG,1/2NC X 1 1/4,SS
13	140778	1	SUPPORT,CATWALK,RH,SLOPED FENDER	27	11021.304	4	NUT.LOCK,NYLON INSERT,1/2-13NC,SS
14	140765	1	SUPPORT,CATWALK,LH,SLOPED FENDER	28	50793	4	WASHER,FLAT, 1/2", SS

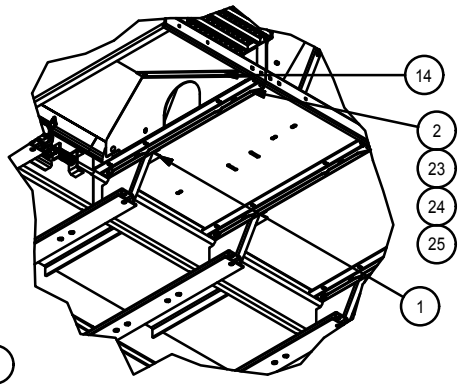
COMPLETE ASSEMBLY: #142970



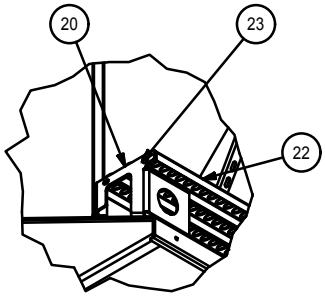
142970_catwalk



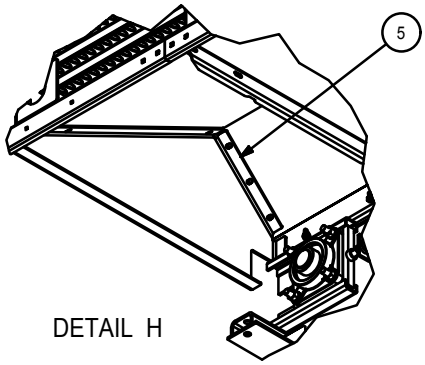
DETAIL E



DETAIL F

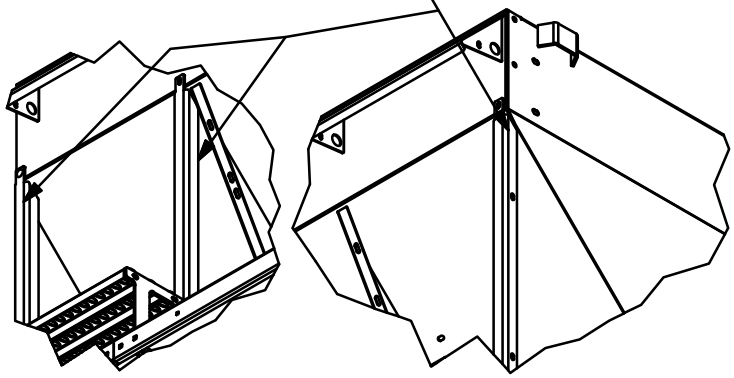


DETAIL G



DETAIL H

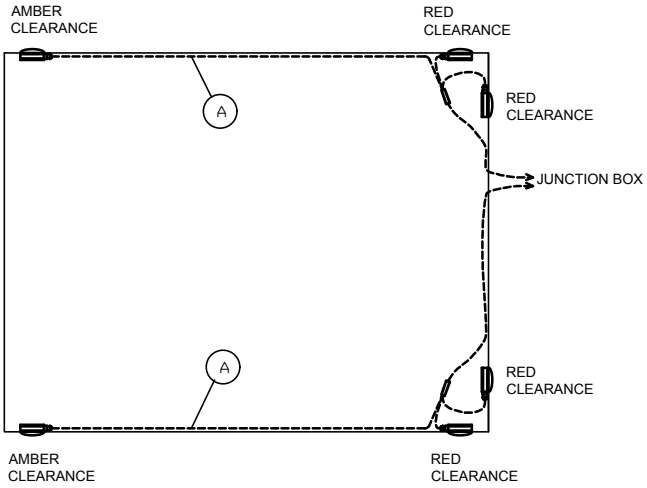
NOTE: STRAP ORIENTATION SHOULD FACE REAR OF SPREADER

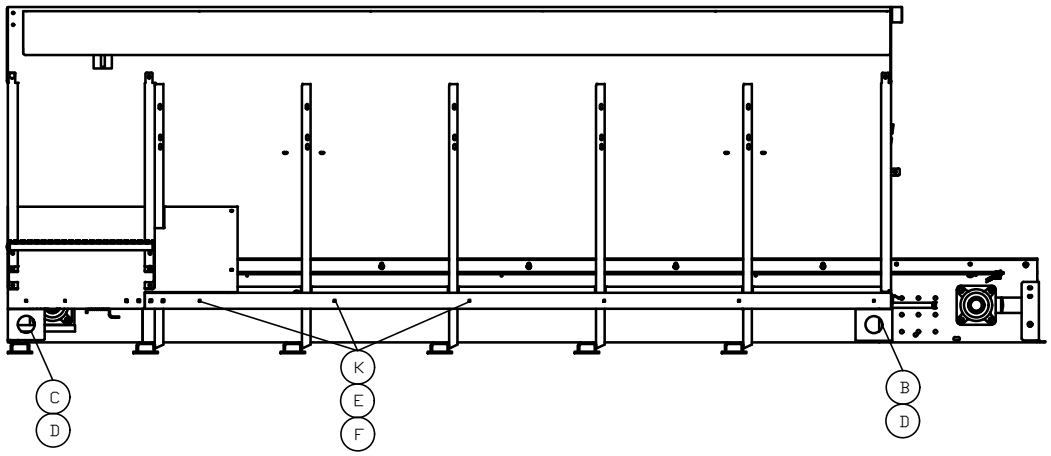


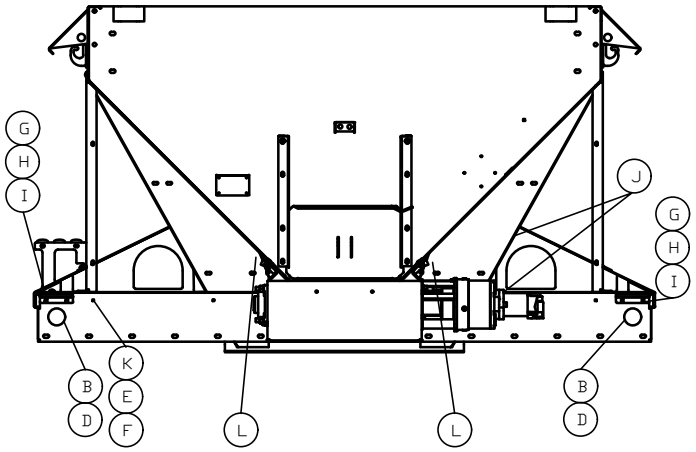
142970_catwalks

LIGHT ASSEMBLY - CATWALKS

PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
A	2	114624	HARNESS,LIGHT,LED,SIDE,AK
B	4	86696	LIGHT,MARKER,RED,2.5,LED
C	2	88686	LIGHT,AMBER,CLEARANCE,LED
D	6	112310	GROMMET,LIGHT,2.5,CLOSED BACK
E	20	50799	BOLT,CRRG,1/4NC X 3/4,SS
F	20	115730.304	NUT,LOCK,NYLON INSERT,1/4-20NC
G	4	50800	BOLT,CRRG,3/8NC X 3/4,SS
H	4	111430.304	NUT,LOCK,NYLON INSERT,3/8-16NC
I	2	140929.201	LIGHT,GUARD,AK
J	2	51145	GROMMET,RUBBER
K	20	51538	CLAMP,VINYL COATED, .25
L	2	80249	FITTING,COMP,3/8 ID

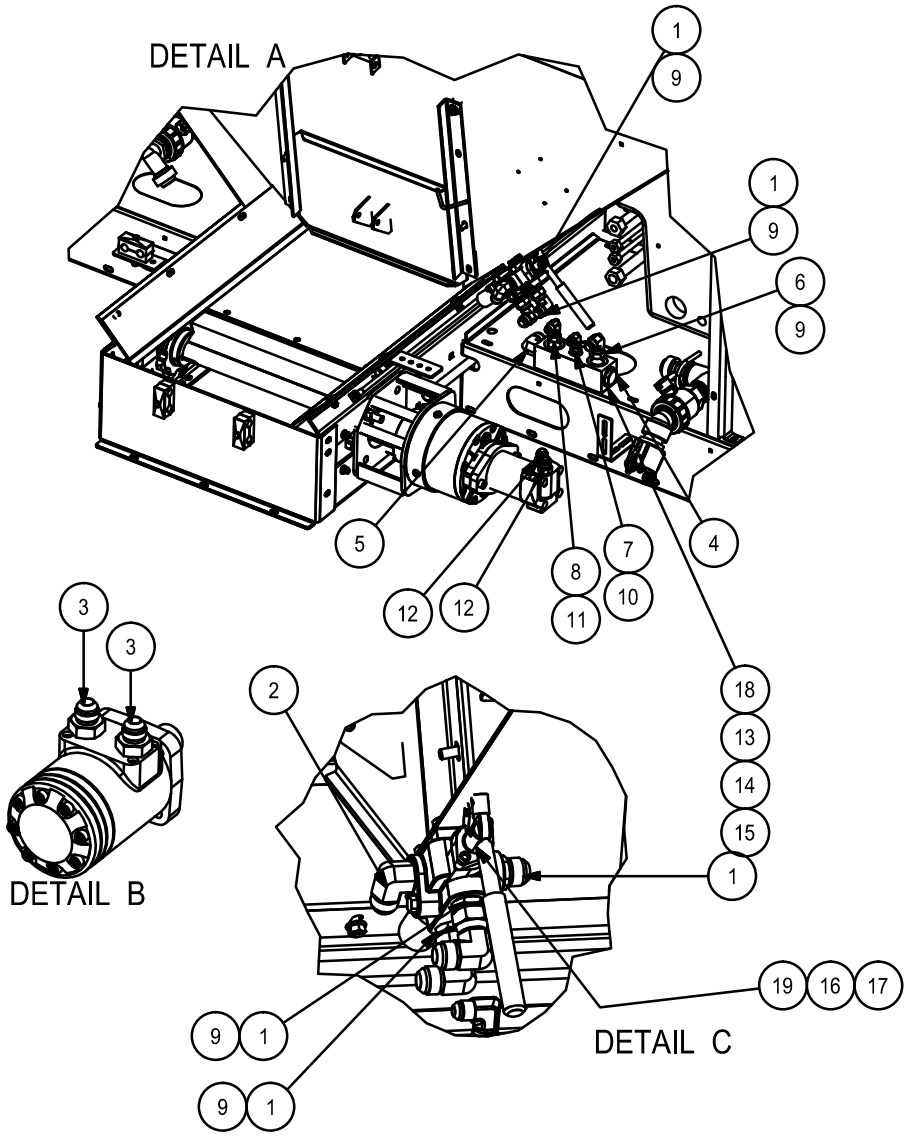






Light_Assembly_Catwalks

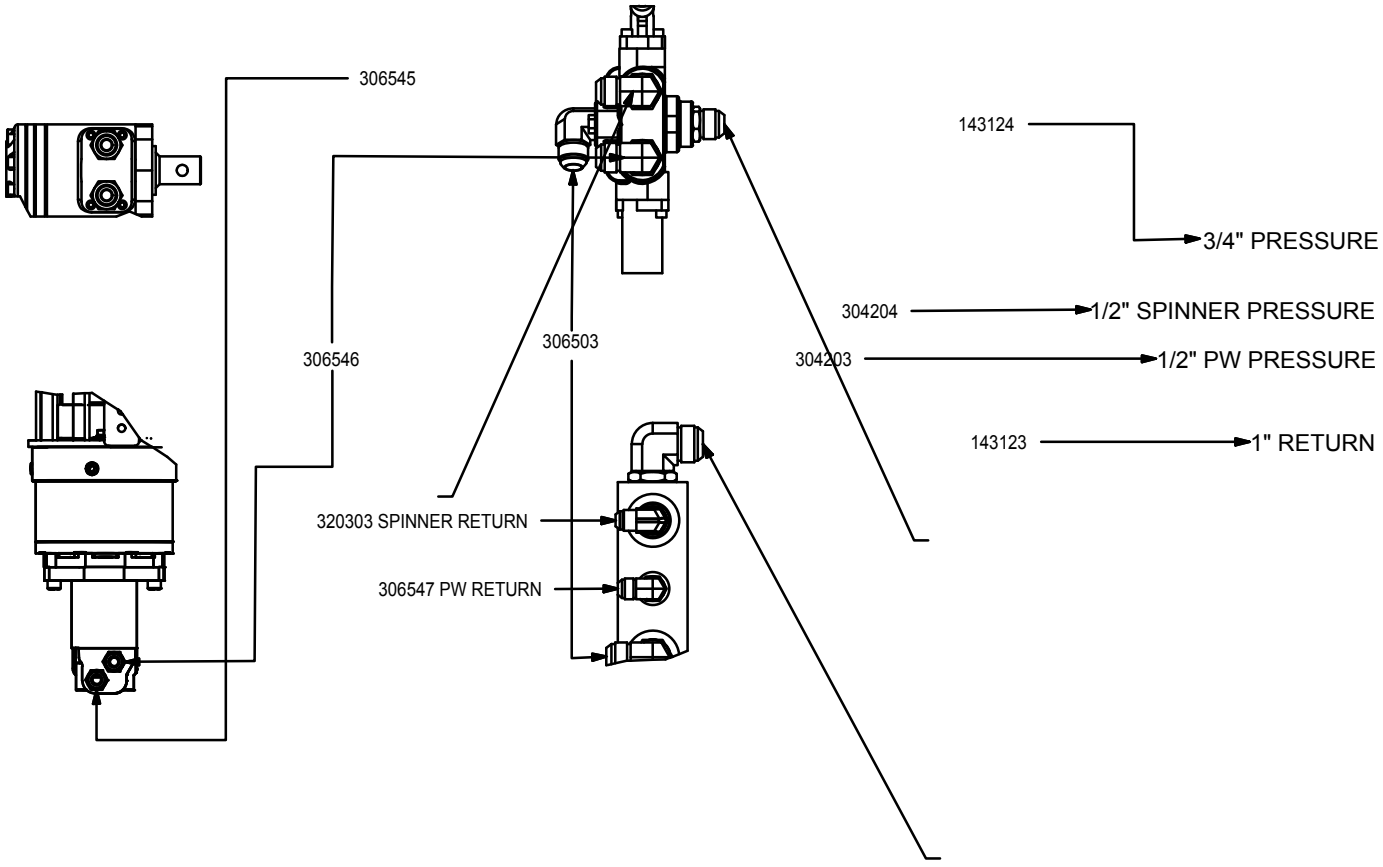
PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	75786	3	ADAPTER, 12MJ/12MP
2	74151	1	ELBOW,12MJ/12MP
3	86342	2	ADAPTER, 10MB/08MJ
4	308302	1	PLUG, 16MB
5	76211	1	ELBOW, 16MB/16MJ
6	85143	1	ADAPTER, 16MB/12MJ
7	81852	1	ADAPTER, 08MJ/08MB
8	301001	1	ADAPTER, 16MB/10MJ
9	73894	3	ELBOW,12FJX/12MJ
10	86827	1	ELBOW,08FJX/08MJ
11	308903	1	ELBOW, 08MJ/10FJX
12	73593	2	ADAPTER, 10MB/12MJ
13	11412	4	SCREW,CP,HX,5/16NC X 1 G5,SS
14	51238	4	WASHER,FLAT,5/16,SS
15	122066	4	WASHER,LOCK, .31,SPRING,SS
16	50806	4	SCREW,CP,HX,3/8NC X 3/4 G5,SS
17	50790	4	WASHER,LOCK,3/8 ID,SPRING,SS
18	142973	1	BLOCK,RETURN,AK
19	85974	1	VALVE, 4-WAY, OPEN CNTR, 12NPT
20	143125	1	HYD,HOSE,KIT,AK,CHASSIS MOUNT



143126 Sheet 1

CONTENTS: 143125 HYD,HOSE,KIT,AK,CHASSIS MOUNT

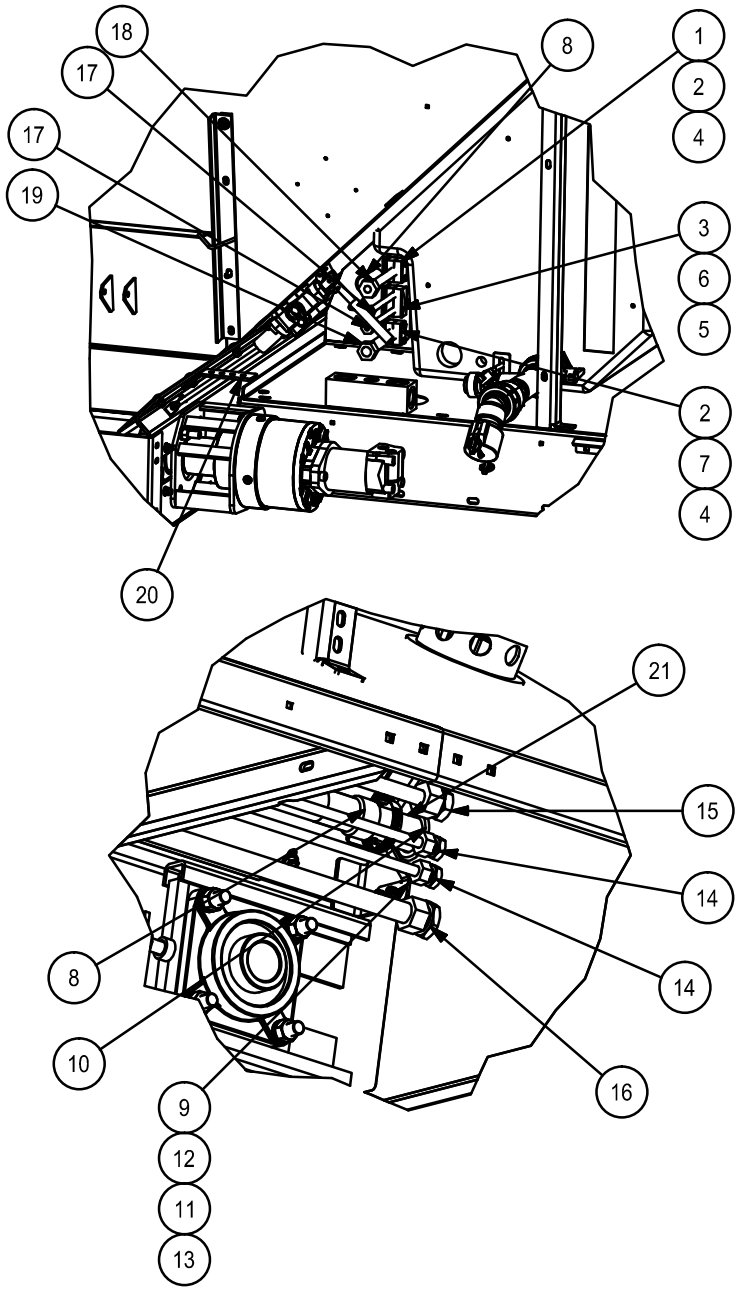
1. 143123 HOSE,ASM,16FJX/16MJ,13.0
2. 143124 HOSE,ASM,12FJX/12MJ,11.5
3. 304203 HOSE,ASM,08-08MJ,08FJX90,124.0
4. 304204 HOSE,ASM,08-08MJ,08FJX90,93.0
5. 306503 HOSE,ASM,12-12FJX/12FJX90,26.0
6. 320303 HOSE,ASM,08-08FJX/08FJX90,83.5
7. 306545 HOSE,ASM,12-12FJX/12FJX90,55.5
8. 306546 HOSE,ASM,12-12FJX/12FJX90,51.5
9. 306547 HOSE,ASM,08-08FJX/08FJX90,110



143126_Sheet_2

SIDE TUBES,ALASKA,CHASSIS MOUNT

PARTS LIST				PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION	ITEM	PART NO	QTY	DESCRIPTION
1	86599	6	CLAMP, TUBE, BODY, SINGLE, 12	12	50804	2	SCREW,CP,HX,1/4NC X 3/4 G5,SS
2	86598.304	6	CLAMP, TUBE, COVER PLATE, SINGLE,SS	13	50097	1	CLAMP,HOSE,32,SS
3	87112	3	CLAMP, COVER PLATE, 08/08	14	84781	2	ADAPTER,08MJ/08MJ,BULKHEAD
4	82287	12	SCREW,CP,HX,1/4NC X 1 3/4,SS	15	85392	1	ADAPTER,12MJ/12MJ,BULKHEAD
5	106363	6	SCREW,CP,HX,5/16NC X 1 3/4,SS	16	308102	1	ADAPTER,16MJ/16MJ,BULKHEAD
6	87115	6	CLAMP,BODY,TUBE,08/08,PLASTIC	17	75222	2	TUBE,ASSY,1/2 X 128
7	106364	6	CLAMP, TUBE, BODY, SINGLE, 16	18	75236	1	TUBE,ASSY,3/4 X 128
8	142972	1	CONDUIT,1 1/4",10'	19	326404.304	1	TUBE,ASSY,1.0 X 128
9	142971	1	TAB,CLAMP,HOSE,BOLT-ON	20	142969	2	MOUNT,CLAMP,HOSE
10	138026	1	GROMMET,RUBBER,2.0 OD X 1.75 ID X .25	21	143523	1	1 1/4" CONDUIT,6"
11	115730.304	2	NUT,HEX,1/4-20NC,SLFLKG,NYLON				



142977 Side Tube Spec 2

THIS PAGE

IS LEFT BLANK

INTENTIONALLY.

TRUCK FRAME MOUNTING (8' - 16')

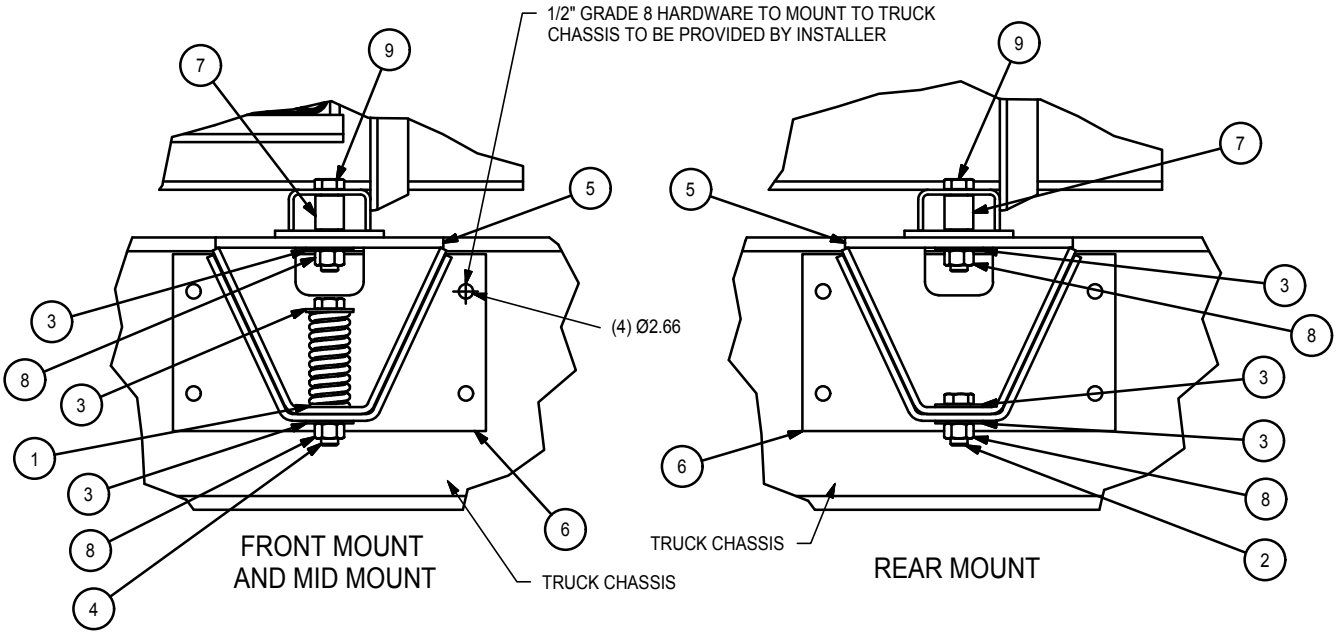
PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	03072	2	SPRING,IDLER
2	105422	2	SCREW,CAP,HX,5/8NC X 1 1/2,GR8
3	10557	12	WASHER,FLAT,5/8
4	11213	2	SCREW, CP, HX, 5/8NC X 5, G5
5	118522	4	V-MOUNT,WLDT,UPPER
6	118525	4	V-MOUNT,WLDT,LOWER
7	118559	4	SPACER,FRAME MOUNT,FSH
8	51389	8	NUT,CENTERLOCK,5/8-11NC
9	76487	4	SCREW, CP, HX, 5/8NC X 3, G8

COMPLETE 8'-12' PACK # 118526

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	03072	4	SPRING,IDLER
2	105422	2	SCREW,CAP,HX,5/8NC X 1 1/2,GR8
3	10557	18	WASHER,FLAT,5/8
4	11213	4	SCREW, CP, HX, 5/8NC X 5, G5
5	118522	6	V-MOUNT,WLDT,UPPER
6	118525	6	V-MOUNT,WLDT,LOWER
7	118559	6	SPACER,FRAME MOUNT,FSH
8	51389	12	NUT,CENTERLOCK,5/8-11NC
9	76487	6	SCREW, CP, HX, 5/8NC X 3, G8

COMPLETE 13'-16' PACK # 118527

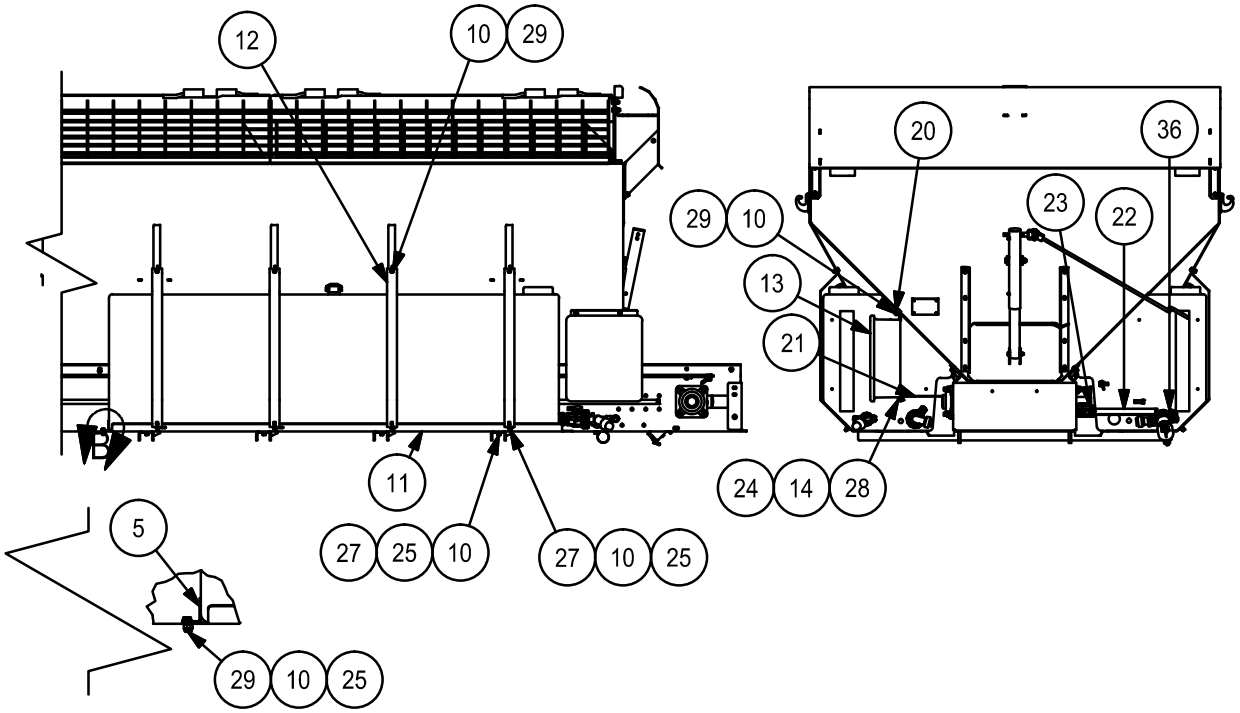
FRONT VIEW



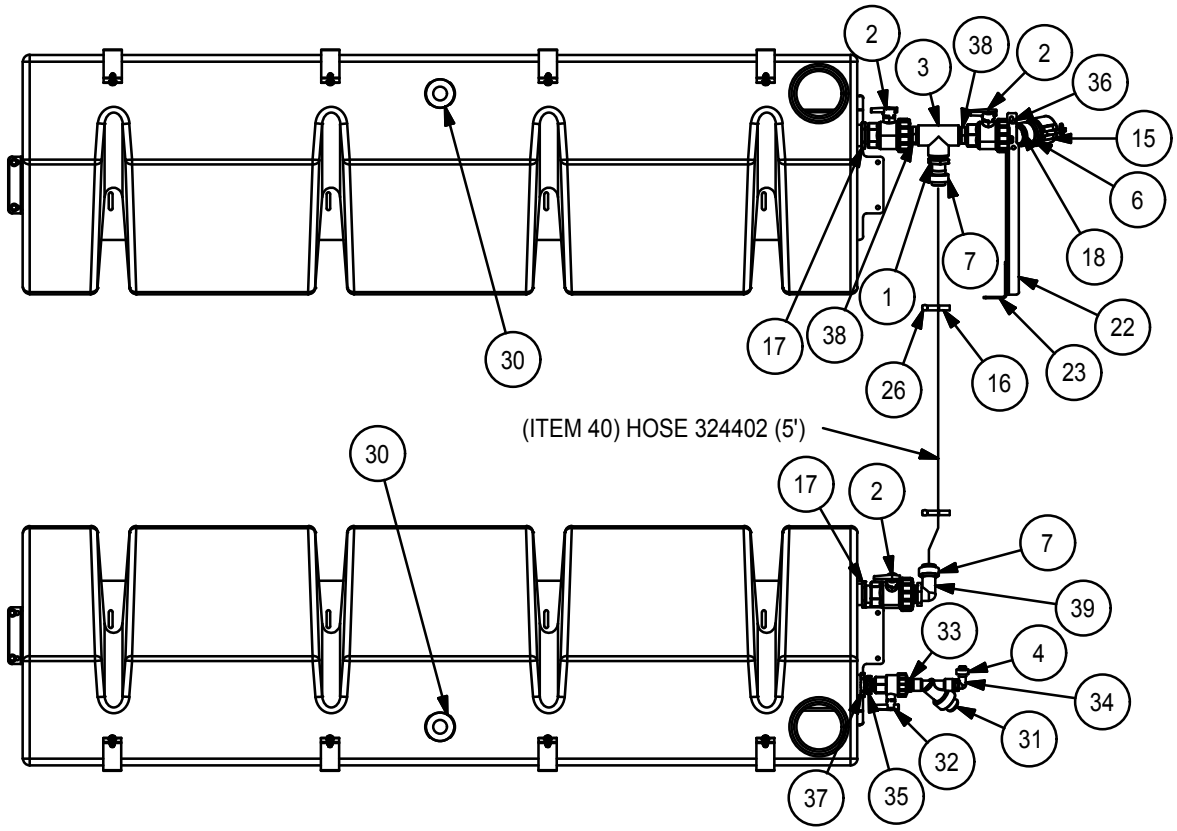
Frmt8-16

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
25	50794	24	WASHER,FLAT,3/8,SS
26	50799	2	BOLT,CRRG,1/4NC X 3/4 G2, SS
27	50801	8	BOLT,CRRG,3/8NC X 1,SS
28	50805	4	SCREW,CP,HX,1/4NC X 1 G5,SS
29	50807	22	SCREW,CP,HX,3/8NC X 1,SS
30	80225	2	PLUG,VENTED,32MP,POLY
31	80798	1	FILTER,STRAINER, Y, 12FR/12FP
32	84659	1	VALVE,BALL,16FP/16FP,POLY
33	85005	1	ADAPTER,16MP/12MP,POLY
34	87623	1	ELBOW,12MP/12HB,POLY
35	88556	1	ADAPTER,20MP/16MP,POLY
36	88595	1	U-BOLT,.31NC,2.0 X 2.50, SS
37	89448	1	ADAPTER,32MP/20FP,POLY
38	89713	2	ADAPTER,24MP/24MP,POLY
39	89716	1	ELBOW,24MP/24HB,POLY
40	324402	5	HOSE,POLY,RIBBED,EPDM,1.5"

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	105035	1	ADAPTER,24MP/24HB,POLY
2	106106	3	VALVE,BALL,24FP/24FP,POLY
3	106203	1	TEE,24FP/24FP/24FP,POLY
4	106299	1	CLAMP,HOSE,12,SS
5	108149.201	2	BRKT,TANK HOLDER
6	109702	1	ADAPTER,MALE,1 1/2" MP/STD
7	109709	2	CLAMP,T-BOLT,1 1/2 HOSE
8	111107	1	TANK, POLY, 200 GAL, RH
9	111108	1	TANK, POLY, 200 GAL, LH
10	111430.304	34	NUT,HEX,3/8-16NC,SLFLKG,NYLON
11	112825.201	2	PLATE,TANK SUPPORT,MONTANA
12	112826.201	8	STRAP,TANK,200 GALLON
13	113730	1	CONTROL BOX,PWSH,NO VAL,8.2GPM
14	115730.304	6	NUT,HEX,1/4-20NC,SLFLKG,NYLON
15	115849	1	CAP,24FC,POLY
16	120639.304	2	CLAMP,VINYL COATED,2.25
17	121247	2	ADAPTER,32MP/24MP,POLY
18	129627	1	ELBOW,24MP/24FP X 45,POLY
20	133991.201	1	BRACKET,MTG,PW BOX,UPPER
21	133992.201	1	BRACKET,MTG,PW BOX,LOWER
22	134897.201	1	SUPPORT,PLUMBING,AK
23	134904.201	1	ANGLE,MOUNT,VALVE
24	50792	4	WASHER,FLAT, 1/4", SS



DETAIL B
SCALE 1 / 16



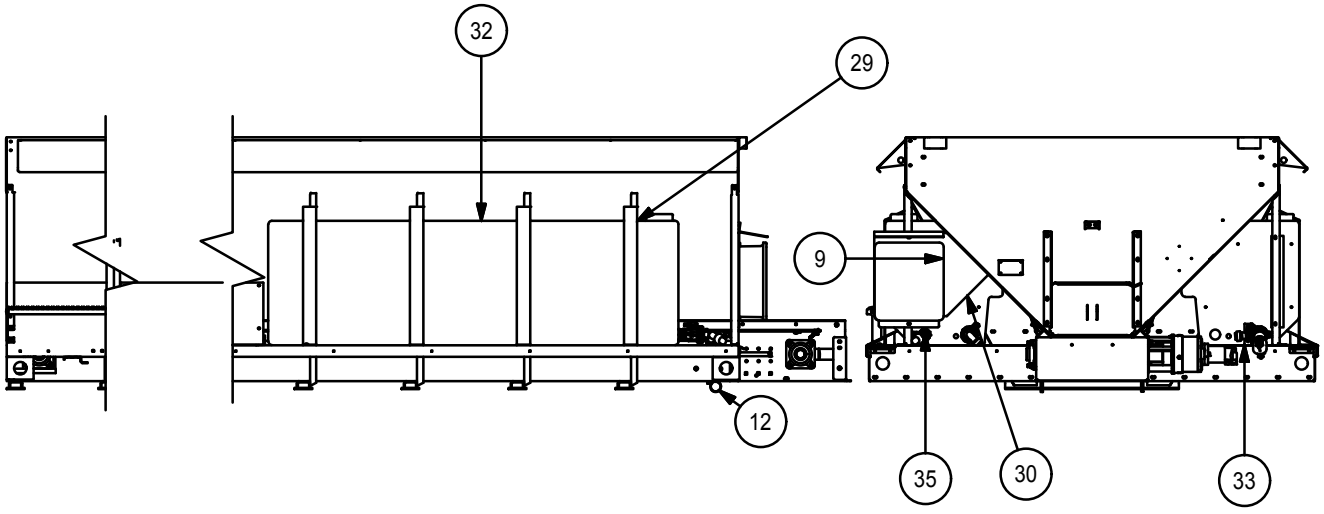
Prewet_Dual_200_gal_tanks-2

PREWET - DUAL 200 GALLON TANKS - CHASSIS MOUNT

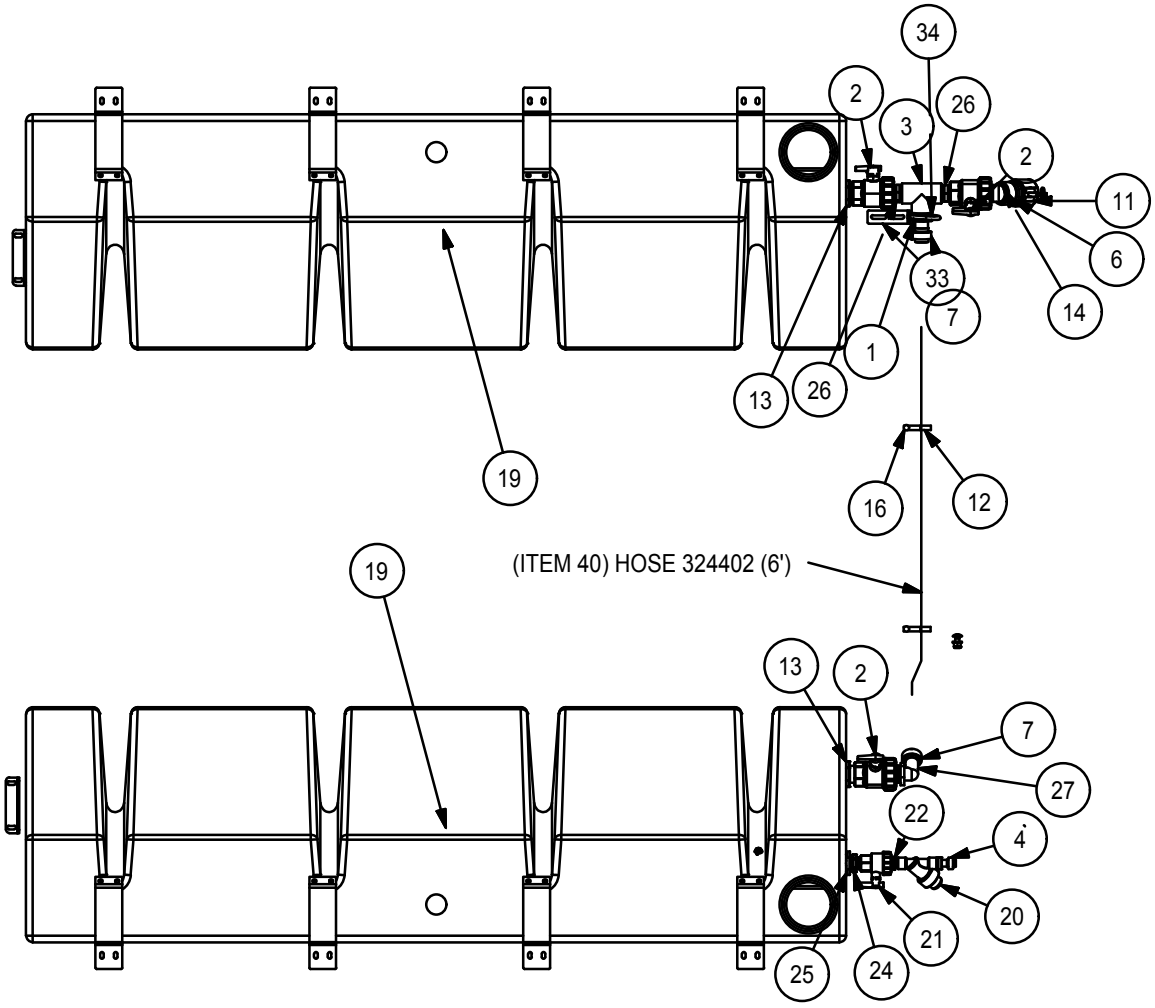
PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	105035	1	ADAPTER,24MP/24HB,POLY
2	106106	3	VALVE,BALL,24FP/24FP,POLY
3	106203	1	TEE,24FP/24FP/24FP,POLY
4	106299	1	CLAMP,HOSE,12,SS
5	108149.201	2	BRKT,TANK HOLDER
6	109702	1	ADAPTER,MALE,1 1/2" MP/STD
7	109709	2	CLAMP,T-BOLT,1 1/2 HOSE
8	111430.304	36	NUT,HEX,3/8-16NC,SLFLKG,NYLON
9	141166	1	CONTROL BOX,PWSH,NO VAL,8.2GPM
10	115730.304	6	NUT,HEX,1/4-20NC,SLFLKG,NYLON
11	115849	1	CAP,24FC,POLY
12	120639.304	2	CLAMP,VINYL COATED,2.25
13	121247	2	ADAPTER,32MP/24MP,POLY
14	129627	1	ELBOW,24MP/24FP X 45,POLY
15	50794	36	WASHER,FLAT,3/8,SS
16	50799	2	BOLT,CRRG,1/4NC X 3/4 G2, SS
17	50801	10	BOLT,CRRG,3/8NC X 1,SS
18	50807	22	SCREW,CP,HX,3/8NC X 1,SS
19	80225	2	PLUG,VENTED,32MP,POLY
20	80798	1	FILTER,STRAINER, Y, 12FR/12FP
21	84659	1	VALVE,BALL,16FP/16FP,POLY
22	85005	1	ADAPTER,16MP/12MP,POLY

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
24	88556	1	ADAPTER,20MP/16MP,POLY
25	89448	1	ADAPTER,32MP/20FP,POLY
26	89713	2	ADAPTER,24MP/24MP,POLY
27	89716	1	ELBOW,24MP/24HB,POLY
28	324402	6	HOSE,POLY,RIBBED,EPDM,1.5"
29	140775	8	STRAP,TANK,200GAL,CHASSIS MOUNT
30	140817	1	CONTROL,PW,MOUNT
31	111107	1	TANK, POLY, 200 GAL, RH
32	111108	1	TANK, POLY, 200 GAL, LH
33	140940	1	SUPPORT,VALVE,AK
34	105758	1	U-BOLT,.375NC,2.44 X 4.44, SS
35	87866	1	ADAPTER,12MP/12HB,POLY

COMPLETE ASSEMBLY:
140872.201

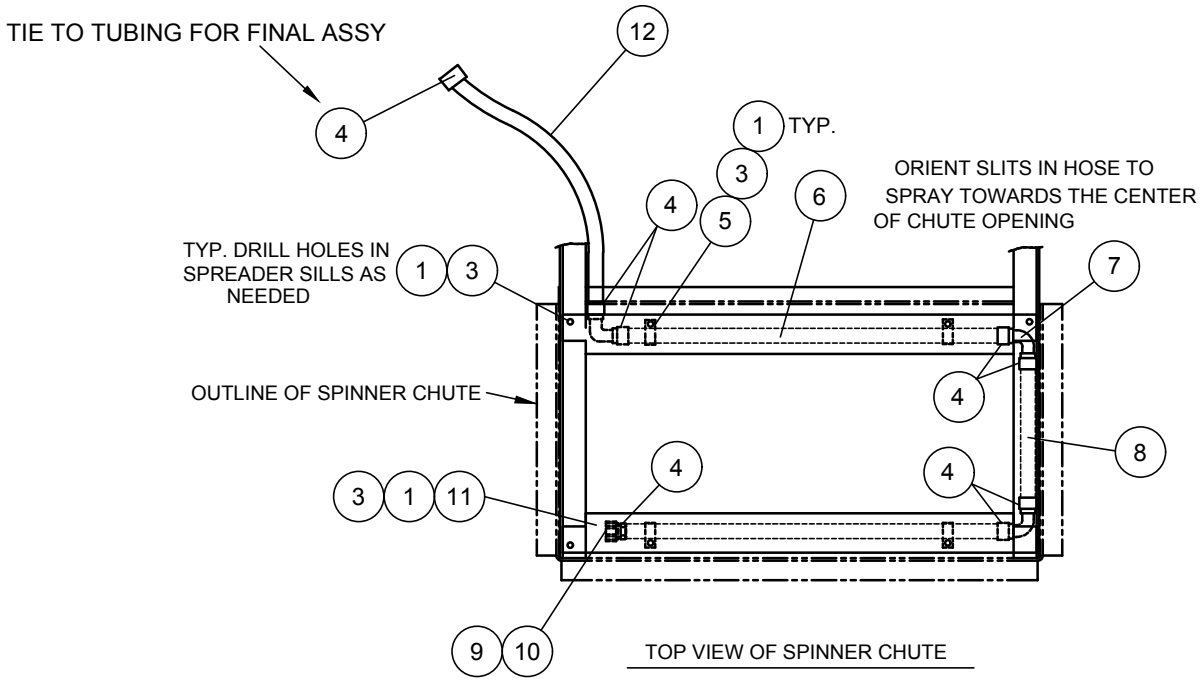


140872_Sheet_1



140872_Sheet_2

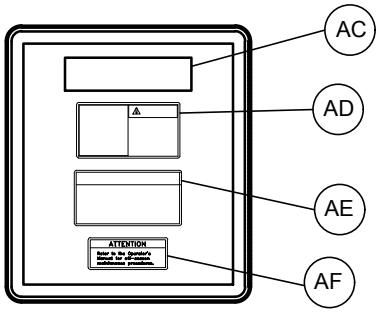
PREWET HOSING PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	50805	10	SCREW,CP,HX,1/4NC X 1,SS
2	--	--	--
3	52763	10	NUT,WHIZLOCK,FLG,1/4-20NC,SS
4	77017	7	CLAMP,HOSE,06,SS
5	77490	4	CLAMP,LOOM,3/4 ID
6	77502	2	TUBE,RBR,3/4"X21",W/18 SLITS
7	77489	3	ELBOW,08HB/08HB,PLASTIC
8	77503	1	TUBING,RBR,3/4"X10"
9	77487	1	CAP,8FP,NYLON
10	77488	1	ADAPTER,08MP/08HB
11	86564	1	BRKT,PREWET
12	77504	6.0'	TUBING,PVC,CLEAR,1/2"



Prewet_Hosing

M12 FLOWMETER CONNECTOR

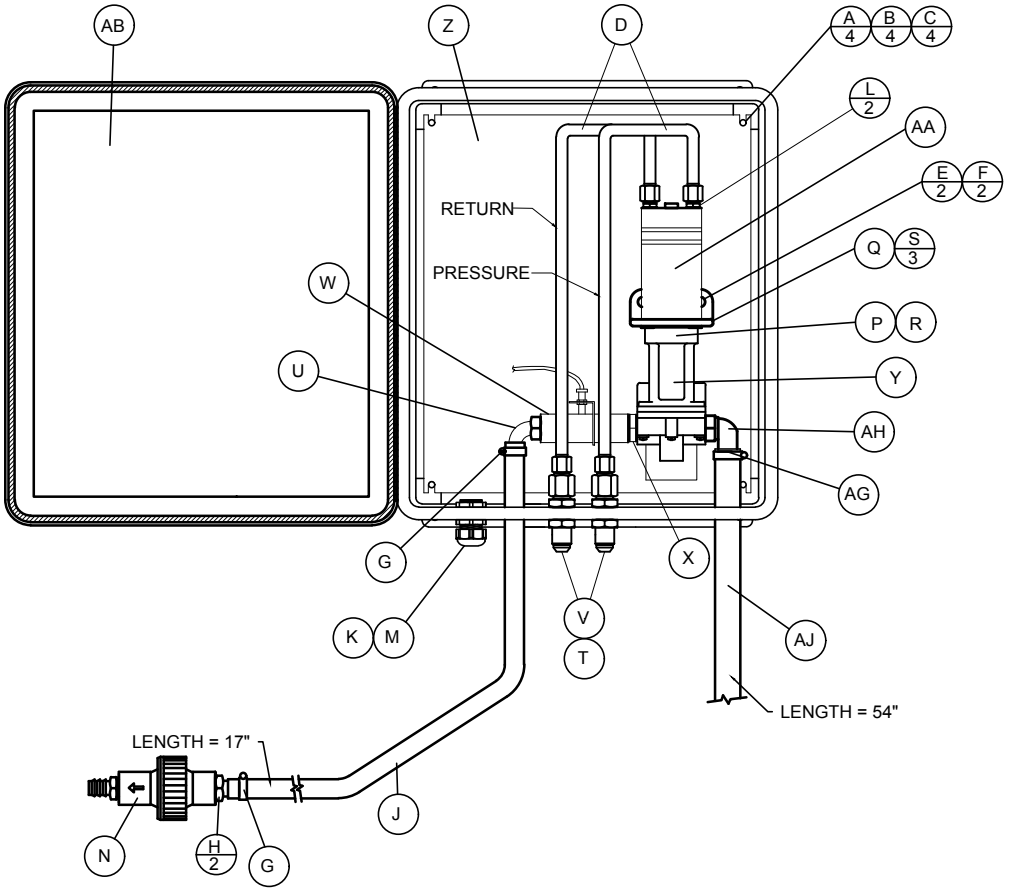
PIN 1 - POWER
PIN 2 - NC
PIN 3 - GROUND
PIN 4 - SIGNAL



DECALS - FRONT OF COVER

PARTS LIST — 113730

ITEM	QTY	PART NO	DESCRIPTION
A	4	50948	WASHER,FLAT,STD,#20,SS
B	4	82356	SCREW RHMS #10NF X 1/2,SS
C	4	82357	WASHER LOCK #10 SPRING,SS
D	2	110895	TUBE ASSY,PWSH,C-DOT
E	2	50807	SCREW CP HX 3/8NC X 1,SS
F	2	52765	NUT WHIZLOCK FLG 3/8-16,SS
G	2	77017	CLAMP HOSE 06 SS
H	2	77488	ADAPTER 08HB/08MP PLASTIC
J	1.5'	77504	TUBING UREBRADE 1/2"
K	1	77518	NUT JAM COMP PLASTIC
L	2	86818	ADAPTER,06MB/06MJ
M	1	80249	FITTING COMP 3/8 ID
N	1	80997	VALVE CHECK PVC 1/2" THD/VIT
P	1	84051	COUPLING FLEX HALF .63 W/KEY
Q	1	84052	BRACKET MOTOR MTG ALUM PWSH
R	1	84068	INSERT RUBBER SPIDER L050
S	3	84779	SCREW CP SH 1/4NF X 1/2
T	2	84781	ADAPTER,08MJ/08MJ,BULKHEAD
U	1	107221	ELBOW, 08MP/08HB
V	2	84784	ADAPTER,08FJ/06MJ
W	1	130537	FLOWMETER, .5-5 GPM,.5 NPT,M12
X	1	107217	NIPPLE,CLOSE,08MP/08MP
Y	1	84062	PUMP GEAR 8.2 GPM PWSH
Z	1	86787.304	PLATE MOUNTING PWSH
AA	1	84057	MOTOR HYD 1.21 CIR OMM
AB	1	124117	JUNCTION BOX PWS,C-DOT
AC	1	81226	DECAL, LOGO, 2.75 X 8.25
AD	1	77505	DECAL, WARNING
AE	1	75250	DECAL - SAFETY
AF	1	106921	DECAL, ATTENTION
AG	1	106299	CLAMP,HOSE,12,SS
AH	1	106627	ELBOW,12HB/08MP,POLY
AJ	4.5	87624	HOSE,PVC,CLEAR,REINFORCED,3/4"



Prewet_Pump_Control_Box

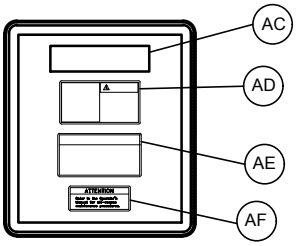
THIS PAGE

IS LEFT BLANK

INTENTIONALLY.

M12 FLOWMETER CONNECTOR

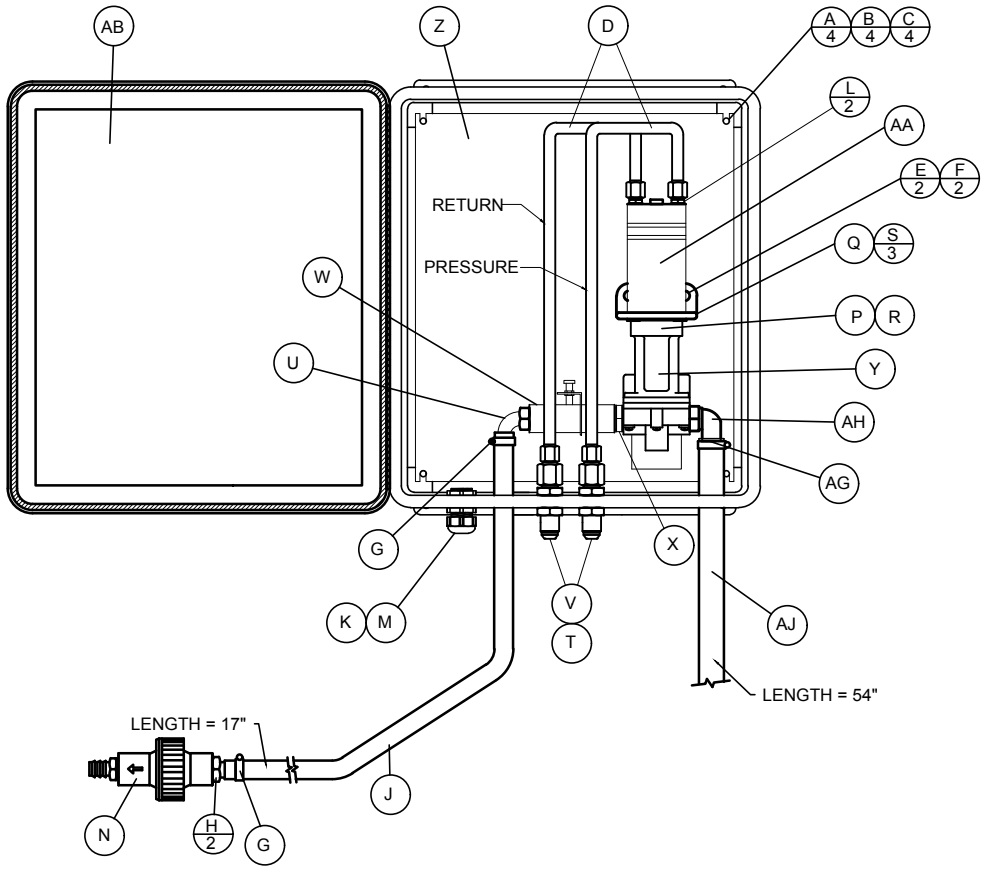
PIN 1 - POWER
PIN 2 - NC
PIN 3 - GROUND
PIN 4 - SIGNAL



DECALS - FRONT OF COVER

PARTS LIST — 141308

ITEM	QTY	PART NO	DESCRIPTION
A	4	5098	WASHER,FLAT,STD,#10,SS
B	4	82356	SCREW RHMS #10NF X 1/2,SS
C	4	82357	WASHER LOCK #10 SPRING,SS
D	2	110895	TUBE ASSY,PWSH,C-DOT
E	2	50807	SCREW CP HX 3/8NC X 1,SS
F	2	52765	NUT WHIZLOCK FLG 3/8-16,SS
G	2	77017	CLAMP HOSE 06 SS
H	2	77488	ADAPTER 08HB/08MP PLASTIC
J	1.5'	77504	TUBING UREBRADE 1/2"
K	1	77518	NUT JAM COMP PLASTIC
L	2	86818	ADAPTER,06MB/06MJ
M	1	80249	FITTING COMP 3/8 ID
N	1	80997	VALVE CHECK PVC 1/2" THD/VIT
P	1	84051	COUPLING FLEX HALF .63 W/KEY
Q	1	84052	BRACKET MOTOR MTG ALUM PWSH
R	1	84068	INSERT RUBBER SPIDER L050
S	3	84779	SCREW CP SH 1/4NF X 1/2
T	2	84781	ADAPTER,08MJ/08MJ,BULKHEAD
U	1	107221	ELBOW, 08MP/08HB
V	2	84784	ADAPTER,08FJ/06MJ
W	1	130537	FLOWMETER, .5-5 GPM,1/2 NPT,M12
X	1	107217	NIPPLE,CLOSE,08MP/08MP
Y	1	84062	PUMP GEAR 8.2 GPM PWSH
Z	1	86787.304	PLATE MOUNTING PWSH
AA	1	84057	MOTOR HYD 1.21 CIR OMM
AB	1	124117	JUNCTION BOX PWS,C-DOT
AC	1	81226	DECAL, LOGO, 2.75 X 8.25
AD	1	77505	DECAL, WARNING
AE	1	75250	DECAL - SAFETY
AF	1	106921	DECAL, ATTENTION
AG	1	106299	CLAMP,HOSE,12,SS
AH	1	106627	ELBOW,12HB/08MP,POLY
AJ	4.5	87624	HOSE,PVC,CLEAR,REINFORCED,3/4"

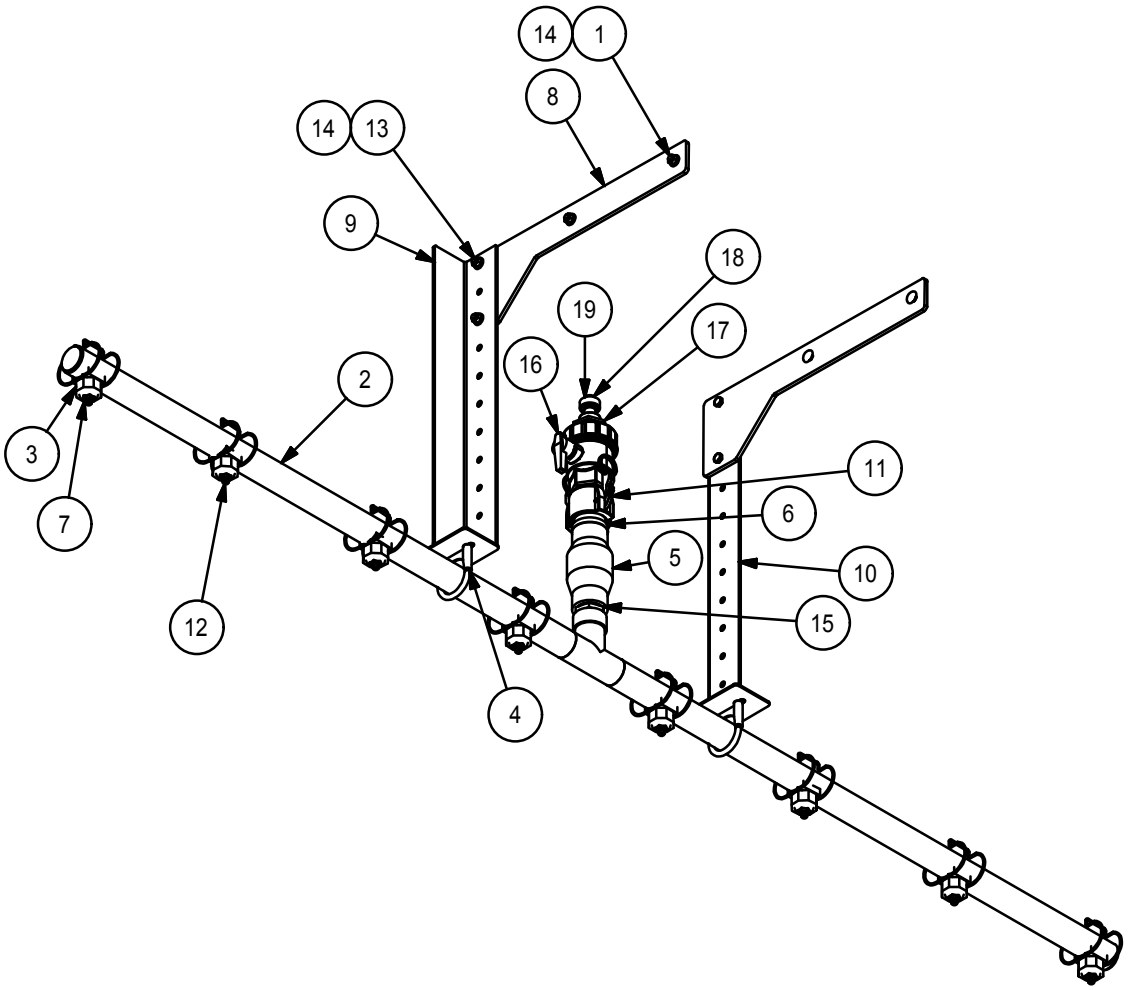


141308_Cntrl_Box

BOOM, SINGLE LANE, CHUTE MOUNTING

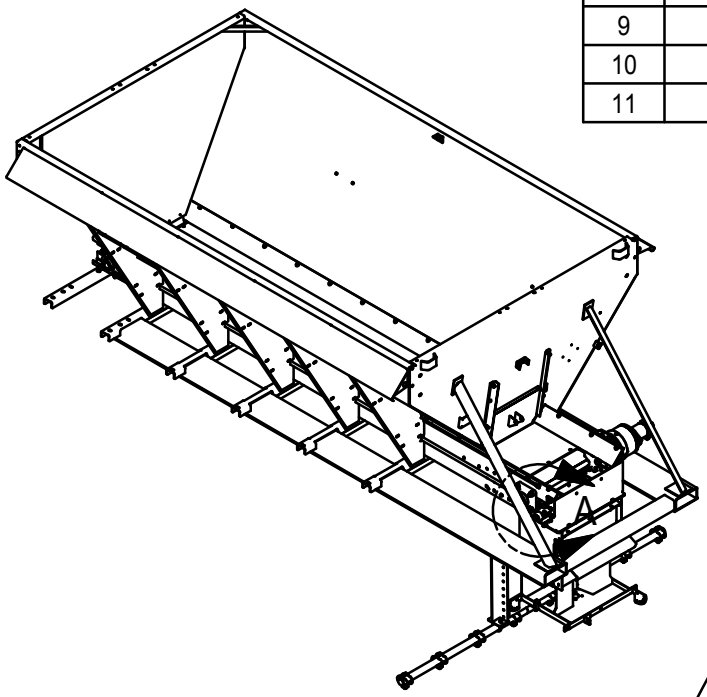
PARTS LIST				
ITEM	PART NO	304SS	QTY	DESCRIPTION
1	10541	50801	4	BOLT,CRRG,3/8NC X 1
2	108339	108339	1	TUBE, WLDT,CENTER, BOOM, LAS
3	109694	109694	8	HOLDER, NOZZLE BODY
4	109695	109695	2	U-BOLT,2" CLAMP,SS
5	109700	109700	1	VALVE,CHECK,SPRING,1 1/2"
6	109702	109702	1	ADAPTER,MALE,1 1/2" MP/STD
7	109706	109706	8	NOZZLE,BALL,HOLDER,PLASTIC
8	123863	123863.304	2	PLATE,BOOM MOUNTING,CHUTE
9	123869	123869.304	1	BRACKET,WLDT,BOOM MTG,LH
10	123870	123870.304	1	BRACKET,WLDT,BOOM MTG,RH
11	316203	316203	1	ADAPTER,24FC/24MP,POLY
12	330402	330402	8	NOZZLE,SPRAY,1 GPM, SOLID STREAM,BRASS
13	50335	50807	4	SCREW,CP,HX,3/8NC X 1 G5
14	74334	52765	8	NUT,WHIZLOCK,FLG,3/8-16NC
15	89713	89713	1	ADAPTER,24MP/24MP,POLY
16	106106	106106	1	VALVE,BALL,24FP/24FP,POLY
17	89413	89413	1	ADAPTER,24MP/12FP,POLY
18	87866	87866	1	ADAPTER,12MP/12HB,POLY
19	106299	106299	1	CLAMP,HOSE,12,SS

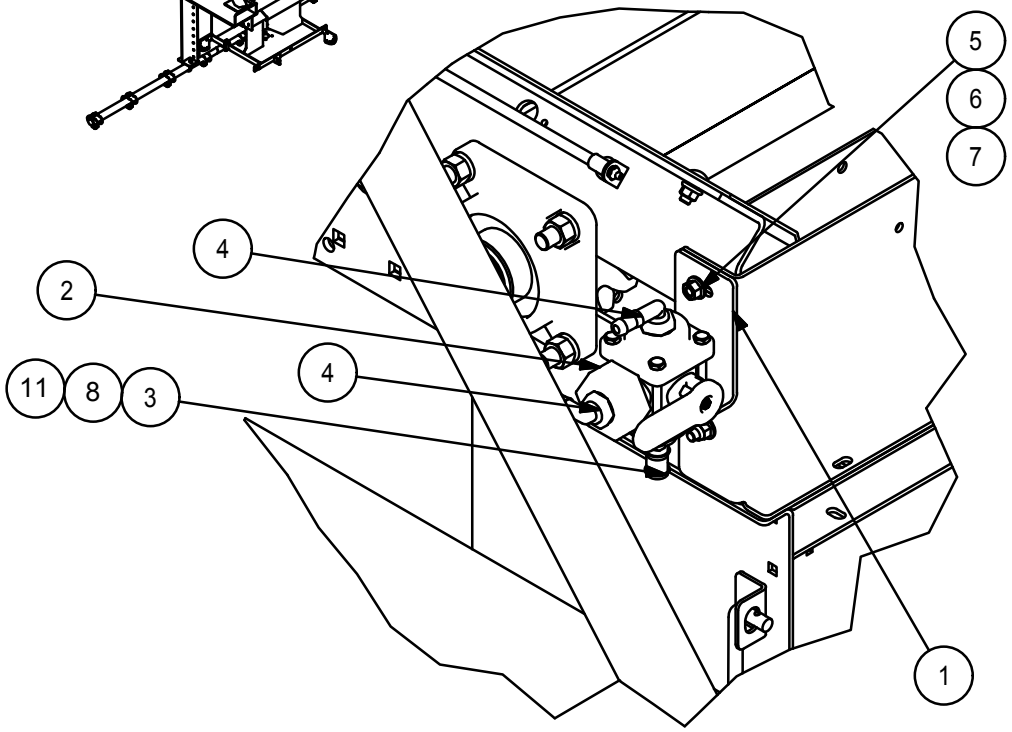
NOTE: SHIP HARDWARE AND
ITEMS 8, 9 AND 10 LOOSE



140734_PG_1

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	140733	1	VALVE MOUNT, SILL
2	HX20356	1	VALVE,3-WAY,POLY,12NPT
3	87866	1	ADAPTER,12MP/12HB,POLY
4	80876	2	ELBOW,12MP/08HB,POLY
5	50802	1	BOLT,CRRG,3/8NC X 1 1/4,SS
6	50794	1	WASHER,FLAT,3/8,SS
7	52768	1	NUT,CENTERLOCK,3/8-16NC,SS
8	106299	2	CLAMP,HOSE,12,SS
9	77017	4	CLAMP,HOSE,06,SS
10	77504	2	HOSE,PVC,CLEAR,REINFORCED,1/2"
11	87624	5	HOSE,PVC,CLEAR,REINFORCED,3/4"



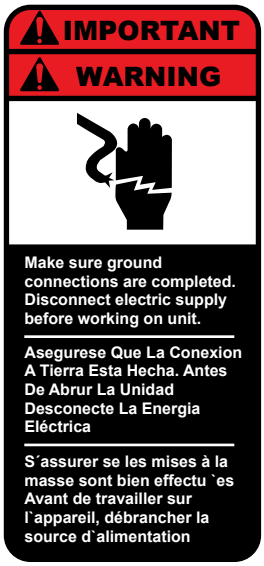


INSTRUCTIONS:

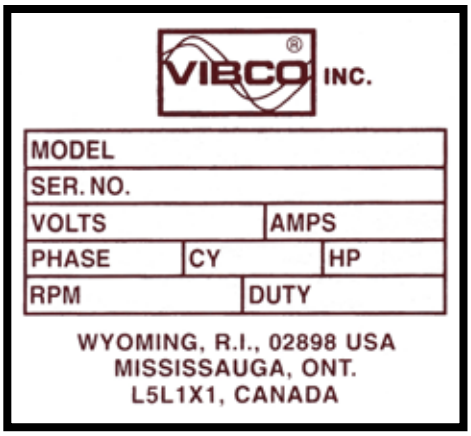
CUT PRESSURE HOSE TO PRE-WET NOZZLES AND CONNECT TO INLET OF VALVE PART NO. HX20356. CONNECT PRE-WET HOSE TO PART NO. 80876 ON TOP OF VALVE AND BOOM TO PART NO. 87866 ON BOTTOM OF VALVE.

140734_PG_2

WARNING!
Do not operate with counterweight guards removed. Whenever the covers are removed make sure that the power is turned off and locked so it cannot be turned on accidentally.
Location: On body of vibrator.



WARNING!
Make sure ground connections are completed. Before working on unit, disconnect electric supply.
Location: Wrapped around end of cord.



Please have the information on this tag ready when ordering parts or contacting the technical service department at VIBCO.
Location: On top of conduit box.
DC-3500: Sticker on round motor.

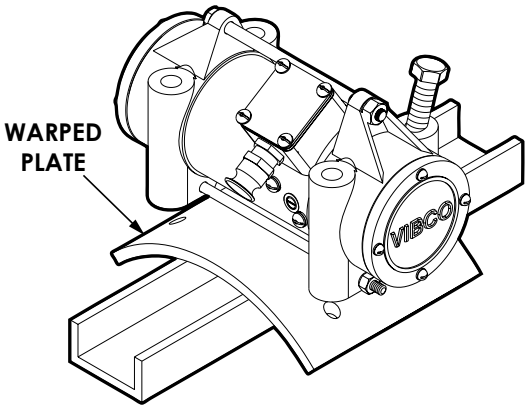
MOUNTING INSTRUCTIONS CHECKLIST

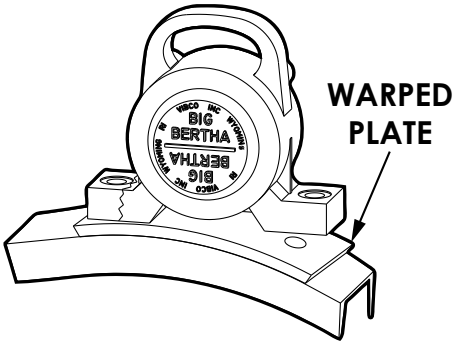
The warranty is void if vibrator is not properly installed. During installation follow and check off the following steps and your vibrator should provide you with years of trouble-free service.

- □ Determine the length of the channel iron.
- □ Select thickness of vibrator mounting plate and method of mounting.
- □ **STITCH** Weld mounting plate to channel iron.
- □ Determine where vibrator should be placed on the bin.
- □ **STITCH** Weld channel iron to bin.
- □ Place vibrator on mounting plate. It is important that you ***check the mounting plate for any warping***. Secure vibrator firmly.
- □ Install safety chain or wire.
- □ Connect electrical wiring.
- □ ***FILL OUT WARRANTY CARD!!!***

Important Safety Instructions

When installing vibrator, make sure that the rotary motion of the vibrator is in the direction of flow (the length of the vibrators body should be 90 degrees or perpendicular to the direction of flow). Secure one end of vibrator to the mounting plate using one or two bolts (depending on the model). If mounting plate is warped or bent due to welding, shim the opposite end of vibrator (over-shim slightly) and tighten remaining mounting bolt(s) to 260 ft-lbs. Remove end cover on vibrator and spin shaft with finger, it should spin freely - if not, re-shim vibrator (does not apply to DC-60, DC-500, or DC-3500). Retighten the bolts after the first 10-15 minutes of running, then check them periodically for tightness. When mounting the DC-3500 secure vibrator with one bolt (use Loctite 242 or equal), and lock washer. Shim opposite foot (overshim slightly), then tighten other bolt.





Note: A loose vibrator can cause damage to the bin and may also get electrically overloaded, which could cause motor burnout. Be sure to install a safety chain or cable to vibrator. Adhere to any other local, state or federal safety codes that may apply.

For no weld, bolt on installations contact the technical service department at VIBCO at 1-800- 633-0032.

OPERATING INSTRUCTIONS

Duty Cycle
VIBCO's 12 and 24 volt DC vibrators are rated for either continuous, intermittent or limited intermittent duty.

Models DC-20, DC-60, DC-100, DC-200, DC-300, DC-450 and DC-500 are rated for **continuous duty**. Be sure to use a continuous duty solenoid (VIBCO part number 1500PF56).

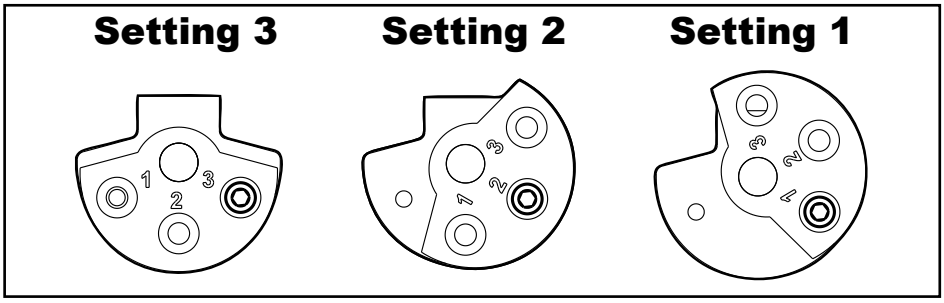
Models DC-700, DC-900 and DC-1600 are rated for **intermittent duty**. Running time for these vibrators should not exceed 30 minutes in any 60 minute period. Continuous duty solenoids (VIBCO part number SW-266) should be used with these units. Drilling holes in the end covers to provide the unit with ventilation can increase the duty cycle. The duty cycle must be determined in each particular application. A temperature test of the field casing can help to determine the duty cycle. Temperature should not exceed 180 degrees Fahrenheit. Longer duty cycles can considerably decrease brush life, and VIBCO's liability under the warranty does not cover duty cycles longer than those stated above.

Models DC-3500 and DC-5000 are rated for **limited intermittent duty only**. Maximum continuous running time should not exceed 30 seconds, with a minimum of one (1) minute off time. Total running time in any 60 minute period is 20 minutes.

Lubrication
All DC vibrator bearings are pre-lubricated to last for the life of the vibrator.

ADJUSTING ECCENTRICS

Models **DC-20, 50, 60, 450, 500, 700** have a fixed force settings and cannot be adjusted. **DC-100** has a single end for adjustment as shown below. **DC-200, DC-300, DC-900 and DC-1600** have eccentrics on both ends of the motor. Setting 3 is the maximum and is the rated force output. Setting 2 is the standard and is approximately 2/3 of the maximum force output. Setting 1 is approximately 1/2 of the maximum force output.



To change the eccentric setting, remove both end covers and the eccentric screws, place the eccentrics at the desired setting and replace the screws and end covers (see example) Be sure to set the eccentric on both sides of the vibrator to the same setting (see Figures 20 & 21).

ELECTRICAL INSTALLATION PROCEDURE

The electrical hook-up consists of two circuits, a master circuit and a pilot circuit (except DC-20, see previous page). The master circuit supplies the motor with current and must be able to carry the vibrators rated amperage. The pilot circuit is the controlling circuit, and carries only a small current between the switch on the dashboard and the solenoid, connecting or disconnecting the master circuit. The supplies needed for hooking up each model are listed on the previous page.

Mount the solenoid in a convenient location. Note that the solenoid grounds through its body, so make sure that it is mounted to a well grounded surface.

Cut off enough large cable to run from the vibrator to one of the solenoids large terminals. On dump bodies, be sure to guide cable around the pivot so that it will not be pinched by the beds movement.

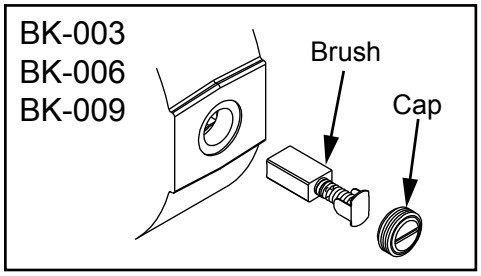
Run the balance of the large cable from the other large terminal to the positive battery terminal (if the truck is grounded from the positive terminal, connect cable to the negative battery terminal).

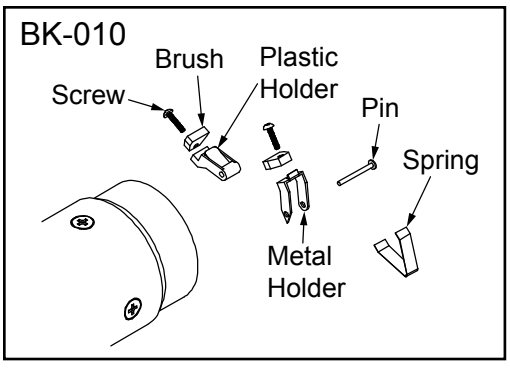
Select a convenient location on the truck dashboard for the switch. Using the small cable, connect one terminal on the switch to the small terminal on the solenoid (on solenoids with two small terminals, connect to the terminal marked “S”). Run another length of small cable from the other switch terminal to a power source. This cable can be connected to the ignition switch, so that when the ignition is turned off, the vibrator cannot be operated (see figure 1).

NOTE: Warranty will be void if circuit breaker is not installed.

BRUSH KIT REPLACEMENT

Model Number	Brush Kit	Parts in Kit Brushes, Caps & Accessories	Brush Length Replacement
DC-900 DC-1600	BK-003	(2)900-12-1B (2)900US10	5/16” or less
DC-100 DC-200 DC-300 DC-500	BK-006	(2)33DC014 (2)33DC016	3/8” or less
DC-450T DC-700	BK-009	(2)300US60-15 (2)300US59-13	5/16” or less
DC-3500 DC-5000	BK-010	(4)1500PF41 (2)1500PF42 (2)1500PF43 (4)1500PF44 (2)1500PF45 (2)1500PF46	5/16” or less





TROUBLESHOOTING

1.) Vibrator doesn't start.

Make sure vibrator is getting power. Check fuses and make sure all connections are properly secured.

New installations should insure that the vibrator is properly grounded to the frame. If the vibrator is not mounted to the main frame, such as on a pivoted truck body, make sure the body is grounded to the main frame.

The vibrator is designed to ground through the foot. For more positive grounding, use the grounding strap provided in the wiring kit.

Make sure push button or on/off switch and solenoid are in proper working order. If damaged or non functioning, replace.

2.) Vibrator is running slow (loss of RPM).

Measure motor voltage. If less than 12 volts DC, wire size should be increased.

Check the brushes and change if necessary. The life of the brushes is approximately 1,000 hours. The brush life is dependent on the duty cycle.

3.) An unusual sound (banging) coming from the vibrator. This usually means that the mounting is cracked, or the vibrator is loose.

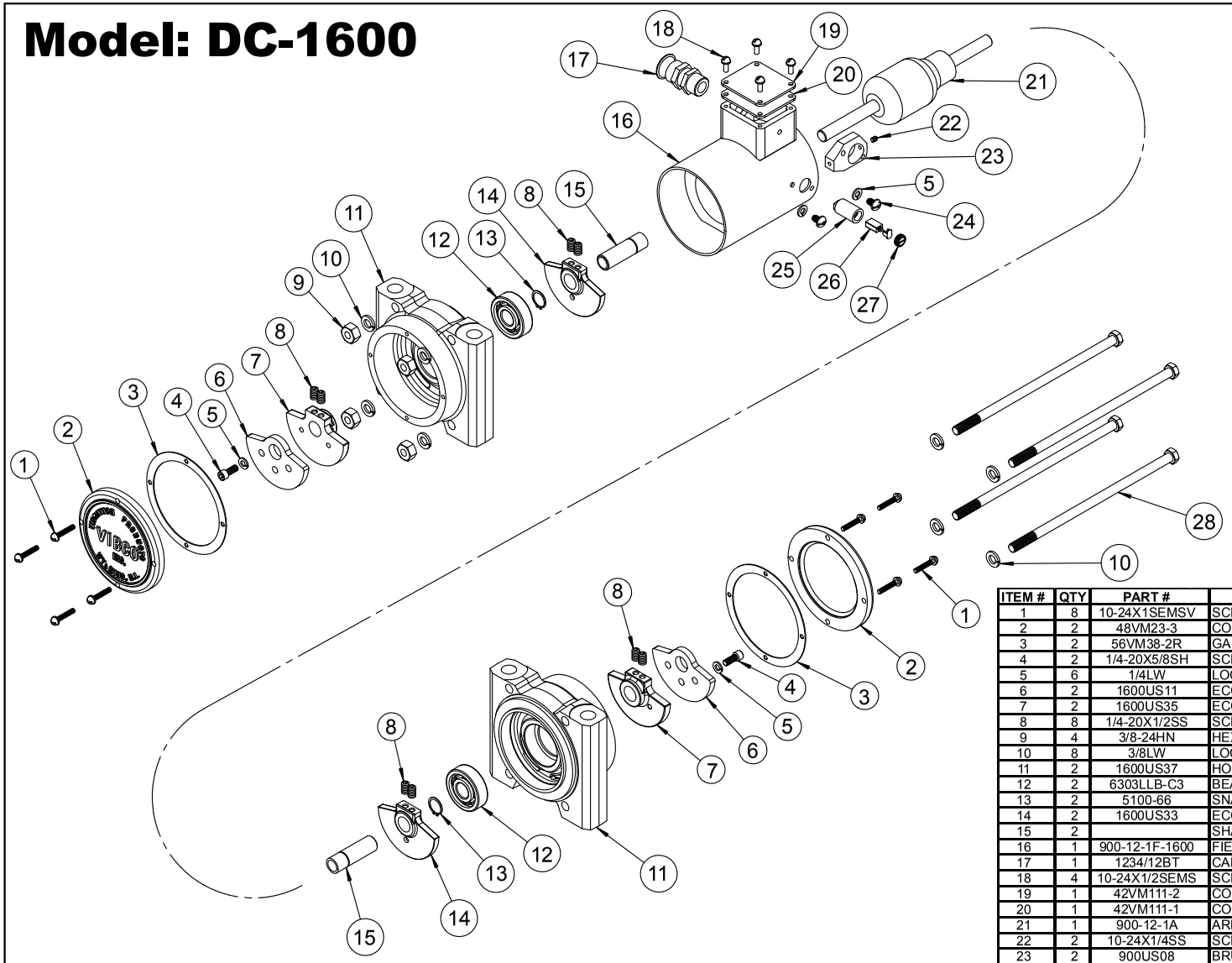
Check the vibrator mounting bolts for tightness.

Check the mounting structure.

New installations may be too weak. Reinforce mount area immediately by adding stiffeners-angle iron or channel iron.

In existing installations look for cracks in mounting angle iron or plates. Also look for fatigued or cracked welds. Repair and reinforce immediately.

Model: DC-1600



ITEM #	QTY	PART #	DESCRIPTION
1	8	10-24X1SEMSV	SCREW, ROUND HEAD MACHINE
2	2	48VM23-3	COVER
3	2	56VM38-2R	GASKET, RUBBER
4	2	1/4-20X5/8SH	SCREW, SOCKET HEAD CAP
5	6	1/4LW	LOCK WASHER
6	2	1600US11	ECCENTRIC, ADJUSTABLE
7	2	1600US35	ECCENTRIC, OUTSIDE
8	8	1/4-20X1/2SS	SCREW, SOCKET SET
9	4	3/8-24HN	HEX NUT
10	8	3/8LW	LOCK WASHER
11	2	1600US37	HOUSING, END BELL
12	2	6303LLB-C3	BEARING
13	2	5100-66	SNAP RING
14	2	1600US33	ECCENTRIC, INSIDE
15	2		SHAFT BUSHING (ARMATURE ASSEMBLY)
16	1	900-12-1F-1600	FIELD, DC-1600
17	1	1234/12BT	CABLE CONNECTOR
18	4	10-24X1/2SEMS	SCEW, ROUND HEAD MACHINE
19	1	42VM111-2	CONDUIT BOX COVER
20	1	42VM111-1	COVER GASKET
21	1	900-12-1A	ARMATURE ASSEMBLY
22	2	10-24X1/4SS	SCREW, SOCKET SET
23	2	900US08	BRUSH HOLDER BRACKET
24	4	10-24X3/8RH	SCREW, ROUND HEAD MACHINE
25	2	900US09	BRUSH HOLDER
26	2	900-12-1B	BRUSH
27	2	900US10	BRUSH CAP

PHONE: 1-800-633-0032 FAX: 1-401-539-2584
WWW.VIBCO.COM VIBRATORS@VIBCO.COM

REV295-13

THIS PAGE

IS LEFT BLANK

INTENTIONALLY.

SNOWFOE® SERIES
MODEL: Reversible Snow Plow
SERIAL #: _____

INSTRUCTIONS FOR ORDERING PARTS

Order parts from the authorized dealer covering your area.

DEALER:_____
Phone #: _____

ALWAYS GIVE THE MODEL AND SERIAL NUMBER.

To obtain parts promptly, give part name and part number.

Give post office address, town, and state where the parts are to be shipped. UPS (United Parcel Service) and other carriers will not ship to a post office box. You must use a street address. Also be sure to specify whether material is to be shipped by freight, express, parcel post, or UPS. All UPS shipments will be normal surface routing unless specified otherwise.

Confirm all telephone or FAX orders in writing.

Credit for new parts not needed must be obtained from the dealer from whom they were purchased.

Unless claims for shortages or errors are made immediately upon receipt of goods, they will not be considered.

Inspect all goods received immediately upon receipt. When damaged goods are received, insist that a full description of the damage be made by the carrier agent on the freight bill. If this description is insisted upon, full damage can be collected from the transportation company.

No responsibility is assumed for delay or damage to merchandise while in transit. Dealer's responsibility ceases upon delivery of shipment to the transportation company from whom a receipt is received showing that shipment was in good condition when delivered to them; therefore, claims (if any) should be filed with the transportation company and not with the dealer.

ALASKA 2014 – 2018

Reversible Snow Plow

TABLE OF CONTENTS

ALASKA
RSP

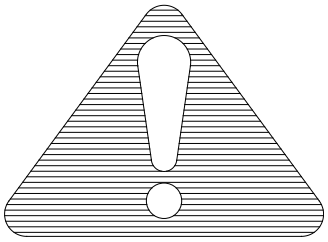
SAFETY INFORMATION

SAFETY

The Safety-Alert Symbol.

This symbol is on safety signs on the equipment and in the manual.

This symbol indicates to you the potential for personal injury and/or property damage.



Hazard Seriousness Levels.

The DANGER signal word indicates - immediate hazards which WILL result in severe personal injury or death.

The WARNING signal word indicates - hazards or unsafe practices which COULD result in severe personal injury or death.

The CAUTION signal word indicates - hazards or unsafe practices which COULD result in minor personal injury or product or property damage.

 Persons who install, mount, operate, or service this equipment must be properly instructed and warned. Do not let anyone operate equipment without instruction.

 Read operator manuals completely before operating equipment. Learn how to operate controls properly.

 Read decal instructions, cautions, and warnings. Read the safety messages in this manual and on safety decals on the snowplow unit. Replace missing or damaged safety decals.

 Unauthorized modifications to the snowplow and related components may impair the function and/or safety.

IN SEASON MAINTENANCE

- Snow removal equipment must be cared for and maintained regularly. Daily or pre-route inspection and maintenance are necessary. Failure to do so may affect efficiency, wear life or safety.

- A visual inspection must be carried out after every eight hours of operation. Look for damaged components, bends, cracked welds or hydraulic leaks. Repair immediately. It is recommended to re-torque all bolts after the first eight hours of use and to regularly check for loosened or missing fasteners. Replace any damaged fasteners immediately.

- Because of the environment in which snow equipment is expected to operate, hydraulic lines, fasteners, wearable or replaceable items and warning decals may become damaged by snow, ice and road debris. These items must be inspected daily and replaced if necessary to avoid equipment damage or personal injury.

- Lubrication of moving parts is of utmost importance. Exposure to snow, ice, salt and road debris will wash away lubrication quickly and it may be necessary to inspect and reapply lubrication more than once a day.

OFF SEASON MAINTENANCE

- Mounting bolts are Grade 8 cap screws with hardened flat washers. Care should be taken not to mix or misplace them when the snowplow is removed during the off-season. Be sure to replace any fasteners with damaged threads.

- All hydraulic cylinders should be fully retracted when stored, if possible, during the off-season to prevent damage, corrosion, or contamination. Remaining exposed shaft surface is to be coated with a moisture displacement, such as a thick grease, which should be removed before returning to regular service.

- When disconnecting hydraulic lines, valves, and so forth insure that dirt and other forms of contamination do not enter the system. Use caps for covering hydraulic hose fittings and install plugs in hydraulic ports.

OPERATING INSTRUCTIONS

- Inspect all fasteners prior to use. Replace broken or worn parts immediately. Re-torque loose fittings to SAE standards (see chart in back of manual).

- Do not attempt to plow snow with the plow suspended off the ground. Serious damage to the snowplow may result as well as subjecting the front axle assembly to possible overload.

- Do not back up with the snow plow cutting edge on the ground if using any type of carrying devise (i.e. running gear). Always raise the snow plow before putting the truck in reverse. Failure to do so will result in damage to carrying devices and/or the snow plow.

- If the snowplow is equipped with quick hitch mechanism, inspect all attaching parts, springs, and latches prior to use.

- Inspect the cutting edge prior to each use and at various intervals during the period of use to inspect for wear, loose or missing fasteners, and breakage. Repair or replace as needed. Do not attempt to wear cutting edge beyond useable life to avoid damage to bottom moldboard support structure (frog). In order to preserve the chrome-plated shafts on hydraulic cylinders, the hydraulic cylinder should be operated at least once each day. This is particularly important for those cylinders that operate in a normally extended position. This operation allows oil to penetrate the "pores" of the chrome to prevent rusting. When storing units for the off season, insure that hydraulic cylinders are stored in the fully collapsed position if possible, and that all ports, hoses, etc., have been capped or plugged to prevent the introduction of moisture and contaminants.

HYDRAULIC SYSTEM REQUIREMENTS

PUMP SIZE	20 gpm
CONTROL VALVES	
Plow lift function	7-10 gpm
Reversing function	7-10 gpm
RELIEF PRESSURE	2000 psi
FILTRATION	10 micron rating
HOSE	0.50 dia. SAE 100R2 minimum

THIS PAGE

IS LEFT BLANK

INTENTIONALLY.

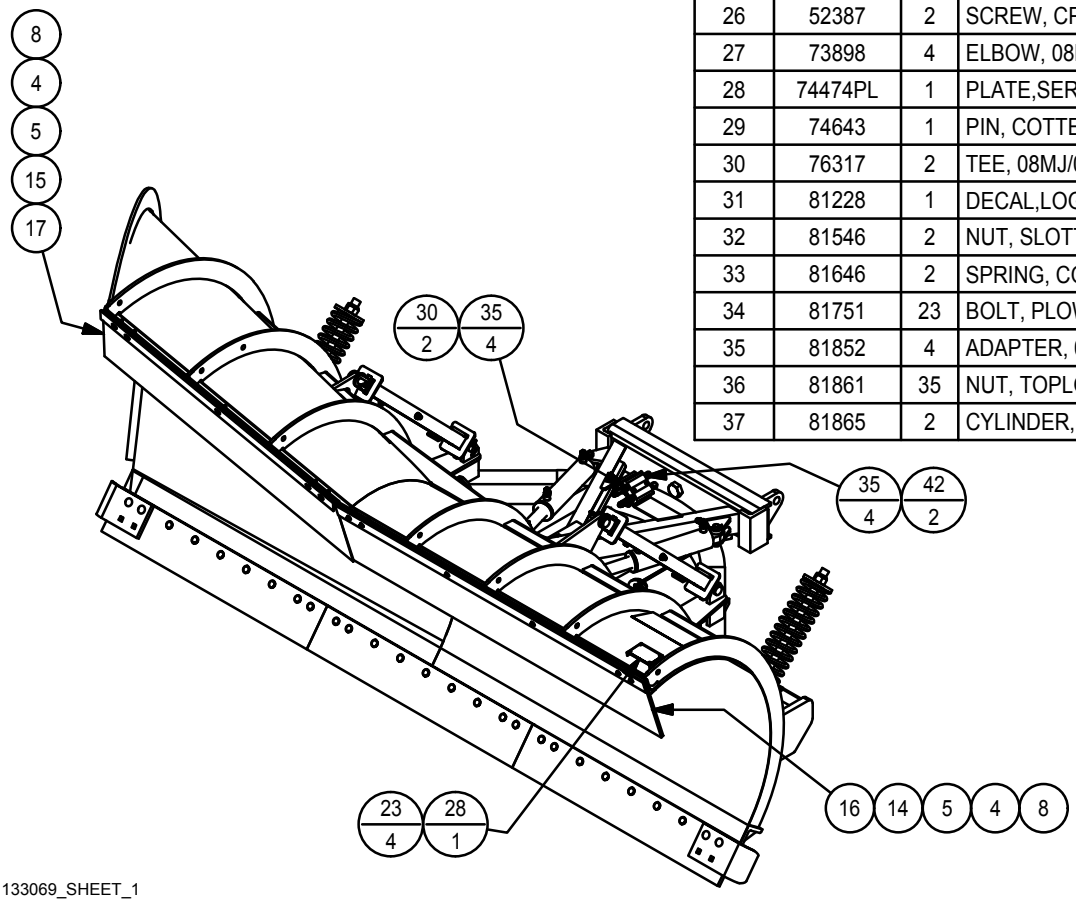
ALASKA
RSP

PARTS

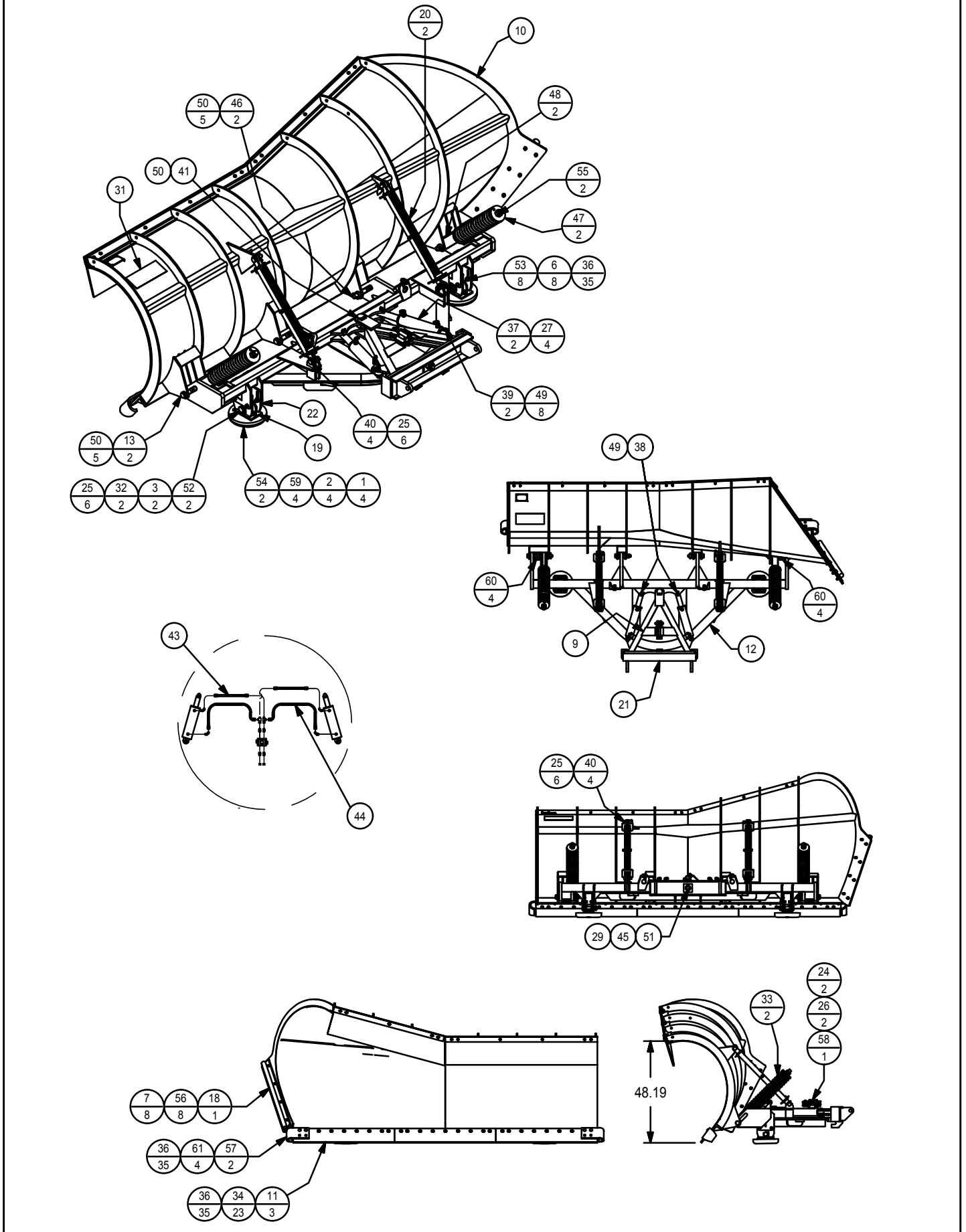
MOLDBARD ASSEMBLY, RSP, SLOTTED TRIP - PRIOR TO 2015

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
38	81870	2	PIN,1.00 X 4.62
39	81871	2	PIN, 1.00 X 3.88
40	81875	4	PIN, 1.00 X 3.25
41	81876	1	PIN, 1.75 X 6.75
42	81880	2	CAP, 08FJ
43	81921	2	HOSE, ASM
44	81922	2	HOSE, ASM
45	81929	1	NUT, HEX, SLOTTED, 1 1/2NC, G8
46	81991	2	PIN,1.25 X 7.25
47	81994	2	CAP, SPRING, WLDT, 1 3/8 ID
48	81996	2	GUIDE, SPRING, WLDT
49	82150	8	PIN,EXPNSN,1/4 X 2
50	82151	5	PIN, EXPANSION, 3/8 X 2 1/2
51	82439	1	SCREW, CP, HX, 1 1/2NC X 4, WHOLE
52	82725	2	SCREW, CP, HX, 1/14 X 6, W/HOLE
53	82819	8	SCREW, CP, HX, 5/8NC X 2, G8
54	83287H	2	SHOE, MUSHROOM, GREY IRON
55	83318	2	NUT, HEX, 1 1/4-7NC, SLFLKG
56	85978	8	SCREW, CP, HX, 1/2NC X 2, G8
57	86980	2	CURB GUARD, WRAPAROUND
58	87748	1	VALVE, CUSHION
59	95458	4	SCREW, SQHCS, 3/4NC X 2 1/2
60	96039	4	ROLLER, 3.75 OD, OWP
61	96371	4	BOLT,CRRG,5/8NC X 3,G8

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	00188	4	NUT,HEX,3/4-10NC
2	00189	4	WASHER,LOCK,3/4 ID,SPRING,CP
3	10006	2	WASHER, FLAT, STD, 1 1/4 ID
4	10086	11	SCREW,CP,HX,3/8NC X 1 3/4 G5
5	10538	11	WASHER, FLAT, STD, 3/8 ID
6	10557	8	WASHER,FLAT,STD,5/8,ZP
7	11021	8	NUT.LOCK,NYLON INSERT,1/2-13NC
8	111430	11	NUT,HEX,3/8-16NC,SLFLKG,NYLON
9	120977	1	A-FRAME, WLDT FOR .75 ANGLE
10	133070	1	MLDBRD, WLDT, 48-66-12' EXPRSSWY, AK
11	133076	3	EDGE, CUTTING, 5/8 X 8 X 4'
12	133077	1	PUSHFRAME, WLDT, ST, ALASKA
13	133619	2	PIN,1.25 X 11.75
14	133623	1	PLATE, BACKING, 72"
15	133624	1	PLATE, BACKING, 73.38"
16	133878	1	DEFLECTOR, RUBBER, LOGO, 10'
17	133879	1	DEFLECTOR, RUBBER, LOGO, RH, AL DOT
18	133883	1	RUB RAIL, WLDT
19	133909	2	BRACKET, SWIVEL, MUSHROOM SHOE
20	133915	2	STRUT ASSEMBLY, SLOTTED TRIP, AK
21	133916	1	HITCH, WLDT, PIN, PLOW, 30.5", AK
22	133921	2	BRACKET, WLDT, SHOE
23	50252	4	RIVET,POP,5/32,SS
24	50414	2	NUT,TOPLOCK,FLG,5/16-18NC
25	50601	6	PIN, COTTER, 1/4 X 2 1/4
26	52387	2	SCREW, CP, HX, 5/16NC X 2 1/2, G5
27	73898	4	ELBOW, 08MJ/08MB
28	74474PL	1	PLATE,SERIAL
29	74643	1	PIN, COTTER, 1/4 X 3
30	76317	2	TEE, 08MJ/08FJX/08MJ
31	81228	1	DECAL,LOGO, 5.3 X 13.4
32	81546	2	NUT, SLOTTED, 1 1/4NF, G5
33	81646	2	SPRING, COMP, .719 X 5.313 X 23.25
34	81751	23	BOLT, PLOW, 5/8-11NC X 2 1/2, G8
35	81852	4	ADAPTER, 08MJ/08MB
36	81861	35	NUT, TOPLOCK, 5/8-11NC, G8
37	81865	2	CYLINDER, 3-10, 1.5 ROD, NITRIDED



133069_SHEET_1

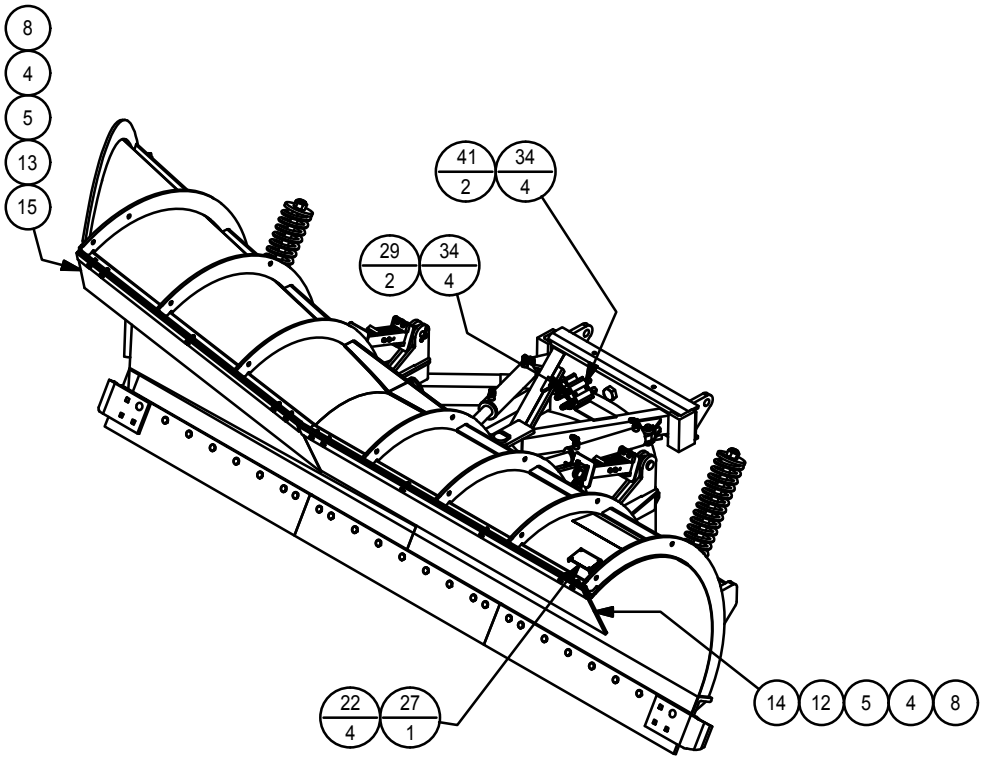


133069_Page_2

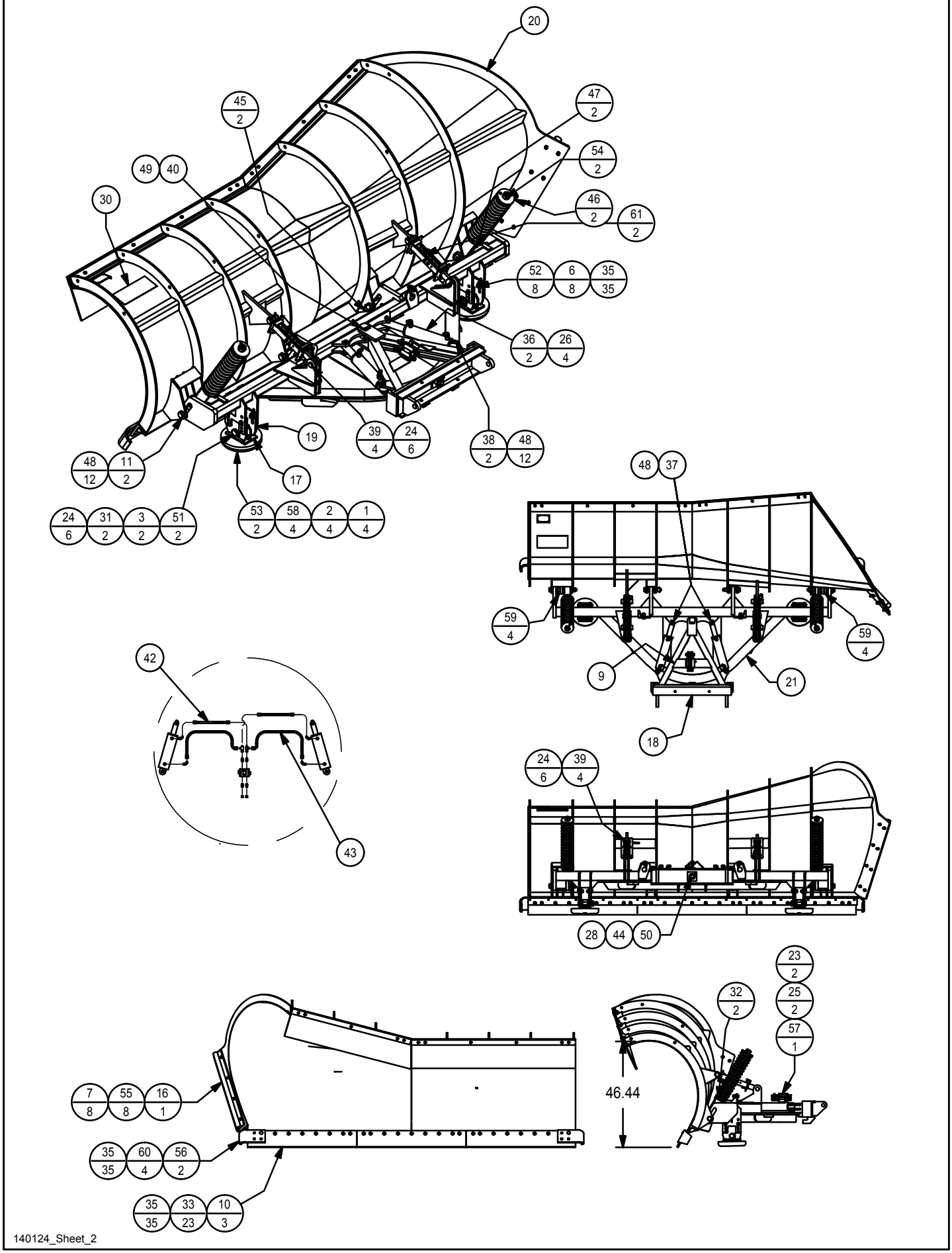
MOLDBOARD ASSEMBLY,RSP,SLOTTED TRIP - 2015

PARTS LIST				PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION	ITEM	PART NO	QTY	DESCRIPTION
1	00188	4	NUT,HEX,3/4-10NC	32	81646	2	SPRING, COMP, .719 X 5.313 X 23.25
2	00189	4	WASHER,LOCK,3/4 ID,SPRING,CP	33	81751	23	BOLT, PLOW, 5/8-11NC X 2 1/2, G8
3	10006	2	WASHER, FLAT, STD, 1 1/4 ID	34	81852	4	ADAPTER, 08MJ/08MB
4	10086	11	SCREW,CP,HX,3/8NC X 1 3/4 G5	35	81861	35	NUT, TOPLOCK, 5/8-11NC, G8
5	10538	11	WASHER, FLAT, STD, 3/8 ID	36	81865	2	CYLINDER, 3-10, 1.5 ROD, NITRIDED
6	10557	8	WASHER,FLAT,5/8	37	81870	2	PIN,1.00 X 4.62
7	11021	8	NUT.LOCK,NYLON INSERT,1/2-13NC	38	81871	2	PIN, 1.00 X 3.88
8	111430	11	NUT,HEX,3/8-16NC,SLFLKG,NYLON	39	81875	4	PIN, 1.00 X 3.25
9	120977	1	A-FRAME, WLDT FOR .75 ANGLE	40	81876	1	PIN, 1.75 X 6.75
10	133076	3	EDGE, CUTTING, 5/8 X 8 X 4'	41	81880	2	CAP, 08FJ
11	133619	2	PIN,1.25 X 11.75	42	81921	2	HOSE, ASM
12	133623	1	PLATE, BACKING, 72"	43	81922	2	HOSE, ASM
13	133624	1	PLATE, BACKING, 73.38"	44	81929	1	NUT, HEX, SLOTTED, 1 1/2NC, G8
14	133878	1	DEFLECTOR, RUBBER, LOGO, 10'	45	81991	2	PIN,1.25 X 7.25
15	133879	1	DEFLECTOR, RUBBER, LOGO, RH, AK DOT	46	81994	2	CAP, SPRING, WLDT, 1 3/8 ID
16	133883	1	RUB RAIL, WLDT	47	81996	2	GUIDE, SPRING, WLDT
17	133909	2	BRACKET, SWIVEL, MUSHROOM SHOE	48	82150	12	PIN,EXPNSN,1/4 X 2
18	133916	1	HITCH, WLDT, PIN, PLOW, 30.5", AK	49	82151	1	PIN, EXPANSION, 3/8 X 2 1/2
19	141618	2	BRACKET, WLDT, SHOE	50	82439	1	SCREW, CP, HX, 1 1/2NC X 4, WHOLE
20	140125	1	MLDBRD, WLDT, 48-66-12' EXPRSSWY, AK	51	82725	2	SCREW, CP, HX, 1/14 X 6, W/HOLE
21	140130	1	PUSHFRAME, WLDT, ST, ALASKA	52	82819	8	SCREW, CP, HX, 5/8NC X 2, G8
22	50252	4	RIVET,POP,5/32,SS	53	83287H	2	SHOE, MUSHROOM, GREY IRON
23	50414	2	NUT,TOPLOCK,FLG,5/16-18NC	54	83318	2	NUT, HEX, 1 1/4-7NC, SLFLKG
24	50601	6	PIN, COTTER, 1/4 X 2 1/4	55	85978	8	SCREW, CP, HX, 1/2NC X 2, G8
25	52387	2	SCREW, CP, HX, 5/16NC X 2 1/2, G5	56	86980	2	GUARD,CURB WRAP AROUND
26	73898	4	ELBOW, 08MJ/08MB	57	87748	1	VALVE, CUSHION
27	74474	1	PLATE,SERIAL	58	95458	4	SCREW, SQHCS, 3/4NC X 2 1/2
28	74643	1	PIN, COTTER, 1/4 X 3	59	96039	4	ROLLER, 3.75 OD, OWP
29	76317	2	TEE, 08MJ/08FJX/08MJ	60	96371	4	BOLT,CRRG,5/8NC X 3,G8
30	81228	1	DECAL,LOGO, 5.3 X 13.4	61	142030	2	STRUT, ASSEMBLY, SLOTTED TRIP, AK 2015
31	81546	2	NUT, SLOTTED, 1 1/4NF, G5				

COMPLETE ASSEMBLY: #140124

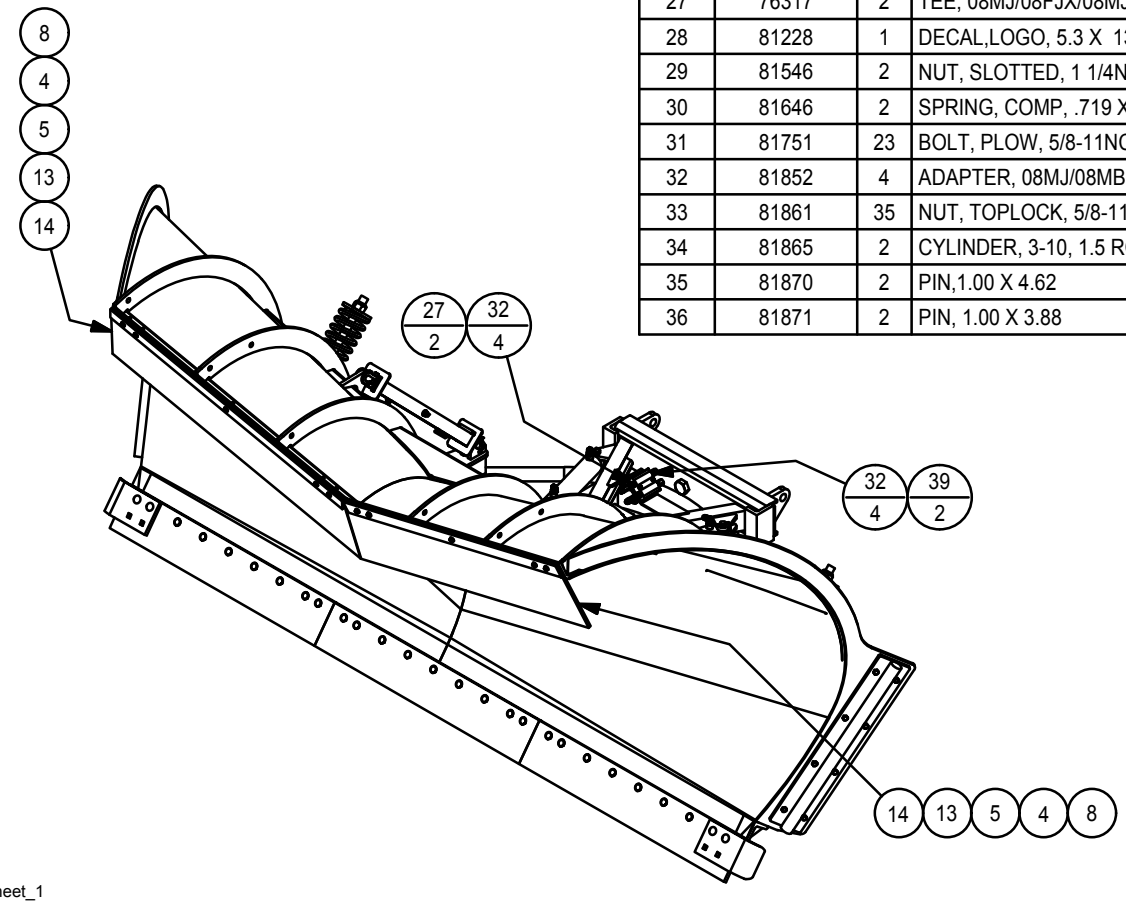


140124_Sheet_1

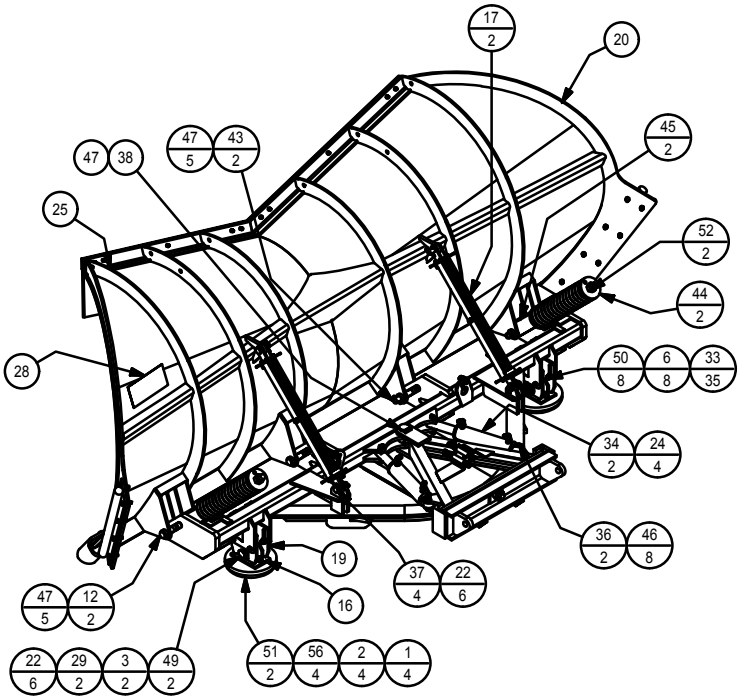

20
45 2
47 2
54 2
49 40
30
46 2
61 2
52 8
6 8
35 35
36 2
26 4
19
39 4
24 6
38 2
48 12
48 12
11 2
17
24 6
31 2
3 2
51 2
53 2
58 4
2 4
1 4
48 37
59 4
59 4
9
21
18
42
43
24 6
39 4
28
44
50
23 2
32 2
25 2
57 1
46.44
7 8
55 8
16 1
35 35
60 4
56 2
35 35
33 23
10 3
140124_Sheet_2

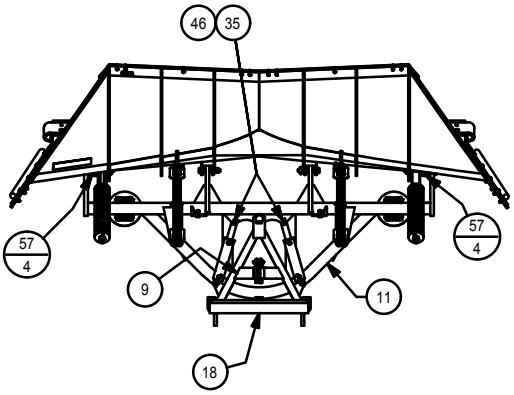
PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
37	81875	4	PIN, 1.00 X 3.25
38	81876	1	PIN, 1.75 X 6.75
39	81880	2	CAP, 08FJ
40	81921	2	HOSE, ASM
41	81922	2	HOSE, ASM
42	81929	1	NUT, HEX, SLOTTED, 1 1/2NC, G8
43	81991	2	PIN,1.25 X 7.25
44	81994	2	CAP, SPRING, WLDT, 1 3/8 ID
45	81996	2	GUIDE, SPRING, WLDT
46	82150	8	PIN,EXPNSN,1/4 X 2
47	82151	5	PIN, EXPANSION, 3/8 X 2 1/2
48	82439	1	SCREW, CP, HX, 1 1/2NC X 4, WHOLE
49	82725	2	SCREW, CP, HX, 1/14 X 6, W/HOLE
50	82819	8	SCREW, CP, HX, 5/8NC X 2, G8
51	83287H	2	SHOE, MUSHROOM, GREY IRON
52	83318	2	NUT, HEX, 1 1/4-7NC, SLFLKG
53	85978	16	SCREW, CP, HX, 1/2NC X 2, G8
54	86980	2	CURB GUARD, WRAPAROUND
55	87748	1	VALVE, CUSHION
56	95458	4	SCREW, SQHCS, 3/4NC X 2 1/2
57	96039	4	ROLLER, 3.75 OD, OWP
58	96371	4	BOLT,CRRG,5/8NC X 3,G8

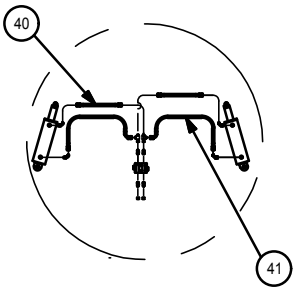
PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	00188	4	NUT,HEX,3/4-10NC
2	00189	4	WASHER,LOCK,3/4 ID,SPRING,CP
3	10006	2	WASHER, FLAT, STD, 1 1/4 ID
4	10086	10	SCREW,CP,HX,3/8NC X 1 3/4 G5
5	10538	10	WASHER, FLAT, STD, 3/8 ID
6	10557	8	WASHER,FLAT,STD,5/8,ZP
7	11021	16	NUT.LOCK,NYLON INSERT,1/2-13NC
8	111430	10	NUT,HEX,3/8-16NC,SLFLKG,NYLON
9	120977	1	A-FRAME, WLDT FOR .75 ANGLE
10	133076	3	EDGE, CUTTING, 5/8 X 8 X 4'
11	133077	1	PUSHFRAME, WLDT, ST, ALASKA
12	133619	2	PIN,1.25 X 11.75
13	133624	2	PLATE, BACKING, 73.38"
14	133879	2	DEFLECTOR, RUBBER, LOGO, RH, AL DOT
15	133883	2	RUB RAIL, WLDT
16	133909	2	BRACKET, SWIVEL, MUSHROOM SHOE
17	133915	2	STRUT ASSEMBLY, SLOTTED TRIP, AK
18	133916	1	HITCH, WLDT, PIN, PLOW, 30.5", AK
19	133921	2	BRACKET, WLDT, SHOE
20	134718	1	MLDBRD, WLDT, 48-66-12' EXPRSSWY, AK
21	50414	2	NUT,TOPLOCK,FLG,5/16-18NC
22	50601	6	PIN, COTTER, 1/4 X 2 1/4
23	52387	2	SCREW, CP, HX, 5/16NC X 2 1/2, G5
24	73898	4	ELBOW, 08MJ/08MB
25	74474	1	PLATE, SERIAL
26	74643	1	PIN, COTTER, 1/4 X 3
27	76317	2	TEE, 08MJ/08FJX/08MJ
28	81228	1	DECAL,LOGO, 5.3 X 13.4
29	81546	2	NUT, SLOTTED, 1 1/4NF, G5
30	81646	2	SPRING, COMP, .719 X 5.313 X 23.25
31	81751	23	BOLT, PLOW, 5/8-11NC X 2 1/2, G8
32	81852	4	ADAPTER, 08MJ/08MB
33	81861	35	NUT, TOPLOCK, 5/8-11NC, G8
34	81865	2	CYLINDER, 3-10, 1.5 ROD, NITRIDED
35	81870	2	PIN,1.00 X 4.62
36	81871	2	PIN, 1.00 X 3.88

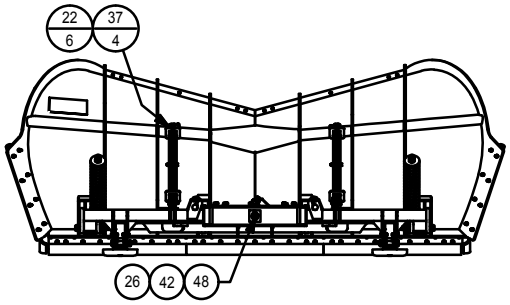


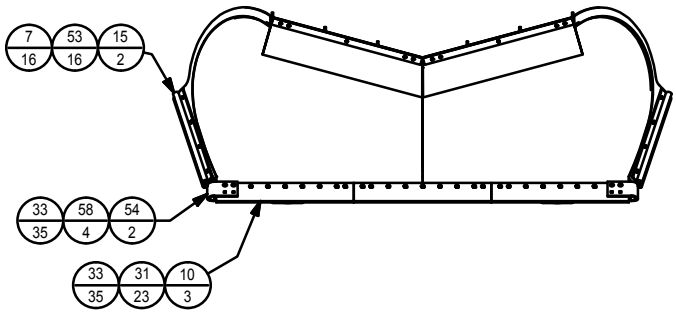
134717_Sheet_1

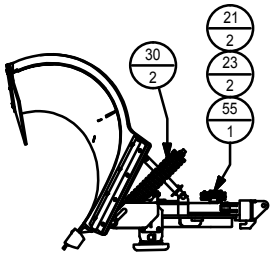








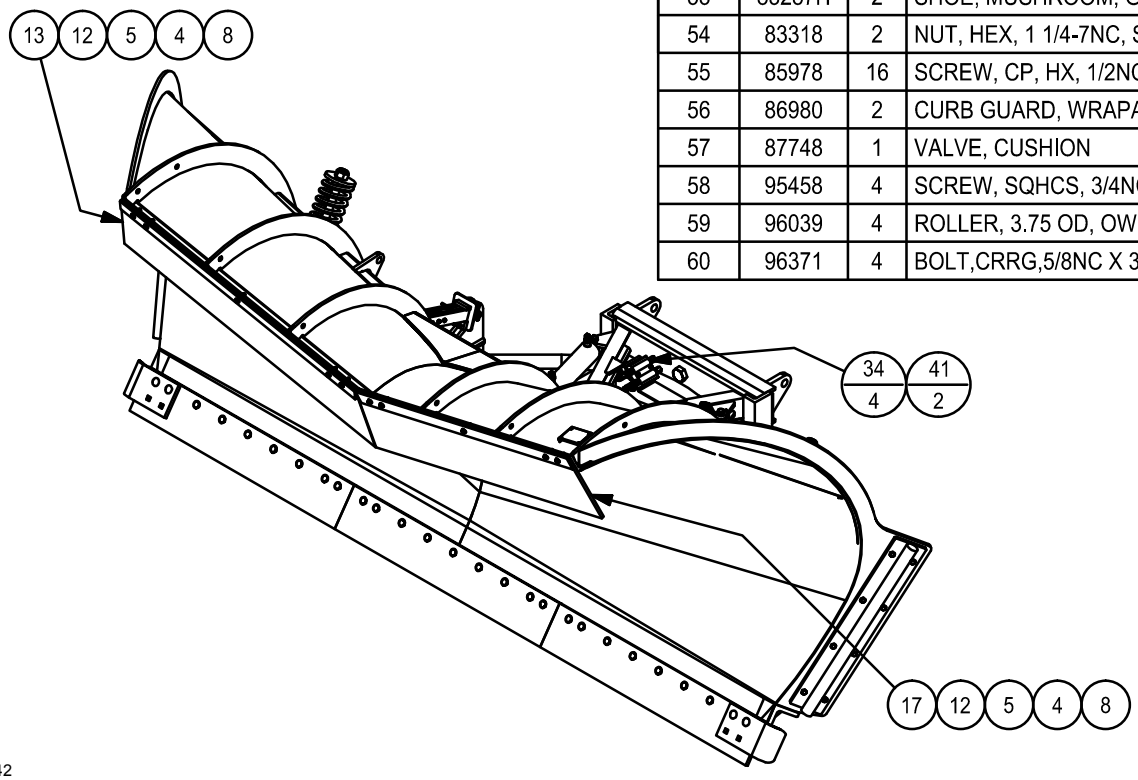




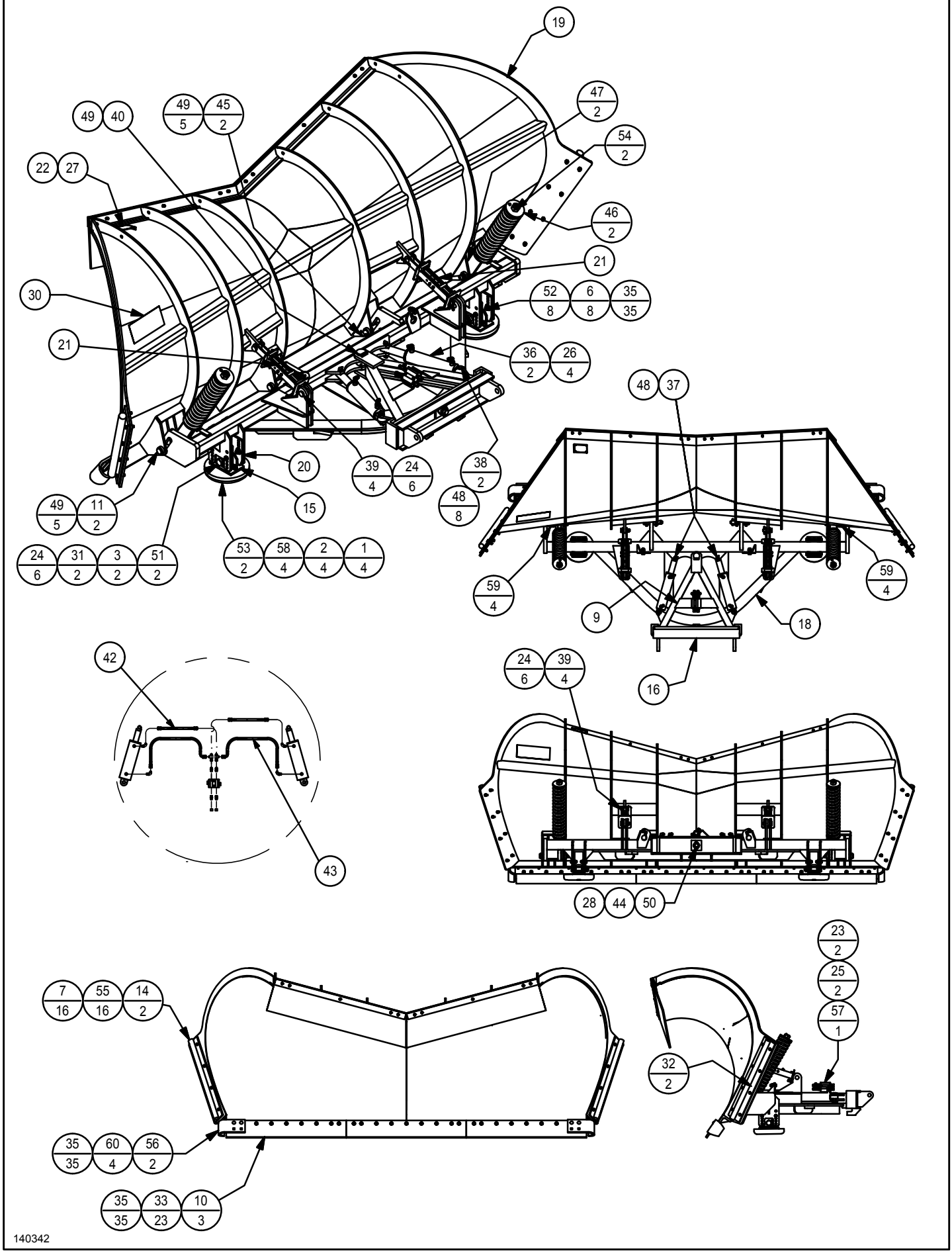
134717_Sheet_2

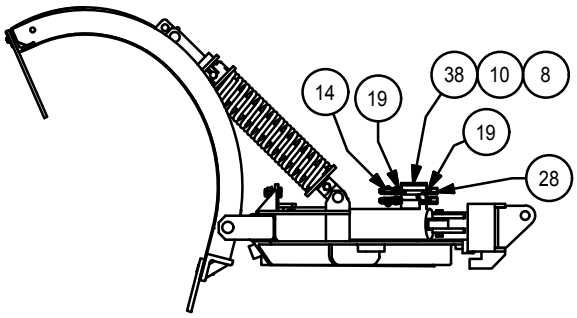
PARTS LIST			
ITEM	PART N	QTY	DESCRIPTION
1	00188	4	NUT,HEX,3/4-10NC
2	00189	4	WASHER,LOCK,3/4 ID,SPRING,CP
3	10006	2	WASHER, FLAT, STD, 1 1/4 ID
4	10086	10	SCREW,CP,HX,3/8NC X 1 3/4 G5
5	10538	10	WASHER, FLAT, STD, 3/8 ID
6	10557	8	WASHER,FLAT,5/8
7	11021	16	NUT.LOCK,NYLON INSERT,1/2-13NC
8	111430	10	NUT,HEX,3/8-16NC,SLFLKG,NYLON
9	120977	1	A-FRAME, WLDT FOR .75 ANGLE
10	133076	3	EDGE, CUTTING, 5/8 X 8 X 4'
11	133619	2	PIN,1.25 X 11.75
12	133624	2	PLATE, BACKING, 73.38"
13	133879	1	DEFLECTOR, RUBBER, LOGO, RH, AK DOT
14	133883	2	RUB RAIL, WLDT
15	133909	2	BRACKET, SWIVEL, MUSHROOM SHOE
16	133916	1	HITCH, WLDT, PIN, PLOW, 30.5", AK
17	138991	1	DEFLECTOR, RUBBER, LOGO, LH, AK DOT
18	140130	1	PUSHFRAME, WLDT, ST, ALASKA
19	140343	1	MLDBRD, WLDT, 48-66-12' EXPRSSWY, AK
20	141618	2	BRACKET, WLDT, SHOE
21	142030	2	STRUT, ASSEMBLY, SLOTTED TRIP, AK 2015
22	50252	4	RIVET,POP,5/32,SS
23	50414	2	NUT,TOPLOCK,FLG,5/16-18NC
24	50601	6	PIN, COTTER, 1/4 X 2 1/4
25	52387	2	SCREW, CP, HX, 5/16NC X 2 1/2, G5

PARTS LIST			
ITEM	PART N	QTY	DESCRIPTION
26	73898	4	ELBOW, 08MJ/08MB
27	74474	1	PLATE,SERIAL
28	74643	1	PIN, COTTER, 1/4 X 3
29	76317	2	TEE, 08MJ/08FJX/08MJ
30	81228	1	DECAL,LOGO, 5.3 X 13.4
31	81546	2	NUT, SLOTTED, 1 1/4NF, G5
32	81646	2	SPRING, COMP, .719 X 5.313 X 23.25
33	81751	23	BOLT, PLOW, 5/8-11NC X 2 1/2, G8
34	81852	4	ADAPTER, 08MJ/08MB
35	81861	35	NUT, TOPLOCK, 5/8-11NC, G8
36	81865	2	CYLINDER, 3-10, 1.5 ROD, NITRIDED
37	81870	2	PIN,1.00 X 4.62
38	81871	2	PIN, 1.00 X 3.88
39	81875	4	PIN, 1.00 X 3.25
40	81876	1	PIN, 1.75 X 6.75
41	81880	2	CAP, 08FJ
42	81921	2	HOSE, ASM
43	81922	2	HOSE, ASM
44	81929	1	NUT, HEX, SLOTTED, 1 1/2NC, G8
45	81991	2	PIN,1.25 X 7.25
46	81994	2	CAP, SPRING, WLDT, 1 3/8 ID
47	81996	2	GUIDE, SPRING, WLDT
48	82150	8	PIN,EXPNSN,1/4 X 2
49	82151	5	PIN, EXPANSION, 3/8 X 2 1/2
50	82439	1	SCREW, CP, HX, 1 1/2NC X 4, WHOLE
51	82725	2	SCREW, CP, HX, 1/14 X 6, W/HOLE
52	82819	8	SCREW, CP, HX, 5/8NC X 2, G8
53	83287H	2	SHOE, MUSHROOM, GREY IRON
54	83318	2	NUT, HEX, 1 1/4-7NC, SLFLKG
55	85978	16	SCREW, CP, HX, 1/2NC X 2, G8
56	86980	2	CURB GUARD, WRAPAROUND
57	87748	1	VALVE, CUSHION
58	95458	4	SCREW, SQHCS, 3/4NC X 2 1/2
59	96039	4	ROLLER, 3.75 OD, OWP
60	96371	4	BOLT,CRRG,5/8NC X 3,G8



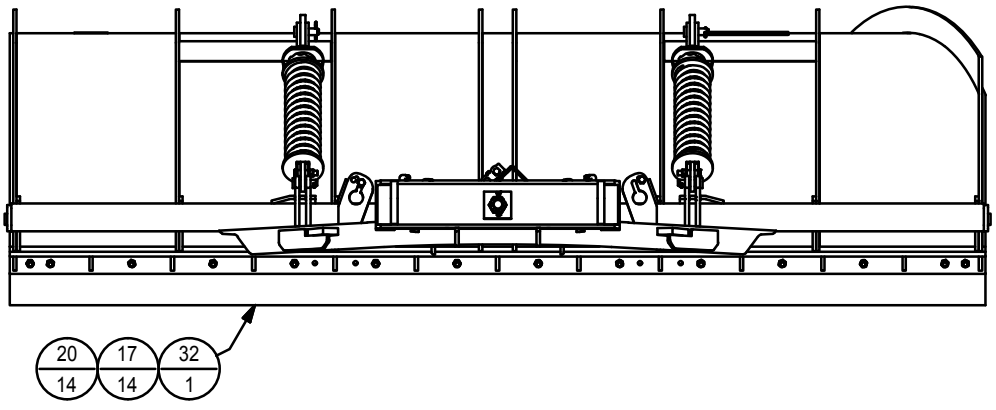
140342


19
47 2
54 2
49 40
49 5
45 2
22 27
46 2
21
30
52 8
6 8
35 35
21
36 2
26 4
48 37
20
39 4
24 6
38 2
48 8
49 11
5 2
15
24 6
31 2
3 2
51 2
53 2
58 4
2 4
1 4
59 4
59 4
9
18
16
42
24 6
39 4
43
28
44
50
23 2
25 2
57 1
32 2
7 16
55 16
14 2
35 35
60 4
56 2
35 35
33 23
10 3
140342

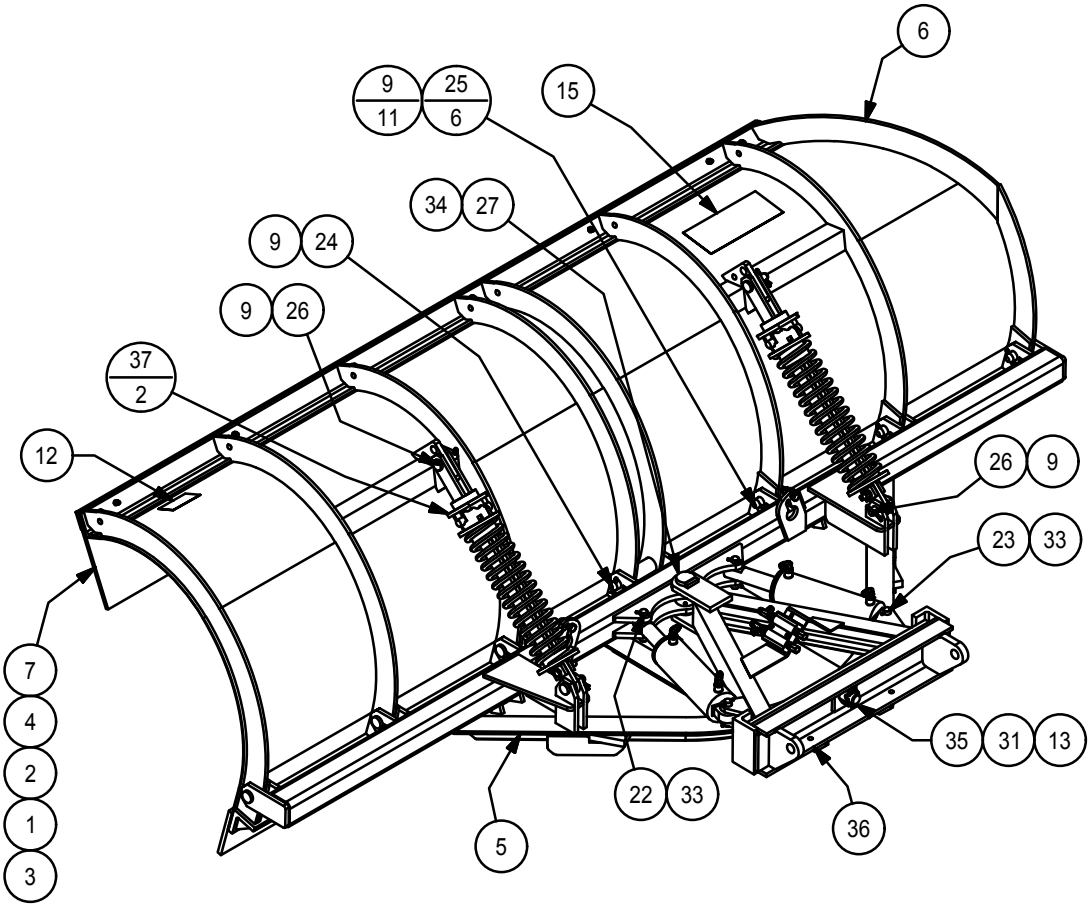


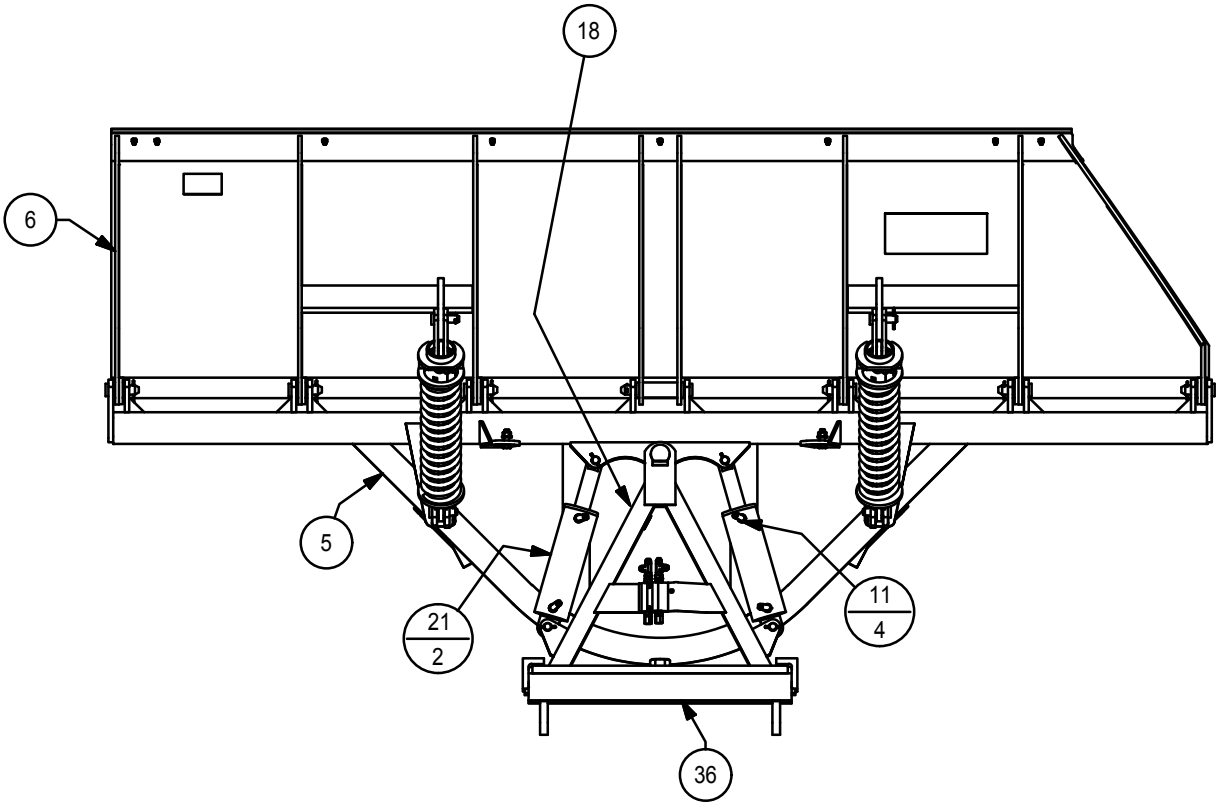
BILL OF MATERIALS			
ITEM	PART NO	QTY	DESCRIPTION
1	10086	8	SCREW,CP,HX,3/8NC X 1 3/4 G5
2	10538	8	WASHER, FLAT, STD, 3/8 ID
3	111430	8	NUT,HEX,3/8-16NC,SLFLKG,NYLON
4	137338	1	PLATE, BACKING,DEFLECTOR 12X42,IS W/MB CUT
5	145395	1	SEMI CIRCLE, WLDT, 12',W/O RG
6	147276	1	MLDBRD,WLDT,12X42,IS,FT W/RH MB CUT
7	338602	1	DEFLECTOR, RUBBER, LOGO, 11'
8	50414	2	NUT,TOPLOCK,FLG,5/16-18NC
9	50601	11	PIN, COTTER, 1/4 X 2 1/4
10	52387	2	SCREW, CP, HX, 5/16NC X 2 1/2, G5
11	73898	4	ELBOW, 08MJ/08MB
12	74474	1	PLATE,SERIAL
13	74643	1	PIN, COTTER, 1/4 X 3
14	76317	2	TEE, 08MJ/08FJX/08MJ
15	81228	1	DECAL,LOGO, 5.3 X 13.4
16	81642**	1	WRENCH, PLOW, TENSION ADJ
17	81751	14	BOLT, PLOW, 5/8-11NC X 2 1/2, G8
18	81830	1	A-FRAME, WLDT
19	81852	4	ADAPTER, 08MJ/08MB
20	81861	14	NUT, TOPLOCK, 5/8-11NC, G8
21	81867	2	CYLINDER, 4-10, 2.00, DA, NITRIDED
22	81870	2	PIN,1.00 X 4.62
23	81871	2	PIN, 1.00 X 3.88
24	81873	1	PIN,1.25 X 9.00
25	81874	6	PIN, 1.25 X 4.00
26	81875	4	PIN, 1.00 X 3.25
27	81876	1	PIN, 1.75 X 6.75
28	81880	2	CAP, 08FJ
29	81921**	2	HOSE, ASM
30	81922**	2	HOSE, ASM
31	81929	1	NUT, HEX, SLOTTED, 1 1/2NC, G8
32	81937	1	EDGE, CUTTING, 5/8 X 8 X 12'
33	82150	8	PIN,EXPNSN,1/4 X 2
34	82151	1	PIN, EXPANSION, 3/8 X 2 1/2
35	82439	1	SCREW, CP, HX, 1 1/2NC X 4, WHOLE
36	133916	1	HITCH, WLDT, PIN, PLOW, 30.5"
37	83152	2	SPRING,ASSY,ADJ,HD
38	87748	1	VALVE, CUSHION

**NOT SHOWN.



147275


6
9/11
25/6
15
34
27
9
24
9
26
37/2
12
26
9
23
33
7
4
2
1
3
35
31
13
22
33
5
36


18
6
5
21/2
11/4
36

147275

THIS PAGE

IS LEFT BLANK

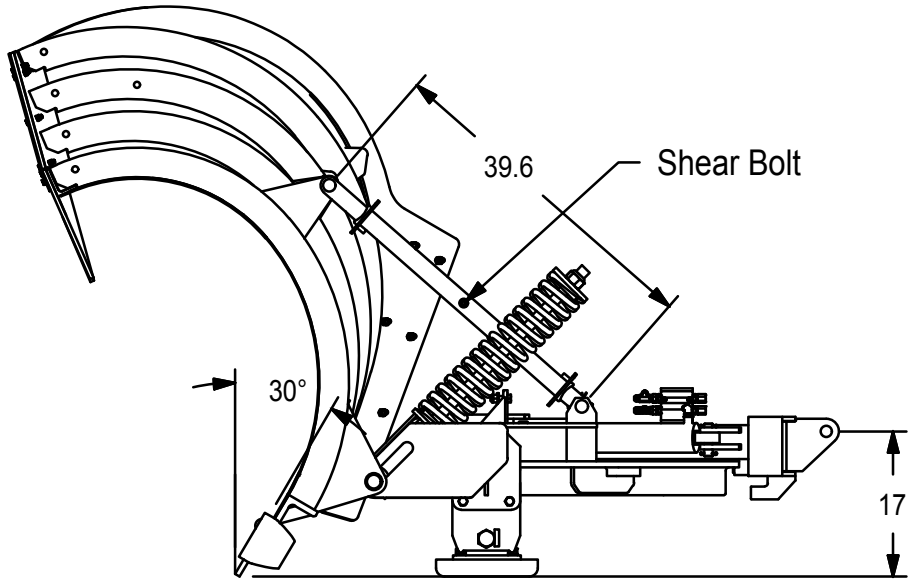
INTENTIONALLY.

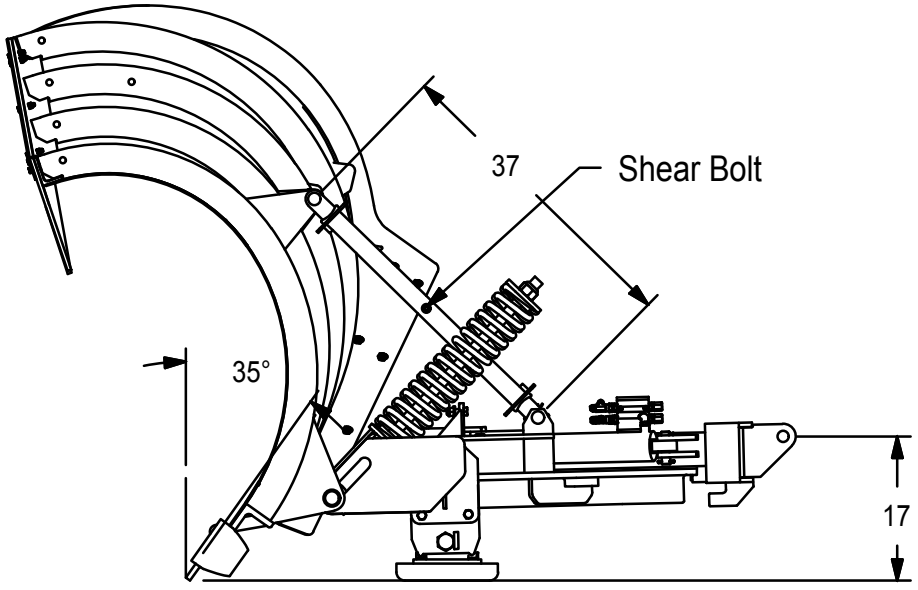
ALASKA
RSP

Operation Instructions

Instructions for changing attack angle:

1. Moldboard must be supported by a hoist or other safe means to prevent the moldboard from rolling forward.
2. Remove shear bolt and fastener from center of brace assembly and lengthen or shorten the brace to dimensions shown below to achieve the desired attack angle.
3. Replace shear bolt and fastener.





attackangle

Operation Instructions
Reversible Slotted Trip

BE SURE TO ADHERE TO ALL SAFETY AND CAUTION INFORMATION WHILE OPERATING THE EQUIPMENT. THIS MANUAL SHOULD BE COMPLETELY READ BEFORE OPERATING THIS EQUIPMENT.

Initial Start-up

The initial start-up of the equipment should be done with a partner that can watch the operation of the plow at a safe distance. Be sure the hydraulic reservoir is filled with oil, retaining pins are in place and all fasteners are tightened. Start the truck with the pump engaged and raise the plow 6-10" above the ground. Have your partner verify that there are no hydraulic leaks and that there are no interferences with all moving parts when raising and lowering the plow. Watch for clearance between the discharge end of the plow and any bumpers or leveling wings and front masts. Also watch for clearance between the lift arm, lift chains and moldboard brace. If there is any interference with the chassis or other equipment, return the unit to your installer or mechanic for adjustment.

Note: The hydraulic system is under extreme pressure and can cause serious personal injury if released. Never use your hands to check for leaks with the system under pressure. Always wear safety glasses.

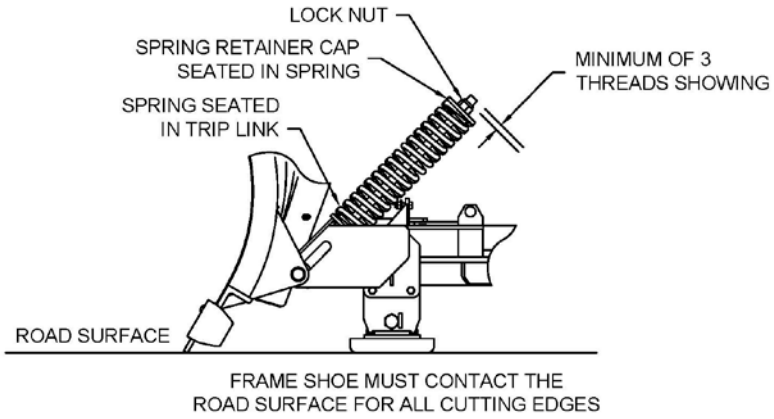
Never let any part of your body be under the plow, cutting edge or shoes. Serious personal injury can occur.

All operations should be smooth without any hang-ups or abnormal noises.

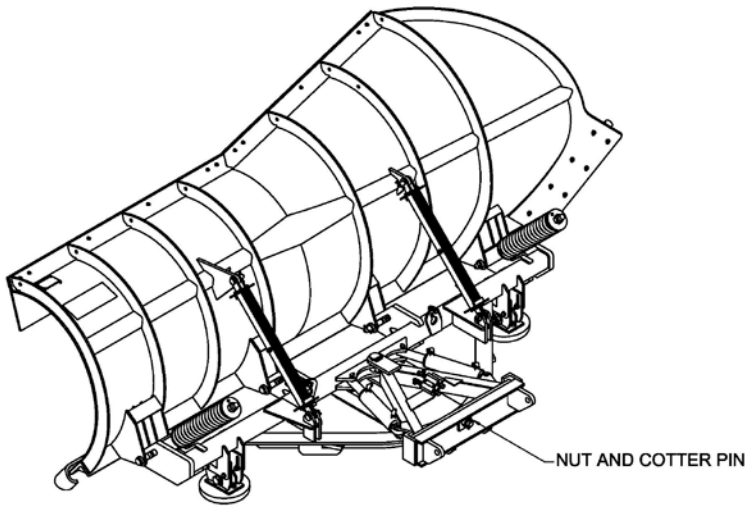
General Operation

At the beginning of the shift, the operator should walk around the equipment and do a visual inspection. The operator should make sure all bolts are in place and not loose, chains are not worn, clevis and cold shuts are not broken. The operator should inspect the plow moldboard and drive frame for bent, broken and missing parts. The cutting edge and all shoes should be inspected for wear. Never let the cutting edge wear up to the moldboard bottom angle. All wear parts (blades and shoes) should be replaced before damage occurs to the plow and drive frame. The drive frame should be inspected for broken or weak springs. The spring retaining caps and lock nuts should be properly installed, as shown on next page. Inspect the nylon insert and replace the locknut if the nylon insert is cracked or split.

The lock nut on the buffer spring end cap should be tightened until three full threads are showing past the nylon insert in the nut, dimension “B” shown below. Inspect the nylon insert for cracked or distorted nylon. Nylon insert lock nuts should be replaced after they have been removed. The spring must be centered and seated on the trip link and the spring retainer cap must be centered and seated on the spring.



Inspect the oscillating drive bar and pivot bolt. The pivot bolt and nut should be checked for wear or damage. Make certain the nut shown below has a properly installed cotter pin.



Inspect the hydraulic system for leaks and damage. Hoses and fittings should be inspected for cuts, damage, or corrosion. The hydraulic reservoir should be inspected for leaks. The hydraulic oil level and condition should be checked. The oil filter condition should be checked. The hydraulic pump and driveline should be checked for leaks, wear, and damage. If any deficiencies are discovered, they ***must*** be repaired before the equipment goes into service.

Once the visual inspection is complete and the equipment is in satisfactory condition, start and warm up the truck and the hydraulic system. Operate all the hydraulic functions. All functions should move smoothly without any binding or hesitation. Make sure all other safety equipment on the truck is operational (i.e. Lights, reflectors, horns, seat belts, etc.).

During the operation of the equipment, several items must be kept in mind:

CAUTION

Severe equipment and road damage will occur with the possibility of personal injury if this equipment is used improperly.

CAUTION

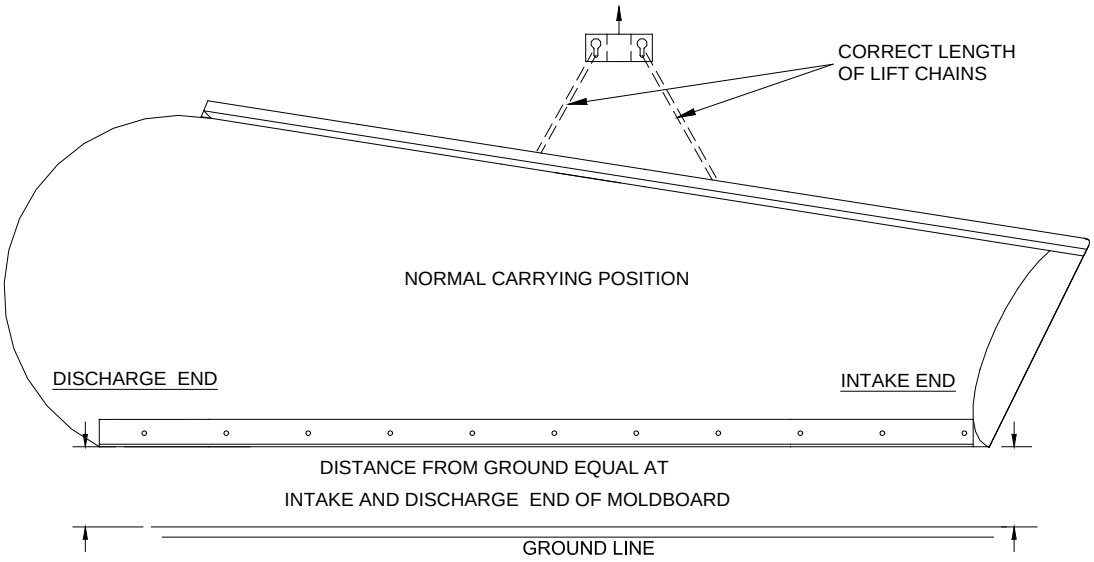
The condition of the shoes and cutting edge limit the height of the obstructions that this unit will safely operate over. Do not attempt to operate this equipment over any obstructions higher than 2". The contour of the lane being plowed must be considered when evaluating the height of obstructions to be encountered. Bridge expansion joints, frost heaves and railroad crossings should also be carefully evaluated. Any such items that cross the lane at an angle of between 30 and 40 degrees should be observed and noted as there is a possibility that the cutting edge could drop into these and cause damage or injury. Proper shoe adjustment and road contact is very important.

Operators should travel over plowing routes in good weather and observe any obstructions that may be encountered while plowing.

CAUTION

Caution should be observed when plowing routes that are unfamiliar to the operator. The height of the obstructions that this unit will safely operate over are limited by the condition of the shoes and cutting edge and the length of travel of the slides and roller on the drive angle. The frame shoes must contact the ground. The buffer action will not work correctly until the shoes contact the ground. Equipment damage or injury can occur.

Carry Position: The plow should be approximately 12" from the ground and level with the ground, as shown below. When traveling at high speeds, slow the vehicle before crossing large bumps and frost heaves. Failing to do this could cause the plow to bounce and put extreme loads on the lift chains and fasteners.

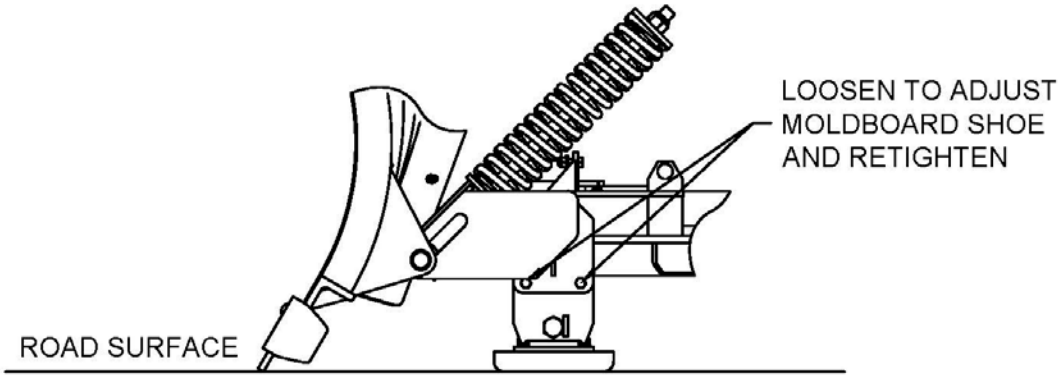


Road plowing mode: It is recommended that the cylinders controlling the plow lift chains be relaxed, allowing the plow to "float" with the road contours. Truck speeds in this mode should be between 25 – 40 MPH. Some conditions may require slower speeds. It is very important not to overdrive the equipment given the plowing conditions. Doing so will shorten the life cycle of the equipment.

It is important to note the position of the intake end and discharge ends of the plow in relation to the edge of the lane being plowed. The plow is wider than the truck and may protrude into traffic lanes on either side of the vehicle.

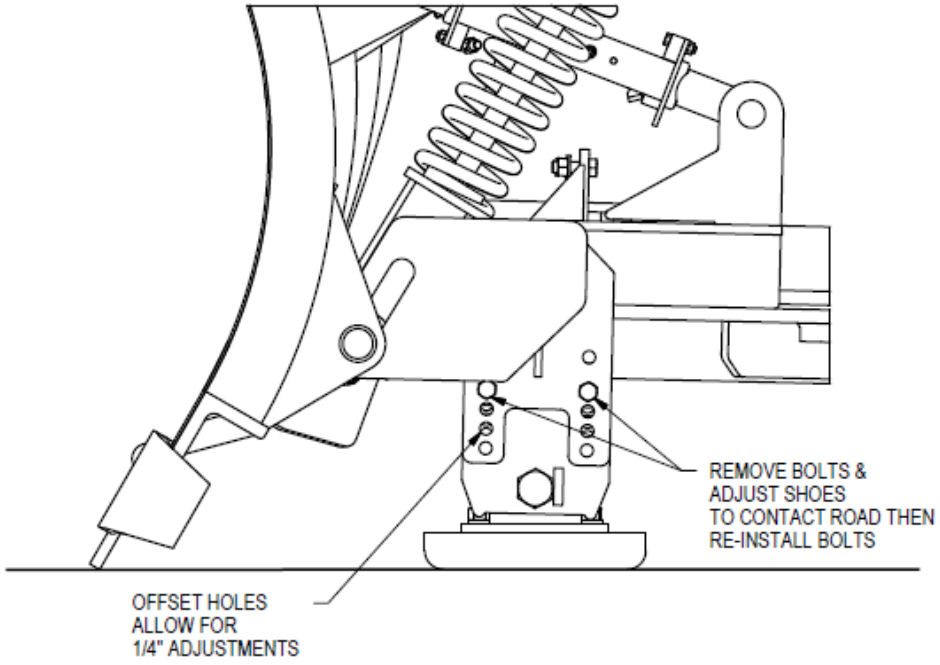
The operator should also be aware of the surface being driven on. Keep the truck on hard, level ground.

Adjust the drive frame shoes by loosening up the bolts holding the shoe brackets onto the drive frame and sliding the bracket up or down.



FRAME SHOE MUST CONTACT THE
ROAD SURFACE FOR ALL CUTTING EDGES

*THIS ADJUSTMENT METHOD APPLIES TO PLOW PART NUMBERS 140124 AND 140342.



SNOWFOE® SERIES
MODEL: HITCH

SERIAL #: _____

INSTRUCTIONS FOR ORDERING PARTS

Order parts from the authorized dealer covering your area.

DEALER:_____
Phone #: _____

ALWAYS GIVE THE MODEL AND SERIAL NUMBER.

To obtain parts promptly, give part name and part number.

Give post office address, town, and state where the parts are to be shipped. UPS (United Parcel Service) and other carriers will not ship to a post office box. You must use a street address. Also be sure to specify whether material is to be shipped by freight, express, parcel post, or UPS. All UPS shipments will be normal surface routing unless specified otherwise.

Confirm all telephone or FAX orders in writing.

Credit for new parts not needed must be obtained from the dealer from whom they were purchased.

Unless claims for shortages or errors are made immediately upon receipt of goods, they will not be considered.

Inspect all goods received immediately upon receipt. When damaged goods are received, insist that a full description of the damage be made by the carrier agent on the freight bill. If this description is insisted upon, full damage can be collected from the transportation company.

No responsibility is assumed for delay or damage to merchandise while in transit. Dealer's responsibility ceases upon delivery of shipment to the transportation company from whom a receipt is received showing that shipment was in good condition when delivered to them; therefore, claims (if any) should be filed with the transportation company and not with the dealer.

ALASKA 2014 - 2018

HITCH

TABLE OF CONTENTS

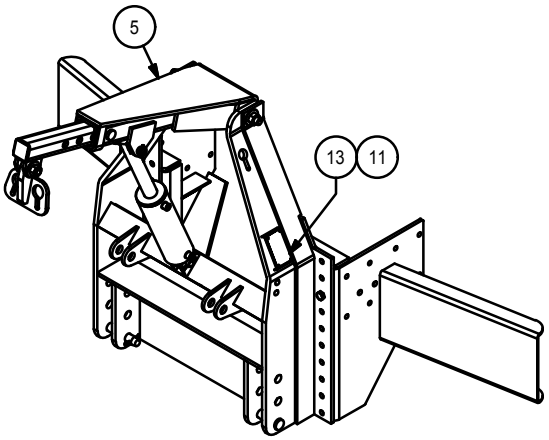
ALASKA
HITCH

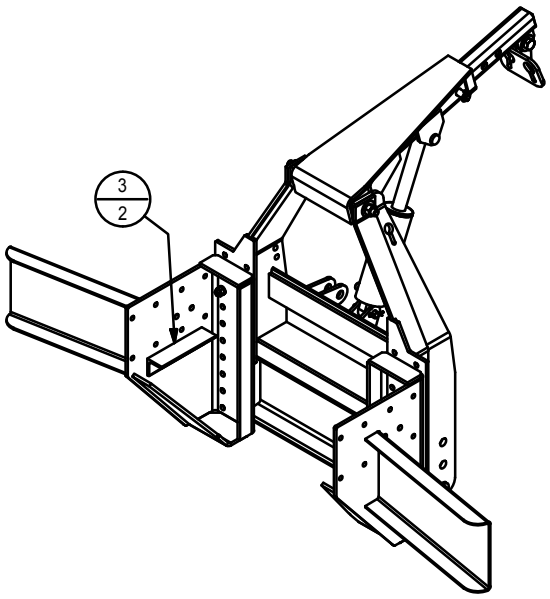
PARTS LIST

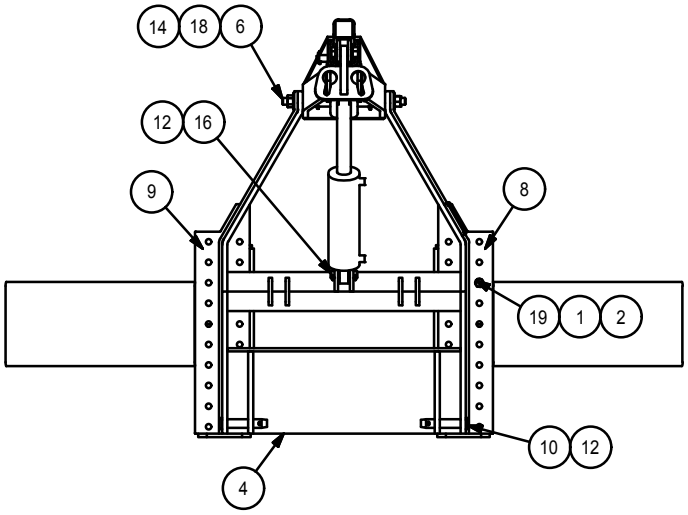
HITCH ASSEMBLY (MACK 2014)

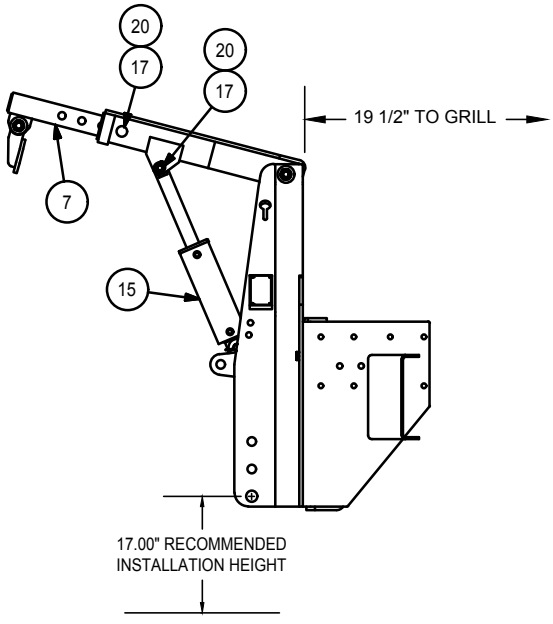
PARTS LIST				PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION	ITEM	PART NO	QTY	DESCRIPTION
11	50252	4	RIVET,POP,5/32,SS	1	00189	26	WASHER,LOCK,3/4 ID,SPRING,CP
12	50601	4	PIN, COTTER, 1/4 X 2 1/4	2	105341	26	NUT, HEX, 3/4NC, G8
13	74474PL	1	PLATE,SERIAL	3	112866**	2	ANGLE, HEADER
14	74612	2	WASHER,FLAT,STD,1 ID,UNPLATED	4	133098	1	HITCH,WLDT,AK 2013
15	81867	1	CYLINDER,4-10,2.00,DA,NITRIDED	5	133100	1	LIFT ARM,WLDT,OUTER,AK 2013
16	81871	1	PIN, 1.00 X 3.88	6	133118	1	PIVOT,STUD,AK 2013
17	81872	2	PIN, 1.00 X 6.00	7	133121	1	LIFT ARM,INNER,ASSY,AK 2013
18	83183	2	NUT, TOPLOCK, 1-8NC, G8	8	133133	1	MOUNT,FRAME,WLDT,LH,AK 2013
19	83303	26	SCREW, CP, HX, 3/4 X 2 1/4, G8	9	133134	1	MOUNT,FRAME,WLDT,RH,AK 2013
20	85761	2	PIN,LYNCH,1/4 X 1 9/16	10	133135	2	PIN,1.25 X 6.50,W/ HOLE

**SHIPS LOOSE









133097

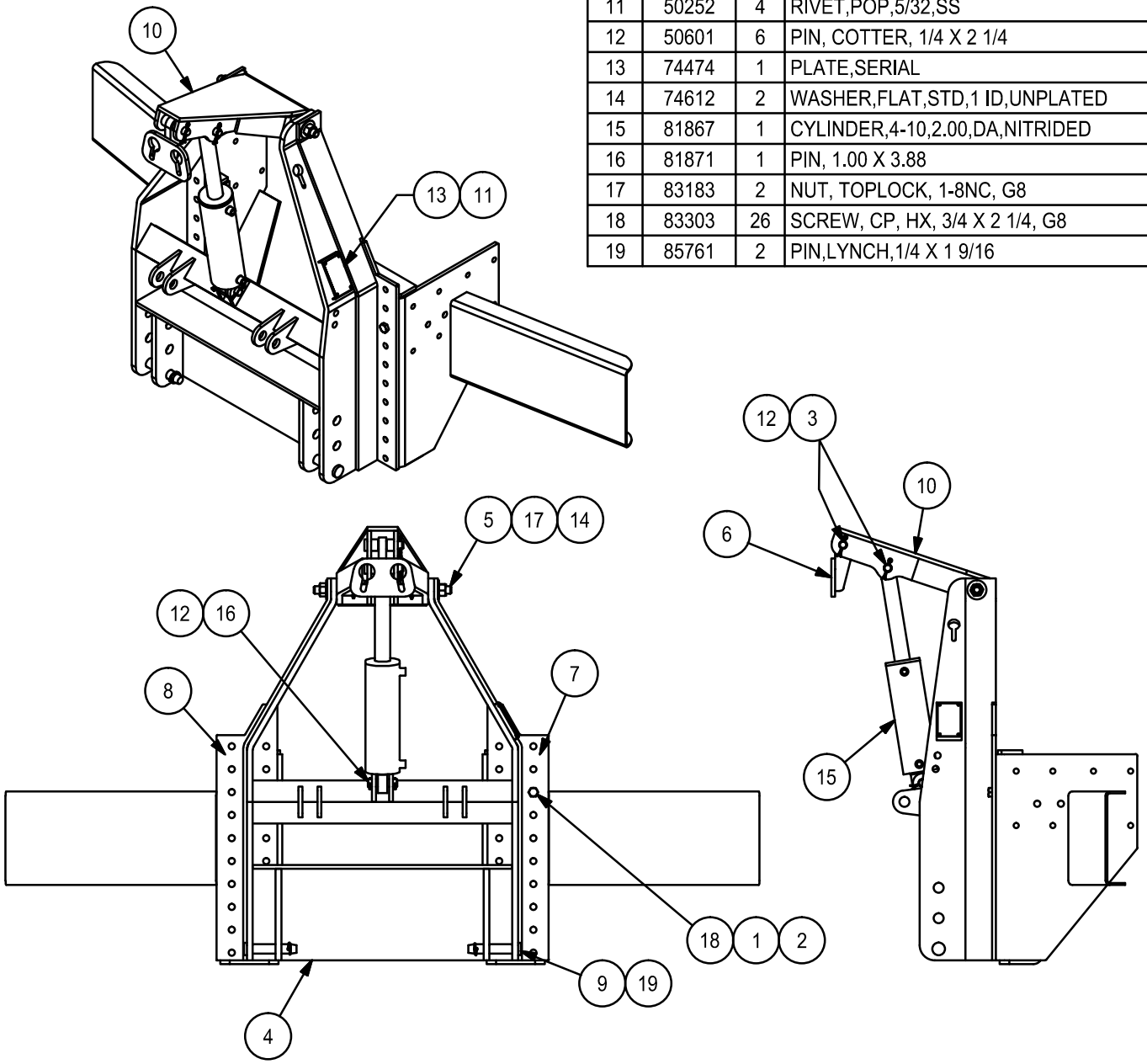
THIS PAGE

IS LEFT BLANK

INTENTIONALLY.

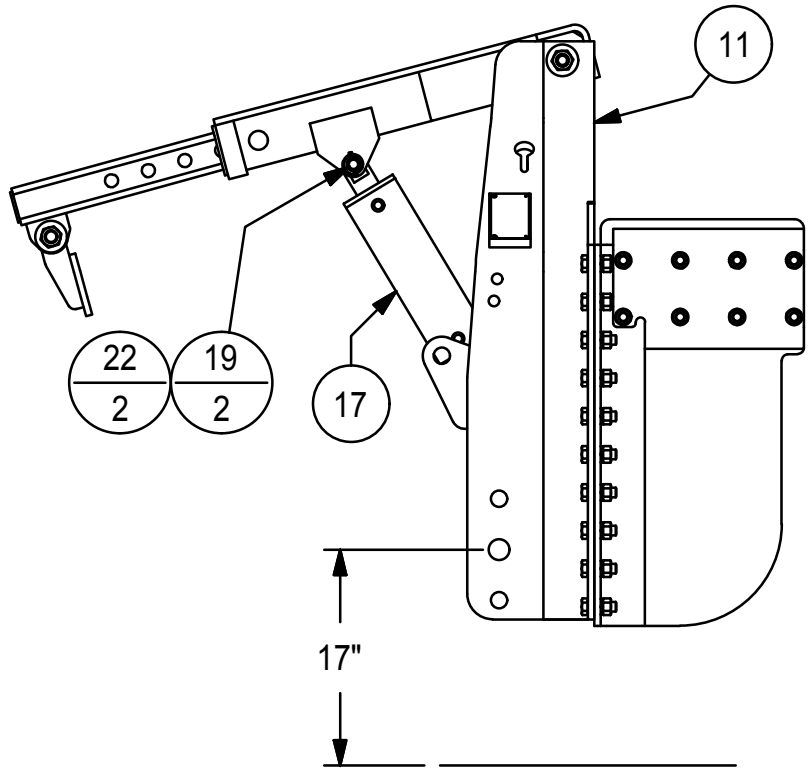
HITCH ASSEMBLY, W/FIXED LIFT ARM

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	00189	26	WASHER,LOCK,3/4 ID,SPRING,CP
2	105341	26	NUT, HEX, 3/4NC, G8
3	110198	2	PIN, 1.00 X 4.75
4	133098	1	HITCH,WLDT,AK 2013
5	133118	1	PIVOT,STUD,AK 2013
6	133129	1	CHAIN HOOK,WLDT,LIFT ARM,AK 2013
7	133133	1	MOUNT,FRAME,WLDT,LH,AK 2013
8	133134	1	MOUNT,FRAME,WLDT,RH,AK 2013
9	133135	2	PIN,1.25 X 6.50,W/ HOLE
10	133573	1	LIFT ARM,WLDT,FIXED,AK 2013
11	50252	4	RIVET,POP,5/32,SS
12	50601	6	PIN, COTTER, 1/4 X 2 1/4
13	74474	1	PLATE,SERIAL
14	74612	2	WASHER,FLAT,STD,1 ID,UNPLATED
15	81867	1	CYLINDER,4-10,2.00,DA,NITRIDED
16	81871	1	PIN, 1.00 X 3.88
17	83183	2	NUT, TOPLOCK, 1-8NC, G8
18	83303	26	SCREW, CP, HX, 3/4 X 2 1/4, G8
19	85761	2	PIN,LYNCH,1/4 X 1 9/16

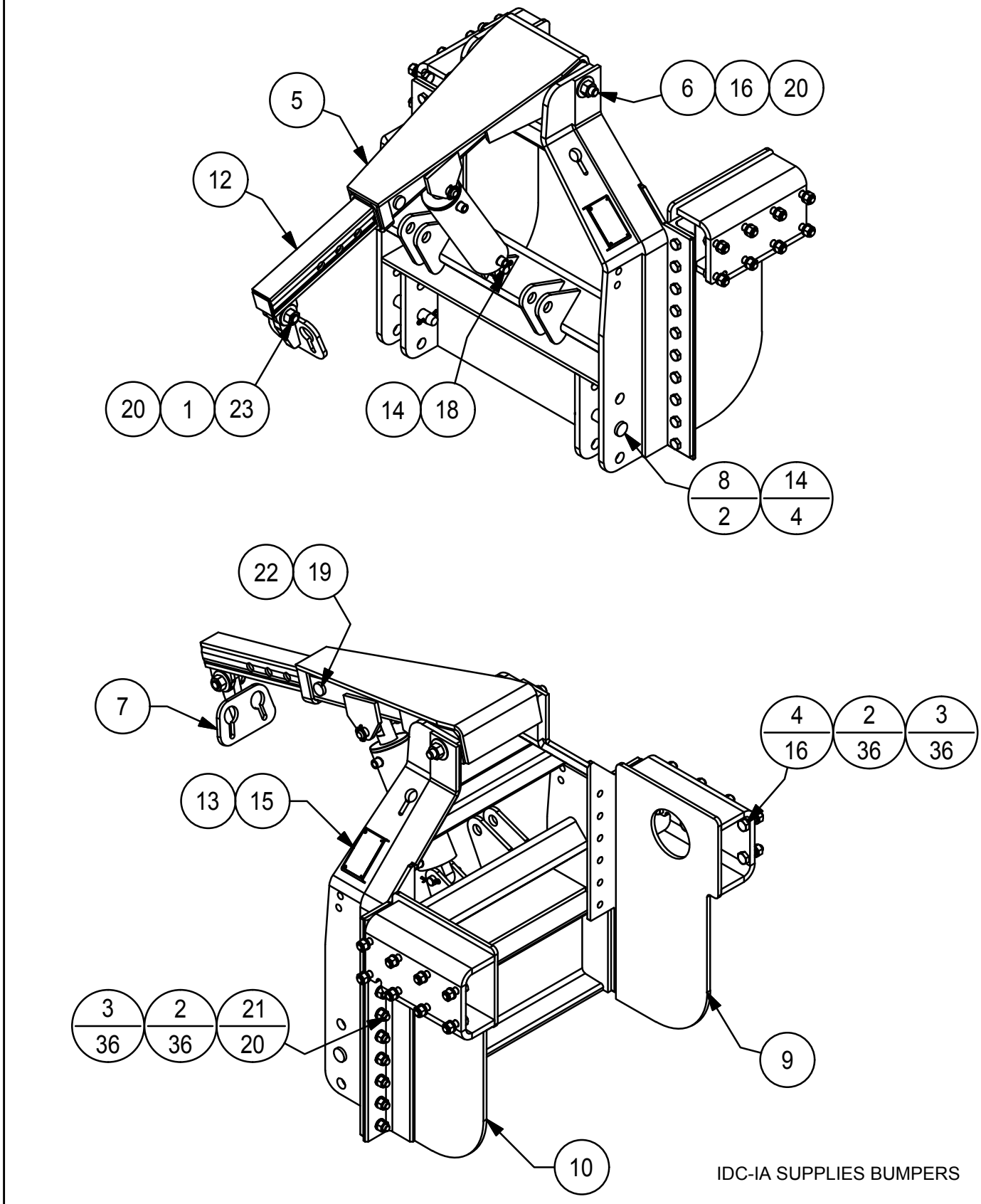


133572

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	00105	2	WASHER, FLAT, ST, 1" ID, PLATED
2	00189	36	WASHER,LOCK,3/4 ID,SPRING,CP
3	105341	36	NUT, HEX, 3/4NC, G8
4	112476	16	SCREW,CP,HX,3/4NC X 2 1/2,G8
5	133100	1	LIFT ARM,WLDT,OUTER,AK 2013
6	133118	1	PIVOT,STUD,AK 2013
7	133129	1	CHAIN HOOK, WLDT, LIFT ARM
8	133135	2	PIN,1.25 X 6.50,W/ HOLE
9	140264	1	CHEEKPLATE,WLDT,RH,AK 2015
10	140265	1	CHEEKPLATE,WLDT,LH,AK 2015
11	140278	1	HITCH,WLDT,AK 2015
12	146211	1	LIFT ARM, INNER, WLDT, AK 2016
13	50252	4	RIVET,POP,5/32,SS
14	50601	4	PIN, COTTER, 1/4 X 2 1/4
15	74474	1	PLATE,SERIAL
16	74612	2	WASHER,FLAT,STD,1 ID,UNPLATED
17	81867	1	CYLINDER,4-10,2.00,DA,NITRIDED
18	81871	1	PIN, 1.00 X 3.88
19	81872	2	PIN, 1.00 X 6.00
20	83183	3	NUT, TOPLOCK, 1-8NC, G8
21	83303	20	SCREW, CP, HX, 3/4 X 2 1/4, G8
22	85761	2	PIN,LYNCH,1/4 X 1 9/16
23	95263	1	SCREW, CP, HX, 1 NC X 3 1/2, G8

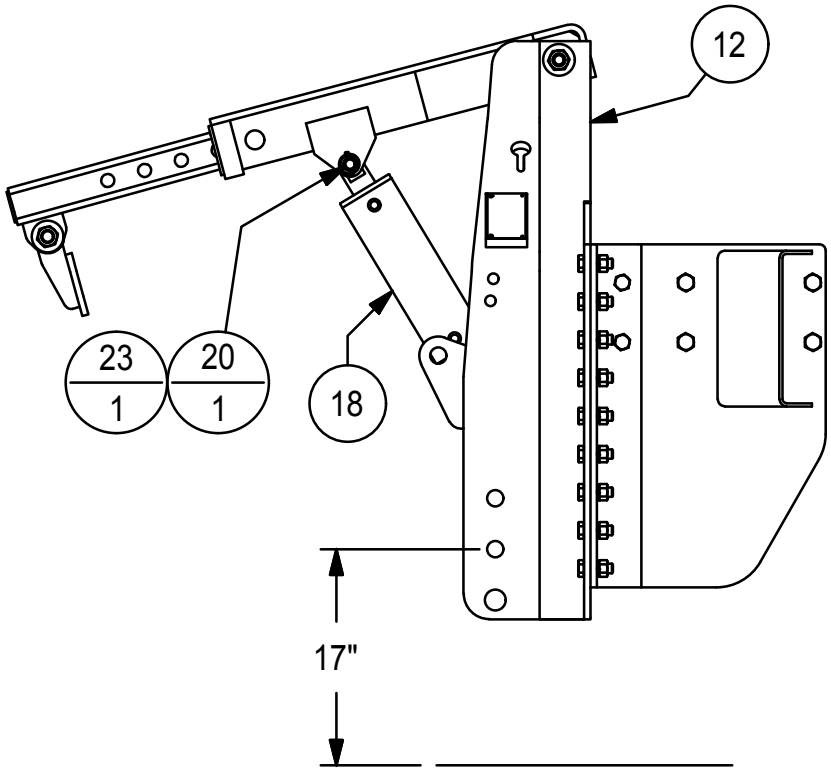


140282 W/140279

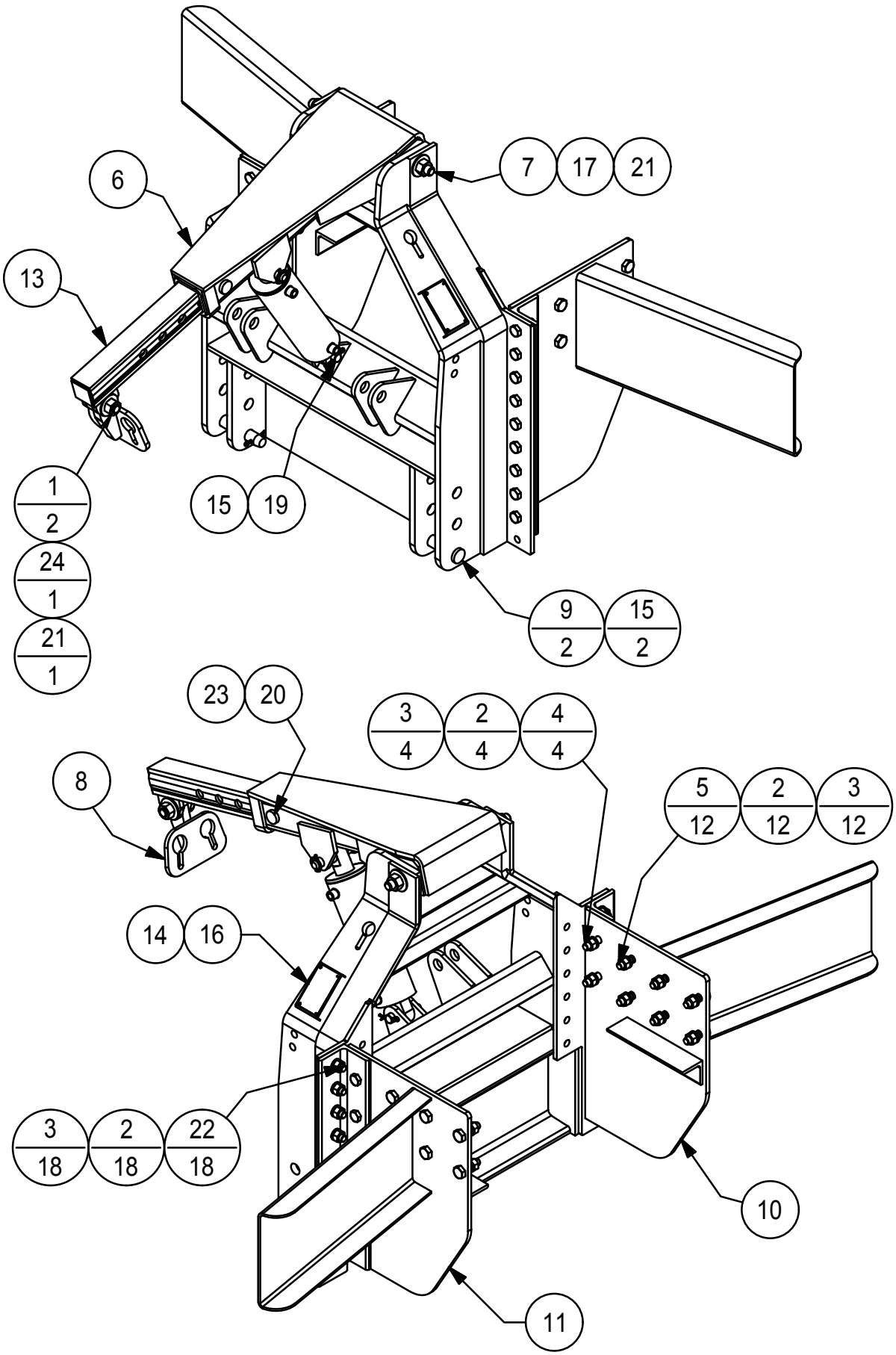


140282 W/140279

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	00105	2	WASHER, FLAT, ST, 1" ID, PLATED
2	00189	34	WASHER,LOCK,3/4 ID,SPRING,CP
3	105341	34	NUT, HEX, 3/4NC, G8
4	110083	4	SCREW, CP, HX, 3/4NC X3, G8
5	112476	12	SCREW,CP,HX,3/4NC X 2 1/2,G8
6	133100	1	LIFT ARM,WLDT,OUTER,AK 2013
7	133118	1	PIVOT,STUD,AK 2013
8	133129	1	CHAIN HOOK, WLDT, LIFT ARM
9	133135	2	PIN,1.25 X 6.50,W/ HOLE
10	140268	1	CHEEKPLATE, WLDT, RH, INTL, AK 2015
11	140269	1	CHEEKPLATE, WLDT, LH, INTL, AK 2015
12	140278	1	HITCH,WLDT,AK 2015
13	146211	1	LIFT ARM, INNER, WLDT, AK 2016
14	50252	4	RIVET,POP,5/32,SS
15	50601	4	PIN, COTTER, 1/4 X 2 1/4
16	74474	1	PLATE,SERIAL
17	74612	2	WASHER,FLAT,STD,1 ID,UNPLATED
18	81867	1	CYLINDER,4-10,2.00,DA,NITRIDED
19	81871	1	PIN, 1.00 X 3.88
20	81872	2	PIN, 1.00 X 6.00
21	83183	3	NUT, TOPLOCK, 1-8NC, G8
22	83303	18	SCREW, CP, HX, 3/4 X 2 1/4, G8
23	85761	2	PIN,LYNCH,1/4 X 1 9/16
24	95263	1	SCREW, CP, HX, 1 NC X 3 1/2, G8



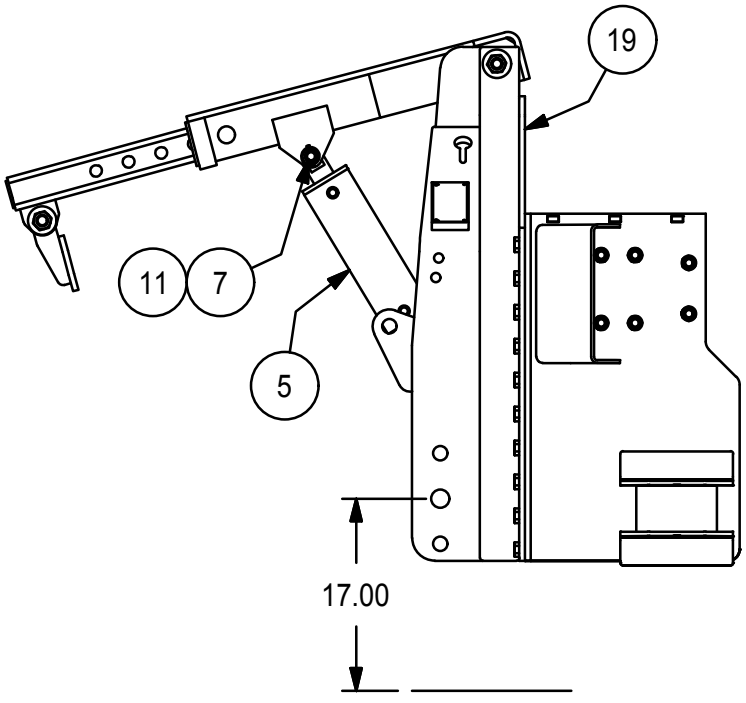
140282 W/141249



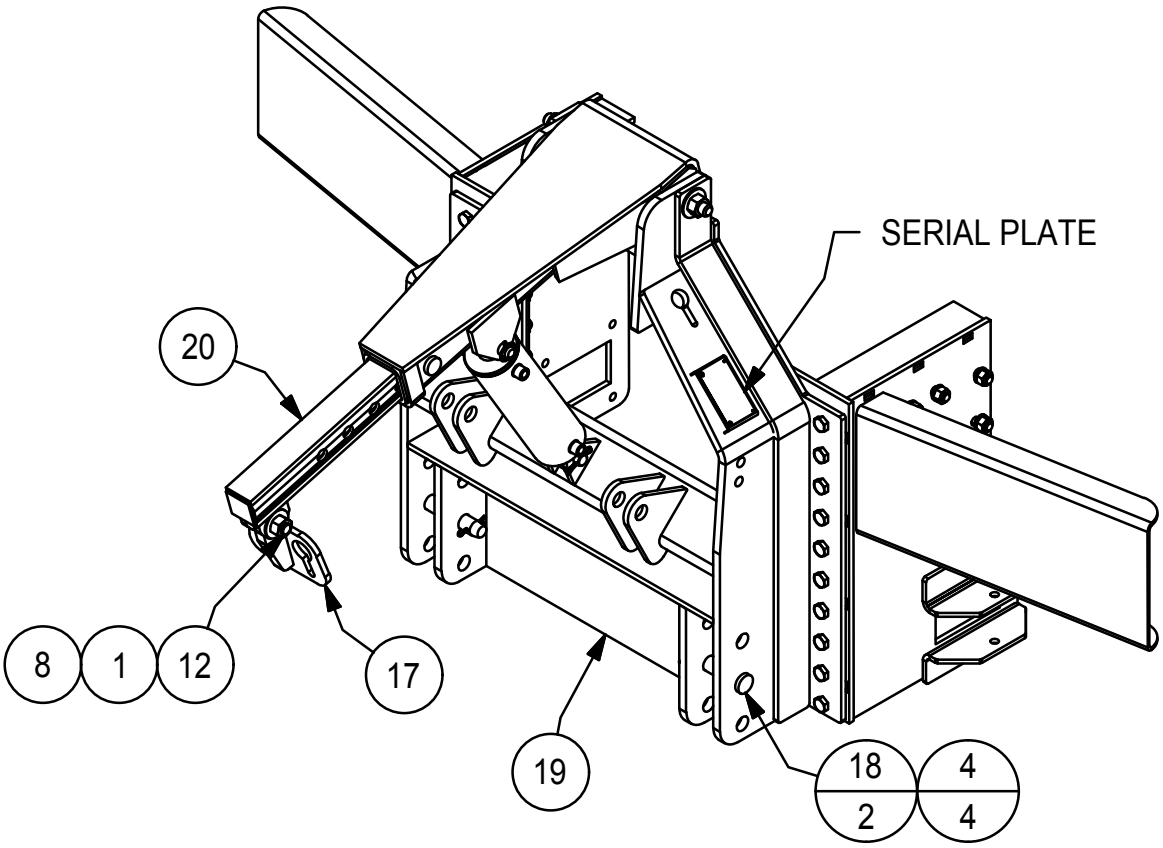
140282 W/141249

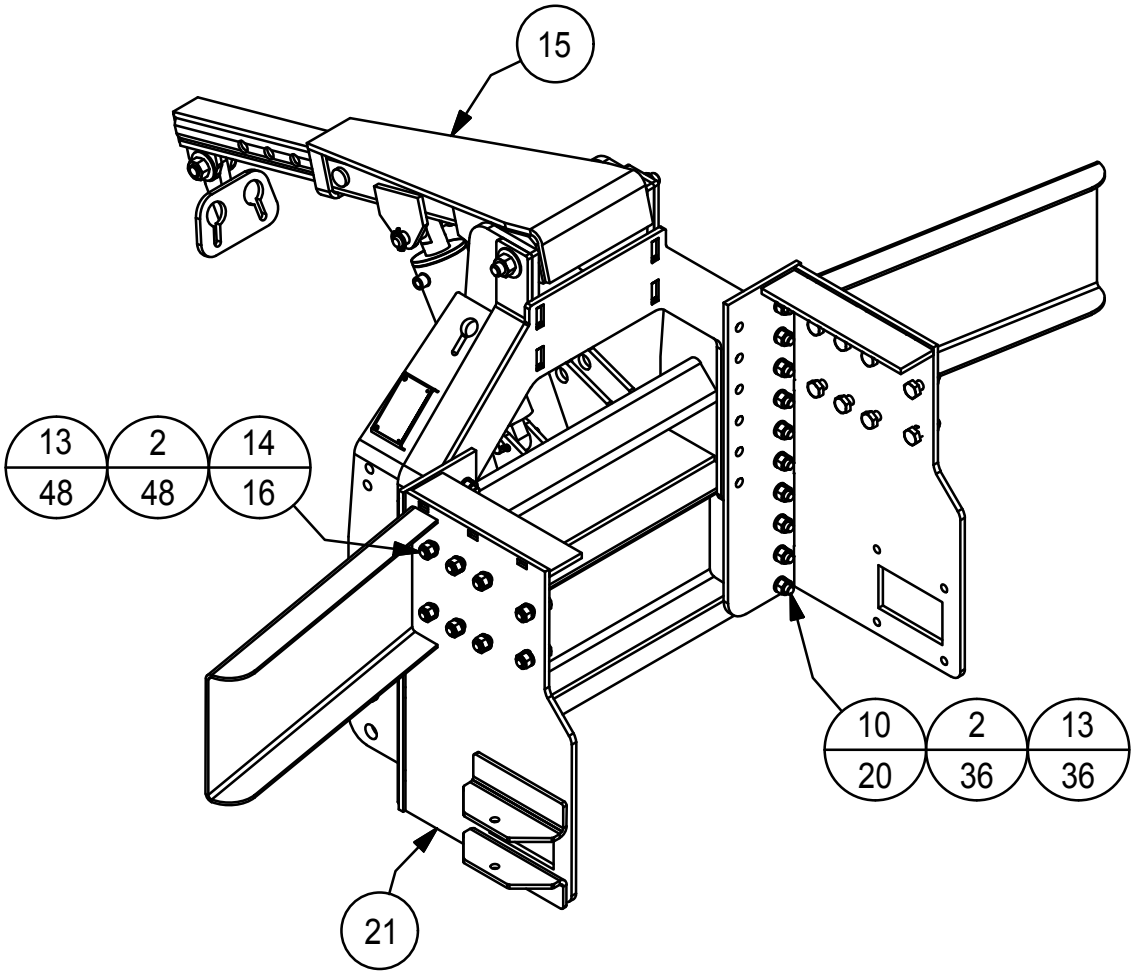
PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	00105	2	WASHER,FLATE,STD,1" ID
2	00189	36	WASHER,LOCK,3/4 ID,SPRING,CP
3	50252	4	RIVET,POP,5/32,SS
4	74612	2	WASHER,FLAT,STD,1 ID,UNPLATED
5	81867	1	CYLINDER,4-10,2.00,DA,NITRIDED
6	81871	1	PIN, 1.00 X 3.88
7	81872	2	PIN, 1.00 X 6.00
8	83183	1	NUT,TOPLOCK,1-8NC,G8
9	83183	2	NUT, TOPLOCK, 1-8NC, G8
10	83303	20	SCREW, CP, HX, 3/4 X 2 1/4, G8
11	85761	2	PIN,LYNCH,1/4 X 1 9/16
12	95263	1	SCREW,CP,HX,1NC S 3 1/2,G8
13	105341	36	NUT, HEX, 3/4NC, G8
14	112476	16	SCREW,CP,HX,3/4NC X 2 1/2,G8
15	133100	1	LIFT ARM,WLDT,OUTER,AK 2013
16	133118	1	PIVOT,STUD,AK 2013
17	133129	1	CHAIN HOOK,WLDT
18	133135	2	PIN,1.25 X 6.50,W/ HOLE
19	140278	1	HITCH,WLDT,AK 2015
20	146211	1	LIFT ARM,INNER,WLDT,AK
21	147070	1	CHEEKPLATE,WLDT,LH,AK 2017
22	147071	1	CHEEKPLATE,WLDT,RH,AK 2017
23	148357*	2	ANGLE,3.00 X 3.00 X .38 X 12.00

*NOT SHOWN



140282 W/147069

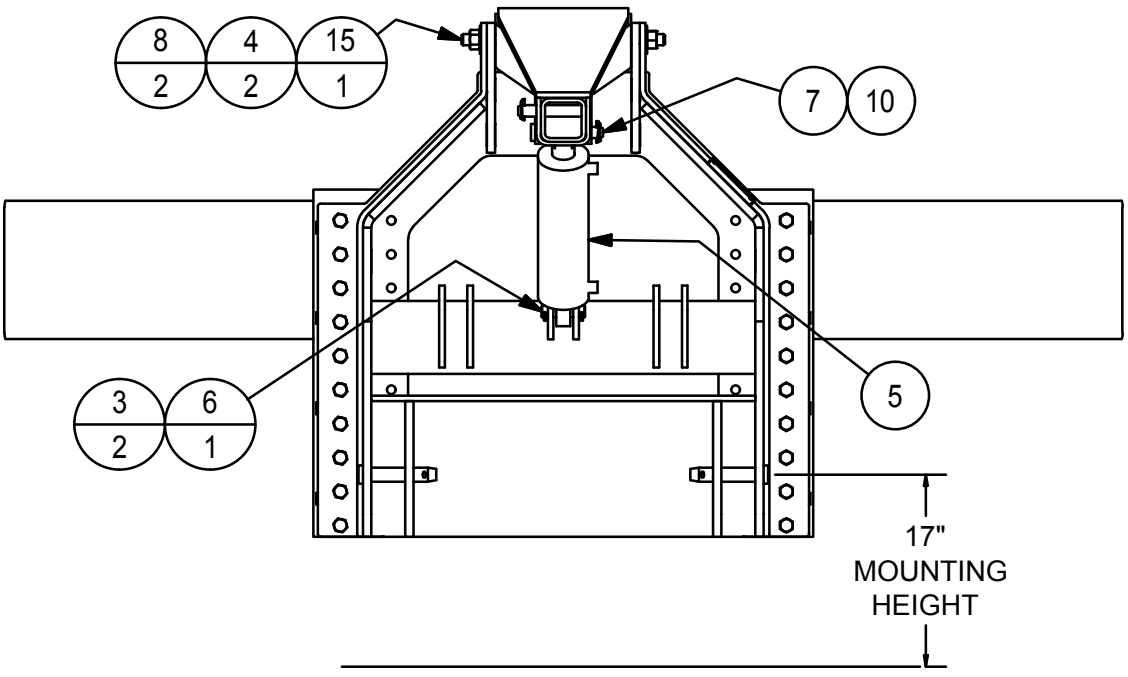




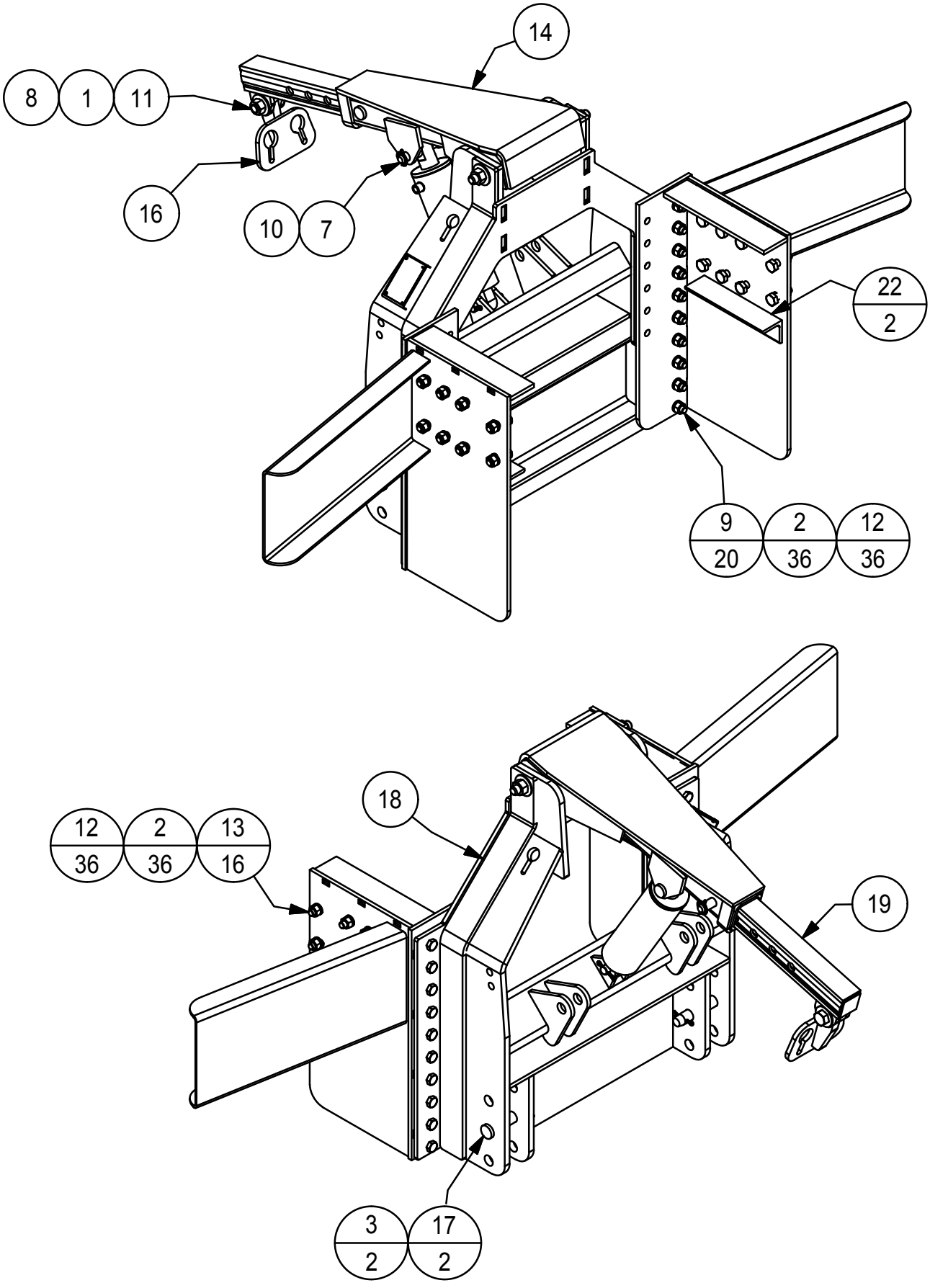
140282 W/147069

BILL OF MATERIALS			
ITEM	PART NO	QTY	DESCRIPTION
1	00105	2	WASHER,FLAT,STD,1" ID
2	00189	36	WASHER,LOCK,3/4 ID,SPRING,CP
3	50601	4	PIN, COTTER, 1/4 X 2 1/4
4	74612	2	WASHER,FLAT,STD,1 ID,UNPLATED
5	81867	1	CYLINDER,4-10,2.00,DA,NITRIDED
6	81871	1	PIN, 1.00 X 3.88
7	81872	2	PIN, 1.00 X 6.00
8	83183	3	NUT, TOPLOCK, 1-8NC, G8
9	83303	20	SCREW, CP, HX, 3/4 X 2 1/4, G8
10	85761	2	PIN,LYNCH,1/4 X 1 9/16
11	95263	1	SCREW,CP,HX,1 NC X 3 1/2,G8
12	105341	36	NUT, HEX, 3/4NC, G8
13	112476	16	SCREW,CP,HX,3/4NC X 2 1/2,G8
14	133100	1	LIFT ARM,WLDT,OUTER,AK 2013
15	133118	1	PIVOT,STUD,AK 2013
16	133129	1	CHAIN HOOK,WLDT
17	133135	2	PIN,1.25 X 6.50,W/ HOLE
18	140278	1	HITCH,WLDT,AK 2015
19	146211	1	LIFT ARM, WLDT,INNER
20	148050	1	CHEEKPLATE,WLDT,LH,AK 2017
21	148051	1	CHEEKPLATE,WLDT,RH,AK 2017
22	148357**	2	ANGLE,3.00 X 3.00 X .38 X 12.00

**SHIPS LOOSE



140282/146811



140282/146811

THIS PAGE

IS LEFT BLANK

INTENTIONALLY.

SNOWFOE® SERIES
MODEL: Henderson Wing System
SERIAL #: _____

INSTRUCTIONS FOR ORDERING PARTS

Order parts from the authorized dealer covering your area.

DEALER:_____
Phone #: _____

ALWAYS GIVE THE MODEL AND SERIAL NUMBER.

To obtain parts promptly, give part name and part number.

Give post office address, town, and state where the parts are to be shipped. UPS (United Parcel Service) and other carriers will not ship to a post office box. You must use a street address. Also be sure to specify whether material is to be shipped by freight, express, parcel post, or UPS. All UPS shipments will be normal surface routing unless specified otherwise.

Confirm all telephone or FAX orders in writing.

Credit for new parts not needed must be obtained from the dealer from whom they were purchased.

Unless claims for shortages or errors are made immediately upon receipt of goods, they will not be considered.

Inspect all goods received immediately upon receipt. When damaged goods are received, insist that a full description of the damage be made by the carrier agent on the freight bill. If this description is insisted upon, full damage can be collected from the transportation company.

No responsibility is assumed for delay or damage to merchandise while in transit. Dealer's responsibility ceases upon delivery of shipment to the transportation company from whom a receipt is received showing that shipment was in good condition when delivered to them; therefore, claims (if any) should be filed with the transportation company and not with the dealer.

ALASKA

HENDERSON WING SYSTEM

TABLE OF CONTENTS

Page Number

WING SYSTEM

SAFETY

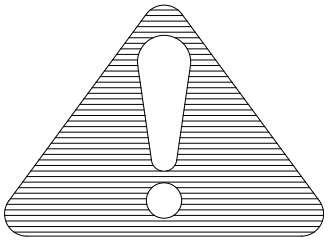
INFORMATION

SAFETY

The Safety-Alert Symbol.

This symbol is on safety signs on the equipment and in the manual.

This symbol indicates to you the potential for personal injury and/or property damage.



Hazard Seriousness Levels.

The DANGER signal word indicates - immediate hazards which WILL result in severe personal injury or death.

DANGER

The WARNING signal word indicates - hazards or unsafe practices which COULD result in severe personal injury or death.

WARNING

The CAUTION signal word indicates - hazards or unsafe practices which COULD result in minor personal injury or product or property damage.

CAUTION

Persons who install, mount, operate, or service this equipment must be properly instructed and warned. Do not let anyone operate equipment without instruction.

Read operator manuals completely before operating equipment. Learn how to operate controls properly.

Read decal instructions, cautions, and warnings. Read the safety messages in this manual and on safety decals on the snowplow unit. Replace missing or damaged safety decals.

Unauthorized modifications to the snowplow and related components may impair the function and/or safety.

1. Safety decals are installed on the equipment at the factory. Additional safety decals are shipped loose for applying by the dealer in the operator's cab. These decals ***MUST*** be installed by the dealer prior to passing possession of the equipment to the end user.

2. Safety decals are provided with an overlay that can be peeled off after painting.

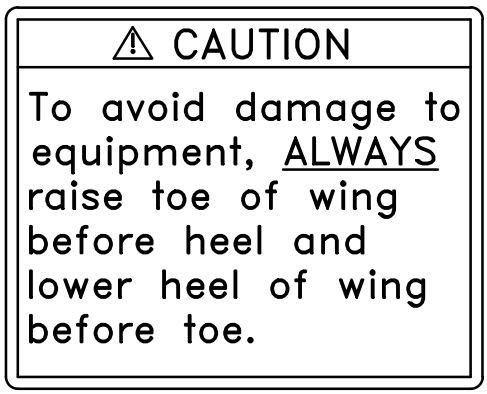
3. Check to make certain all safety decals are in place and the overlays are removed.

4. Keep safety decals clean and in good condition.

5. Replace damaged or missing safety decals at once. Order replacements through your dealer, or from:

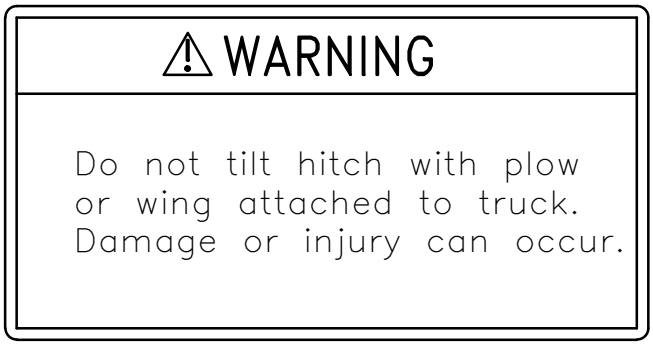
Henderson Products, Inc.
Parts Department
1085 South Third Street
Manchester, IA 52057

Telephone: (563) 927-2828



81555

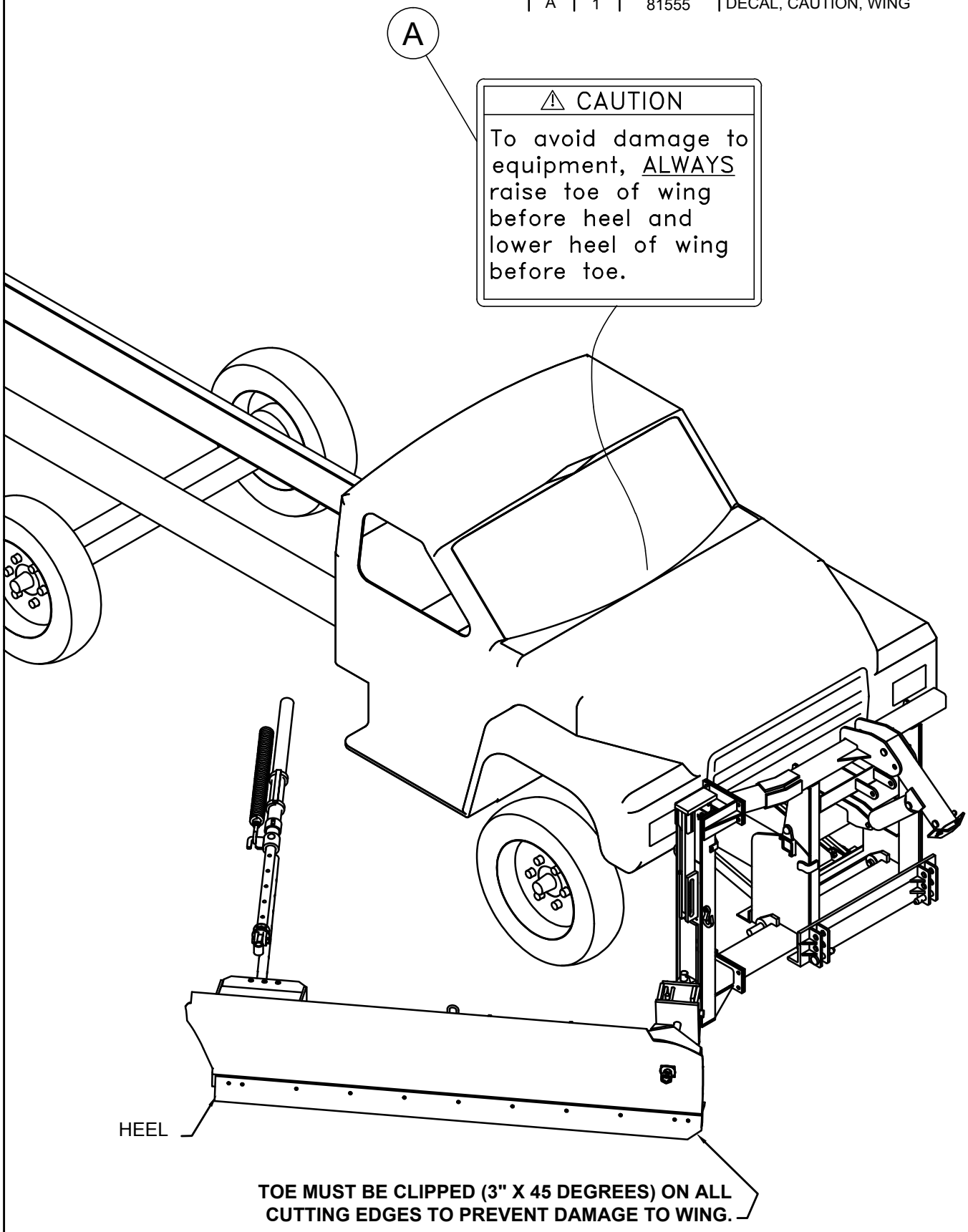
NOTE: THIS DECAL SHOULD BE INSTALLED IN THE CAB OF THE TRUCK IN THE SIGHT OF THE OPERATOR.



95593

NOTE: THIS SAFETY DECAL IS PROVIDED WITH THE POWER TILT HITCH. IT SHOULD BE MOUNTED ON THE TILT SECTION SIDE PLATE DRIVER'S SIDE OF THE HITCH.

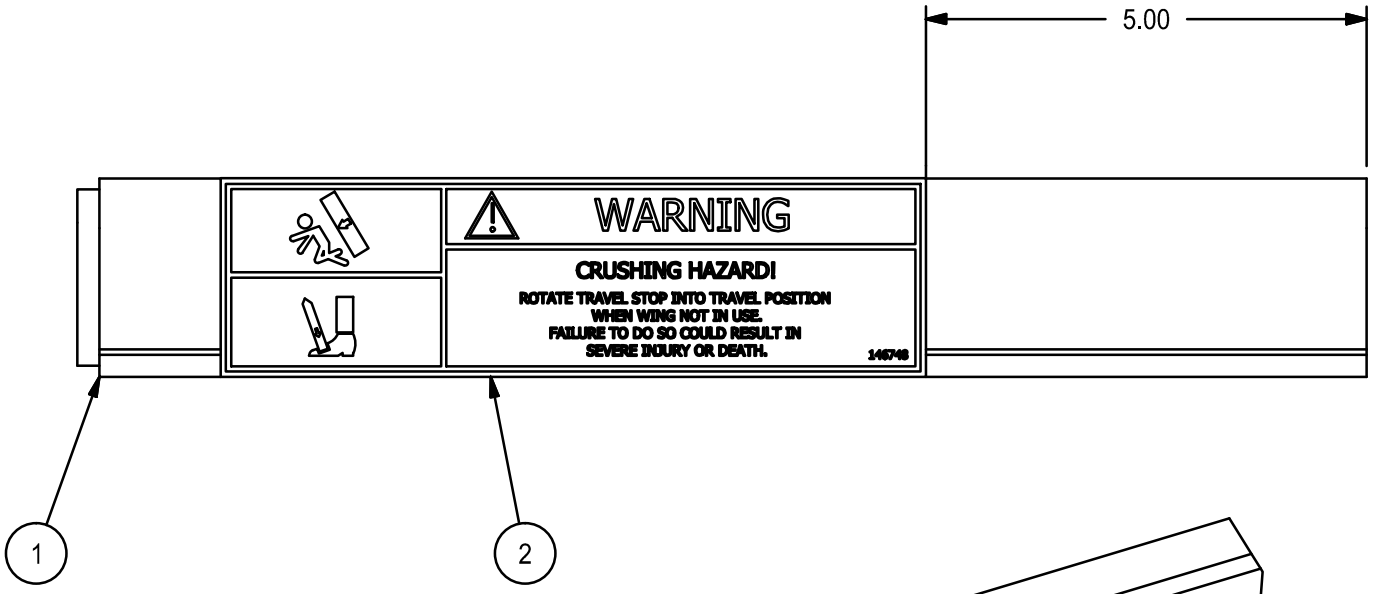
PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
A	1	81555	DECAL, CAUTION, WING

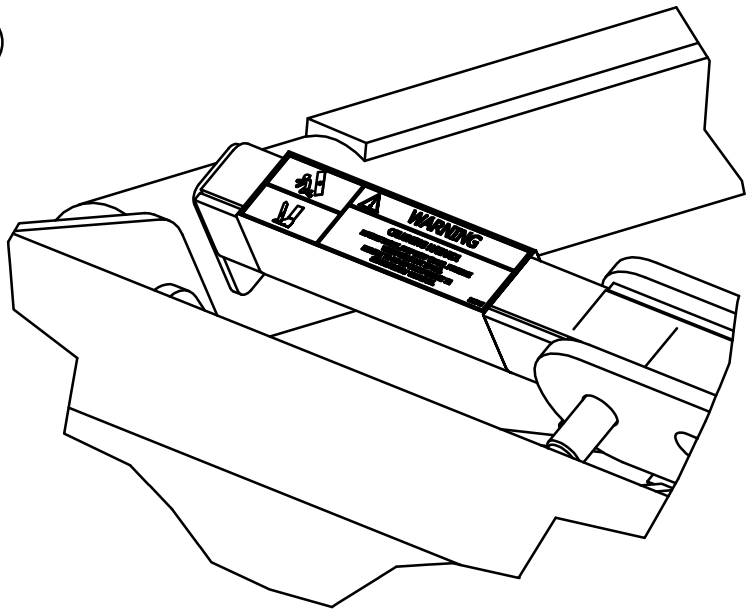


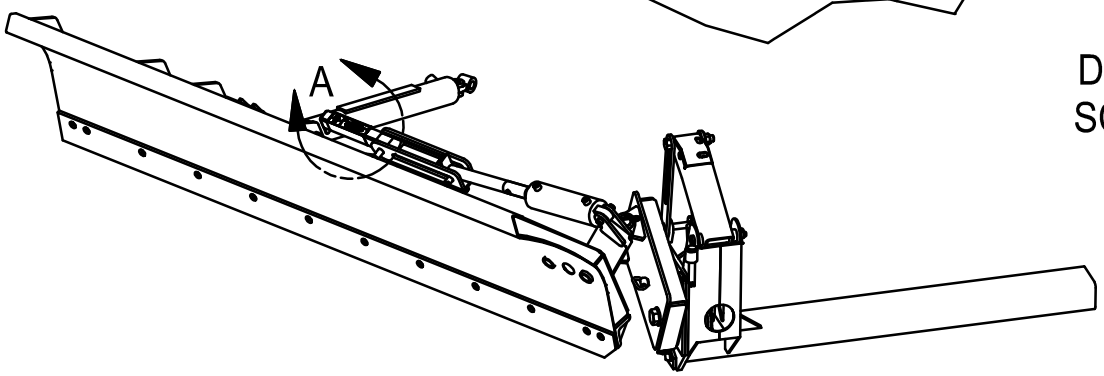
MAN26□2D

INSTALL THE SMART LINK STOP DECAL ON THE STOP (130119) AS SHOWN. THE DECAL SHOULD FULLY WRAP AROUND THE STOP AND OVERLAP. THE DECAL WARNING SHOULD BE VISIBLE AND UPRIGHT WITH THE STOP IN THE "PLOWING POSITION" AS SHOWN.

BILL OF MATERIALS			
ITEM	PART NO	QTY	DESCRIPTION
1	130119	1	STOP, WLDT, CYLINDER
2	146748	1	DECAL,WARNING,WING CRUSHING HAZARD





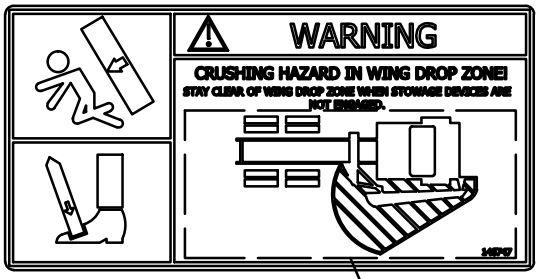


DETAIL A
SCALE 1/5

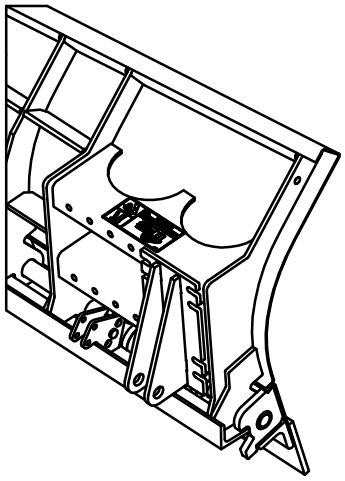
SMARTLINK TRAVEL STOP DECAL

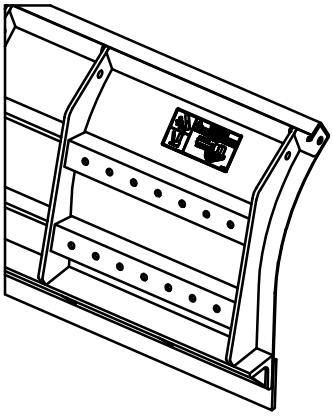
WARNING! A CRUSHING HAZARD EXISTS IN THE AREA BETWEEN THE FRONT AND REAR WING SUPPORTS AND EXTENDS OUT AWAY FROM THE TRUCK AT THE REAR SUPPORT A DISTANCE GREATER THAN THE BRACE LENGTH(S). WING STOWAGE DEVICES SHOULD BE INSTALLED AND ENGAGED WHEN THE WING IS RAISED AND NOT IN USE.

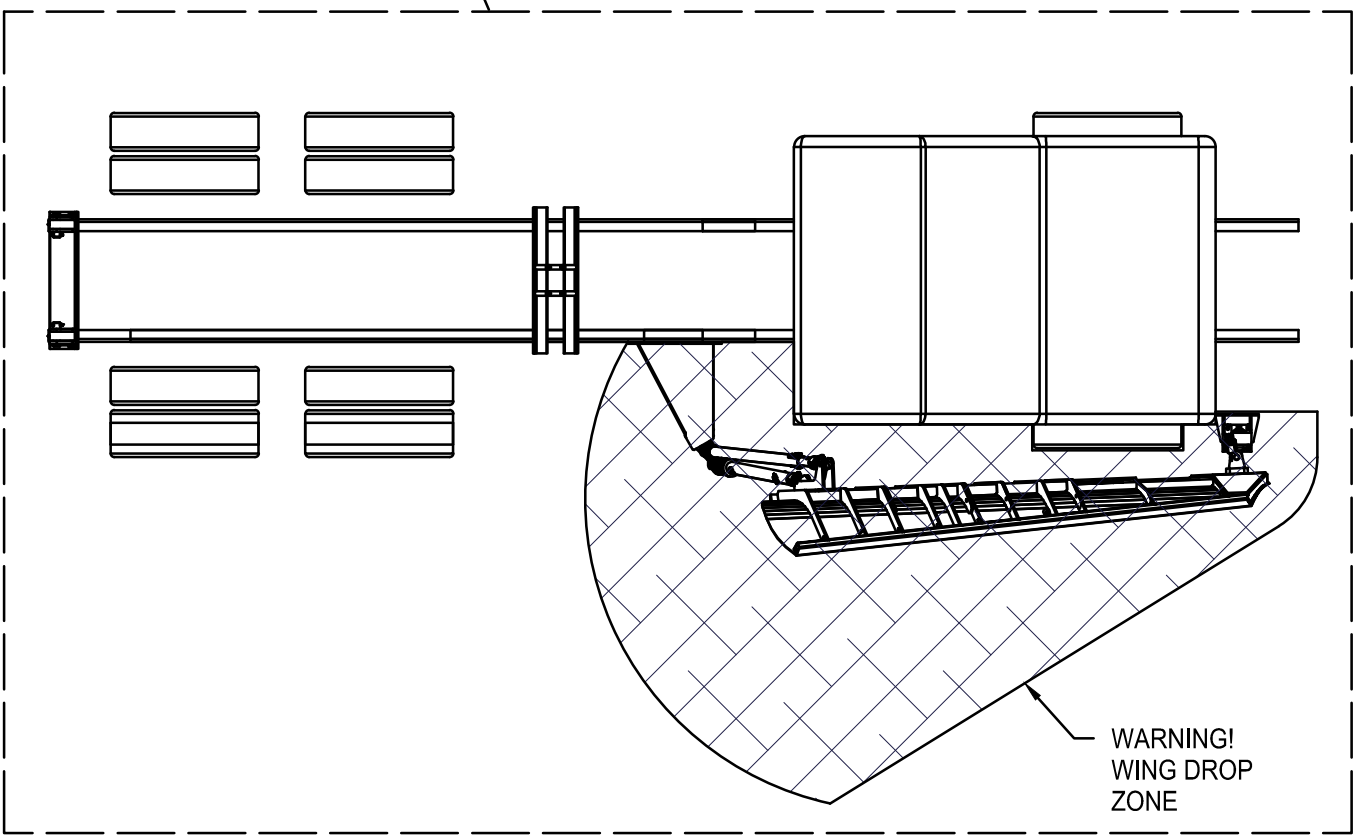
PLACE DECAL ON TRUCK SIDE, HEEL END OF THE MOLDBOARD, IN THE MOST VISIBLE AREA AVAILABLE.



DECAL #146747







DANGER WING DROP ZONE

Installation and Removal of Equipment Safety

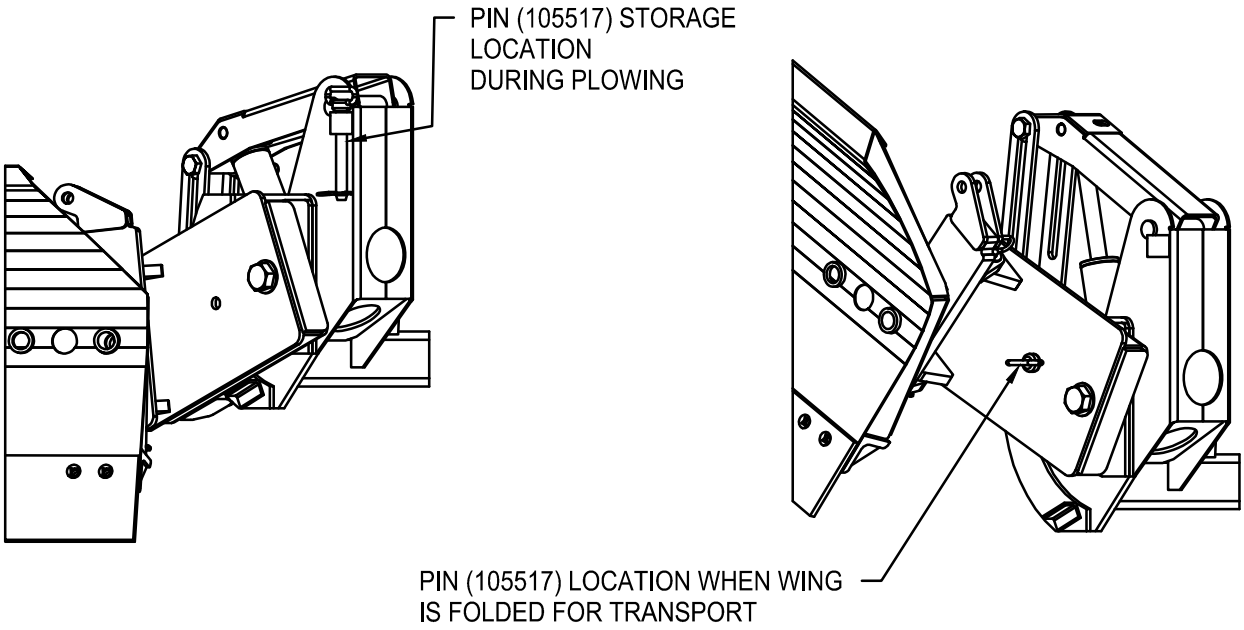
- ⚠ NOTE: Any additional hardware used in assembly or repair must be a minimum of **Grade 8**. Failure to use proper hardware may result in equipment failure and possibly cause serious bodily injury.
- ⚠ NOTE: Do not weld to truck chassis frame at any time when mounting a wing system or hitch. Use a minimum of **Grade 8** hardware for mounting a wing system or hitch to the truck chassis.
- ⚠ Do not weld stowage chains to masts, supports, or braces. Welding the chain may weaken it, causing it to break under some circumstances which could result in injury or death.
- ⚠ NOTE: During the installation or removal of any equipment which requires to be lifted, use a suitable lifting device that is properly rated for the weight of the equipment to be lifted. Failure to do so could cause serious injury or death.

Operation Safety

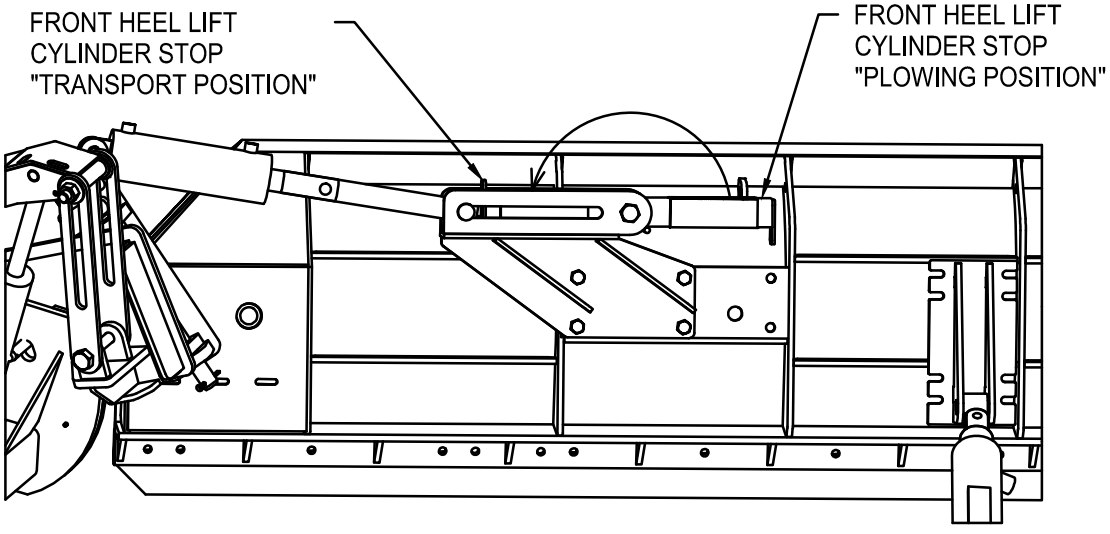
- ⚠ **Always** raise the front (toe) of the wing off the ground first, then the rear (heel). **Always** lower the rear (heel) of the wing to the ground first then the front. Severe equipment and road damage will occur with the possibility of personal injury if this procedure is not followed.
- ⚠ Do not tilt hitch with plow or wing attached to truck. Damage or injury can occur.
- ⚠ Carry or Transport Position: The toe of the wing should be 10”-12” from the ground and the heel should be at its highest position to prevent damage or injury.
- ⚠ **NOTE:** The stowage chain and/or stowage devices should be installed and engaged whenever the wing is not in use or is unattended with the wing in the raised position to prevent the wing from falling and causing damage, injury or death (see “Wing Drop Zone”).
- ⚠ Road Plowing Mode: The toe and heel of the wing should be on the ground. The full trip wing brace and dee (if equipped) may be either locked in or out of trip mode. Truck speeds in this mode should be between 25-40 MPH. Some conditions may require slower speeds. It is very important not to overdrive the equipment given the plowing conditions. Doing so will shorten the life cycle of the equipment.
- ⚠ Full Trip Dee and Wing Brace Lockout: Do not run the wing at ground level (shouldering) with the lock pins inserted in either the trip dee or wing brace. Damage to the wing components and/or chassis may result if the lock pins are used while plowing at ground level. Never insert one lock pin and not the other. Winging with one pin in and one pin out can cause wing component and/or chassis damage as well as unsafe travel conditions.
- ⚠ Leveling (benching) Mode: The front of the wing should be slightly lower than the rear of the wing. The full trip wing brace and dee (if equipped) should be locked into the non-trip mode. Truck speeds should be very slow in this mode. Extra care should be taken to avoid hitting objects hidden under the snow banks. These objects can cause substantial equipment damage and may cause injuries. The operator should also be aware of the surfaces being driven on. Keep the truck on hard, level ground.

THE SMART LINK ARM SHOULD BE PINNED TO THE FRAME WHEN THE WING IS FOLDED IN THE TRANSPORT POSITION FOR AN EXTENDED PERIOD OF TIME. RAISE THE ARM WITH THE TRUCK HYDRAULICS, REMOVE THE PIN FROM THE STOWED POSITION AND INSERT THROUGH THE HOLE IN THE ARM AND THE MAST FRAME. INSTALL THE HAIRPIN THROUGH THE HOLE IN THE PIN.

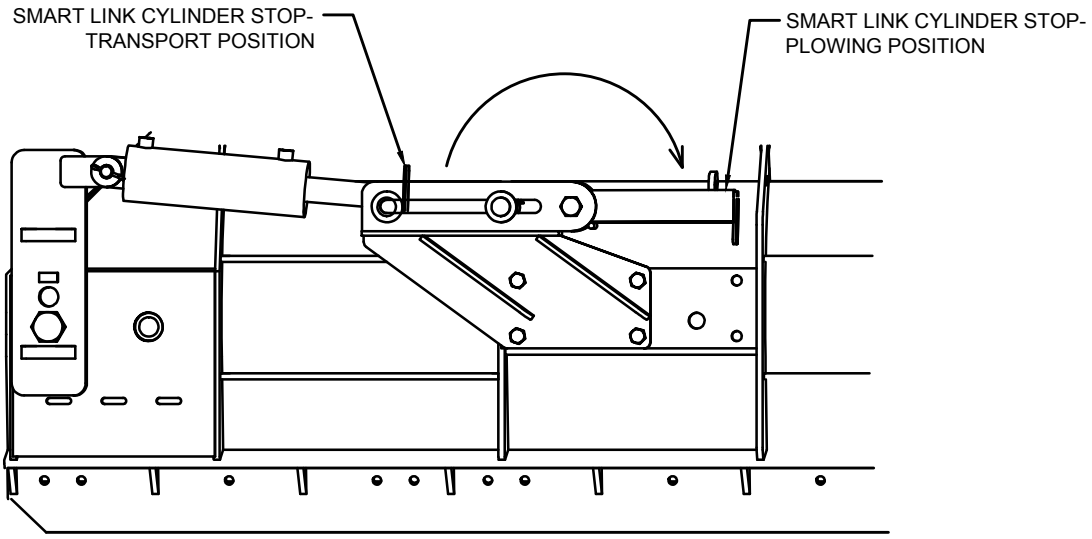
BEFORE THE WING IS LOWERED FOR PLOWING, REMOVE THE PIN FROM THE ARM AND PLACE IT IN THE STORAGE LOCATION.

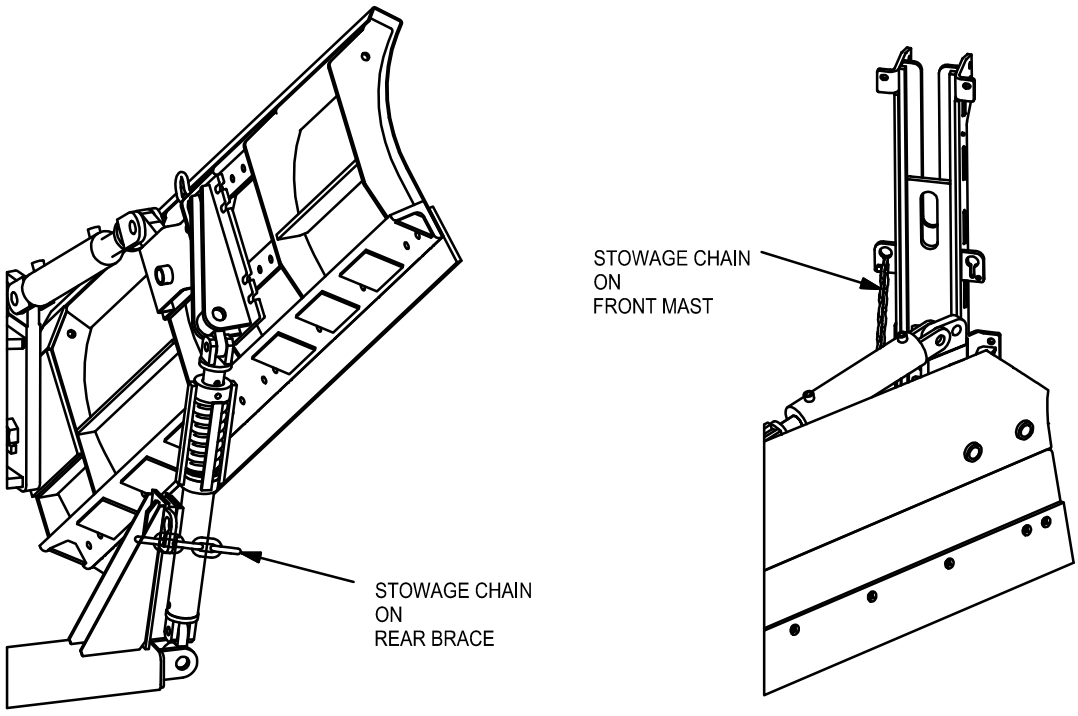


THE CYLINDER STOP SHOULD BE ROTATED INTO "TRANSPORT POSITION" NEXT TO THE HEEL LIFT CYLINDER ROD WHEN THE WING IS FOLDED FOR TRANSPORT FOR AN EXTENDED PERIOD.
BEFORE LOWERING THE HEEL, ROTATE THE STOP INTO THE "PLOWING POSITION".



1. WITH THE TRUCK ENGINE RUNNING, OPERATE THE HYDRAULIC CONTROLS TO ENSURE THE HYDRAULIC SYSTEM IS FUNCTIONING PROPERLY.
2. USING THE HYDRAULIC CONTROLS, RAISE BOTH THE WING TOE AND WING HEEL TO THE FULL EXTENT. FAILURE TO DO THIS COULD RESULT IN THE MOLDBOARD SUDDENLY FALLING WHEN THE STOWAGE CHAIN IS REMOVED.
3. ON CONVENTIONAL SLIDE MASTS, UNHOOK THE UNBOLTED END OF THE STOWAGE CHAIN FROM THE CHAIN HOOK. **SMART LINK ONLY**: REMOVE THE PIN FROM THE TRAILING LINK AT THE TOE END AND PLACE IT IN THE PIN STORAGE LOCATION (SEE SMART LINK TRANSPORT). ADDITIONALLY, ROTATE THE CYLINDER STOP FROM THE TRANSPORT POSITION TO THE PLOWING POSITION (SEE ILLUSTRATION BELOW).
4. ENSURE THE "WING DROP ZONE" IS CLEAR OF PEOPLE AND OBJECTS, POSITION YOURSELF BEHIND THE REAR SUPPORT AND CLEAR OF THE WING HEEL AND UNCHAIN THE STOWAGE TRANSPORT CHAIN FROM THE REAR BRACE. EXIT THAT POSITION BY AVOIDING THE "WING DROP ZONE" IF POSSIBLE.
5. USING THE HYDRAULIC CONTROLS IN THE CAB, LOWER THE HEEL TO THE GROUND AND THEN THE TOE.





MAN300 UNSTOWING

Maintenance and Service Safety

⚠ NOTE: The hydraulic system is under extreme pressure and can cause serious personal injury if released. Never use your hands to check for leaks with the system under pressure. Always wear safety glasses. Never let any part of your body be under the wing if the stowage devices are not engaged. Serious personal injury can occur.

⚠ The Henderson Wing System was designed to reduce maintenance and to make required maintenance easier. OBSERVE CAUTION/SAFETY LABELS AND INSTRUCTIONS BEFORE AND DURING ANY MAINTENANCE PROCEDURES.

⚠ **WARNING: Shut off all power, allow all moving parts to come to rest, and lower the wing to the ground before performing any maintenance operations.**

⚠ Snow removal equipment must be cared for and maintained regularly. Daily or pre-route inspection and maintenance are necessary. Failure to do so may affect efficiency, equipment life, or safety.

⚠ A visual inspection must be carried out after every eight hours of operation. **See page 9-01 in the General Information Section for a recommended practice for checking for loose hardware**. Look for damaged components, bends, cracked welds or hydraulic leaks. Repair immediately. It is recommended to re-torque all bolts after the first eight hours of use and to regularly check for loosened or missing fasteners. Replace any damaged fasteners immediately.

⚠ Because of the environment in which snow equipment is expected to operate, hydraulic lines, fasteners, wearable or replaceable items and warning decals may become damaged by snow, ice and road debris. These items must be inspected daily and replaced if necessary to avoid equipment damage or personal injury.

⚠ Equipment with Cables: Inspect all cables for signs of wear daily with a thorough inspection weekly during the plowing season. If any broken strands are found, “bird caging” is evident, or kinking is found, replace the cable immediately. **NOTE: A broken cable could result in severe injury or death.** Lubrication is very important to the life of the cable. While the cable is lubricated at the factory, it should be cleaned and re-lubricated with a light bodied oil periodically. Oil is applied most effectively on the radius of a sheave. The movement of the cable over the sheave allows the oil to penetrate the cable.

⚠ Mounting bolts are Grade 8 cap screws with hardened flat washers. Care should be taken not to mix or misplace them when the snowplow is removed during the off-season. Be sure to replace any fasteners with damaged threads.

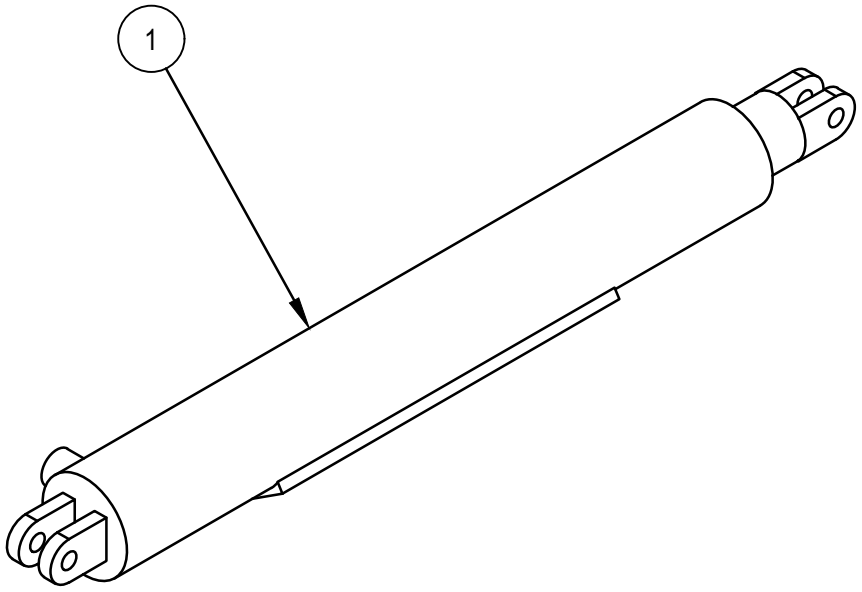
PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
1	1	106807	CYLINDER, 4.0-28, 3.00, DA, ACCUM
*	2	105418	JOINT,UNIVERSAL,WLDT,MALE
*	2	83310	SCREW,CP,HX,3/4NC X 3 1/2 G8
*	2	11483	NUT,LOCK,NYLON INSERT,3/4NC

* NOT SHOWN

WARNING:

This cylinder is pre-charged with nitrogen gas under pressure. Do not attempt to disassemble or service this part without first contacting Henderson Products, Inc.

CAUTION: To avoid damage to equipment, set relief pressure on the brace extend/retract circuit to 600-700 psi.



THIS PAGE

IS LEFT BLANK

INTENTIONALLY.

WING SYSTEM

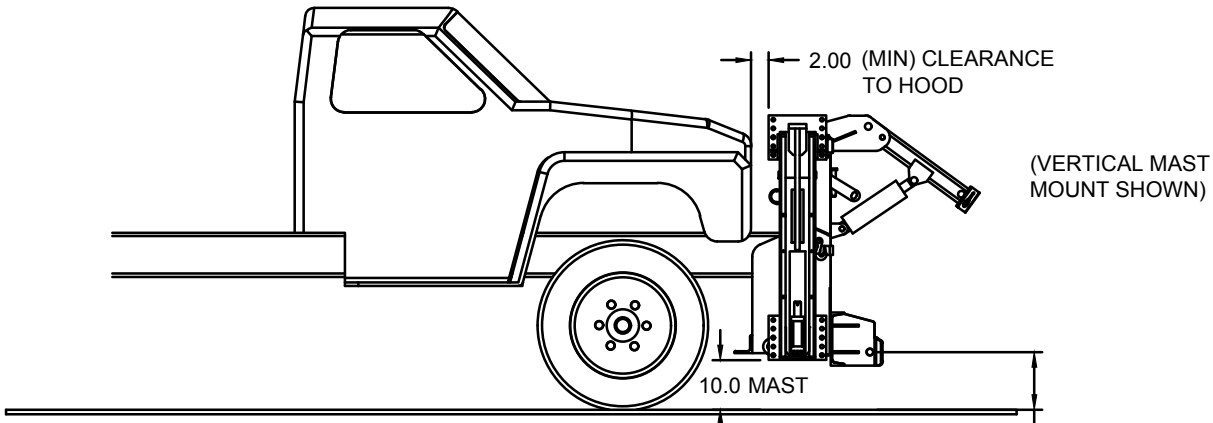
INSTALLATION & OPERATION

PROCEDURES

HYDRAULIC SYSTEM REQUIREMENTS

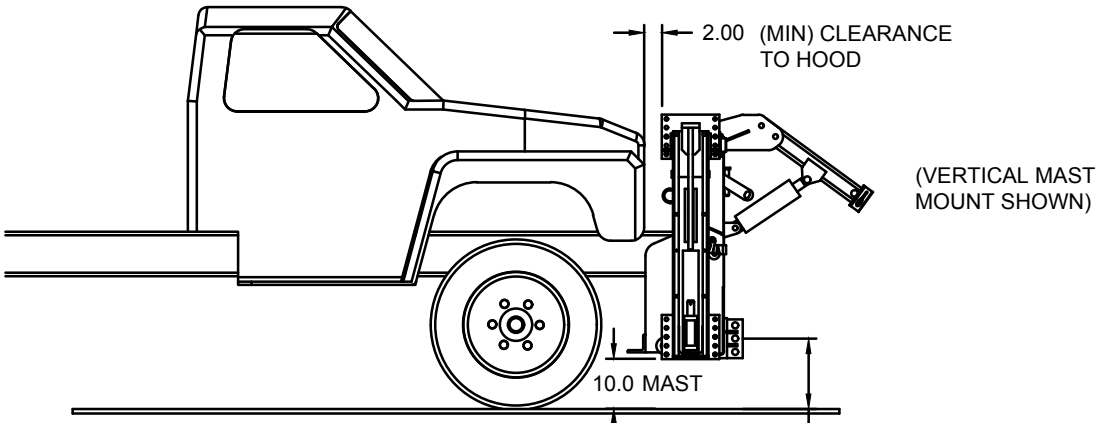
PUMP SIZE	20 gpm
CONTROL VALVES	
Toe lift function	7-10 gpm – double acting
Heel lift function	7-10 gpm – double acting
Brace extend/retract (opt.)	7-10 gpm – double acting
RELIEF PRESSURE	2000 psi
FILTRATION	10 micron rating
HOSE	0.50 dia. SAE 100R2 minimum

HEIGHTS FOR POWER TILT QUICK-HITCH



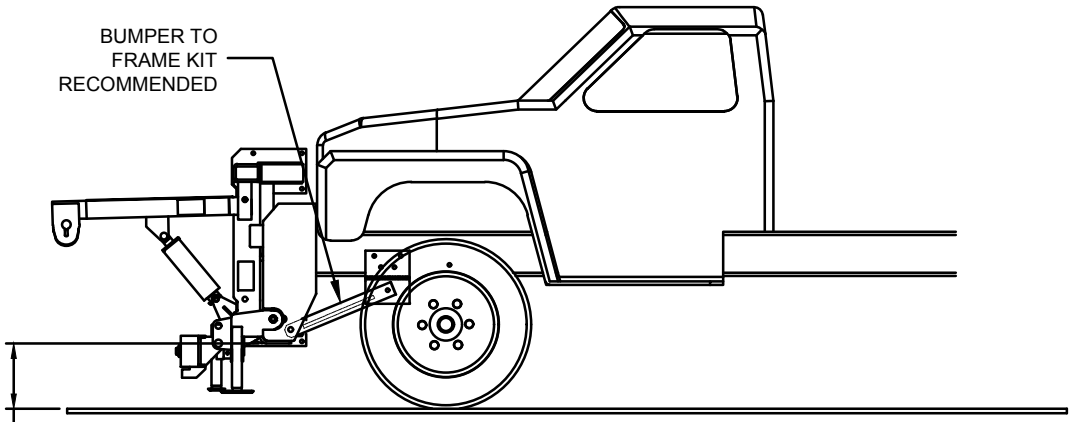
PIN HEIGHT FOR REVERSIBLE PLOW - 13"
PIN HEIGHT FOR OUTBOARD CYLINDER RSP - 14 1/2"
PIN HEIGHT FOR FULL TRIP ONE-WAY PLOW - 13"
PIN HEIGHT FOR SLOTTED TRIP ONE-WAY PLOW - 17 3/8"

HEIGHTS FOR POWER TILT PIN HITCH



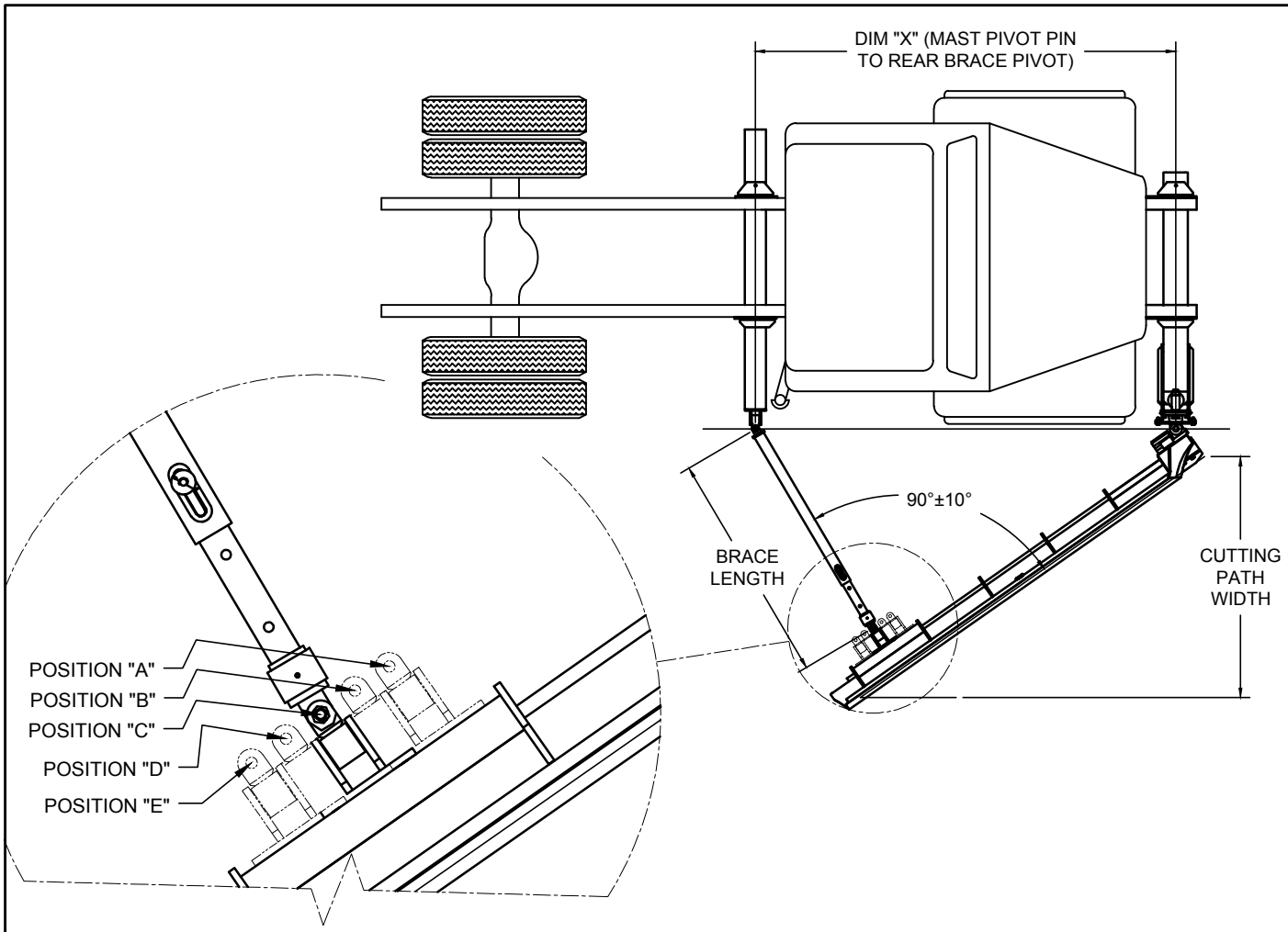
CENTER PIN HEIGHT FOR REVERSIBLE PLOW - 14 5/8"
CENTER PIN HEIGHT FOR OUTBOARD CYLINDER RSP - 16 1/4"
CENTER PIN HEIGHT FOR FULL TRIP ONE-WAY PLOW - 14 5/8"
CENTER PIN HEIGHT FOR SLOTTED TRIP ONE-WAY - 19"

HEIGHTS FOR FLAT PLATE HITCH WITH WING



SEE DIAGRAMS ABOVE FOR PIN HEIGHTS FOR VARIOUS PLOWS

man11

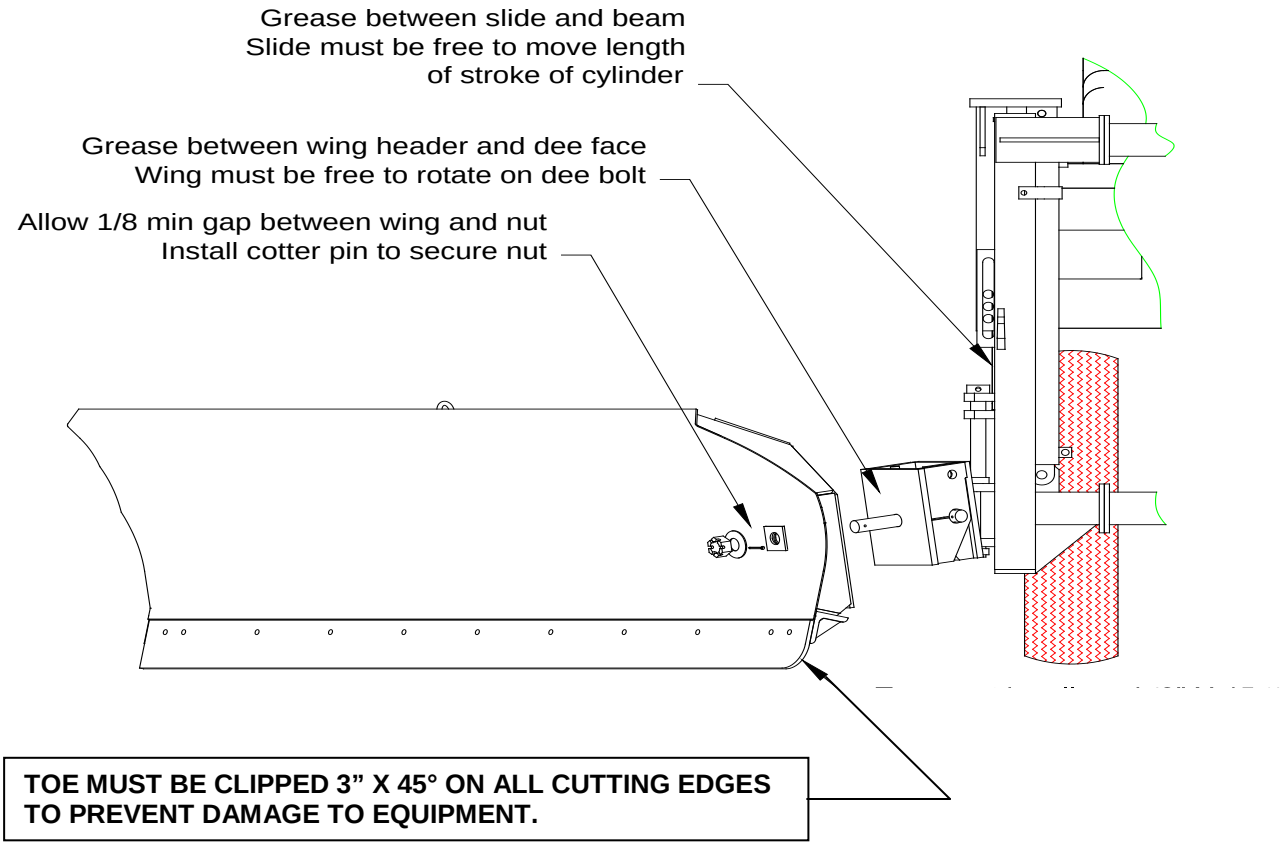


Front Mast Pivot Pin to Rear Brace Pivot Dimension (Dim "X")	Wing MoldBoard Length BRACE LENGTH" / BRACE RIB POSITION / CUTTING PATH WIDTH"				
	8'	9'	10'	11'	12'
110	83.5" / A / 71"	71.5" / A / 69"			
114	83.5" / C / 68"	77.5" / A / 72"	66.5" / A / 69"		
118	83.5" / E / 66"	83.5" / A / 75"	71.5" / A / 72"		
122	83.5" / E / 64"	83.5" / C / 73"	77.5" / A / 76"		
126	83.5" / E / 62"	83.5" / D / 71"	83.5" / A / 79"	66.5" / A / 70"	
130		83.5" / E / 69"	83.5" / B / 77"	71.5" / A / 74"	
134		83.5" / E / 66"	83.5" / D / 75"	77.5" / A / 77"	
138			83.5" / E / 73"	83.5" / A / 81"	71.5" / A / 77"
142			83.5" / E / 71"	83.5" / B / 79"	83.5" / A / 87"
146				83.5" / D / 77"	83.5" / B / 85"
150				83.5" / E / 75"	83.5" / C / 83"
154					83.5" / D / 81"

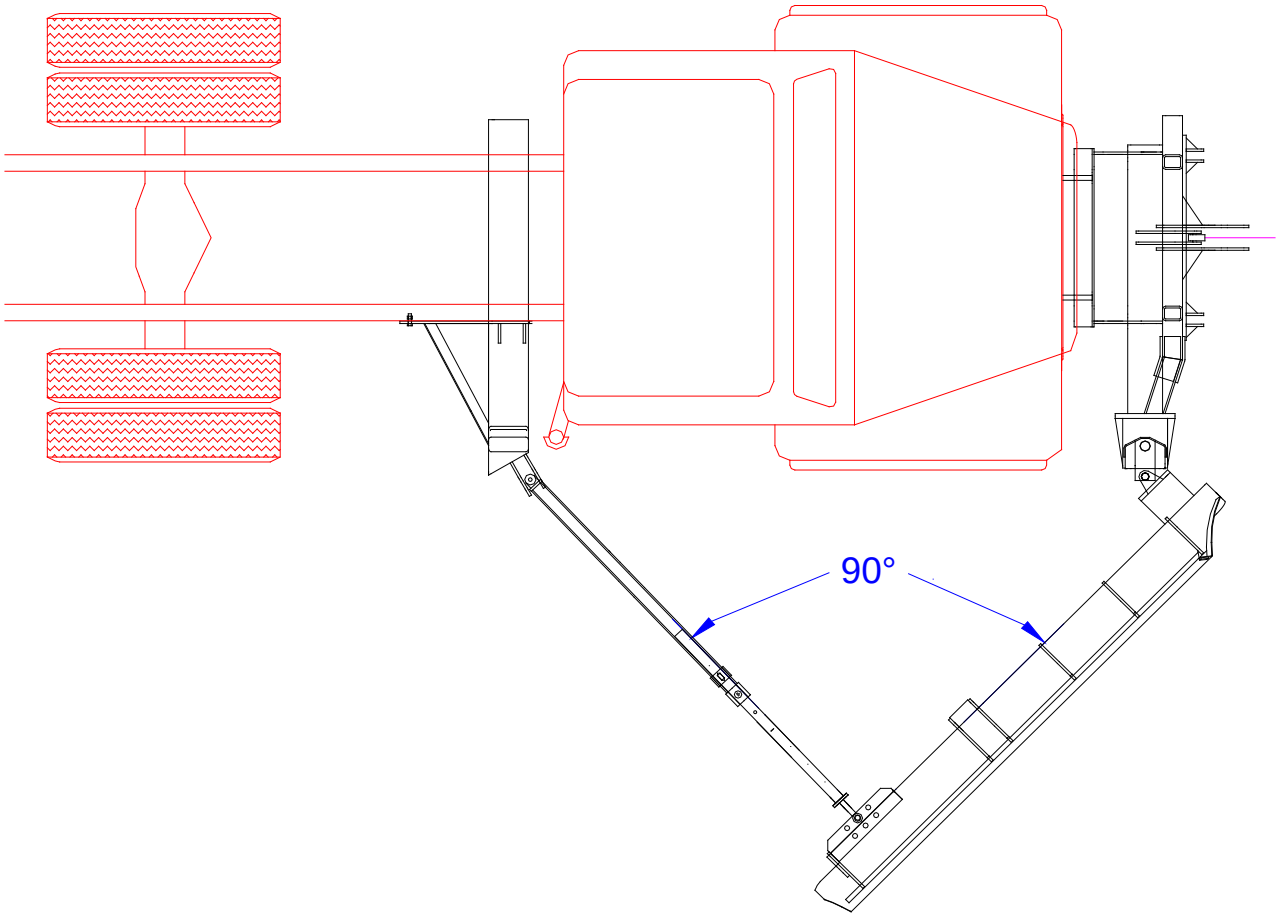
	Wing Moldboard Length NOT RECOMMENDED for this Mast Pivot Pin/Rear Brace Pivot Distance
	Maximum / Optimum Length Moldboard and Mast Pivot Pin/Rear Brace Pivot Combinations
Brace Length Settings:	See page 2-05 for instructions on adjusting Brace Length.
Adjustable Rib on Wing Settings:	Position A is the location closest to the truck; Position E is the position furthest from the truck.

Wing Installation & Set-up

Attach the front of the wing to the dee bolt on the front post. There must be clearance between the wing and the plow in the plowing position, the carry position and when both the plow and wing trip. The wing and the plow must be able to travel though all of its travel without interfering with each other. The plow must also overlap the toe of the wing. Too little overlap will allow snow to "dribble" between the plow and wing. The dee nut should be tightened then loosened ½ - 1 turn to allow the moldboard to pivot freely. Make sure that the cotter pin is installed properly through the dee nut and bolt to keep the nut in place.



Attach the wing braces to the rear support or mast with the fasteners provided. Attach the rear of the wing to the wing braces. The angle between the wing brace and wing should be as close as possible to 90° (see pages 2-03 and page 2-05). The closer this measurement is to 90°, the stronger the connection will be. It will also provide for a much smoother operating wing.



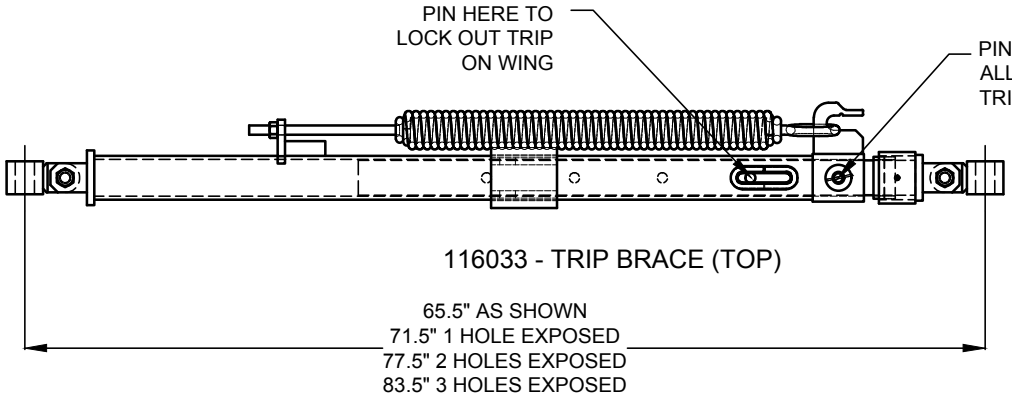
Dual Brace Applications:

Refer to the wing brace parts pages 4-04 to 4-05 for proper orientation of the wing braces. Special care needs to be taken that the braces are adjusted to the same length. If the braces are of unequal length, equipment damage can occur or the wing will not operate or fold properly. The full trip wing brace should be used as a top wing brace only. This brace has an extension spring, which allows the wing to trip when an obstacle is encountered. **Note:** The spring should face the rear of the truck for maximum clearance with exhausts, etc. **Note:** On full trip applications, both the trip brace and the trip dee must be in the same mode, either both locked out of trip mode or unlocked and free to trip (see page 2-08). A standard wing brace is used as a bottom brace for tripping applications. See parts page for proper identification.

THIS PAGE

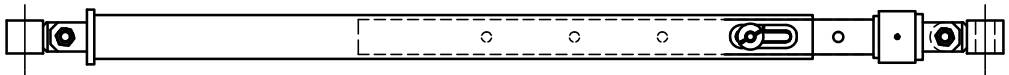
IS LEFT BLANK

INTENTIONALLY.



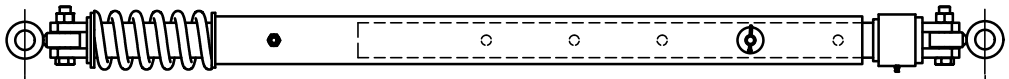
116033 - TRIP BRACE (TOP)

65.5" AS SHOWN
71.5" 1 HOLE EXPOSED
77.5" 2 HOLES EXPOSED
83.5" 3 HOLES EXPOSED



116036 - STANDARD BRACE

65.5" 1 HOLE EXPOSED
71.5" 2 HOLES EXPOSED
77.5" 3 HOLES EXPOSED
83.5" 4 HOLES EXPOSED



116038 - SHOCK BRACE

65.5" AS SHOWN
71.5" 1 HOLE EXPOSED
77.5" 2 HOLES EXPOSED
83.5" 3 HOLES EXPOSED

IMPORTANT:
FOR WINGS USING DUAL PUSH ARMS, BOTH PUSH ARMS MUST BE ADJUSTED TO THE SAME LENGTH FOR WING TO FOLD PROPERLY.

Wing Installation & Set-up (continued)

Brace Heel Lift:

Most full trip applications have a cylinder located between the braces to raise and lower the heel (rear) of the wing. Refer to page 2-09 for illustrations of the following procedures.

After attaching the braces to the rear support, position the base of the cylinder and the pivot ear weldment on the rear support and attach with the fasteners provided. Attach the rod end of the cylinder to the sliding collar on the top wing brace. Raise the toe of the wing to the transport position, approximately 6" – 12" off the ground. Using an overhead crane, raise the heel of the wing not closer than 4" from the passenger side mirror, exhaust stack, front fender etc. Extend the wing brace cylinder fully. Mark the location of the outer side of the sliding collar on the top wing brace. Lower the heel and toe to the ground and fully retract the wing brace cylinder. Position two split collar stops (P/N 88429) ½" – ¾" inside (truck side) of the extended mark made earlier when the cylinder was extended. Weld all around the outside of the collar and the seam with a ¼" fillet. Install the other two split collar stops 9" (inside to inside) from the first collar stops on the opposite side of the sliding collar. Weld all around on the side opposite the sliding collar and at the seams between the collars. Locate strap (P/N 115166) between the cylinder lugs on the sliding collar. With a 1/16" gap between the strap and the split collars to allow the sliding collar to slide, weld the strap to the split collars on both ends all around with a ¼" fillet.

Install stowage chain lug and stop. See page 2-11 for instructions and illustrations.

PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
A	1	116033	PUSH ARM ASSEMBLY, TRIP
B	1	116038	PUSH ARM ASSEMBLY, STD
C	1	82470N	CYLINDER, 3-14.88, 2.0, DA, NIT
	1	107445	CYLINDER, 3-14.88, 2.0 DA, NIT, DCELL
D	4	88429	COLLAR, HALF, TRIP ARM
E	1	115166	STRAP, COLLAR, TRIP ARM

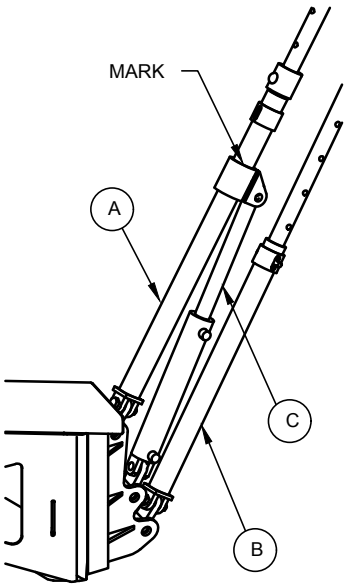


FIG. 1

CYLINDER FULLY EXTENDED

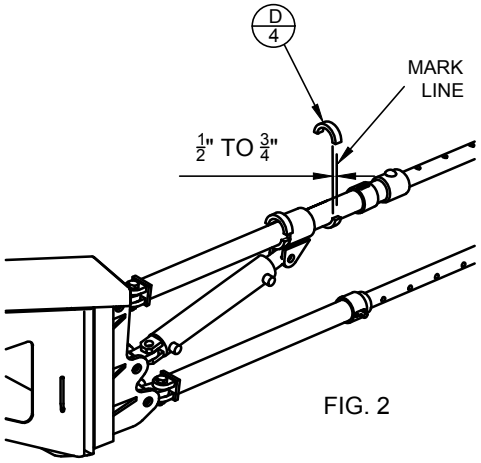


FIG. 2

CYLINDER FULLY RETRACTED

STEP 1. COMPLETE THE ENTIRE INSTALLATION INCLUDING HYDRAULIC SYSTEM AND CONTROLS. CONNECT CYLINDER (ITEM "C") AS SHOWN IN FIG. 2.

STEP 2. RAISE THE FRONT OF THE WING (TOE) TO THE TRANSPORT POSITION. USING AN OVERHEAD HOIST OR OTHER SUITABLE AND SAFE LIFTING DEVICE, RAISE THE HEEL OF THE WING TO ITS FOLDED POSITION.

STEP 3. OPERATE THE HEEL LIFT CYLINDER TO EXTEND IT TO ITS MAXIMUM LENGTH. WITH A WELDERS PENCIL OR PAINT, MARK THE UPPER ARM (ITEM "A") AT THE OUTER END OF THE SLIDING COLLAR. FIG. 1

STEP 4. RETRACT THE HEEL LIFT CYLINDER COMPLETELY. LOWER THE WING (TOE AND HEEL) TO THE FLOOR. THE SPLIT COLLAR (ITEM "D") SHOULD BE POSITIONED ONE-HALF (1/2) TO THREE QUARTERS (3/4) OF AN INCH INSIDE THE MARK (TOWARDS TRUCK) MADE IN STEP 3. WELD THE COLLAR ALL AROUND ONLY ON SIDE AWAY FROM THE SLIDING COLLAR. WELD SEAMS ALSO.

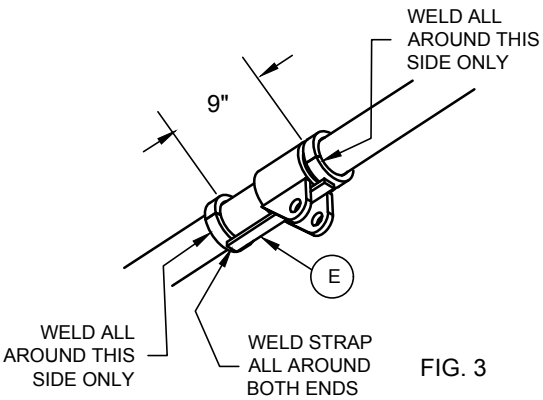


FIG. 3

STEP 5. LOCATE SECOND SPLIT COLLAR 9" (INSIDE TO INSIDE) FROM FIRST SPLIT COLLAR ON OPPOSITE SIDE OF SLIDING COLLAR. FIG. 3. WELD ALL AROUND SPLIT COLLAR ON SIDE AWAY FROM SLIDING COLLAR. WELD SEAMS ALSO.

STEP 6. LOCATE COLLAR STRAP (ITEM "E") BETWEEN CYLINDER COLLAR LUGS TO PREVENT SLIDING COLLAR FROM ROTATING. WELD BOTH ENDS OF STRAP TO SPLIT COLLARS.

man09

THIS PAGE

IS LEFT BLANK

INTENTIONALLY.

BILL OF MATERIALS			
ITEM	PART NO	QTY	DESCRIPTION
1	82399	1	RUBBER PAD,MOLDED,5.5
2	123002	1	PLATE,STOP,SIDE W/FLANGE
3	123003	1	PLATE,STOP,SIDE
4	82477	1	LUG, CHAIN, PUSH ARM

WING STOP INSTALLATION

STEP 1. TACK TOGETHER ITEMS 2 AND 3 AS SHOWN IN FIG. 1 TO FIT ON OUTSIDE OF BRACE BRACKET. CENTER RUBBER PAD ON ITEM 2 AND WELD IN PLACE.

STEP 2. RAISE WING TO FOLDED POSITION. LOCATE STOP TO CONTACT PUSH ARM AS SHOWN IN FIG. 2 AND MARK LOCATION ON THE ADJUSTABLE RIB BRACKET. LOWER WING AND WELD IN PLACE.

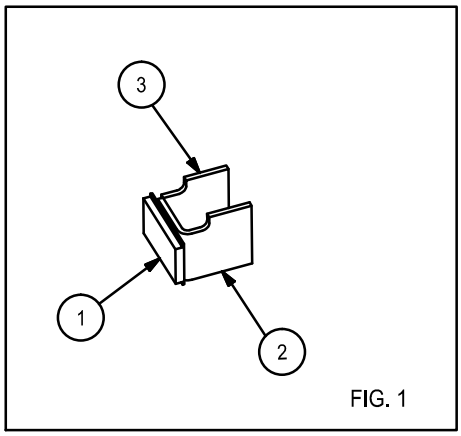


FIG. 1

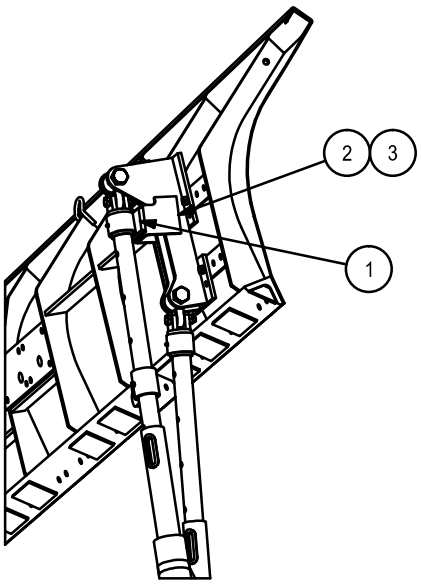


FIG. 2

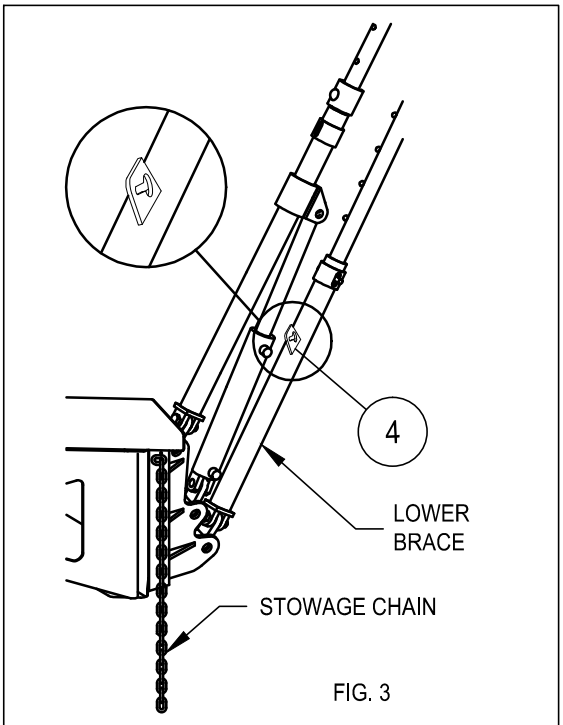


FIG. 3

CYLINDER FULLY EXTENDED

SAFETY CHAIN LUG INSTALLATION

STEP 1. RAISE WING INTO FOLDED POSITION. **ON LOWER BRACE**, LOCATE A SUITABLE PLACE ON THE OUTER TUBE WHERE THE CHAIN LUG (ITEM 4) WILL BE IN ALIGNMENT WITH CHAIN AND THE CHAIN WILL CLEAR THE BRACE LIFT CYLINDER. LOCATING THE LUG CLOSER TO THE OUTER END OF THE TUBE WILL PROVIDE MORE CLEARANCE AND REDUCE THE LOAD ON THE CHAIN. WELD CHAIN LUG TO BRACE WITH A ⅜" FILLET ALL AROUND. SEE FIG. 3

STEP 2. CHECK THE INSTALLATION. WITH THE STOWAGE CHAIN ATTACHED TO THE BRACE, USE THE HYDRAULIC CONTROLS TO RELEASE THE PRESSURE TO THE CYLINDER. CAUTION MUST BE TAKEN NOT TO APPLY DOWNWARD PRESSURE ON THE CYLINDER.

□a□30

FULL TRIP DEE LOCK PIN

When the wing is being used to plow at ground level (shouldering), the lock pin **should not** be inserted in the trip dee to prevent the dee from tripping. In this way, shock loads, caused by obstructions encountered at the wing, will be absorbed by the torsion spring within the trip dee.

When winging back (benching) banks, the lock pin **should** be inserted in the trip dee. When in place, the lock pin makes a rigid structure of the trip dee and locks out the torsion spring. This allows the wing to "cut" without tripping.

FULL TRIP TOP WING BRACE LOCK PIN

When the wing is being used to plow at ground level (shouldering), the lock pin for the top wing brace should be inserted through the spring collar. This allows shock loads encountered at the wing to be transmitted to the tension spring attached to the brace.

When winging back (benching) banks, this pin should be inserted through the slot in the tube. When in place, the lock pin makes a rigid structure of the top brace and locks out the tension spring.

SPRING LOAD ADJUSTMENT

In the event the wing may be tripping too hard (or too light), there is provisions for spring load adjustment at the top brace and on the trip dee.

The wing brace has a threaded eyebolt with nut (see drawing). Turning the bolt clockwise preloads the spring and makes the wing trip harder. Turning the bolt counter-clockwise unloads the spring and allows the wing to trip easier.

The trip dee has an adjusting u-bolt with lock nuts on the back side. Tightening the lock nuts preloads the trip spring and makes the wing trip harder. Loosening the lock nuts unloads the tension on the trip spring and allow the wing to trip easier.

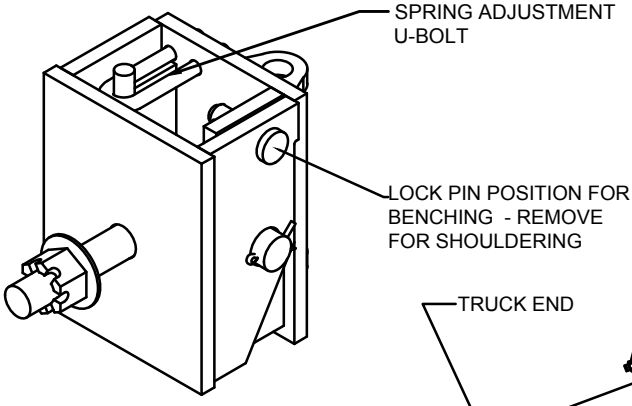
IMPORTANT

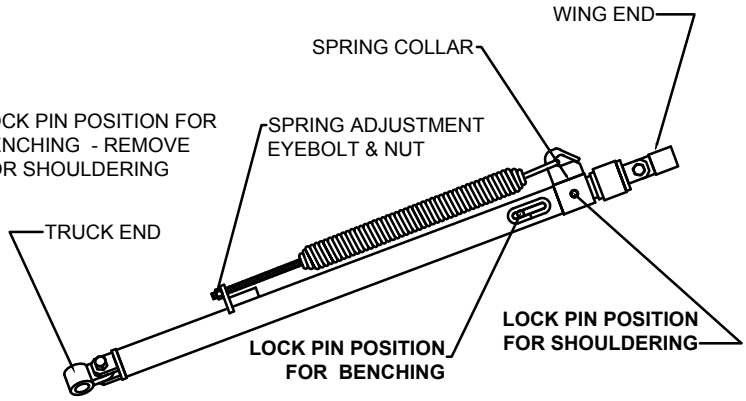
*Do not run the wing at ground level (shouldering) with the lock pins inserted in either the trip dee or wing brace. Damage to wing components and/or chassis may result if the lock pins are used while plowing at ground level.

*When winging back (benching), both pins should be used to avoid tripping.

***Never insert one lock pin and not the other**. Winging with one pin in and one pin out can cause wing component and/or chassis damage as well as unsafe travel conditions.

FULL TRIP DEE





FULL TRIP TOP WING BRACE

A 5" x 8" laminated card (part# 95589) of the above instructions are provided with each wing. We recommended installing the card in the cab of the truck in plain view for easy reference by the driver/operator. The card has an adhesive backing for ease in installation.

man27

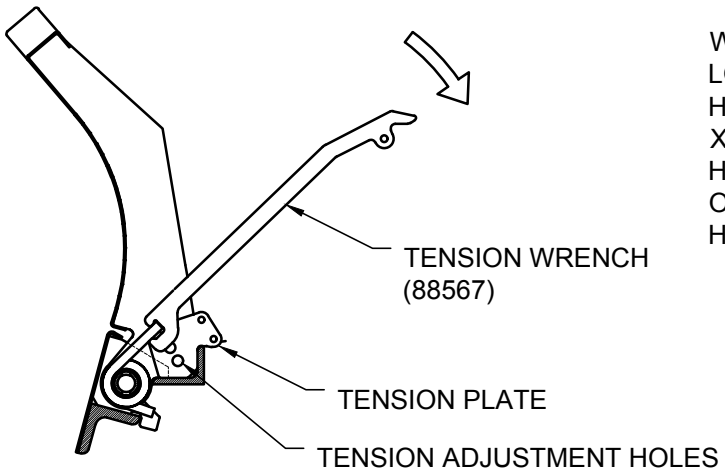


DIAGRAM 1

TO SET TENSION IN LOWEST SETTING:
1) USING BOX END OF TENSION WRENCH AS SHOWN IN DIAGRAM 1, LOWER END OF SPRING BELOW FIRST HOLE IN TENSION PLATE. INSERT 3/4 X 2 1/2 CLEVIS PIN (88571) IN FIRST HOLE. SLOWLY RELEASE PRESSURE ON SPRING. SECURE CLEVIS PIN WITH HAIR PIN (87430).

TO SET TENSION IN MIDDLE SETTING:
2) USING OPPOSITE END AS IN STEP 1, ALIGN HOLE IN TENSION WRENCH WITH TOP PIVOT HOLE IN TENSION PLATE (SEE DIAGRAM 2). INSERT 1/2 X 2 3/4 BOLT THROUGH TENSION PLATES AND WRENCH. LOWER END OF SPRING BELOW MIDDLE HOLE IN TENSION PLATE AND INSERT CLEVIS PIN. SLOWLY RELEASE SPRING TENSION AND SECURE CLEVIS PIN WITH HAIR PIN.

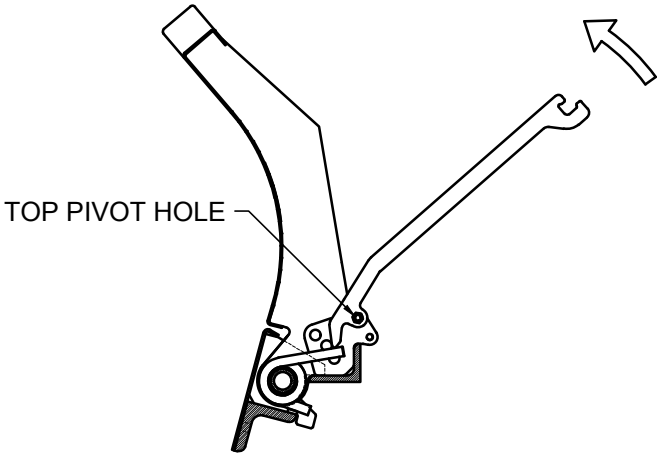


DIAGRAM 2

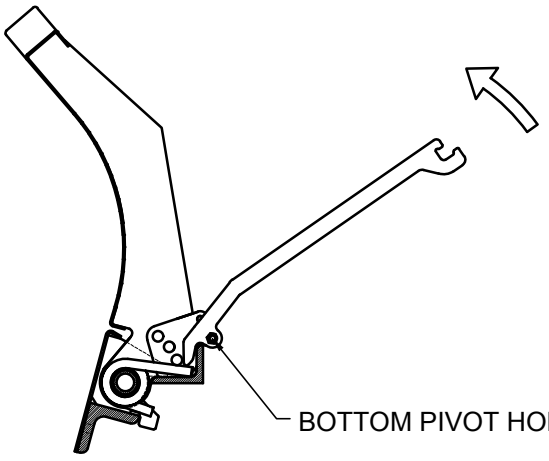


DIAGRAM 3

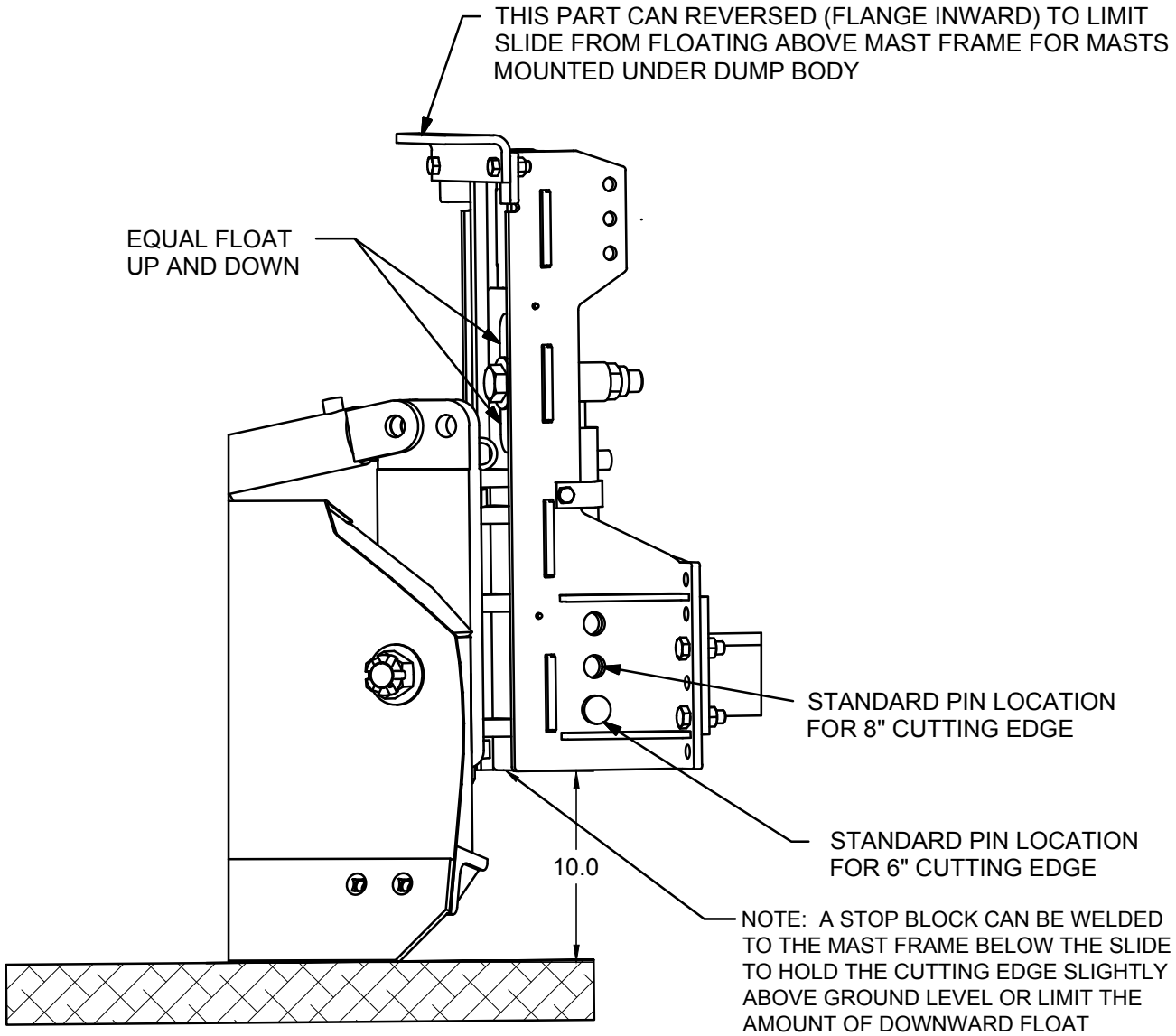
TO SET TENSION IN HIGHEST SETTING:
3) USING SAME END AS IN STEP 2, ALIGN HOLE IN TENSION WRENCH WITH BOTTOM PIVOT HOLE IN TENSION PLATE (SEE DIAGRAM 3). INSERT 1/2 X 2 3/4 BOLT THROUGH TENSION PLATES AND WRENCH. LOWER END OF SPRING BELOW BOTTOM HOLE IN TENSION PLATE AND INSERT CLEVIS PIN. SLOWLY RELEASE SPRING TENSION AND SECURE CLEVIS PIN WITH HAIR PIN.

teadj

There are 3 holes in the mast frame for locating the base end of the cylinder. The "standard" setting is to provide equal float upward and downward. With the mast mounted 10" above the ground, the standard setting for a 6" cutting edge or an 8" center punched cutting edge is the bottom hole. The standard setting for an 8" top punched cutting edge is the center hole. The top hole can be used to limit the amount of downward float, if desired.

The 8" lift and 12" lifts have an angle bracket (P/N 122088) at the top of the mast. The standard position is with the flange outward which allows the slide to float upward beyond the top of the mast frame. For masts mounted under the dump body with limited clearance, this part can be reversed to limit the slide from floating upward beyond the top of the mast frame and hitting the underside of the body.

NOTE: If the truck suspension is modified after wing installation to compensate for wing and equipment weight, the 10" mast height should be checked. The mast may need to be unbolted from the hitch or cross tube and raised or lowered to the 10" dimension to maintain proper float.



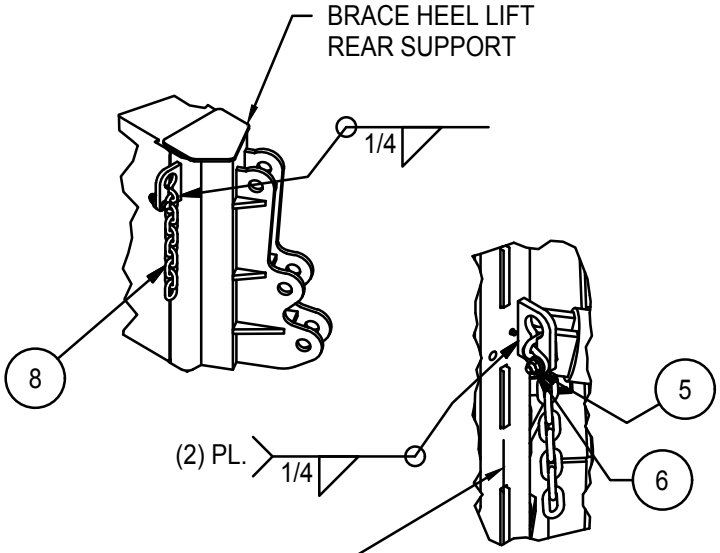
MAN100

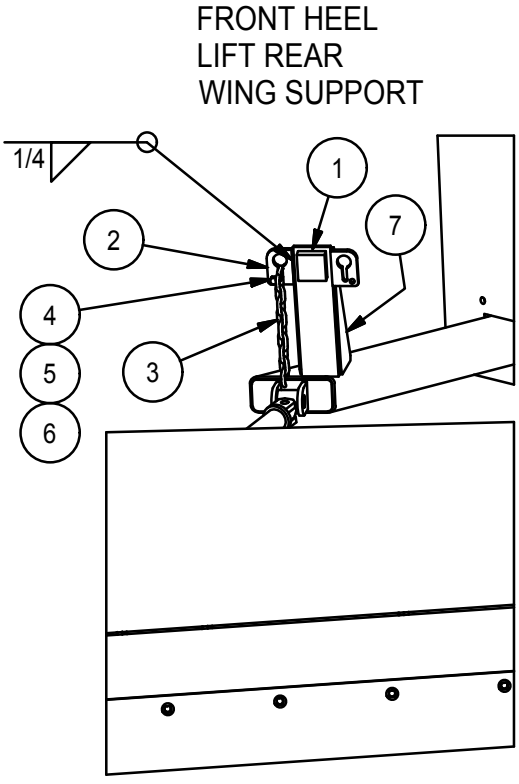
RAISE THE HEEL AND TOE TO THE DESIRED TRANSPORT POSITIONS (TOE 10" - 12" ABOVE THE GROUND). LOCATE THE CHAIN (81902) AND HOOKS (116649) ON THE FRONT MAST FRAME SO THE CHAIN CAN BE BOLTED IN THE REAR HOOK (AS SHOWN) AND ROUTED UNDER THE DEE LUGS AND CONNECTED TO THE SLOT IN THE FRONT HOOK FOR TRANSPORT.

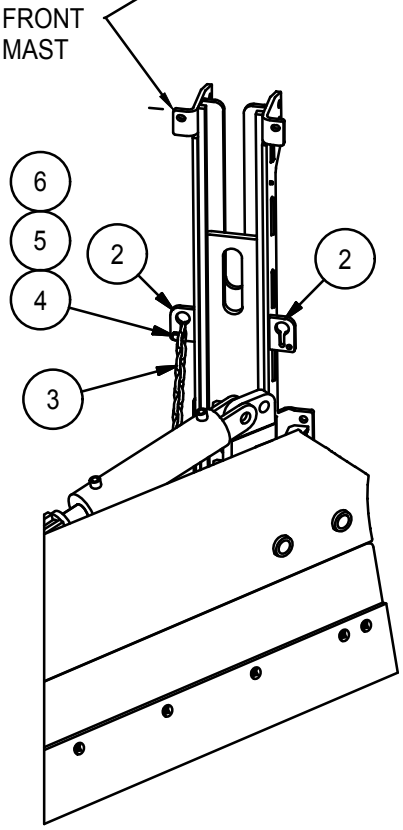
IF LOCATED LOW ENOUGH, THE CHAIN AND HOOKS CAN BE USED TO LIMIT THE AMOUNT OF DOWNWARD FLOAT DURING PLOWING. WELD BOTH FRONT HOOKS TO FRAME WITH 1/4" FILLET WELD AS SHOWN.

LOCATE AND WELD A CHAIN HOOK (116649), FROM THE WING MOUNT PACK, ON THE REAR SUPPORT SO THE CHAIN WILL HOLD THE WING BRACE AGAINST THE STOP. THE STOWAGE CHAIN ON THE REAR SUPPORT MUST BE BOLTED AT ONE OF THE CHAIN HOOKS AS SHOWN.

BILL OF MATERIALS			
ITEM	PART NO	QTY	DESCRIPTION
1	81781	1	STOP PLATE, WLDT
2	116649	3	CHAIN HOOK, 3/8
3	81902	2	CHAIN, 3/8, 21 LINKS
4	112479	2	SCREW, CP, HX, 1/2NC X 1 3/4, G8
5	112348	2	WASHER,FLAT,1/2" SAE
6	50418	2	NUT, TOPLOCK, FLG, 1/2-13NC
7	81776	2	GUSSET,STOP PLATE
8	74774	1	CHAIN, 3/8 X 60"







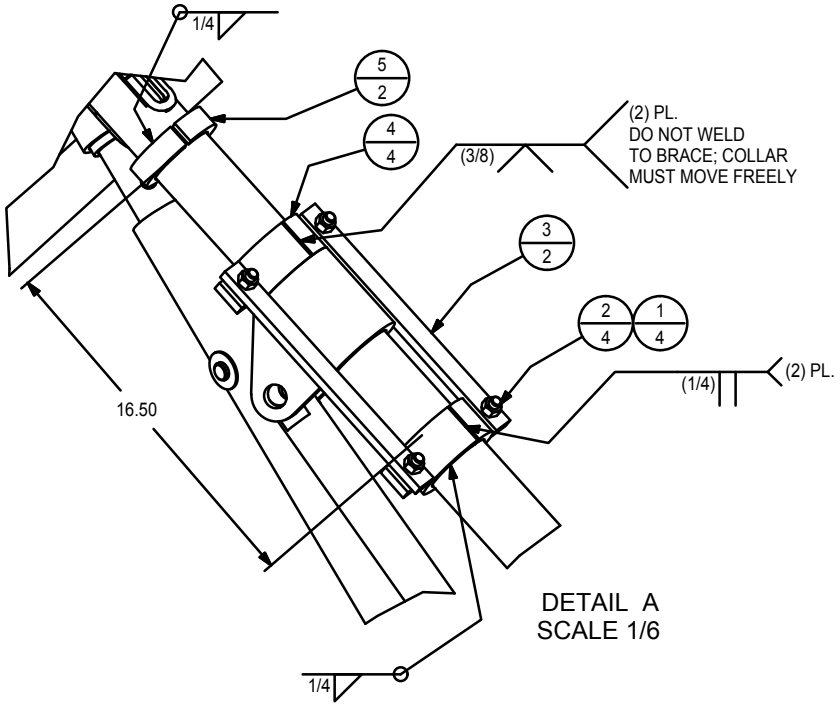
THIS PAGE

IS LEFT BLANK

INTENTIONALLY.

IMPORTANT NOTE: HEEL LIFT CYLINDER EXTEND CIRCUIT TO HAVE 1400 PSI MAX RELIEF TO MITIGATE RISK OF DAMAGE TO WING.

BILL OF MATERIALS			
ITEM	PART NO	QTY	DESCRIPTION
1	108665	4	NUT,TOPLOCK,1/2-13NC
2	145048	4	SCREW, CP, HX, 1/2NC X 1 3/4 G2
3	145239	2	STRAP, COLLAR, TRIP ARM, SHEAR
4	145241	4	COLLAR, WLDT, HALF, SHEAR
5	88429	2	COLLAR, HALF



DETAIL A
SCALE 1/6

STEP 1. MATE (2) COLLAR HALVES (145241) OUTBOARD OF SLIDING COLLAR ON TOP BRACE. WELD THE SPLITS TO FORM NEW SLIDING COLLAR.

STEP 2. MATE (2) COLLAR HALVES (145241) INBOARD OF SLIDING COLLAR ON TOP BRACE AND TACK WELD THE SPLITS.

STEP 3. INSTALL (2) STRAPS (145239) WITH SHEAR BOLTS PROVIDED.

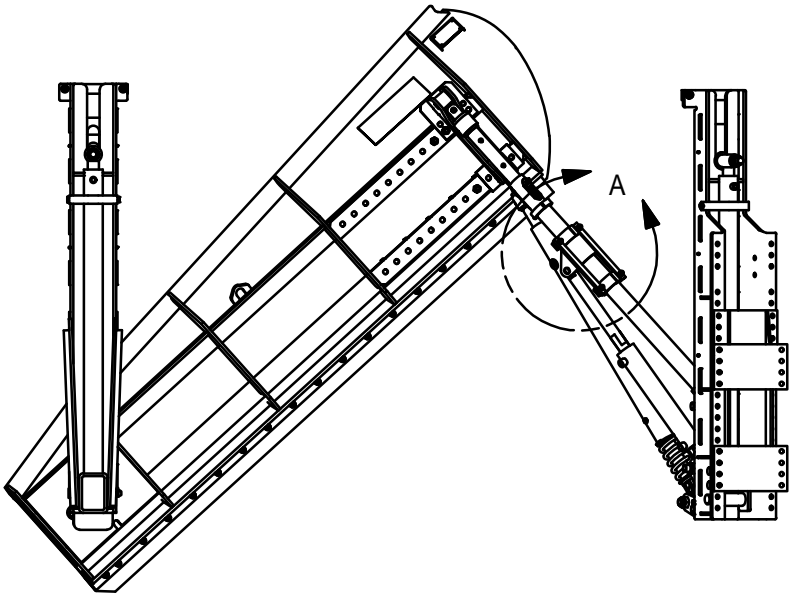
STEP 4. RAISE TOE OF WING 10-12" THEN EXTEND HEEL LIFT CYLINDER FULLY.

STEP 5. USE SUITABLE LIFTING DEVICE TO RAISE THE HEEL OF THE WING TO OBTAIN DESIRED WING "TUCK".

STEP 6. WITH THE SLIDING COLLAR IN CONTACT WITH THE OUTBOARD COLLAR HALVES, MARK THE POSITION OF THE INBOARD COLLAR HALVES.

STEP 7. LOWER THE WING FULLY AND WELD THE INBOARD COLLAR HALVES ON THE MARK MADE.

STEP 8. POSITION (2) COLLAR HALVES (88429) APPROX. 16.5" FROM INBOARD COLLAR HALVES AND WELD IN PLACE.



145244

Wing Operation

Be sure to adhere to all safety and caution information while operating the equipment.

Initial Start-up:

The initial start-up of the equipment should be done with a partner that can watch the operation of the wing at a safe distance. Be sure the hydraulic reservoir is filled with oil and all fasteners are tightened. Start the truck and raise the front of the wing 6" - 12". Raise the rear of the wing off the ground. Have your partner verify that there are no hydraulic leaks and that there are no interferences with all moving parts.

Note: The hydraulic system is under extreme pressure and can cause serious personal injury if released. Never use your hands to check for leaks with the system under pressure. Always wear safety glasses. Never let any part of your body be under the wing at any time, even if the safety chain is attached. Serious personal injury can occur.

Slowly raise the rear of the wing full stroke. Watch for clearance between the wing braces and the exhaust stack, fuel tank and the passenger side mirror. Also watch for clearance between the wing and the fender of the truck. With the rear of the wing at full stroke, connect the safety chain to the wing. **Note**: The safety chain should be installed whenever the wing is not in use or is unattended with the wing in the raised position. The position of the wing now is considered in the carry position. Turn the front tires fully to the right and then the left. Have your partner verify clearance between the front tire and the wing. If the tire hits the wing, return the unit to your installer for adjustment.

Unhook the safety chain and lower the rear of the wing half way. Raise the front of the wing full stroke and verify no interferences. Lower the front of the wing to 6" - 12" from the ground. Lower the rear of the wing to the ground and then the front of the wing to the ground. All operations should be smooth without any hang-ups.

General Operation:

At the beginning of the shift, the operator should walk around the equipment and do a visual inspection. The operator should make sure all bolts are in place and not loose. **See Page 6-01 in the General Information Section for a recommended practice for checking for loose hardware**. Loose bolts should be re-torqued to SAE standards (see chart in Section 9). The operator should inspect the wing and wing braces for bent, broken and missing parts. The cutting edge should be inspected for wear. Never let the cutting edge wear to the backer angle. The full trip wing brace should be inspected for broken or weak springs. Inspect the front slide for wear or damage. Inspect the dee for wear and damage. On full trip dee's, inspect the spring and retainers for damage. Quickly inspect the hydraulic system for leaks and damage. Hoses and fittings should be inspected for cuts, damage, or corrosion. The hydraulic reservoir should be inspected for leaks. The hydraulic oil level and condition should be checked. The oil filter condition should be checked. The hydraulic pump and drive line should be checked for leaks, wear, and damage. If any deficiencies are discovered, they ***must*** be repaired before the equipment goes into service.

Once the visual inspection is complete and the equipment is in satisfactory condition, start and warm up the truck and the hydraulic system. Try all functions of the wing. The wing should move smoothly without any binding or hesitation. Make sure all other safety equipment on the truck is operational (ie: Lights, reflectors, horns, etc.).

Now the equipment is ready for use. During the operation of the equipment, several items must be kept in mind:

Always raise the front of the wing off the ground first, then the rear. **Always** lower the rear of the wing to the ground first, then the front. Severe equipment and road damage will occur with the possibility of personal injury if this procedure is not followed. This is especially true for **Benching Wing** and **Leveling Wing** configurations with a rear brace heel lift cylinder. If the wing is folded up in a stowed or travel position with the front mast lift cylinder near the fully lowered position and the rear mast lift cylinder is raised, the geometry of the wing can cause damage to the heel lift cylinder and rear braces. A shear bolt kit is installed on the upper wing brace as a safety device to prevent catastrophic failure of the components. **Always** use the factory recommended grade and size shear bolt for proper operation of the safety device. Therefore, **NEVER** raise the *rear mast lift cylinder* with the wing folded in the stowed or travel position.

The full trip wing brace and full trip dee have a trip lock out position. It is extremely important that both items are either locked in or out together. Equipment damage will occur.

The wing braces (when two are present) must be of equal length. Each wing brace is adjustable to allow more or less cleared path. Both braces must be adjusted to the same length or equipment damage will occur.

Carry Position: The toe of the wing should be 10”-12” from the ground and the heel of the wing should be at its highest position. A marker kit (P/N 81665) can be installed to the toe end of the moldboard or mast slide as a visual indicator for the driver to easily determine the position of the toe. If the truck will be unattended or the wing not operated, the safety chain should be attached to the rear of the wing.

Road plowing mode: The front and rear of the wing should be on the ground. The full trip wing brace and dee (if equipped) may be either locked in or out of trip mode. Truck speeds in this mode should be between 25 – 40 MPH. Some conditions may require slower speeds. It is very important not to overdrive the equipment given the plowing conditions. Doing so will shorten the life cycle of the equipment.

Leveling (benching) mode: The front of the wing should be slightly lower than the rear of the wing. The full trip wing brace and dee should be locked into the non-trip mode. Truck speeds should be very slow in this mode. Extra care should be taken to avoid hitting objects hidden in the snow banks. These objects can cause substantial equipment damage. The operator should also be aware of the surface being driven on. Keep the truck on hard, level ground.

THIS PAGE

IS LEFT BLANK

INTENTIONALLY.

WING SYSTEM

SERVICE & MAINTENANCE

PROCEDURES & INFORMATION

Service & Maintenance

The Henderson Wing System was designed to reduce maintenance and to make required maintenance easier. OBSERVE CAUTION/SAFETY LABELS AND INSTRUCTIONS BEFORE AND DURING ANY MAINTENANCE PROCEDURES.

WARNING: Shut off all power, allow all moving parts to come to rest, and lower the wing to the ground before performing any maintenance operations.

HYDRAULIC SYSTEM:

The use of proper oil in the hydraulic system is one of the most important factors for satisfactory operation. Utmost cleanliness in handling the oil can not be stressed enough. Keep the hydraulic oil in original closed containers, clean top of container before opening and pouring, and handle in thoroughly clean measures and funnels. Clean tank opening thoroughly before removing cover and use care to avoid dropping debris into opened tank.

Refer to the Lubricant and Hydraulic Oil Specifications section of the manual (page 4-03) as a general guide for the selection of the proper fluid viscosity for a given oil operating temperature. Refer to the manual supplied by the hydraulic system supplier for more specific recommendations on hydraulic oil and system requirements.

All parts are lubricated by the hydraulic oil in the circuit. Particular attention must be paid to keep the oil in the system clean. Whenever there is a pump failure or any reason that metal particles may be in the system, the oil must be drained, the entire system flushed clean, and any filters or screens thoroughly cleaned or replaced. New oil should be supplied for the entire system. Particular care must also be observed when washing the equipment. High pressure water sprayed at or near the fill cap and breather may contaminate the hydraulic oil with water.

COLD WEATHER OPERATIONS:

Hydraulic oils for use in cold weather should have a viscosity not exceeding 7500 SSU at the minimum start-up temperature. A pour point of at least 20°F below start-up temperature is recommended. Start-up procedures should allow for a gradual warm-up until the oil reaches a reasonably fluid state.

SERVICE SCHEDULE:

1. Check the hydraulic reservoir oil level **daily** during use to assure adequate oil to operate the hydraulic system. Add oil when required. Inspect the breather to be sure it is clean and operational. Before filling, clean the filler - breather cap and surrounding area of dirt and dust to keep the oil and reservoir clean. Oil poured into the reservoir should pass through a 100-mesh screen. Pour only clean oil, from clean containers, into the reservoir. **System oil should be changed at least twice a year.**

2. CHANGE THE HYDRAULIC OIL FILTER AFTER THE FIRST WEEK (OR NOT MORE THAN 50 HOURS) OF OPERATION ON A NEW UNIT. After first filter change, **replace filter** when indicator reaches Red Zone or **minimum of twice a year.**

3. Check the hydraulic system **daily** for any leaks or damaged hoses, lines, or fittings. Replace any worn or damaged parts immediately. Oil temperature in reservoir must not exceed 200°F (93.3°C), with a maximum temperature of 180°F (82.2°C) recommended. Higher temperatures will result in rapid oil deterioration.

4. The reservoir should be drained through drain plug (not through suction outlet), flushed, and refilled **annually**, or the oil should be changed if it shows **any signs of contamination** or **breaking down under continued high-pressure operation**. Discoloration of oil is one sign of breakdown.

5. Hydraulic pump controls vary greatly from installation to installation. Have the system checked annually by a qualified hydraulic mechanic. Check and lubricate drive line components to remote mounted pump units **monthly**.

GREASE GUN LUBRICATION: See chart on page 3-04 for lubrication points.

Use a ball and roller bearing lithium base lubricant with a minimum melting point of 300°F. This lubricant should have a viscosity that assures easy handling in the pressure gun at prevailing atmospheric temperatures. The lubricant must be waterproof.

Be sure that all fittings are thoroughly cleaned before grease is injected. Points to be lubricated by means of a grease gun have standard grease fittings.

CRANKSHAFT PTO GEAR BOX LUBRICANT:

Use a SAE 50 petroleum base oil.

LUBRICANT AND HYDRAULIC OIL SPECIFICATIONS:

IMPORTANT: The lubricant distributor and/or supplier is responsible for the results obtained from their products. Procure lubricants from reputable distributors and/or suppliers who are supplying known and tested products. Do not jeopardize your equipment with inferior lubricants. No specific brands of oil are recommended. Use only products qualified under the following oil viscosity specifications and classifications and recommended by reputable oil companies.

The following are general guidelines for the selection of the proper fluid viscosity for a given oil operating temperature. Refer to the manual supplied by the hydraulic system supplier for more specific recommendations on hydraulic oil requirements. Select a major brand industrial PREMIUM QUALITY (anti-wear type) hydraulic oil with viscosity between 100 - 200 SSU at operating temperature. Premium hydraulic oils will provide the following temperature ranges:

INDUSTRY IDENTIFICATION VISCOSITY GRADE	OPERATING TEMPERATURE	VISCOSITY
150 SSU	122° F 84° F	100 SSU 200 SSU
225 SSU	140° F 107° F	100 SSU 200 SSU
300 SSU	150° F 116° F	100 SSU 200 SSU
450 SSU	165° F 130° F	100 SSU 200 SSU
6000 SSU	182° F 145° F	100 SSU 200 SSU

LUBRICATION MAINTENANCE POINTS

LUBRICATION CHART

DESCRIPTION		LOCATION	NO. OF POINTS	METHOD OF LUBRICATION	FREQUENCY			
					DAILY	WEEKLY	MONTHLY	YEARLY
PUMP DRIVE	TRANS PTO	SLIP YOKE	1	GREASE GUN		X		
		UNIVERSAL JOINT	2	GREASE GUN			X	
	CRANKSHAFT PTO	SLIDING SPLINE	1	GREASE GUN		X		
		UNIVERSAL JOINT	2	GREASE GUN			X	
HYDRAULIC SYSTEM	RESERVOIR		1		CHECK			CHANGE
	FILTER		1		Check Ind. Change Element when indicted (RED).			
FRONT MAST		SHEAVE CAP	1	GREASE GUN		X		
		CYLINDER SHEAVE HOUSING	1	GREASE GUN		X		
		SLIDE WAYS	1	GREASE GUN			X	
		CABLE	1	SPRAY OIL			X	
REAR MAST		SHEAVE HOUSING/ARM ASSY	2	GREASE GUN		X		
		CYLINDER SHEAVE HOUSING	1	GREASE GUN		X		
		CABLE RETURN SHEAVE	1	GREASE GUN		X		
		SLIDE WAYS	1	SPRAY GREASE			X	

NOTE: Unusual conditions such as excessive dust, temperature extremes or excessive moisture may require more frequent lubrication of specific parts.

IN SEASON MAINTENANCE

- Snow removal equipment must be cared for and maintained regularly. Daily or pre-route inspection and maintenance are necessary. Failure to do so may affect efficiency, equipment life, or safety.

- A visual inspection must be carried out after every eight hours of operation. **See Page 6-01 in the General Information Section for a recommended practice for checking for loose hardware**. Look for damaged components, bends, cracked welds or hydraulic leaks. Repair immediately. It is recommended to re-torque all bolts after the first eight hours of use and to regularly check for loosened or missing fasteners. Replace any damaged fasteners immediately.

- Because of the environment in which snow equipment is expected to operate, hydraulic lines, fasteners, wearable or replaceable items and warning decals may become damaged by snow, ice and road debris. These items must be inspected daily and replaced if necessary to avoid equipment damage or personal injury.

- To properly care for this equipment, it should be thoroughly **washed every two or three days**. This washing process will remove material that could build up on slides, cables, sheaves, and cylinders.

- Lubrication of moving parts is of utmost importance. Exposure to snow, ice, salt and road debris will wash away lubrication quickly and it may be necessary to inspect and reapply lubrication more than once a day.

- EQUIPMENT WITH CABLES: Inspect all cables for signs of wear daily with a thorough inspection weekly during the plowing season. If any broken strands are found, “bird caging” is evident, or kinking is found, replace the cable immediately. Lubrication is very important to the life of the cable. While the cable is lubricated at the factory, it should be cleaned and re-lubricated with a light bodied oil periodically. Oil is applied most effectively on the radius of a sheave. The movement of the cable over the sheave allows the oil to penetrate the cable.

- CUTTING EDGE: Cutting edge wear varies greatly with conditions. This wear must be monitored daily. Do not allow the cutting edge to wear into the backer angle. Severe damage will occur. The cutting edge is designed to be flipped once. This allows the top edge of the blade to be used. Once worn out, replace the blade and shoes with the same type. Only use grade 8 fasteners.

  NOTE: The toe must be clipped (3” x 45°) on <u>all</u> cutting edges to prevent damage to the wing (see page 1-03).

OFF SEASON MAINTENANCE

- Mounting bolts are Grade 8 cap screws with hardened flat washers. Care should be taken not to mix or misplace them when the snowplow is removed during the off-season. Be sure to replace any fasteners with damaged threads.

- It is important that the machine be thoroughly cleaned and fully lubricated prior to prolonged periods of little or no use. All lubrications and maintenance instructions listed in this section should be closely followed. For longer equipment life, repaint worn spots on a regular basis to prevent formation of rust.

- All hydraulic cylinders should be fully retracted when stored, if possible, during the off-season to prevent damage, corrosion, or contamination. Remaining exposed shaft surface is to be coated with a moisture displacement, such as thick grease, which should be removed before returning to regular service.

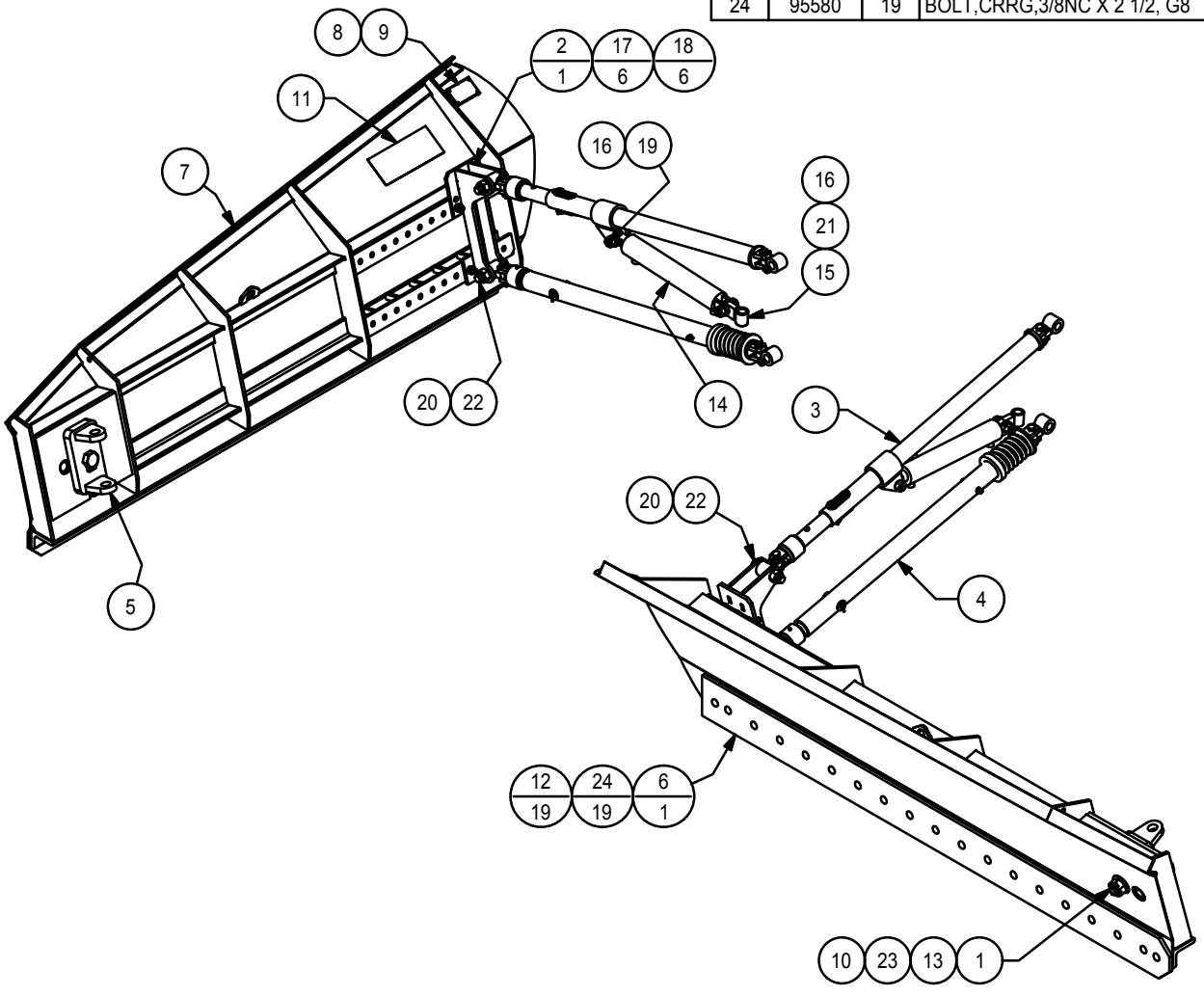
- When disconnecting hydraulic lines, valves, and so forth insure that dirt and other forms of contamination do not enter the system. Use caps for covering hydraulic hose fittings and install plugs in hydraulic ports.

WING SYSTEM

PARTS LIST

MOLDBOARD ASSEMBLY, 9' PATROL WING, ALASKA

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	106801	1	SCREW, CP, HX, 1 1/2 X 8, W/HOLE
2	108492	1	DRIVE RIB, WLDT, ADJUSTABLE
3	148779	1	BRACE, ASSY, W/CYL COLLAR
4	116038	1	BRACE, ASSY, W/SHOCK SPRING
5	122133	1	DEE,WLDT,REAR HEEL LIFT
6	133083	1	EDGE, CUTTING, 5/8 X 8 X 9' CP, 6" BHC
7	133182	1	MLDBRD, WLDT, LWNG, SD, 9' W/ADJ RIB
8	50252	4	RIVET,POP,5/32,SS
9	74474	1	PLATE,SERIAL
10	74643	1	PIN, COTTER, 1/4 X 3
11	81228	1	DECAL,LOGO, 5.3 X 13.4
12	81861	19	NUT, TOPLOCK, 5/8-11NC, G8
13	81927	1	WASHER,1.63 ID X 3.50 OD,.188
14	82470N	1	CYLINDER, 3-14.88, DA, 2" ROD
15	82640	1	EAR, WLDT, MALE
16	83183	2	NUT, TOPLOCK, 1-8NC, G8
17	83303	6	SCREW, CP, HX, 3/4 X 2 1/4, G8
18	83304	6	NUT, TOPLOCK, 3/4-10NC, G8
19	83309	1	SCREW, CP, HX, 1NC X 4, G8
20	83318	2	NUT, HEX, 1 1/4-7NC, SLFLKG
21	95263	1	SCREW, CP, HX, 1NC X 3 1/2, G8
22	95408	2	SCREW, CP, HX, 1 1/4NC X 5 1/2, A325
23	95516	1	NUT, HEX, SLOTTED, HVY, 1 1/2NC, G5
24	95580	19	BOLT,CRRG,3/8NC X 2 1/2, G8



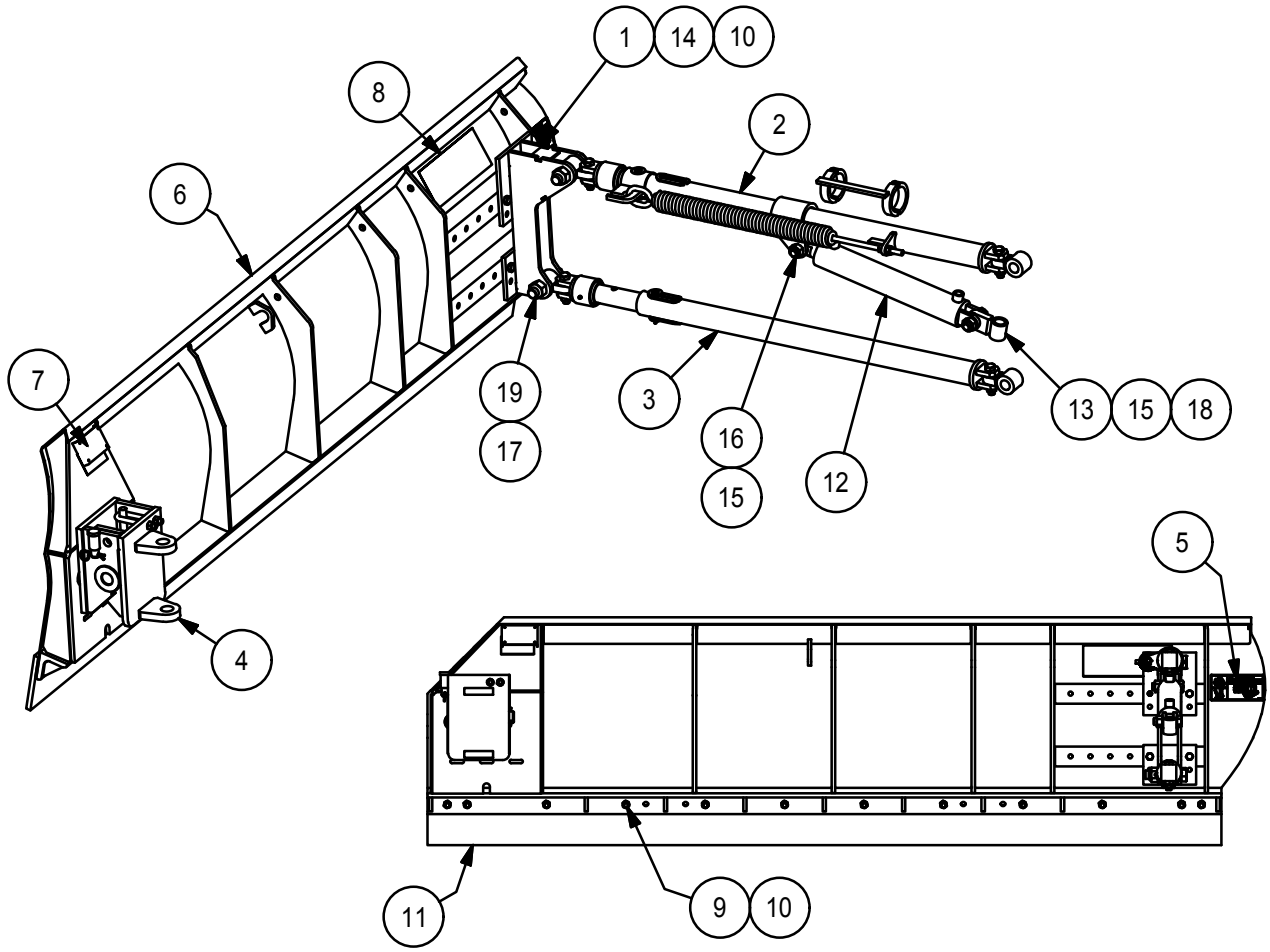
133181

THIS PAGE

IS LEFT BLANK

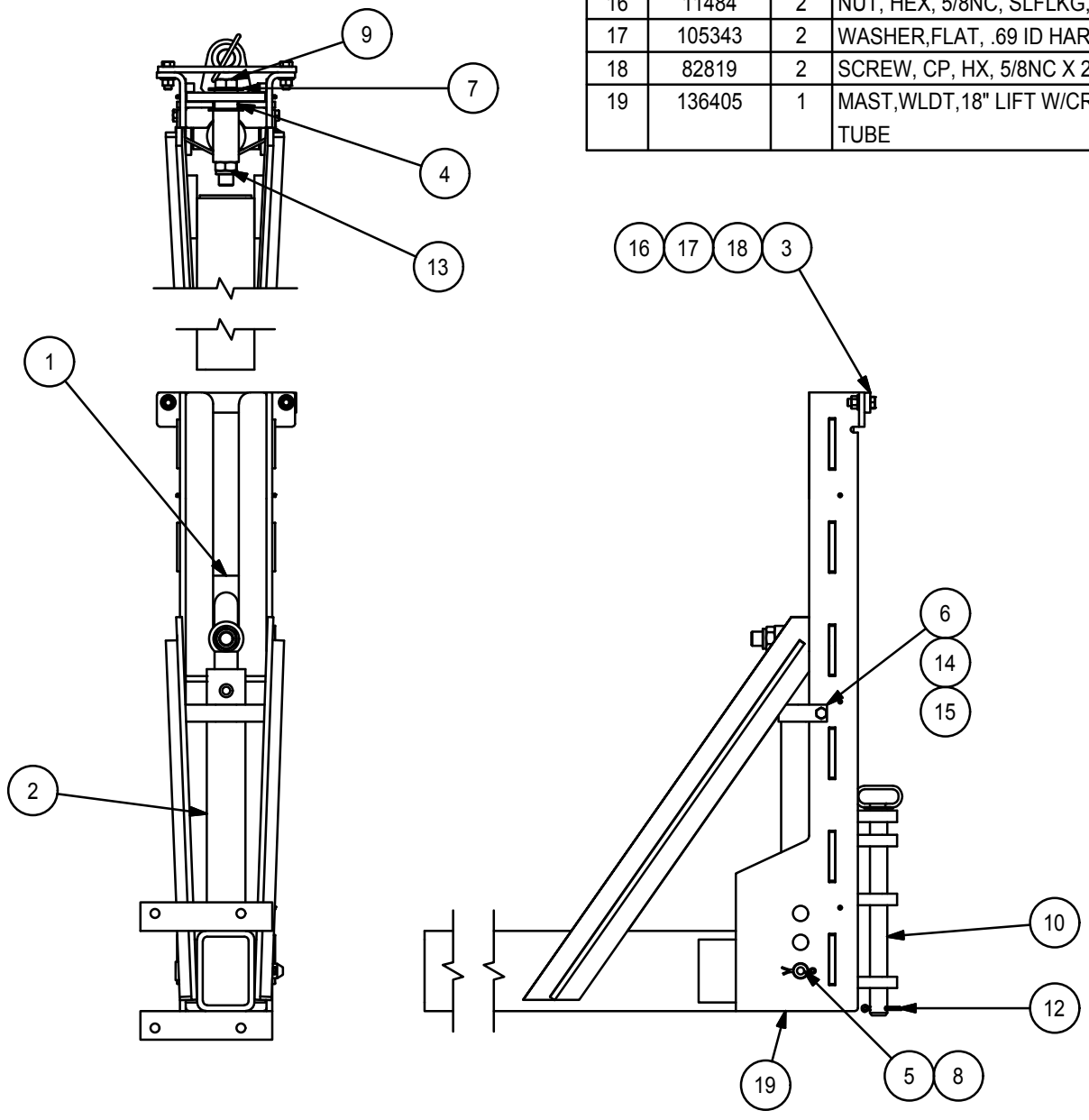
INTENTIONALLY.

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	108293	1	RIB, WLDT, ADJ, FULL-TRIP
2	116033	1	BRACE, ASSY, W/TRIP SPRING & CYL COLLAR
3	116036	1	BRACE, ASSY, STD
4	148006	1	DEE, ASSY, TRIP, WNG
5	146747	1	DECAL,WARNING,WING DROP ZONE
6	147077	1	MLDBRD,WLDT, HWS, 10' ALASKA
7	74474	1	PLATE,SERIAL
8	81228	1	DECAL,LOGO, 5.3 X 13.4
9	81751	12	BOLT, PLOW, 5/8-11NC X 2 1/2, G8
10	81861	16	NUT, TOPLOCK, 5/8-11NC, G8
11	81935	1	EDGE, CUTTING, 5/8 X 8 X 10'
12	82470N	1	CYLINDER, 3-14.88, DA, 2" ROD
13	82640	1	EAR, WLDT, MALE
14	82819	4	SCREW, CP, HX, 5/8NC X 2, G8
15	83183	2	NUT, TOPLOCK, 1-8NC, G8
16	83309	1	SCREW, CP, HX, 1NC X 4, G8
17	83318	2	NUT, HEX, 1 1/4-7NC, SLFLKG
18	95263	1	SCREW, CP, HX, 1NC X 3 1/2, G8
19	95408	2	SCREW, CP, HX, 1 1/4NC X 5 1/2, A325

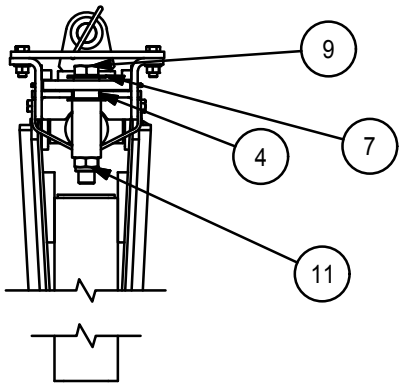


147076

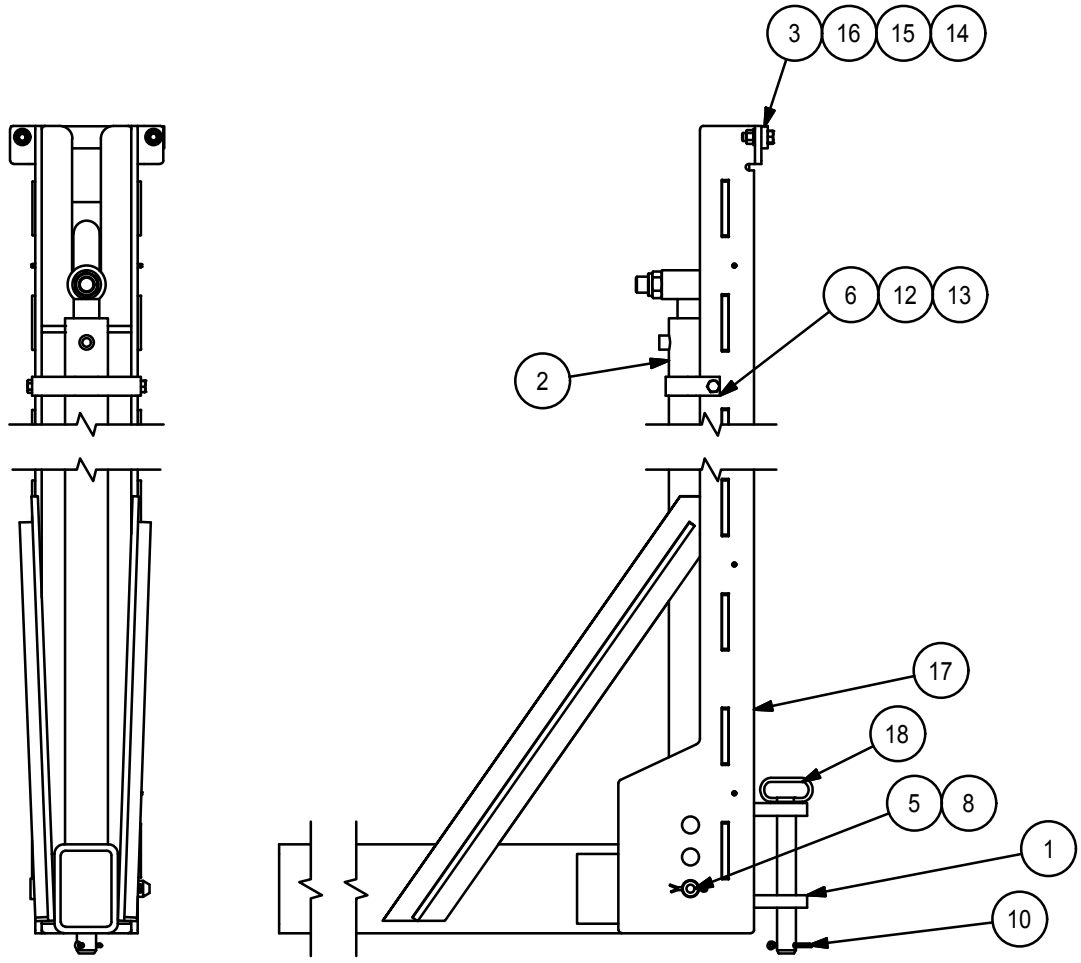
PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	121250	1	SLIDE,WLDT,18" LIFT
2	121114	1	CYLINDER,3-21,2.0,DA,NITRIDED
3	122089	1	PLATE, TIE
4	122087	1	BUSHING, SLIDE
5	81873	1	PIN,1.25 X 9.00
6	81551	1	STRAP, RETAINER, CYLINDER
7	10006	2	WASHER, FLAT, STD, 1 1/4 ID
8	50601	1	PIN, COTTER, 1/4 X 2 1/4
9	105104	1	SCREW, CP, HX 1 1/4 X 8 1/2
10	122099	1	PIN, WLDT, 1.50 X 18
12	74494	1	PIN,COTTER,5/16 X 3
13	119426	1	NUT,LOCK,FULL COLLAR,1 1/4-7NC
14	50342	2	SCREW,CP,HX,1/2NC X 1 1/2 G5
15	11021	2	NUT.LOCK,NYLON INSERT,1/2-13NC
16	11484	2	NUT, HEX, 5/8NC, SLFLKG, NYLON
17	105343	2	WASHER,FLAT, .69 ID HARDENED
18	82819	2	SCREW, CP, HX, 5/8NC X 2, G8
19	136405	1	MAST,WLDT,18" LIFT W/CROSS TUBE



136404



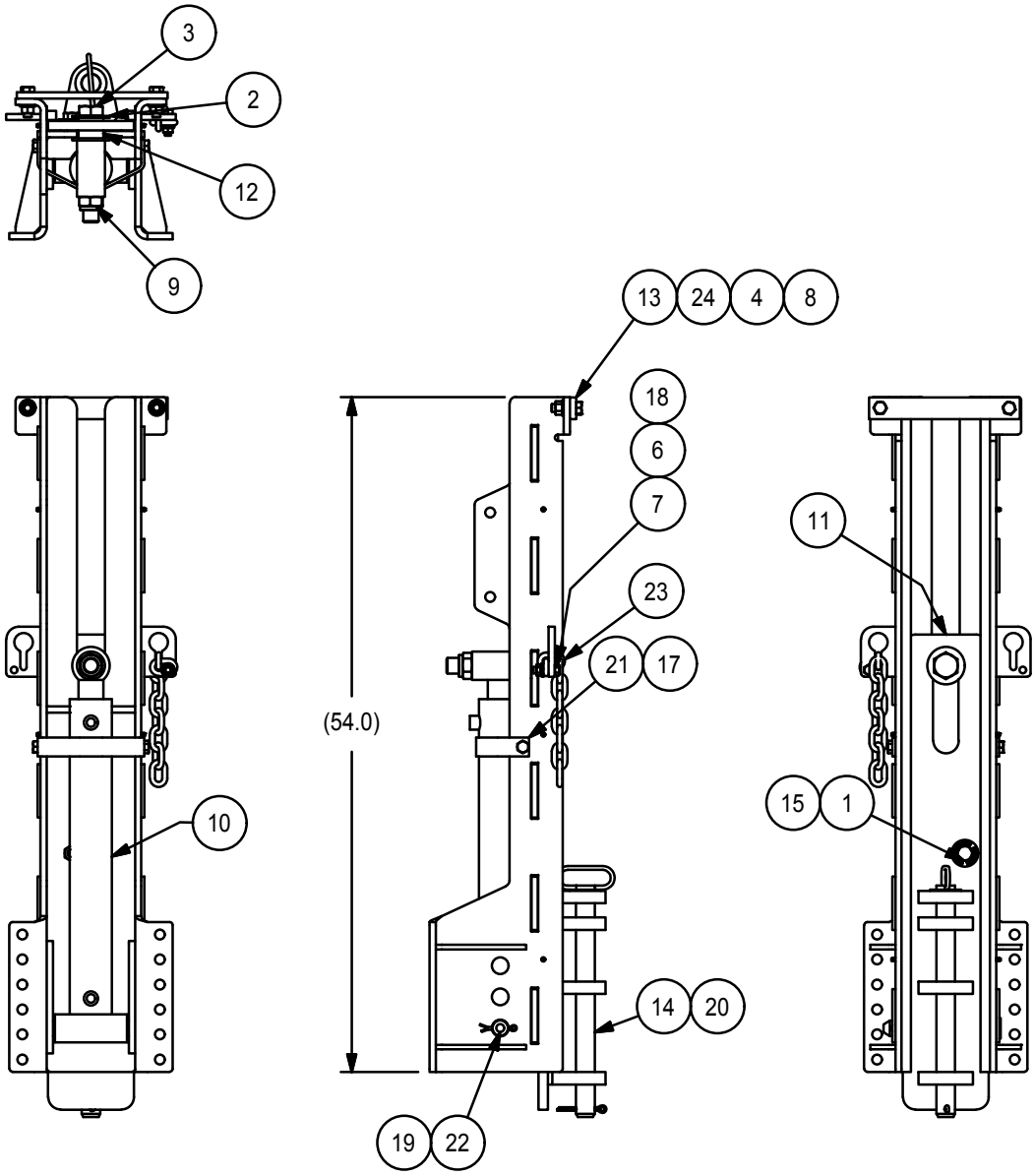
PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	121252	1	SLIDE,WLDT,48" LIFT
2	121116	1	CYLINDER,3-52,2.0,DA,NITRIDED
3	122089	1	PLATE, TIE
4	122087	1	BUSHING, SLIDE
5	81873	1	PIN,1.25 X 9.00
6	81551	1	STRAP, RETAINER, CYLINDER
7	10006	2	WASHER, FLAT, STD, 1 1/4 ID
8	50601	1	PIN, COTTER, 1/4 X 2 1/4
9	105104	1	SCREW, CP, HX 1 1/4 X 8 1/2
10	74494	1	PIN,COTTER,5/16 X 3
11	119426	1	NUT,LOCK,FULL COLLAR,1 1/4-7NC
12	50342	2	SCREW,CP,HX,1/2NC X 1 1/2 G5
13	11021	2	NUT.LOCK,NYLON INSERT,1/2-13NC
14	11484	2	NUT, HEX, 5/8NC, SLFLKG, NYLON
15	105343	2	WASHER,FLAT, .69 ID HARDENED
16	82819	2	SCREW, CP, HX, 5/8NC X 2, G8
17	140059	1	MAST,WLDT,48" LIFT W/CROSS TUBE
18	122535	1	PIN, WLDT, 1.50 X 12



140058

FRONT MASS ASSEMBLY, 18" LIFT, BOLT ON

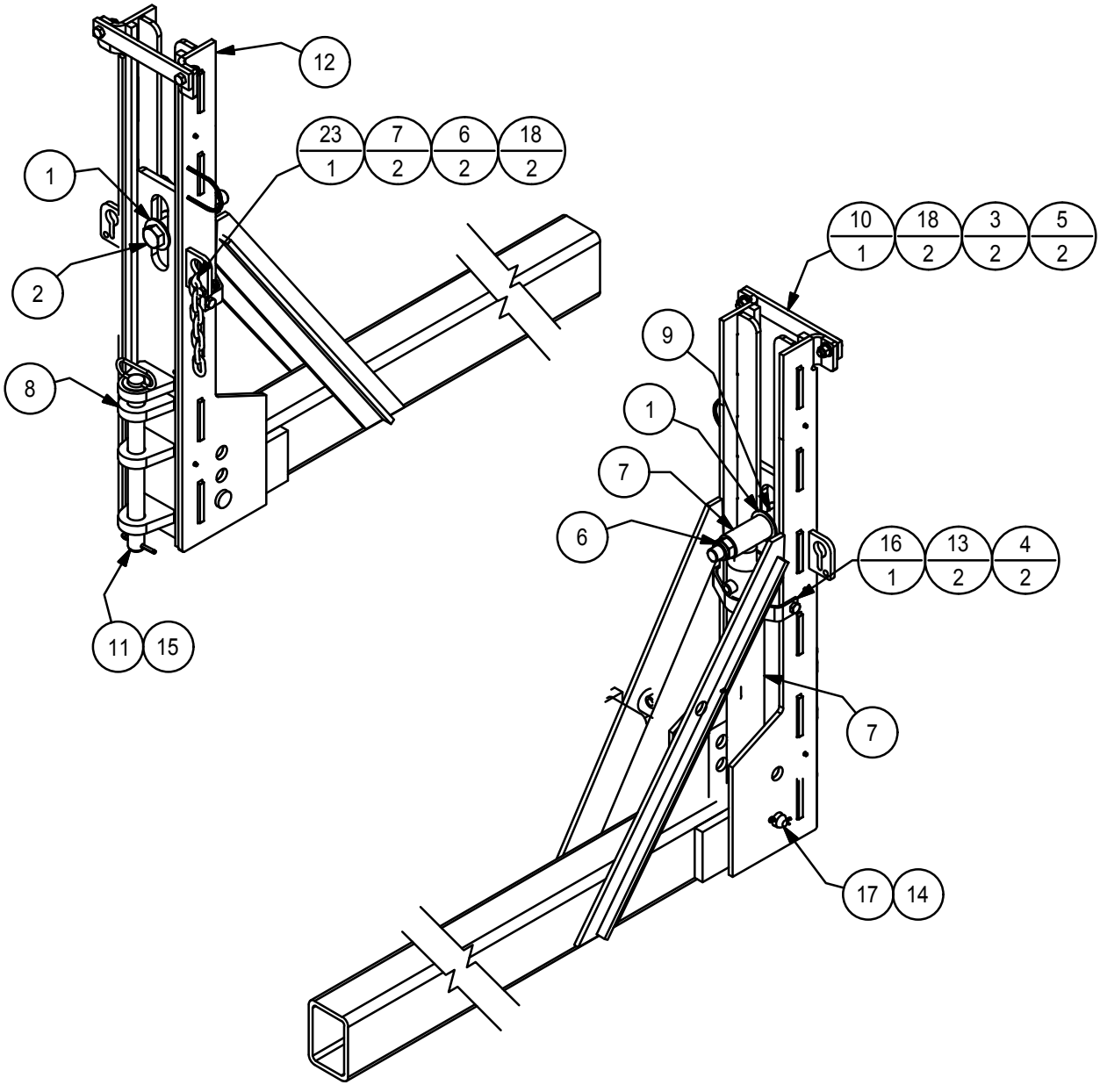
PARTS LIST				PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION	ITEM	PART NO	QTY	DESCRIPTION
1	00257	1	SCREW,CP,HX,3/4NC X 2	13	122089	1	PLATE, TIE
2	10006	2	WASHER, FLAT, STD, 1 1/4 ID	14	122099	1	PIN, WLDT, 1.50 X 18
3	105104	1	SCREW, CP, HX 1 1/4 X 8 1/2	15	150864	1	PLATE,ID,WING SAFETY
4	105343	2	WASHER,FLAT, .69 ID HARDENED	16	152057	1	MAST,WLDT,18" LIFT
5	11021	2	NUT.LOCK,NYLON INSERT,1/2-13NC	17	50342	2	SCREW,CP,HX,1/2NC X 1 1/2 G5
6	112348	1	WASHER,FLAT,1/2" SAE	18	50418	1	NUT, TOPLOCK, FLG, 1/2-13NC
7	112479	1	SCREW, CP, HX, 1/2NC X 1 3/4, G8	19	50601	1	PIN, COTTER, 1/4 X 2 1/4
8	11484	2	NUT, HEX, 5/8NC, SLFLKG, NYLON	20	74494	1	PIN,COTTER,5/16 X 3
9	119426	1	NUT,LOCK,FULL COLLAR,1 1/4-7NC	21	81551	1	STRAP, RETAINER, CYLINDER
10	121114	1	CYLINDER,3-21,2.0,DA,NITRIDED	22	81873	1	PIN,1.25 X 9.00
11	121250	1	SLIDE,WLDT,18" LIFT	23	81902	1	CHAIN, 3/8, 21 LINKS
12	122087	1	BUSHING, SLIDE	24	82819	2	SCREW, CP, HX, 5/8NC X 2, G8



152056

FRONT WING MAST ASSEMBLY, 18" LIFT,CROSSTUBE

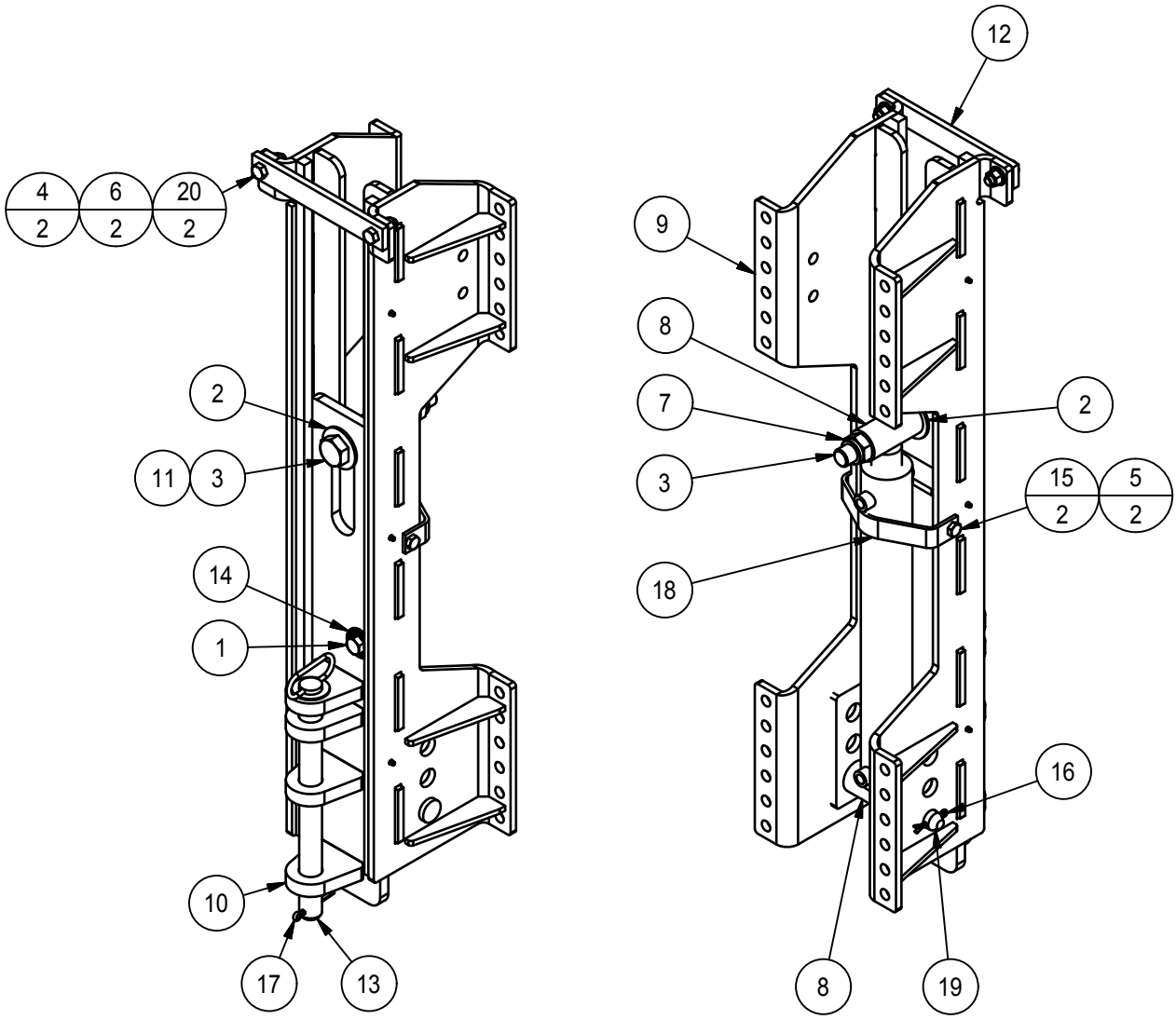
BILL OF MATERIALS				BILL OF MATERIALS			
ITEM	PART NO	QTY	DESCRIPTION	ITEM	PART NO	QTY	DESCRIPTION
1	00257	1	SCREW,CP,HX,3/4NC X 2	13	122089	1	PLATE, TIE
2	10006	2	WASHER, FLAT, STD, 1 1/4 ID	14	122099	1	PIN, WLDT, 1.50 X 18
3	105104	1	SCREW, CP, HX 1 1/4 X 8 1/2	15	138430	1	MAST,WLDT,18" LIFT W/CROSS TUBE
4	105343	2	WASHER,FLAT, .69 ID HARDENED	16	150864	1	PLATE,ID,WING MAS,SAFETY
5	11021	2	NUT.LOCK,NYLON INSERT,1/2-13NC	17	50342	2	SCREW,CP,HX,1/2NC X 1 1/2 G5
6	112348	1	WASHER,FLAT,1/2" SAE	18	50418	1	NUT, TOPLOCK, FLG, 1/2-13NC
7	112479	1	SCREW, CP, HX, 1/2NC X 1 3/4, G8	19	50601	1	PIN, COTTER, 1/4 X 2 1/4
8	11484	2	NUT, HEX, 5/8NC, SLFLKG, NYLON	20	74494	1	PIN,COTTER,5/16 X 3
9	119426	1	NUT,LOCK,FULL COLLAR,1 1/4-7NC	21	81551	1	STRAP, RETAINER, CYLINDER
10	121114	1	CYLINDER,3-21,2.0,DA,NITRIDED	22	81873	1	PIN,1.25 X 9.00
11	121250	1	SLIDE,WLDT,18" LIFT	23	81902	1	CHAIN, 3/8, 21 LINKS
12	122087	1	BUSHING, SLIDE	24	82819	2	SCREW, CP, HX, 5/8NC X 2, G8



138429

FRONT WING MAST ASSEMBLY, 18" LIFT, BOLT ON

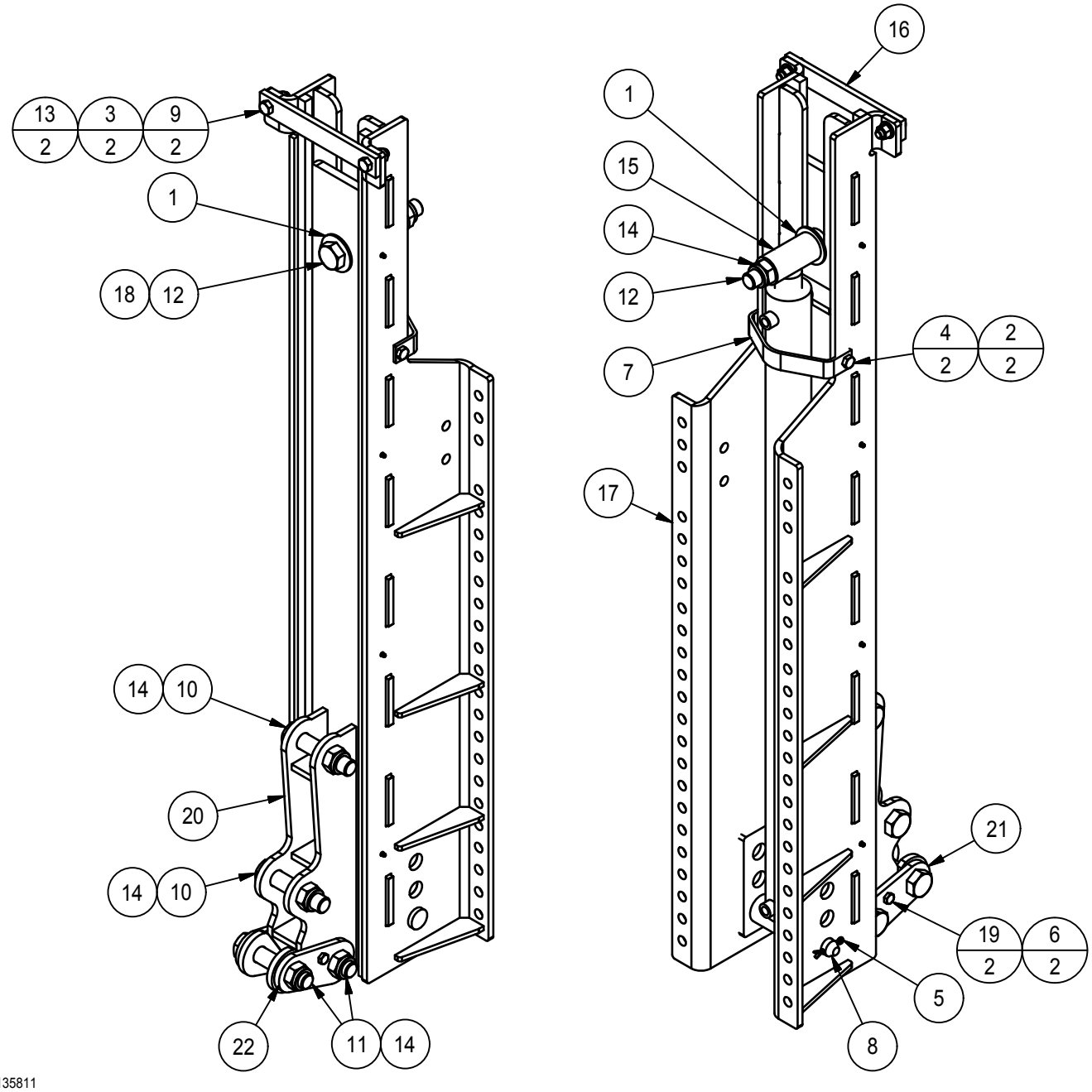
PARTS LIST				PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION	ITEM	PART NO	QTY	DESCRIPTION
1	00257	1	SCREW,CP,HX,3/4NC X 2	3	105104	1	SCREW, CP, HX 1 1/4 X 8 1/2
2	10006	2	WASHER, FLAT, STD, 1 1/4 ID	4	105343	2	WASHER,FLAT, .69 ID HARDENED
5	11021	2	NUT,LOCK,NYLON INSERT,1/2-13NC	7	119426	1	NUT,LOCK,FULL COLLAR,1 1/4-7NC
6	11484	2	NUT,LOCK,NYLON INSERT,5/8-11NC	8	121114	1	CYLINDER,3-21,2.0,DA,NITRIDED
15	50342	2	SCREW,CP,HX,1/2NC X 1 1/2 G5	9	121131	1	MAST,WLDT,18" LIFT
16	50601	1	PIN, COTTER, 1/4 X 2 1/4	10	121250	1	SLIDE,WLDT,18" LIFT
17	74494	1	PIN,COTTER,5/16 X 3	11	122087	1	BUSHING, SLIDE
18	81551	1	STRAP, RETAINER, CYLINDER	12	122089	1	PLATE, TIE
19	81873	1	PIN,1.25 X 9.00	13	122099	1	PIN, WLDT, 1.50 X 18
20	82819	2	SCREW, CP, HX, 5/8NC X 2, G8	14	150864	1	PLATE,ID,WING MAST SAFETY



121119

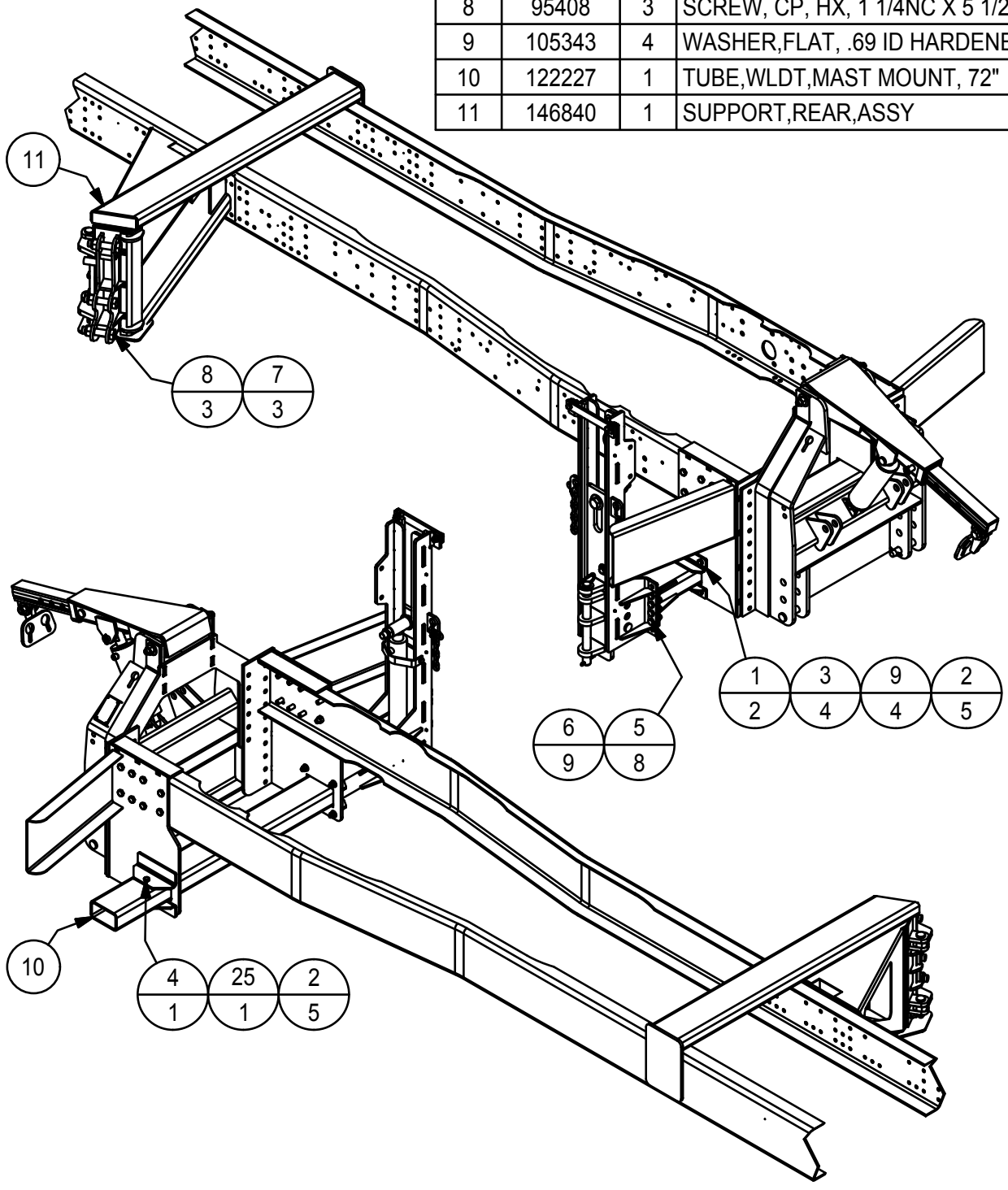
REAR MAST ASSEMBLY, BENCHING WING (2014 MACK)

PARTS LIST				PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION	ITEM	PART NO	QTY	DESCRIPTION
1	10006	2	WASHER, FLAT, STD, 1 1/4 ID	12	105104	1	SCREW, CP, HX 1 1/4 X 8 1/2
2	11021	2	NUT,LOCK,NYLON INSERT,1/2-13NC	13	105343	2	WASHER,FLAT, .69 ID HARDENED
3	11484	2	NUT,LOCK,NYLON INSERT,5/8-11NC	14	119426	5	NUT,LOCK,FULL COLLAR,1 1/4-7NC
4	50342	2	SCREW,CP,HX,1/2NC X 1 1/2 G5	15	121116	1	CYLINDER,3-52,2.0,DA,NITRIDED
5	50601	1	PIN, COTTER, 1/4 X 2 1/4	16	122089	1	PLATE, TIE
6	51387	2	NUT,CENTERLOCK,1/2-13NC	17	135813	1	MAST,WLDT,48" LIFT
7	81551	1	STRAP, RETAINER, CYLINDER	18	135818	1	BUSHING, SLIDE
8	81873	1	PIN,1.25 X 9.00	19	145048	2	SCREW, CP, HX, 1/2NC X 1 3/4 G2
9	82819	2	SCREW, CP, HX, 5/8NC X 2, G8	20	145235	1	SLIDE,WLDT,52" LIFT,REAR
10	95408	2	SCREW, CP, HX, 1 1/4NC X 5 1/2	21	145242	1	HINGE, WLDT, WING BRACE, LH
11	96111	2	SCREW, CP,HX, 1 1/4NC X 6, A325	22	145243	1	HINGE, WLDT, WING BRACE, RH



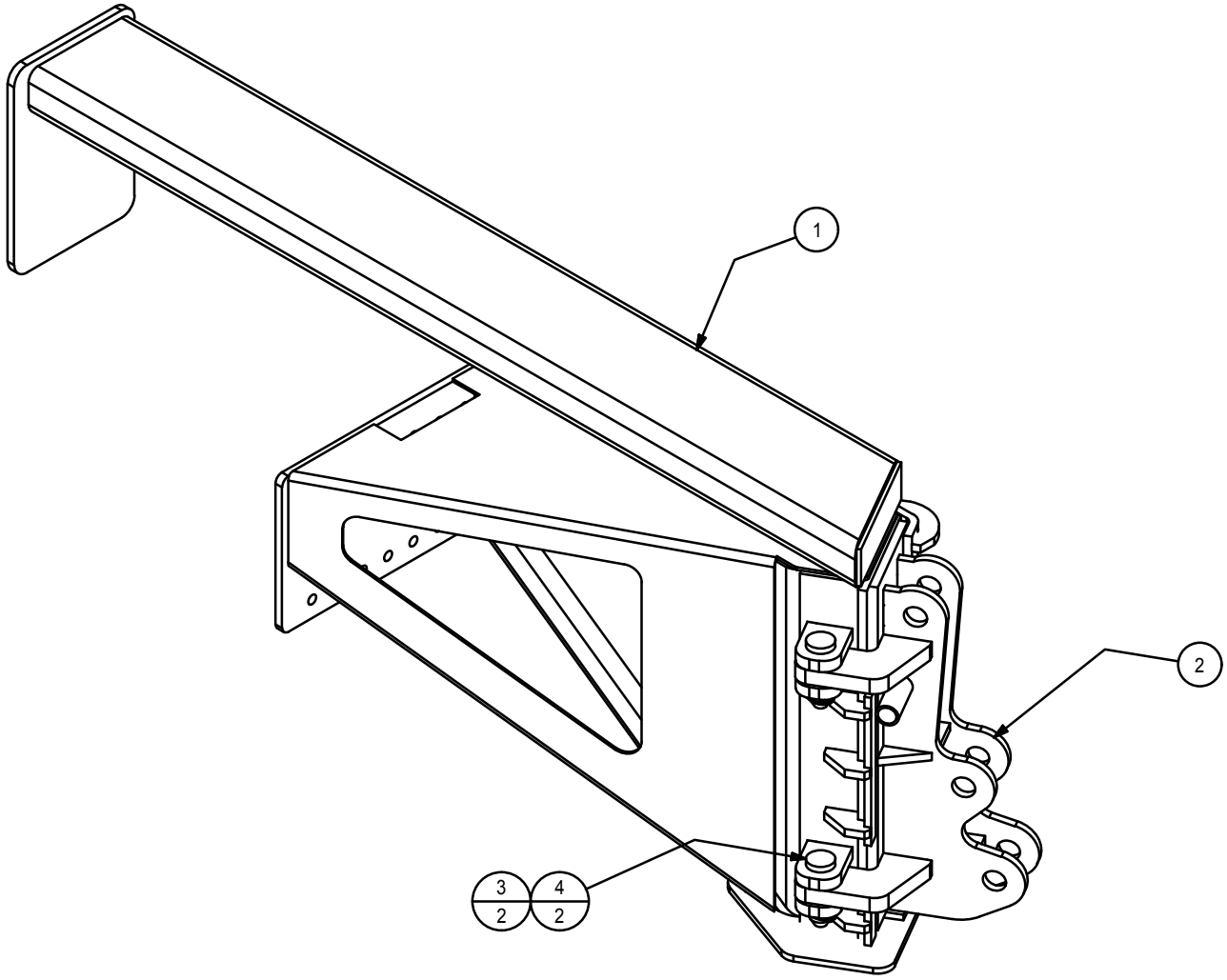
135811

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	81775	2	ANGLE,MOUNTING,2.5 X 2.5
2	81861	5	NUT, TOPLOCK, 5/8-11NC, G8
3	82819	4	SCREW, CP, HX, 5/8NC X 2, G8
4	82821	1	SCREW, CP, HX, 5/8NC X 6, G8
5	83303	8	SCREW, CP, HX, 3/4 X 2 1/4, G8
6	83304	9	NUT, TOPLOCK, 3/4-10NC, G8
7	83318	3	NUT, HEX, 1 1/4-7NC, SLFLKG
8	95408	3	SCREW, CP, HX, 1 1/4NC X 5 1/2, A325
9	105343	4	WASHER,FLAT, .69 ID HARDENED
10	122227	1	TUBE,WLDT,MAST MOUNT, 72"
11	146840	1	SUPPORT,REAR,ASSY



147075

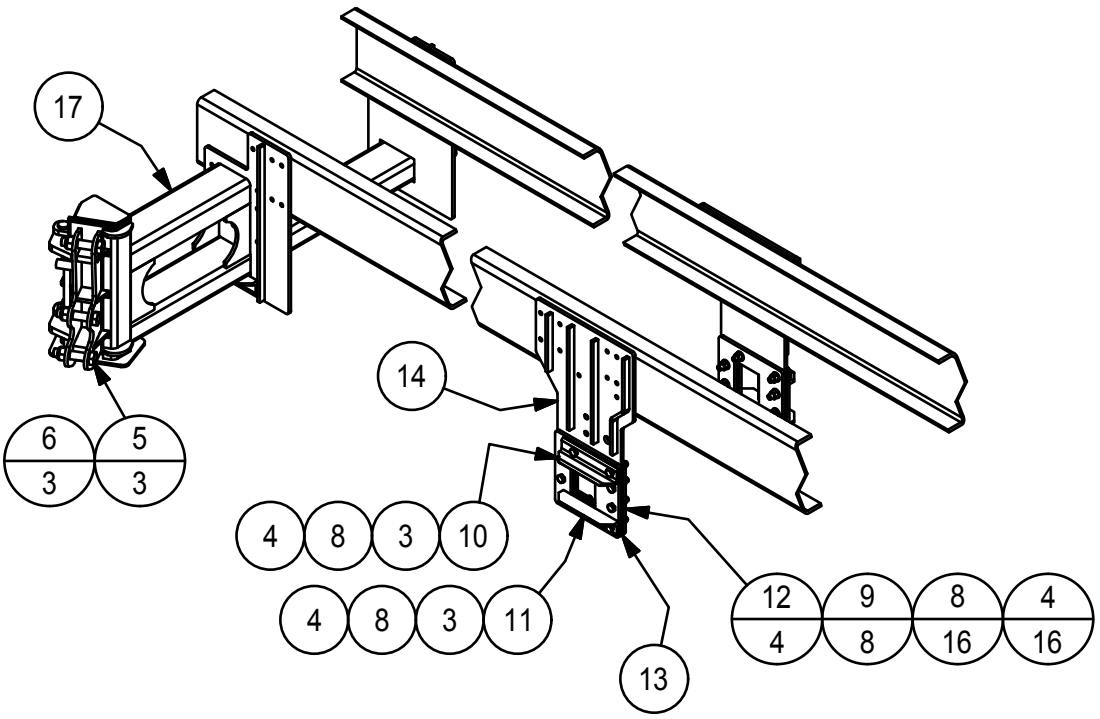
PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	146841	1	REAR,SUPPORT,WLDT
2	149515	1	PLATE,WLDT,BRACE,REMOVABLE
3	80643	2	PIN,LYNCH,3/16 X 1 9/16
4	81874	2	PIN, 1.25 X 4.00

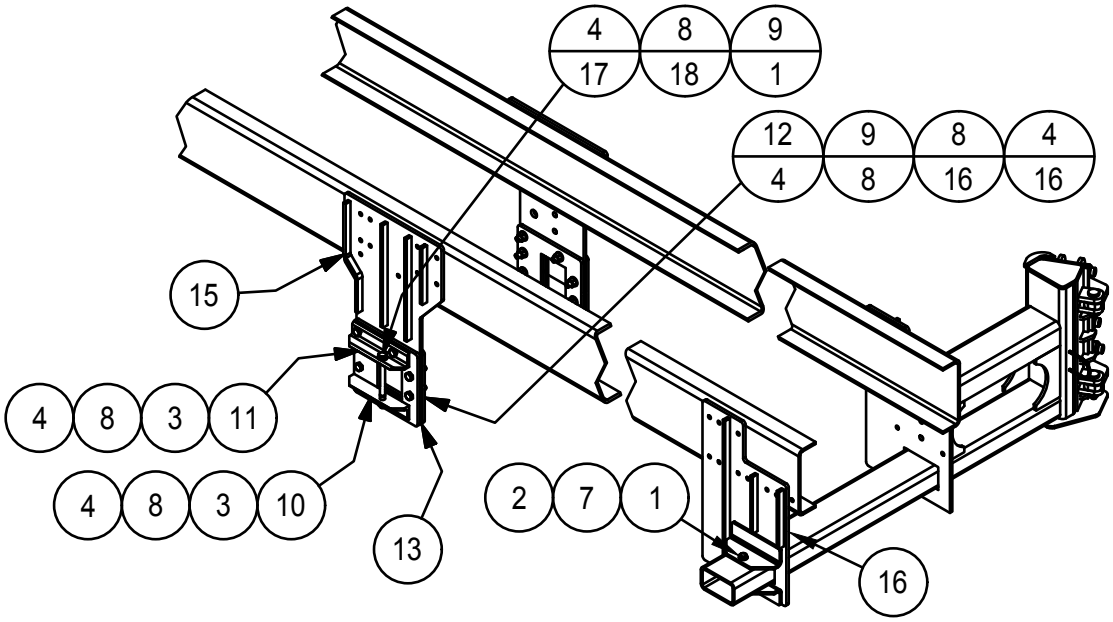


146840

MOUNT PACK FOR REAR MOUNT WING, MACK 2017 W/HMX SUSPENSION

PARTS LIST				PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION	ITEM	PART NO	QTY	DESCRIPTION
1	81861	1	NUT, TOPLOCK, 5/8-11NC, G8	10	137252	2	ANGLE,CHEEKPLATE,RH,OFFSET
2	82821	1	SCREW, CP, HX, 5/8NC X 6, G8	11	137253	2	ANGLE,CHEEKPLATE,LH,OFFSET
3	83130	8	SCREW, CP, HX, 3/4NC X 3 1/4, G8	12	146817	4	PLATE,CHEEK,EXTENSION
4	83304	16	NUT, TOPLOCK, 3/4-10NC, G8	13	146818	2	PLATE,CHEEK,SPACER
5	83318	3	NUT, HEX, 1 1/4-7NC, SLFLKG	14	146822	1	CHEEKPLATE,WLDT,FRONT,PS
6	95408	3	SCREW, CP, HX, 1 1/4NC X 5 1/2	15	146823	1	CHEEKPLATE,WLDT,REAR,DS
7	105343	1	WASHER,FLAT, .69 ID HARDENED	16	146824	1	CHEEKPLATE,WLDT,REAR,DS
8	105344	16	WASHER,FLAT, .81 ID, HARDENED	17	146825	1	REAR SUPPORT,ASSY,RMFP,RH
9	110083	8	SCREW, CP, HX, 3/4NC X3, G8				

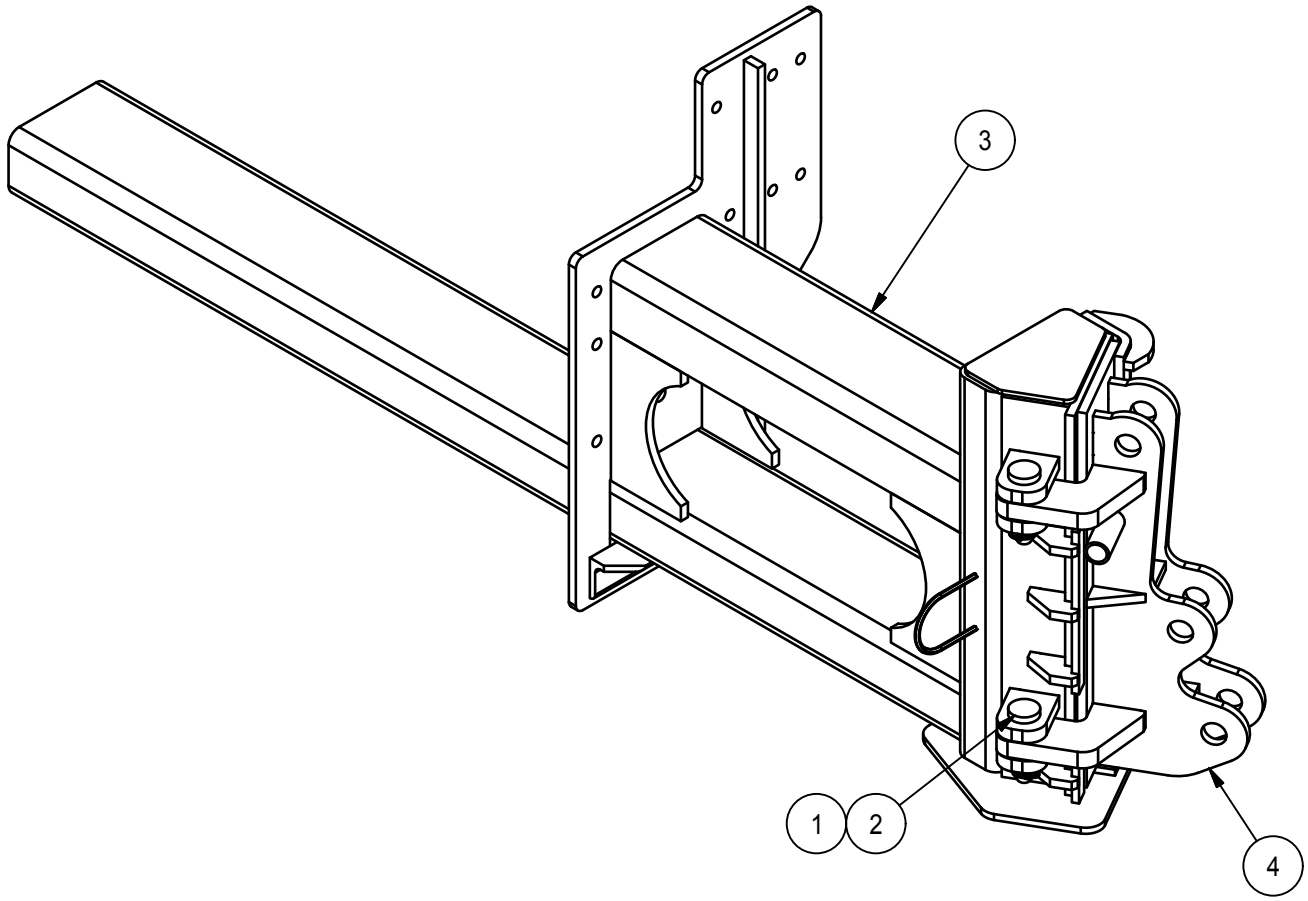




146812

REAR SUPPORT FOR REAR MOUNT WING, MACK TRUCK

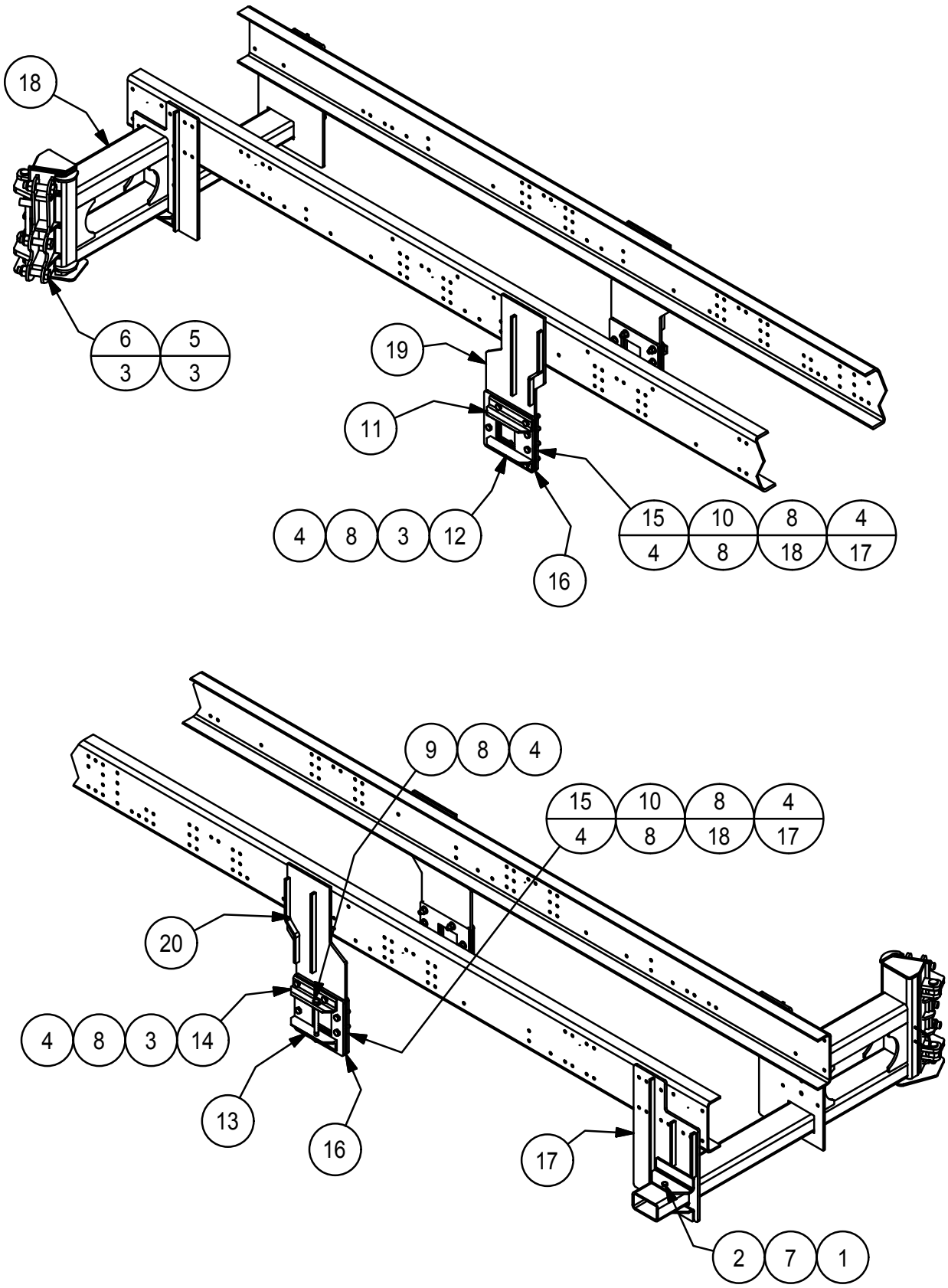
PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	80643	2	PIN,LYNCH,3/16 X 1 9/16
2	81874	2	PIN, 1.25 X 4.00
3	146826	1	REAR SUPPORT,WLDT,RMFP,RH
4	149515	1	PLATE,WLDT,BRACE,REMOVABLE



146825

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	81861	1	NUT, TOPLOCK, 5/8-11NC, G8
2	82821	1	SCREW, CP, HX, 5/8NC X 6, G8
3	83130	8	SCREW, CP, HX, 3/4NC X 3 1/4, G8
4	83304	17	NUT, TOPLOCK, 3/4-10NC, G8
5	83318	3	NUT, HEX, 1 1/4-7NC, SLFLKG
6	95408	3	SCREW, CP, HX, 1 1/4NC X 5 1/2, A325
7	105343	2	WASHER,FLAT, .69 ID HARDENED
8	105344	18	WASHER, FLAT, .81 ID, HARDENED
9	108995	1	SCREW, CP, HX, 3/4NC X 9, GR8
10	110083	8	SCREW, CP, HX, 3/4NC X3, G8
11	137252	1	ANGLE,CHEEKPLATE,RH,OFFSET
12	137253	1	ANGLE,CHEEKPLATE,LH,OFFSET
13	137267	1	ANGLE,CHEEKPLATE,RH,OFFSET,W/H
14	137268	1	ANGLE,CHEEKPLATE,LH,OFFSET,W/H
15	146817	4	PLATE,CHEEK,EXTENSION
16	146818	2	PLATE,CHEEK,SPACER
17	146824	1	CHEEKPLATE,WLDT,REAR,DS
18	146825	1	REAR SUPPORT,ASSY,RMFP,RH
19	146852	1	CHEEKPLATE,WLDT,FRONT,PS
20	146853	1	CHEEKPLATE,WLDT,FRONT,DS

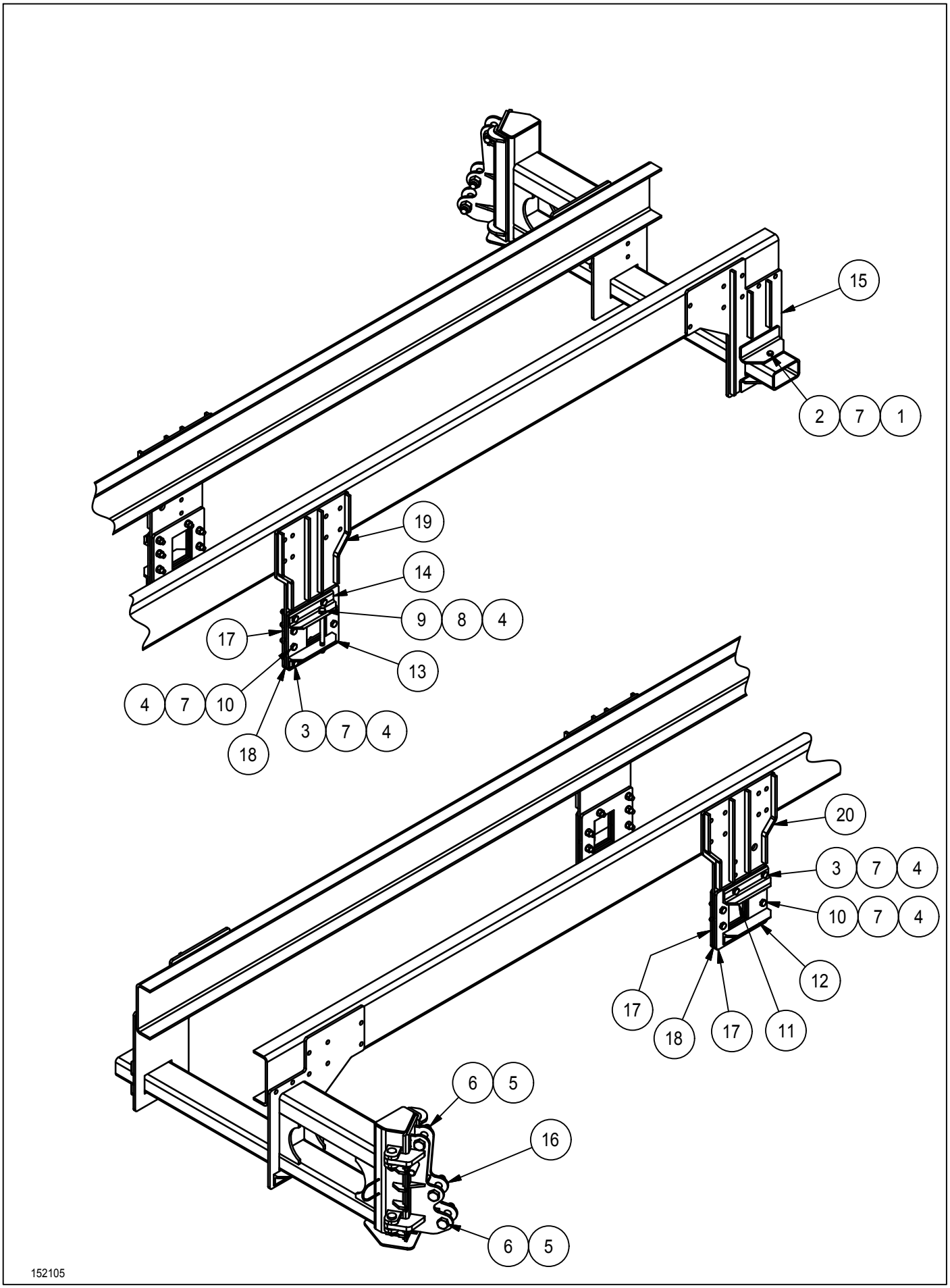
146851


18
6
3
5
3
19
11
4
8
3
12
16
15
4
10
8
8
18
4
17
9
8
4
15
4
10
8
8
18
4
17
20
4
8
3
14
13
16
17
2
7
1

146851

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	81861	1	NUT, TOPLOCK, 5/8-11NC, G8
2	82821	1	SCREW, CP, HX, 5/8NC X 6, G8
3	83130	8	SCREW, CP, HX, 3/4NC X 3 1/4, G8
4	83304	17	NUT, TOPLOCK, 3/4-10NC, G8
5	83318	3	NUT, HEX, 1 1/4-7NC, SLFLKG
6	95408	3	SCREW, CP, HX, 1 1/4NC X 5 1/2, A325
7	105343	17	WASHER,FLAT, .69 ID HARDENED
8	105344	1	WASHER, FLAT, .81 ID, HARDENED
9	108995	1	SCREW, CP, HX, 3/4NC X 9, GR8
10	110083	8	SCREW, CP, HX, 3/4NC X3, G8
11	137252	1	ANGLE,CHEEKPLATE,RH,TOP,OFFSET
12	137253	1	ANGLE,CHEEKPLATE,RH,BOT,OFFSET
13	137267	1	ANGLE,CHEEKPLATE,LH,BOT,OFFSET,W/H
14	137268	1	ANGLE,CHEEKPLATE,LH,TOP,OFFSET,W/H
15	141134	1	CHEEKPLATE,WLDT,LR, INTL, AK 2015
16	141150	1	REAR SUPPORT, ASSY, RMFP, RH
17	146817	4	PLATE,CHEEK,EXTENSION
18	146818	2	PLATE,CHEEK,SPACER
19	152106	1	CHEEKPLATE WLDT, DS, INTL, AK 2018
20	152107	1	CHEEKPLATE WLDT, FRONT,PS, INTL, AK 2018

152105


15
2
7
1
19
14
9
8
4
17
13
4
7
10
3
7
4
18
20
3
7
4
10
7
4
12
17
18
17
11
6
5
16
6
5
152105

THIS PAGE

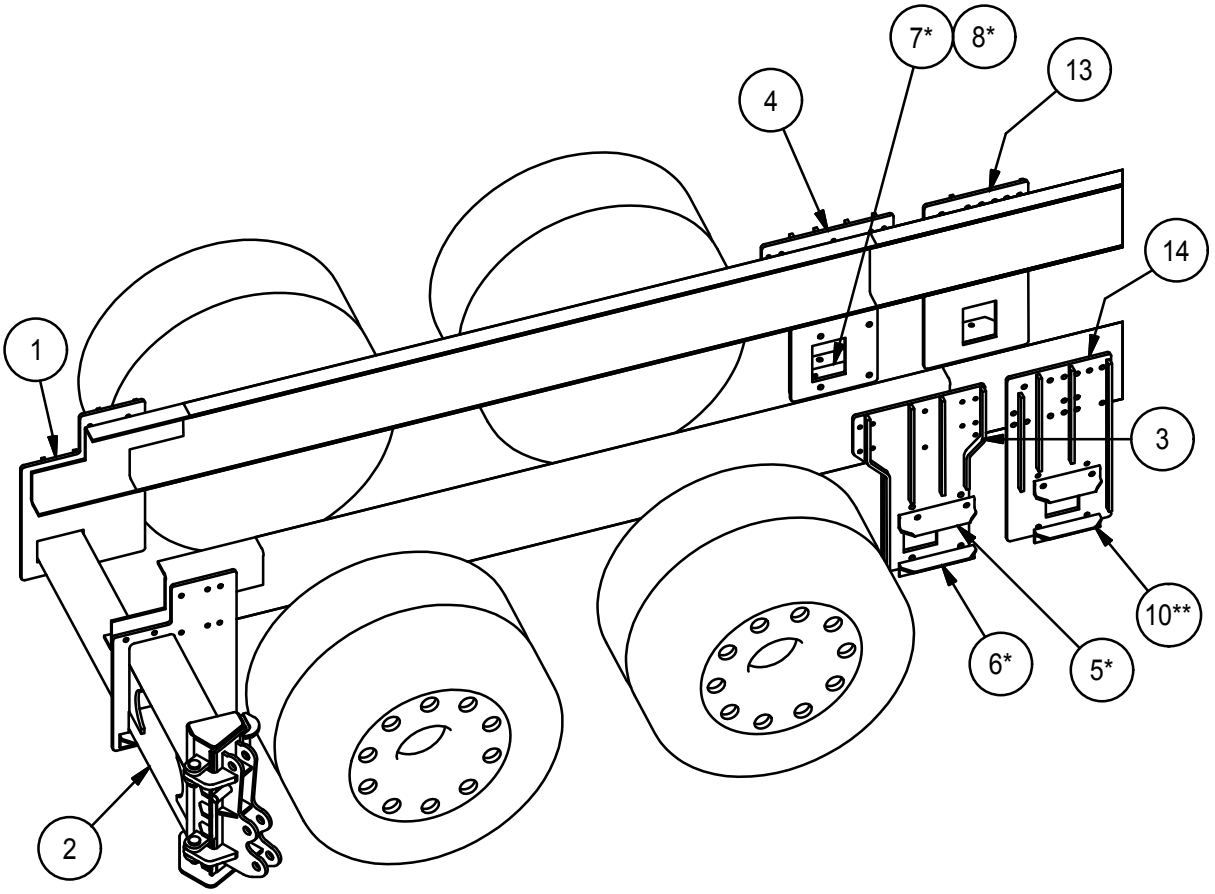
IS LEFT BLANK

INTENTIONALLY.

* FOR 212" WHEELBASE

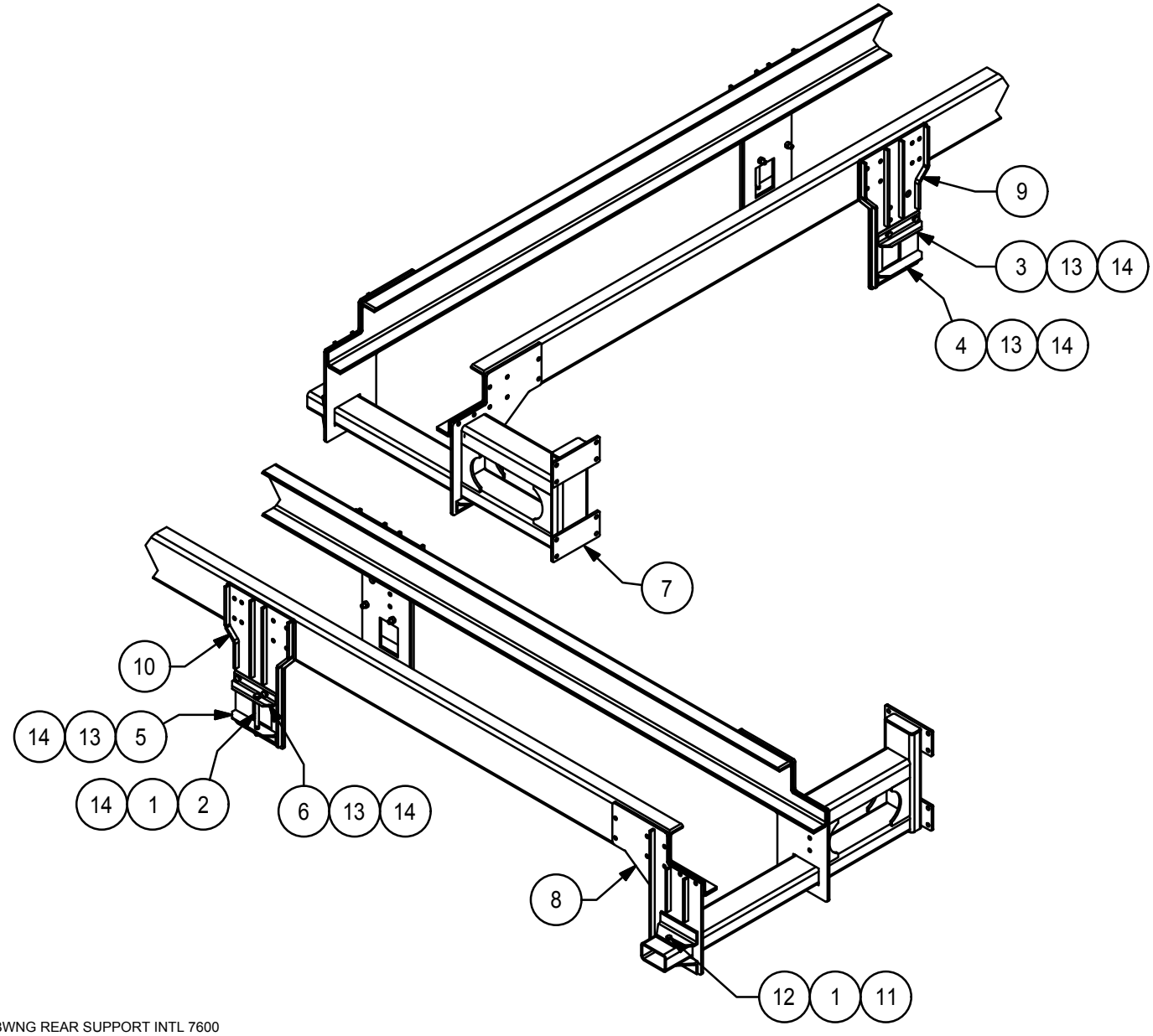
** FOR 228" WHEELBASE

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	133188	1	CHEEKPLATE,WLDT,REAR,DS,ALASKA
2	133218	1	REAR SUPPORT, ASSY, RMFP, RH
3	137255	1	CHEEKPLATE,WLDT,PS,AK
4	137256	1	CHEEKPLATE,WLDT,DS,AK
5*	137252	1	ANGLE,CHEEKPLATE,RH,OFFSET
6*	137253	1	ANGLE,CHEEKPLATE,LH,OFFSET
7*	137267	1	ANGLE,CHEEKPLATE,RH,OFFSET,W/H
8*	137268	1	ANGLE,CHEEKPLATE,LH,OFFSET,W/H
10**	110810	2	ANGLE, 2.5 X 2.5 X 10
13	133186	1	CHEEKPLATE,WLDT,PS,ALASKA
14	133187	1	CHEEKPLATE,WLDT,DS,ALASKA



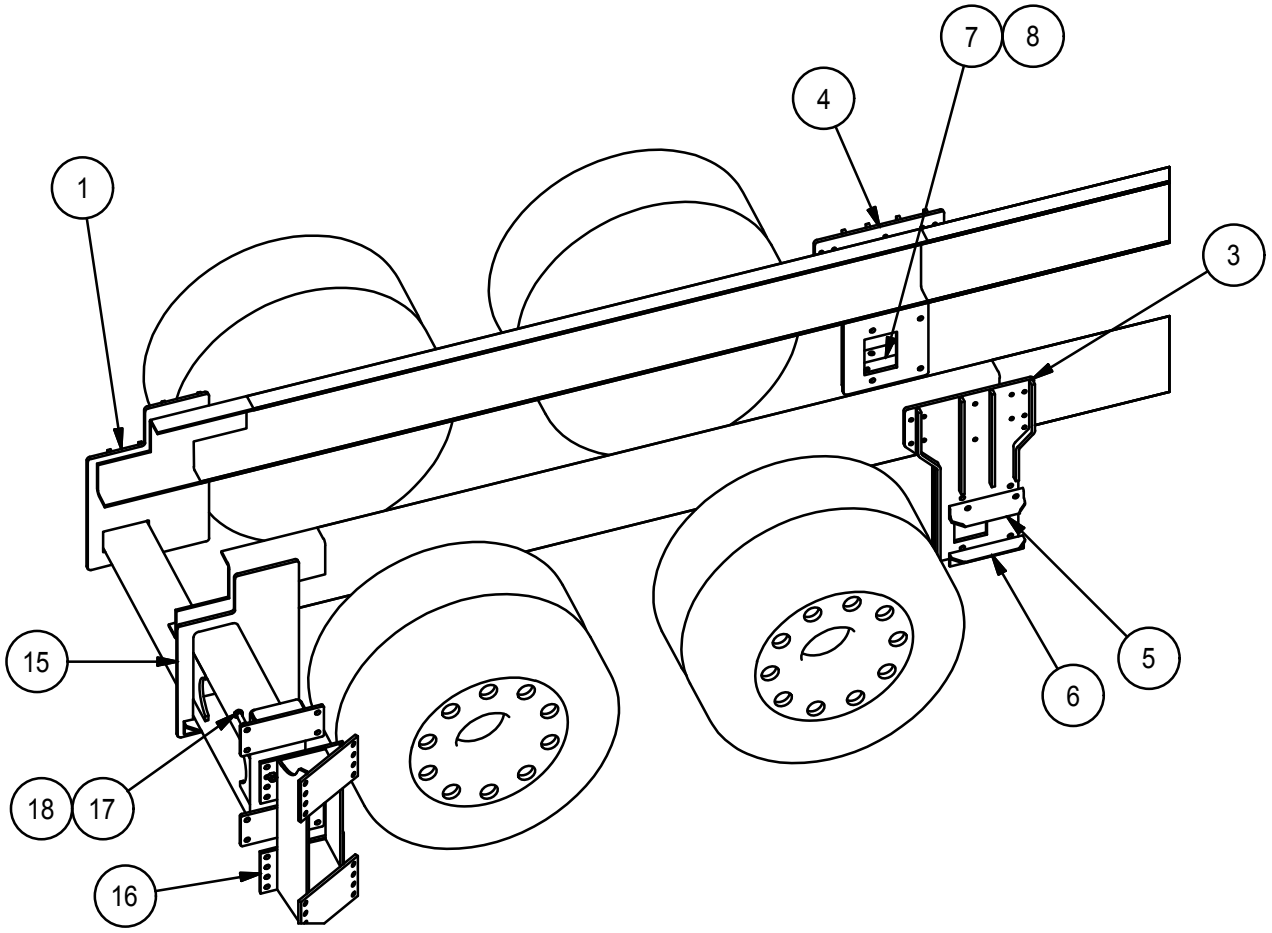
wing cheekplates and rear support

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	105343	2	WASHER,FLAT, .69 ID HARDENED
2	108995	1	SCREW, CP, HX, 3/4NC X 9, GR8
3	137252	1	ANGLE,CHEEKPLATE,RH,OFFSET
4	137253	1	ANGLE,CHEEKPLATE,LH,OFFSET
5	137267	1	ANGLE,CHEEKPLATE,RH,OFFSET,W/H
6	137268	1	ANGLE,CHEEKPLATE,LH,OFFSET,W/H
7	141133	1	REAR SUPPORT, WLDT, BWNG,ALASKA
8	141134	1	CHEEKPLATE,WLDT,LR, INTL, AK 2015
9	141136	1	CHEEKPLATE,WLDT,RH, INTL, AK 2015
10	141139	1	CHEEKPLATE, WLDT, LH,INTL, AK 2015
11	81861	1	NUT, TOPLOCK, 5/8-11NC, G8
12	82821	1	SCREW, CP, HX, 5/8NC X 6, G8
13	83303	8	SCREW, CP, HX, 3/4 X 2 1/4, G8
14	83304	9	NUT, TOPLOCK, 3/4-10NC, G8



BWNG REAR SUPPORT INTL 7600

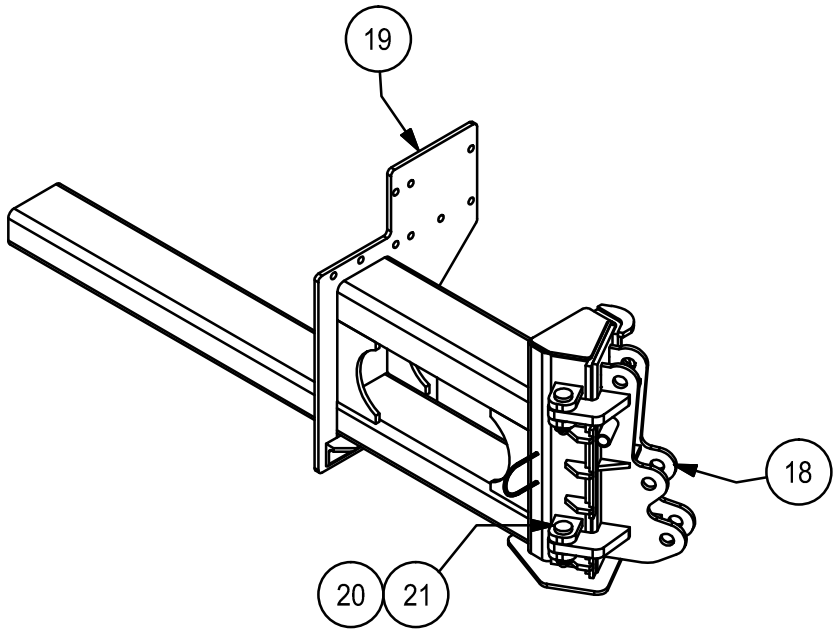
PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	140043	1	CHEEKPLATE,WLDT,REAR,DS,ALASKA
3	140569	1	CHEEKPLATE,WLDT,REAR,PS,AK
4	140573	1	CHEEKPLATE,WLDT,REAR,DS,AK
5	137252	1	ANGLE,CHEEKPLATE,RH,OFFSET
6	137253	1	ANGLE,CHEEKPLATE,LH,OFFSET
7	137267	1	ANGLE,CHEEKPLATE,RH,OFFSET,W/H
8	137268	1	ANGLE,CHEEKPLATE,LH,OFFSET,W/H
15	140062	1	REAR SUPPORT, WLDT, BWNG,ALASKA
16	140064	1	MOUNT,MAST TO REAR SUPPORT
17	83303	24	SCREW, CP, HX, 3/4 X 2 1/4, G8
18	83304	24	NUT, TOPLOCK, 3/4-10NC, G8



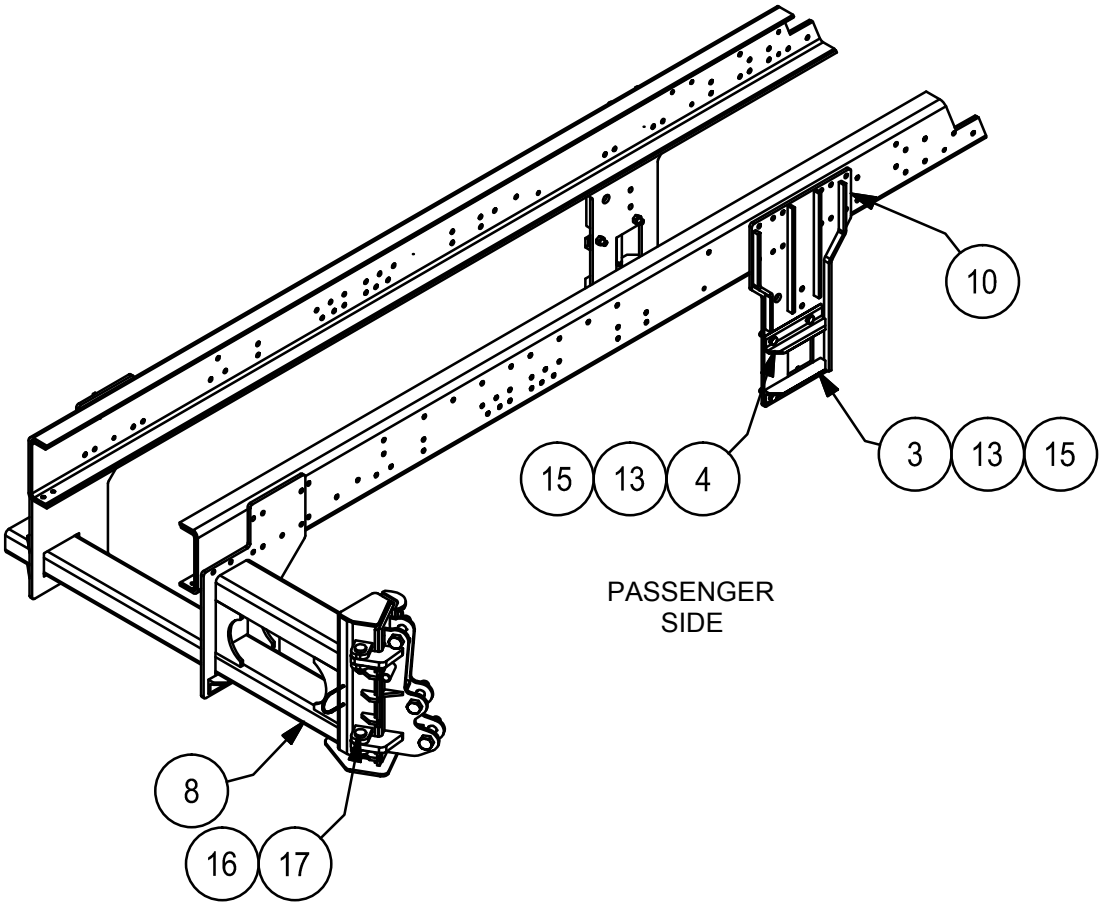
wing cheekplates and rear support for BWNG

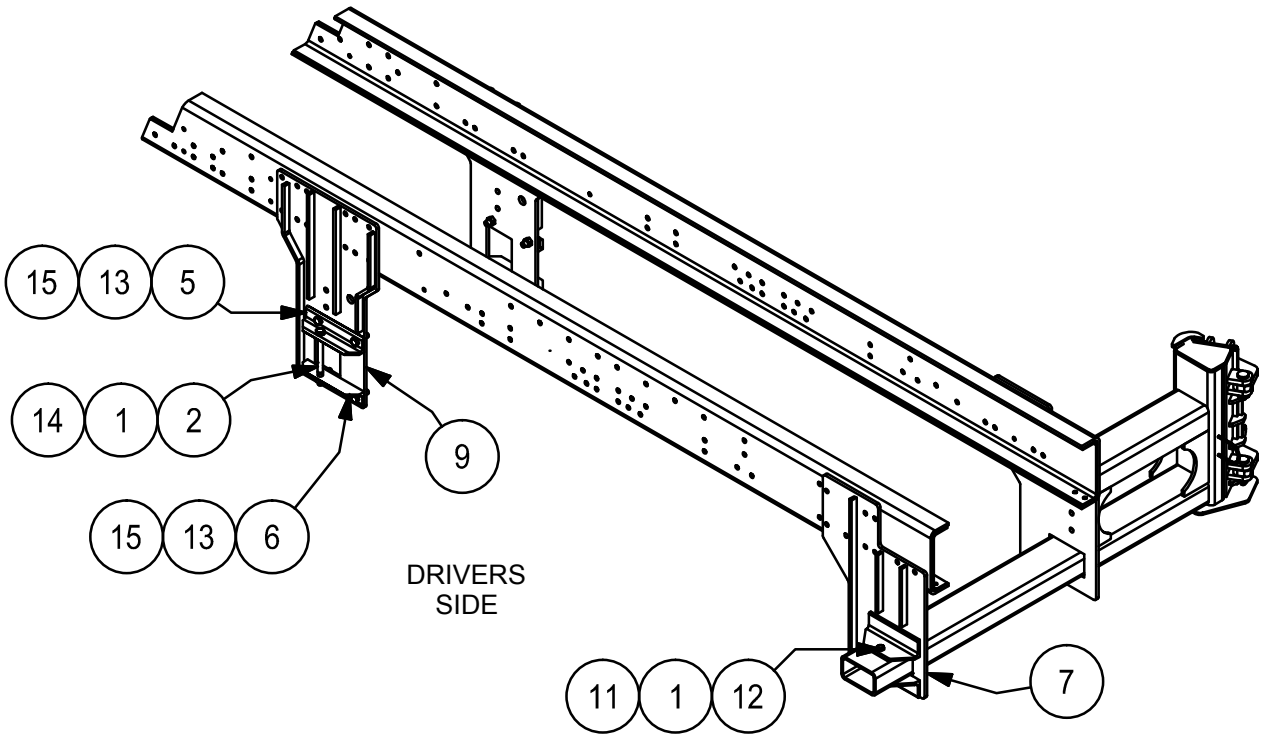
INCLUDED IN 140055
REAR SUPPORT ASSEMBLY

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	105343	2	WASHER,FLAT, .69 ID HARDENED
2	108995	1	SCREW, CP, HX, 3/4NC X 9, GR8
3	137252	1	ANGLE,CHEEKPLATE,RH,OFFSET
4	137253	1	ANGLE,CHEEKPLATE,LH,OFFSET
5	137267	1	ANGLE,CHEEKPLATE,RH,OFFSET,W/H
6	137268	1	ANGLE,CHEEKPLATE,LH,OFFSET,W/H
7	140043	1	CHEEKPLATE,WLDT,REAR,DS,ALASKA
8	140055	1	REAR SUPPORT, ASSY, RMFP, RH
9	140569	1	CHEEKPLATE,WLDT,REAR,PS,AK
10	140573	1	CHEEKPLATE, WLDT, REAR, DS, AK
11	81861	1	NUT, TOPLOCK, 5/8-11NC, G8
12	82821	1	SCREW, CP, HX, 5/8NC X 6, G8
13	83303	8	SCREW, CP, HX, 3/4 X 2 1/4, G8
14	83304	1	NUT, TOPLOCK, 3/4-10NC, G8
15	833042	8	NUT, TOPLOCK, 3/4-10NC, G8
16	83318	3	NUT, HEX, 1 1/4-7NC, SLFLKG
17	95408	3	SCREW, CP, HX, 1 1/4NC X 5 1/2, A325
18	109142	8	PLATE, WLDT, BRACE
19	140054	1	REAR SUPPORT, WLDT, RMFP, RH
20	80643	2	PIN, LYNCH, 3/16 X 1 9/16
21	81874	2	PIN, 1.25 X 4.00



140055

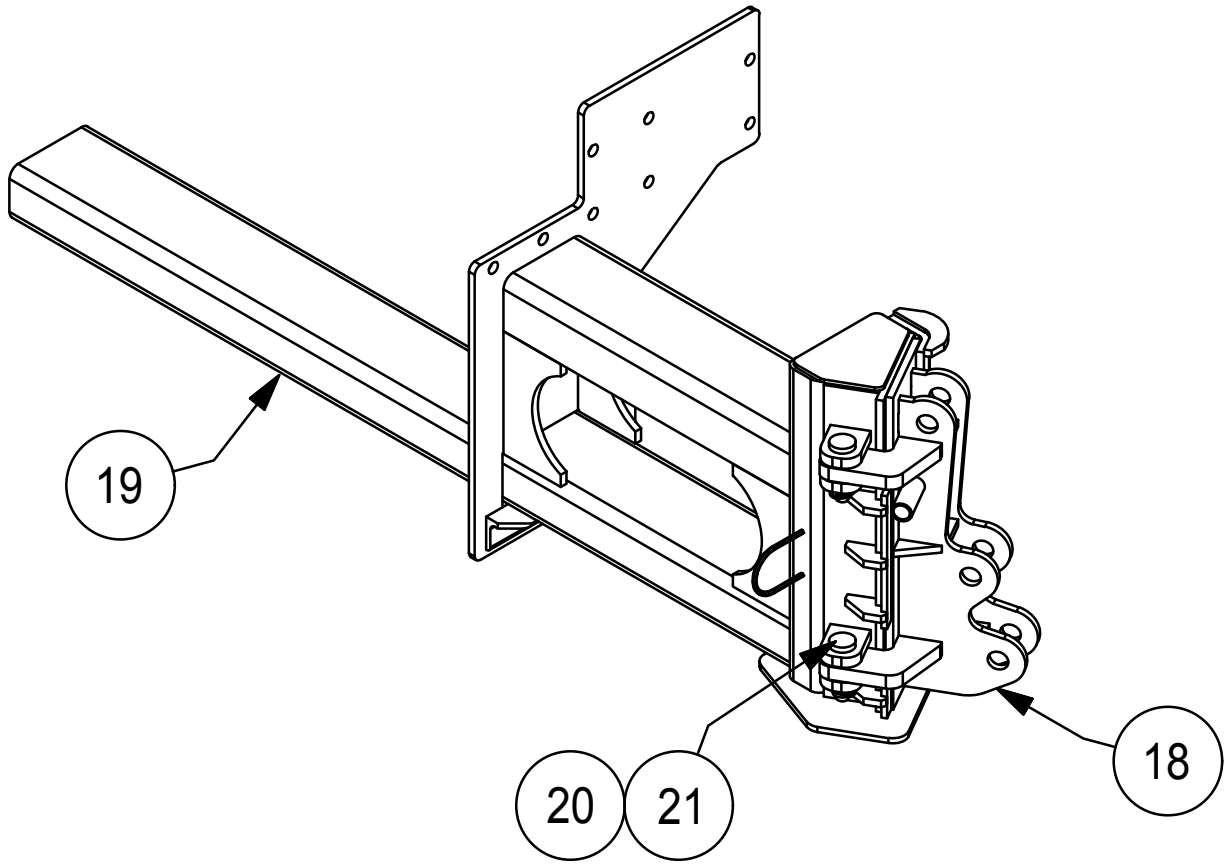

10
15
13
4
3
13
15
PASSENGER
SIDE
8
16
17


15
13
5
14
1
2
9
15
13
6
DRIVERS
SIDE
11
1
12
7

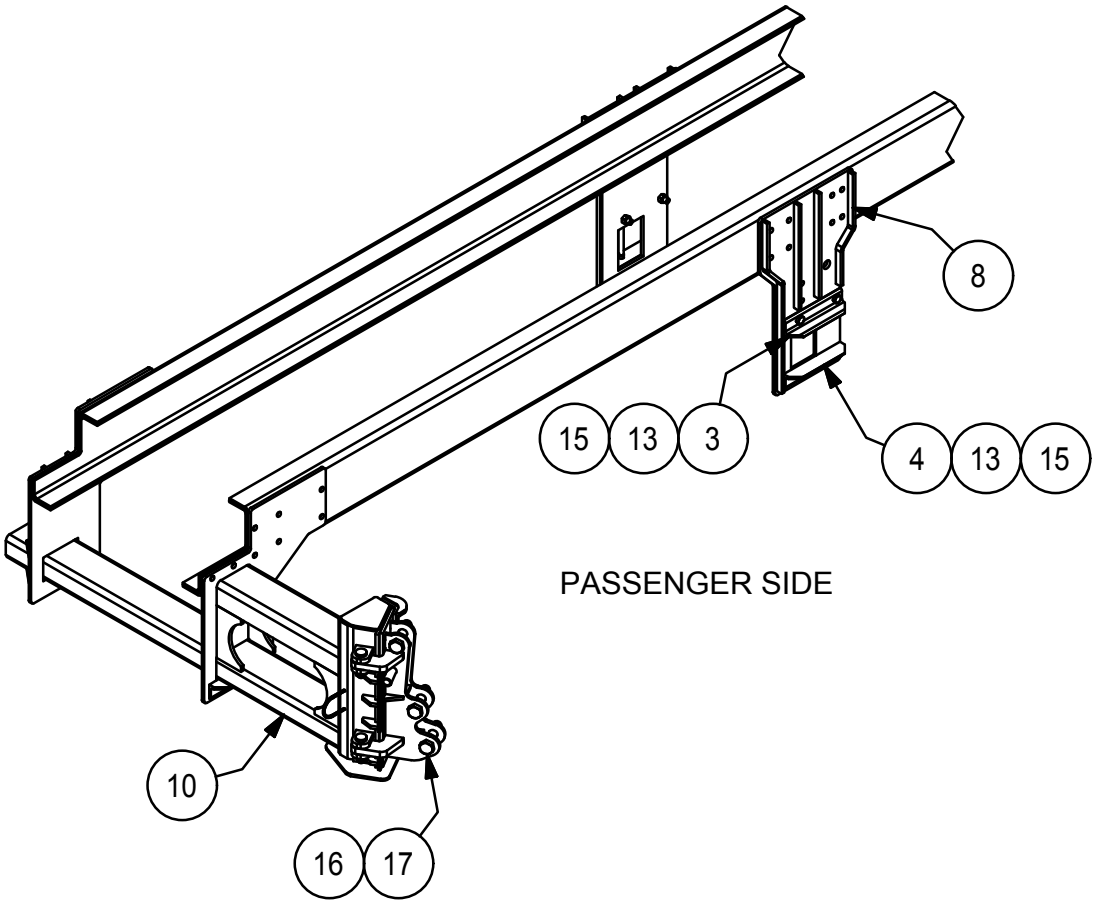
140055

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	105343	2	WASHER,FLAT, .69 ID HARDENED
2	108995	1	SCREW, CP, HX, 3/4NC X 9, GR8
3	137252	1	ANGLE,CHEEKPLATE,RH,OFFSET
4	137253	1	ANGLE,CHEEKPLATE,LH,OFFSET
5	137267	1	ANGLE,CHEEKPLATE,RH,OFFSET,W/H
6	137268	1	ANGLE,CHEEKPLATE,LH,OFFSET,W/H
7	141134	1	CHEEKPLATE,WLDT,LR, INTL, AK 2015
8	141136	1	CHEEKPLATE,WLDT,RH, INTL, AK 2015
9	141139	1	CHEEKPLATE, WLDT, LH,INTL, AK 2015
10	141150	1	REAR SUPPORT, ASSY, RMFP, RH
11	81861	1	NUT, TOPLOCK, 5/8-11NC, G8
12	82821	1	SCREW, CP, HX, 5/8NC X 6, G8
13	83303	8	SCREW, CP, HX, 3/4 X 2 1/4, G8
14	83304	1	NUT, TOPLOCK, 3/4-10NC, G8
15	833042	8	NUT, TOPLOCK, 3/4-10NC, G8
16	83318	3	NUT, HEX, 1 1/4-7NC, SLFLKG
17	95408	3	SCREW, CP, HX, 1 1/4NC X 5 1/2, A325
18	109142	8	PLATE, WLDT, BRACE
19	141149	1	REAR SUPPORT, WLDT, RMFP, RH
20	80643	2	PIN, LYNCH, 3/16 X 1 9/16
21	81874	2	PIN, 1.25 X 4.00

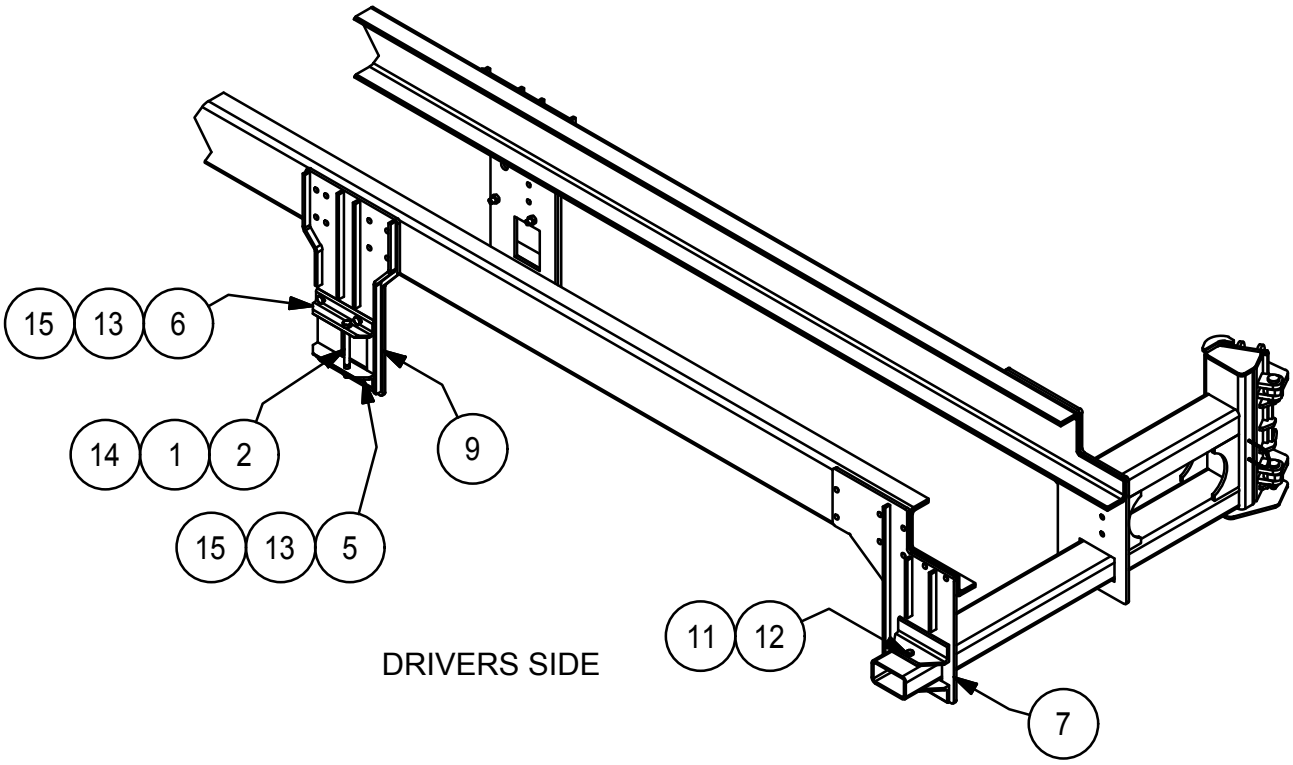
INCLUDED IN 141150
REAR SUPPORT ASSEMBLY



rear support 141150



PASSENGER SIDE

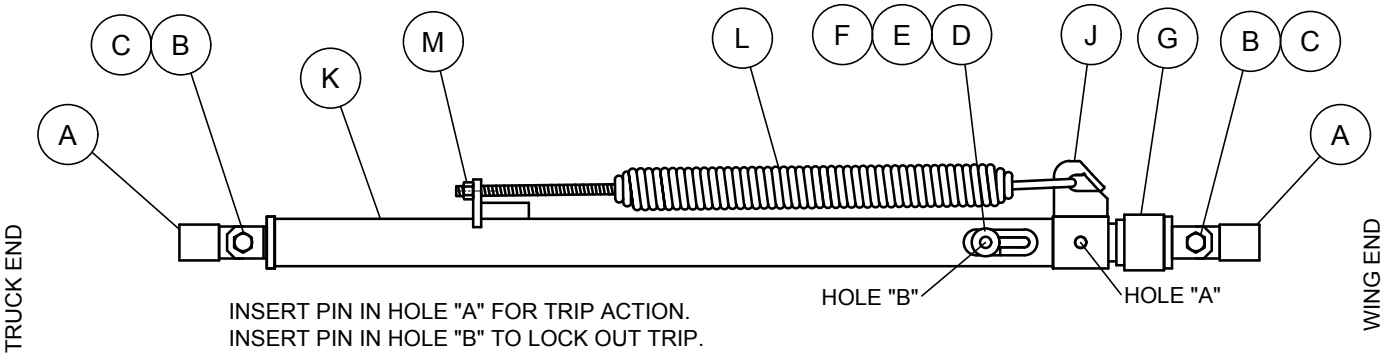


DRIVERS SIDE

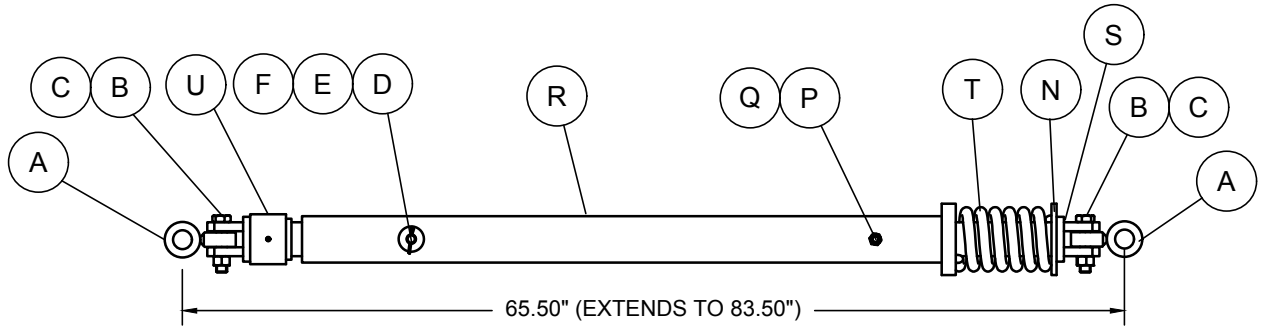
rear support 141150

WING BRACE PARTS LIST

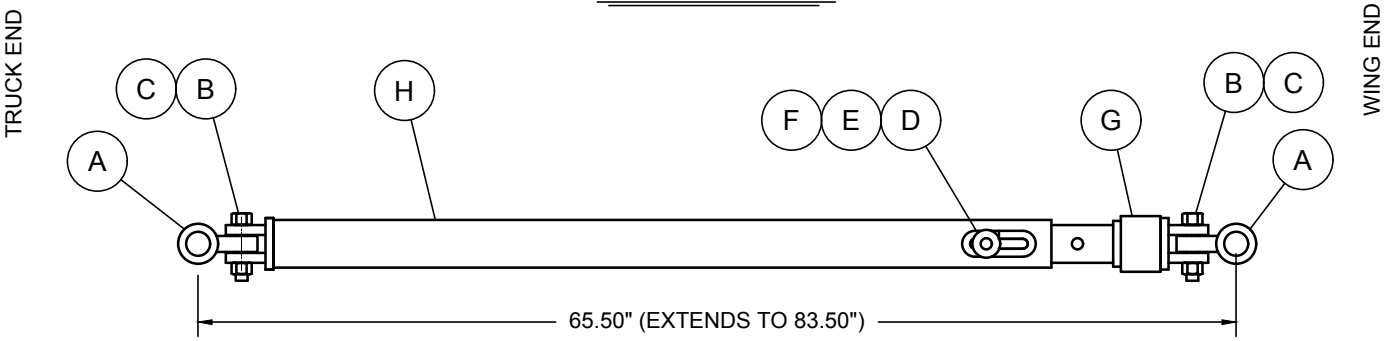
ITEM	116040 TRIP BRACE	116038 SHOCK BRACE	116036 STD BRACE	PARTS LIST PART NO.	PARTS LIST DESCRIPTION
A	2	2	2	105418	JOINT,UNIVERSAL,WLDT,MALE
B	2	2	2	83310	SCREW,CP,HX,3/4NC X 3 1/2,G8
C	2	2	2	11483	NUT,HEX,3/4NC,SLFLKG,NYLON
D	1	1	1	83134	PIN,CLEVIS,5/8 X 4
E	2	2	2	10557	WASHER,FLAT,STD,5/8 ID
F	1	1	1	10098	PIN,COTTER,1/8 X 1 1/2
G	1	0	1	116034	BRACE,WLDT,INNER
H	0	0	1	95068	TUBE,WLDT,BRACE
J	1	0	0	95103	COLLAR,WLDT,SPRING END
K	1	0	0	95100	TUBE,WLDT,FULL TRIP BRACE
L	1	0	0	95133	SPRING,EXTN
M	1	0	0	11484	NUT,HEX,5/8NC,SLFLKG,NYLON
N	0	1	0	146706	WASHER
P	0	1	0	88070	SCREW,CP,HX,1/2NC X 4,G8
Q	0	1	0	11021	NUT,HEX,1/2NC,SLFLKG,NYLON
R	0	1	0	147059	TUBE,SHOCK TYPE
S	0	1	0	95071	BRACE,WLDT,WING END,SHOCK BRACE
T	0	1	0	81893	SPRING
U	0	1	0	123325	BRACE,WLDT,INNER



TRIP WING BRACE



SHOCK WING BRACE



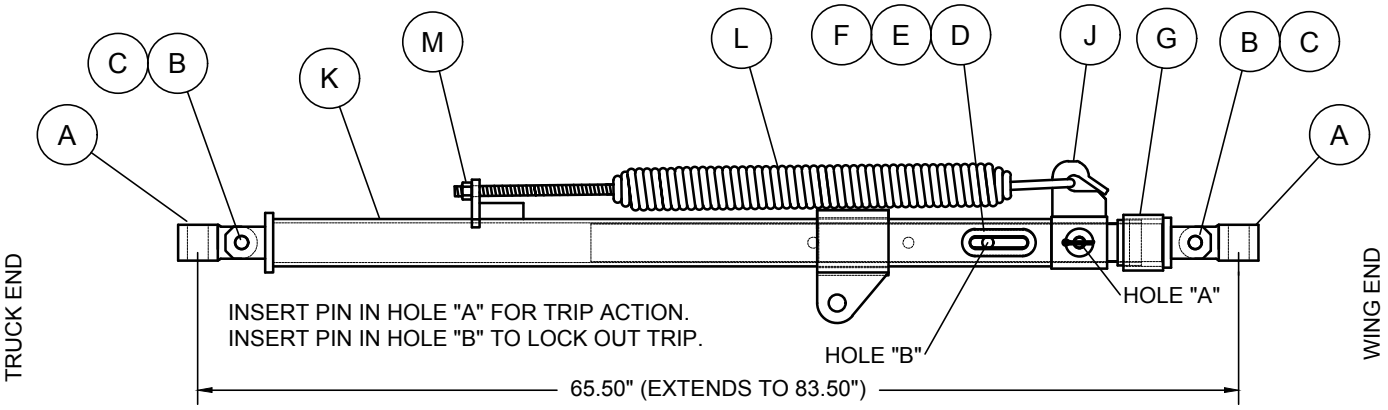
STANDARD WING BRACE

llwg4

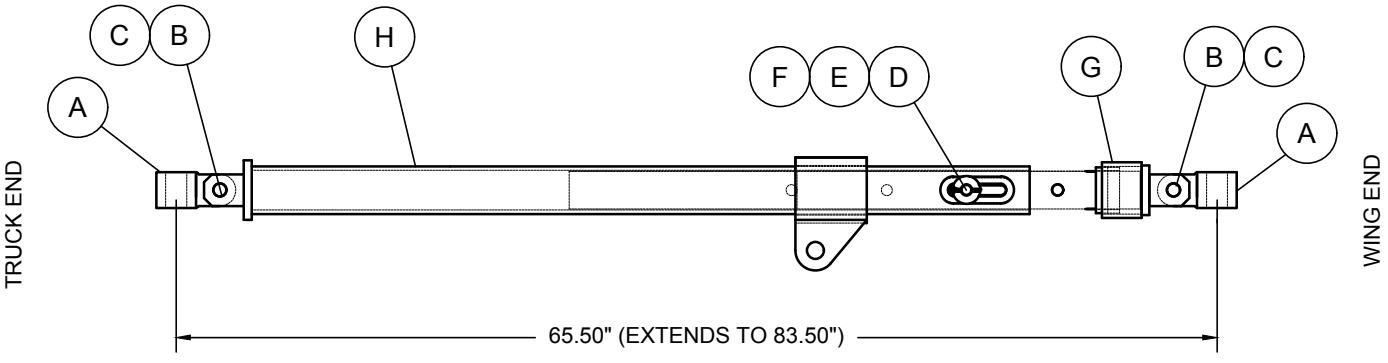
WING BRACE FOR BRACE HEEL LIFT PARTS LIST

ITEM	116033 TRIP BRACE	116037 STD BRACE	PARTS LIST PART NO.	DESCRIPTION
A	2	2	105418	JOINT,UNIVERSAL,WLDT,MALE
B	2	2	83310	SCREW,CP,HX,3/4NC X 3 1/2,G8
C	2	2	11483	NUT,HEX,3/4NC,SLFLKG,NYLON
D	1	1	83134	PIN, CLEVIS, 5/8 X 4
E	2	2	10557	WASHER, FLAT, STD, 5/8 ID
F	1	1	10098	PIN, COTTER, 1/8 X 1 1/2
G	1	1	116034	BRACE WLDT, 27", SOLID
H	0	1	88479	TUBE, WLDT, BRACE
J	1	0	95103	COLLAR, WLDT, SPRING
K	1	0	88428	TUBE, WLDT, FULL TRIP
L	1	0	95133	SPRING, EXTENSION
M	1	0	11484	NUT, HEX, 5/8NC,SLFLKG,NYLON
N	2	2	88429**	COLLAR, HALF

**NOT SHOWN. SHIPS LOOSE.



TRIP WING BRACE

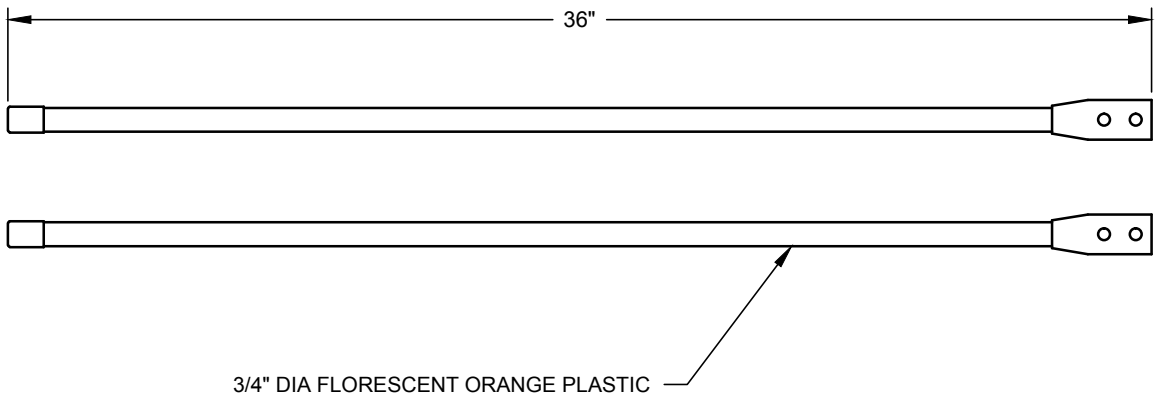


STANDARD WING BRACE

llwg5

MARKERS

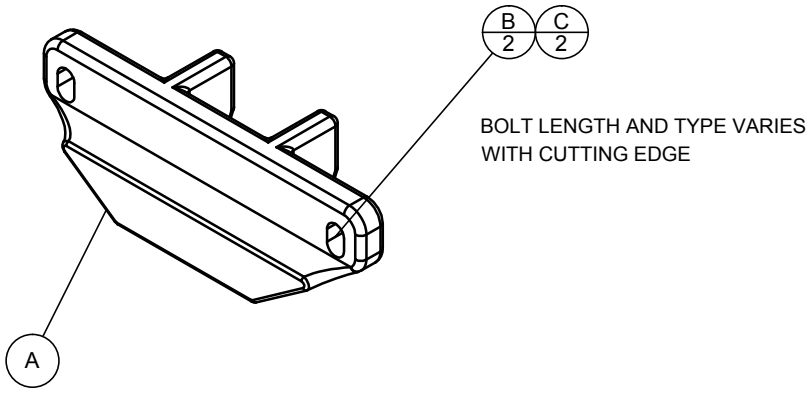
PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
A	1	81665	MARKER KIT, 36" FLORESCENT ORANGE



NOTE: KIT INCLUDES □2□MARKERS, □4□1/4 X 1 SCREWS □ □4□1/4 LOCKING NUTS

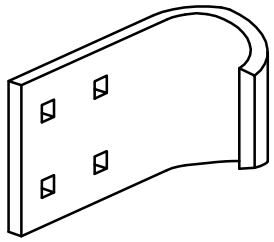
MOLDBOARD SHOE

PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
A	1	95457	8" MOLDBOARD SHOE
B	2	81861	NUT, TOPLOCK, 5/8-11NC, G8
C	2	105343	WASHER, FLAT, .69 ID



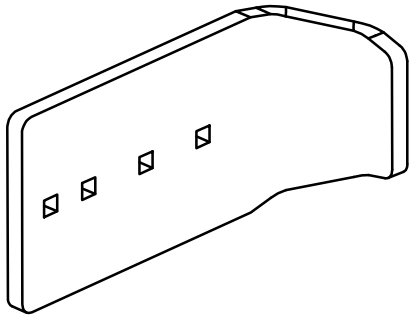
□a□23

PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
		86980	GUARD,CURB,WRAPAROUND



FOR TOP PUNCHED CUTTING EDGE

PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
		95097	SHOE,CURB,WRAPAROUND



FOR CENTER PUNCHED CUTTING EDGE

a 24

THIS PAGE

IS LEFT BLANK

INTENTIONALLY.

WING SYSTEM

HYDRAULIC DIAGRAMS

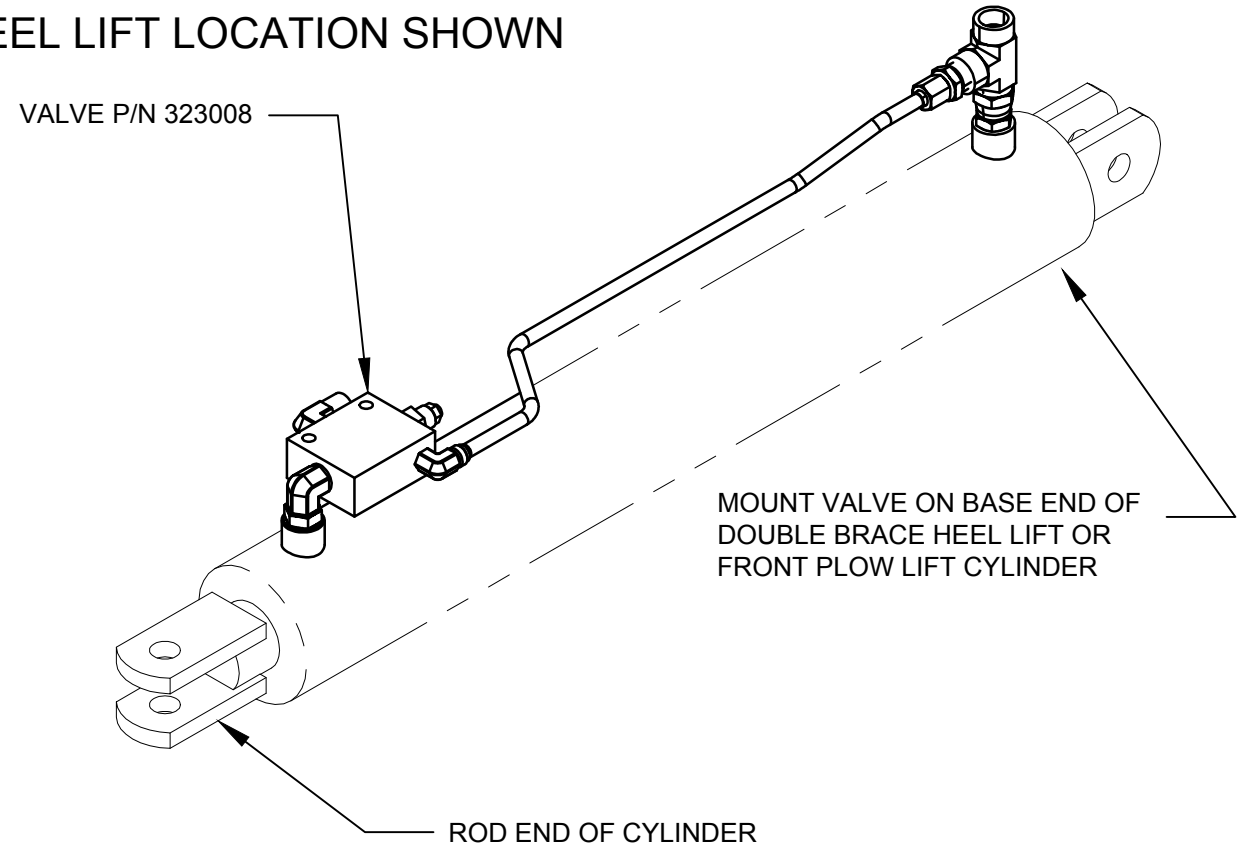
AND SCHEMATICS

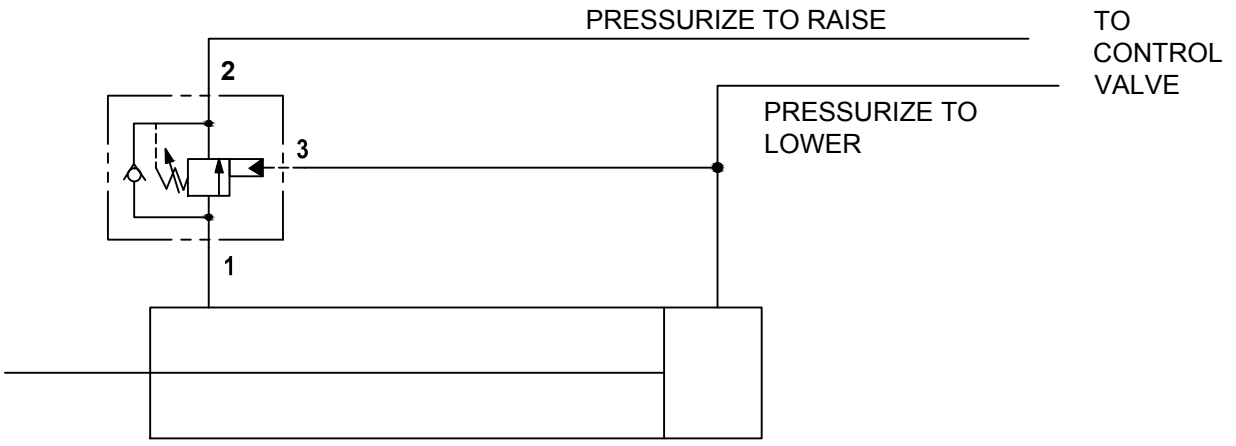
FRONT HEEL LIFT OR SINGLE BRACE HEEL LIFT: MOUNT VALVE ON **ROD END OF CYLINDER** AS SHOWN BELOW

DOUBLE BRACE HEEL LIFT OR FRONT PLOW LIFT: MOUNT VALVE ON **BASE END OF CYLINDER**

THIS VALVE IS MOUNTED DIRECTLY TO THE HEEL LIFT CYLINDER PORT WHICH IS PRESSURIZED WHEN THE HEEL OF THE MOLDBOARD IS RAISED. THE PURPOSE OF THE VALVE IS TO ELIMINATE OR MINIMIZE DRIFT DOWN OF THE HEEL AND IT ALSO HOLDS THE HEEL UP IF THE LINE TO THE TRUCK CONTROL VALVE LEAKS OR BREAKS.

FRONT HEEL LIFT OR SINGLE BRACE HEEL LIFT LOCATION SHOWN





FRONT HEEL LIFT OR SINGLE BRACE HEEL LIFT SHOWN

MAN108

THIS PAGE

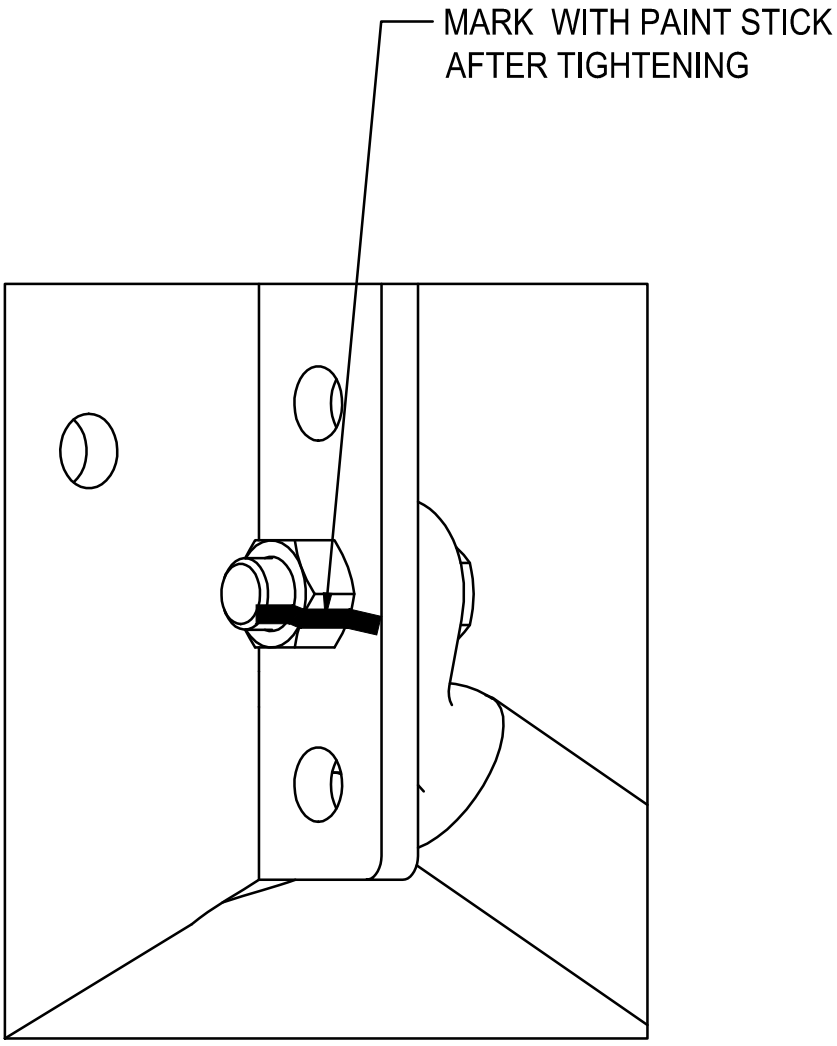
IS LEFT BLANK

INTENTIONALLY.

WING SYSTEM

GENERAL INFORMATION

This is a recommended practice to assist in the visual inspection for loose hardware. After the hardware is tightened to the recommended torque, use a bright-colored paint stick and mark across the bolt, nut, washer (if applies), and a short line across the frame in a continuous line. This will serve two puroses. (1) It will indicate the hardware has been properly torqued and (2 should the hardware loosen, the paint line will be broken and no longer be inline between the components.



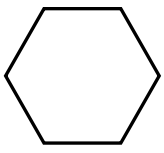
BOLT TORQUE DATA

The chart provided contains information concerning standard hardware used on this machine. It is recommended that all fasteners be tightened to the torque values specified. The grade of the bolt is identified by the markings on the head of the bolt.

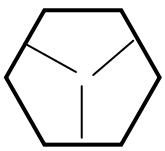
GENERAL BOLT TORQUE DATA IN FT/LB.

BOLT SIZE	SAE-GRADE 2		SAE-GRADE 5		SAE-GRADE 8	
	DRY	LUB	DRY	LUB	DRY	LUB
1/4-20	5	4	8	6	12	9
1/4-28	6	5	9	7	13	10
5/16-18	11	8	17	13	25	18
5/16-24	12	9	19	14	25	20
3/8-16	20	15	30	23	45	35
3/8-24	23	17	35	25	50	40
7/16-14	30	24	50	35	70	50
7/16-20	35	25	55	40	80	60
1/2-13	50	35	75	55	110	80
1/2-20	55	40	90	65	120	90
9/16-12	70	55	110	80	150	110
9/16-18	80	60	120	90	170	130
5/8-11	100	75	150	110	220	170
5/8-18	110	85	170	130	240	180
3/4-10	175	130	260	200	380	280
3/4-16	195	145	300	220	420	320
7/8-9	165	125	430	320	600	460
7/8-14	185	140	470	350	660	500
1-8	250	190	800	600	900	680
1-14	270	200	700	530	1000	740

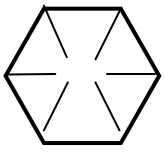
NOTE: 1. Multiply by 1.356 for metric N-M.
2. Do not use above values in place of those specified in other sections of this manual.



GRADE 2
(PLAIN)



GRADE 5
(3 MARKS)



GRADE 8
(6 MARKS)

DIMENSION CHART

DECIMALS OF AN INCH
For each 1/64 of an inch
With Millimeter Equivalents

Fraction	1/64	Decimal	Millimeters (Approx.)	Fraction	1/64	Decimal	Millimeters (Approx.)
- -	1	.015625	0.397	- -	33	.515625	13.097
1/32	2	.03125	0.794	17/32	34	.53125	13.494
- -	3	.046875	1.191	- -	35	.546875	13.891
1/16	4	.0625	1.588	9/16	36	.5625	14.288
- -	5	.078125	1.984	- -	37	.578125	14.684
3/32	6	.09375	2.381	19/32	38	.59375	15.081
- -	7	.109375	2.778	- -	39	.609375	15.478
1/8	8	.125	3.175	5/8	40	.625	15.875
- -	9	.140625	3.572	- -	41	.640625	16.272
5/32	10	.15625	3.969	21/32	42	.65625	16.669
- -	11	.171875	4.366	- -	43	.671875	17.066
3/16	12	.1875	4.763	11/16	44	.6875	17.463
- -	13	.203125	5.159	- -	45	.703125	17.859
7/32	14	.21875	5.556	23/32	46	.71875	18.256
- -	15	.234375	5.953	- -	47	.734375	18.653
1/4	16	.25	6.350	3/4	48	.750	19.050
- -	17	.265625	6.747	- -	49	.765625	19.447
9/32	18	.28125	7.144	25/32	50	.78125	19.844
- -	19	.296875	7.541	- -	51	.796875	20.241
5/16	20	.3125	7.938	13/16	52	.8125	20.638
- -	21	.328125	8.334	- -	53	.828125	21.034
11/32	22	.34375	8.731	27/32	54	.84375	21.431
- -	23	.359375	9.128	- -	55	.859375	21.828
3/8	24	.375	9.525	7/8	56	.875	22.225
- -	25	.390625	9.922	- -	57	.890625	22.622
13/32	26	.40625	10.319	29/32	58	.90625	23.019
- -	27	.421875	10.716	- -	59	.921875	23.416
7/16	28	.4375	11.113	15/16	60	.9375	23.813
- -	29	.453125	11.509	- -	61	.953125	24.209
15/32	30	.46875	11.906	31/32	62	.96875	24.606
- -	31	.484375	12.303	- -	63	.984375	25.003
1/2	32	.500	12.700	1	64	1.000	25.400

TABLE OF WEIGHTS AND MEASURES

Dry Measure

2 pints = 1 quart
1 quart = 67.2 cu. in.
1 British bushel = 1.032 U.S. bushel
8 quarts = 1 peck
4 pecks = 1 bushel
4 pecks = 1 bushel

Liquid Measure

4 gills = 1 pint
16 fluid ounces = 1 pint
2 pints = 1 quart
4 quarts = 1 gallon
1 British Imperial gallon = 1.2 U.S. gals.
1 cu. ft of water contains 7.48 gallons and weighs 62.321 lbs.
1 gallon = 231 cubic inches
31-1/2 gallons = 1 barrel
2 barrels = 1 hogshead

Weight of:

1 gal. water = approx. 8.33 lbs.
1 gal. gasoline = approx. 6.1 lbs.
1 gal. L.PG. = approx. 4.25 lbs.
1 gal. Diesel Fuel = approx. 7.0 lbs.

Linear Measure

1 mil. = 0.001 inch
12 inches = 1 foot
3 feet = 1 yard
5-1/2 yards = 1 rod
40 rods = 1 furlong
8 furlongs = 1 statute mile
5280 feet = 1 statute mile
3 miles = 1 league

Square Measure

1 circular mil. = 0.7854 square mils.
1,000,000 sq. mils. = 1 square inch
144 square inches = 1 sq. ft.
9 sq. ft. = 1 sq. yd.
30-1/4 sq. yds. - 1 sq. rod
40 sq. rods = 1 rood
4 roods - 1 acre = 43560 sq. ft.
640 acres = 1 sq. mile

Surveyor's Measure

7.92 inches = 1 link
25 links = 1 rod
4 rods = 1 chain
10 sq. chains or 160 sq. rods = 1 acre
36 sq. miles (6 miles square) = 1 township
43560 sq. ft. = 1 acre
640 acres = 1 sq. mile

Cubic Measure

1 cu. cm. = .061 cu. in.
27 cu. ft. = 1 cu. yd.
40 cu. ft. = 1 ton (shipping)
231 cu. in. = 1 U.S. gallon
1728 cu. in. = 1 cu. ft.
128 cu. ft. = 1 cord (wood)
2150.42 cu. in. = 1 std. bushel
1 cu. ft. = 4/5 of a bushel

Linear Measure

1 millimeter = 0.03937 inches
1 centimeter = 0.3937 inches
1 decimeter = 3.937 in. = 0.328 ft.
1 meter = 39.37 in. = 1.0936 yards
1 decameter = 1.9884 rods
1 kilometer = 0.62137 mile
1 inch = 2.54 centimeters
1 foot = 3.048 decimeters
1 rod = 9.5029 decameters
1 yard = .09144 meter
1 mile = 1.6093 kilometers

Square Measure

1 sq. cm. = 0.1550 sq. in.
1 sq. decimeter = 0.1076 sq. ft.
1 sq. meter = 1.196 sq. yds.
1 hectare = 2.47 acres
1 sq. kilometer = 0.386 sq. miles
1 sq. in. = 6.452 sq. cm.
1 sq. ft. = 9.2903 sq. decimeters
1 sq. yd. = 0.8361 sq. meter
1 sq. mile = 2.59 sq. kilometers

Weights

1 gram = 0.03527 ounces
1 kilogram = 2.2046 lbs.
1 metric ton = 2205 lbs.
1 pound = 0.4536 kilograms
1 metric ton = 1.1023 short tons
1 ounce = 28.35 grams = 437.5 grains

ALASKA D.O.T. 2017-2018
SNOW FOE® SERIES
MODEL: UNDERBODYSCRAPER (UBS)
SERIAL #: _____

INSTRUCTIONS FOR ORDERING PARTS

Order parts from the authorized dealer covering your area.

DEALER:_____
Phone #: _____

ALWAYS GIVE THE MODEL AND SERIAL NUMBER.

To obtain parts promptly, give part name and part number.

Give post office address, town, and state where the parts are to be shipped. UPS (United Parcel Service) and other carriers will not ship to a post office box. You must use a street address. Also be sure to specify whether material is to be shipped by freight, express, parcel post, or UPS. All UPS shipments will be normal surface routing unless specified otherwise.

Confirm all telephone or FAX orders in writing.

Credit for new parts not needed must be obtained from the dealer from whom they were purchased.

Unless claims for shortages or errors are made immediately upon receipt of goods, they will not be considered.

Inspect all goods received immediately upon receipt. When damaged goods are received, insist that a full description of the damage be made by the carrier agent on the freight bill. If this description is insisted upon, full damage can be collected from the transportation company.

No responsibility is assumed for delay or damage to merchandise while in transit. Dealer's responsibility ceases upon delivery of shipment to the transportation company from whom a receipt is received showing that shipment was in good condition when delivered to them; therefore, claims (if any) should be filed with the transportation company and not with the dealer.

ALASKA D.O.T. – 2014 - 2018
UNDERBODY SCRAPER
TABLE OF CONTENTS

Page Number

SNOW FOE SERIES:

UNDERBODY SCRAPER

SAFETY

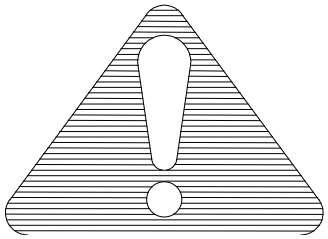
INFORMATION

SAFETY

The Safety-Alert Symbol.

This symbol is on safety signs on the equipment and in the manual.

This symbol indicates to you the potential for personal injury and/or property damage.



Hazard Seriousness Levels.

The **DANGER** signal word indicates - immediate hazards which WILL result in severe personal injury or death.

The **WARNING** signal word indicates - hazards or unsafe practices which COULD result in severe personal injury or death.

The **CAUTION** signal word indicates - hazards or unsafe practices which COULD result in minor personal injury or product or property damage.

- Read and understand all installation, safety and maintenance instructions before operating equipment.
- Be safety conscious while operating equipment.
- With blade in down position, DO NOT operate truck in reverse direction.
- Complete all repairs immediately. DO NOT operate scraper if repairs are needed.
- When operating scraper, keep all personnel away from moving parts.
- Place blade on ground when inspecting scraper.

1. Safety decals are installed on the under body scraper and assembled components at the factory.

2. Safety decals are provided with an overlay that can be peeled off after painting.

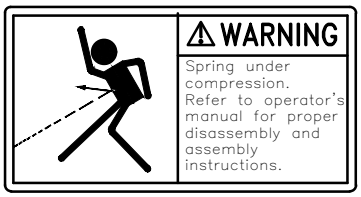
3. Check to make certain all safety decals are in place and the overlays are removed.

4. Keep safety decals clean and in good condition.

5. Replace damaged or missing safety decals at once. Order replacements through your dealer, or from:

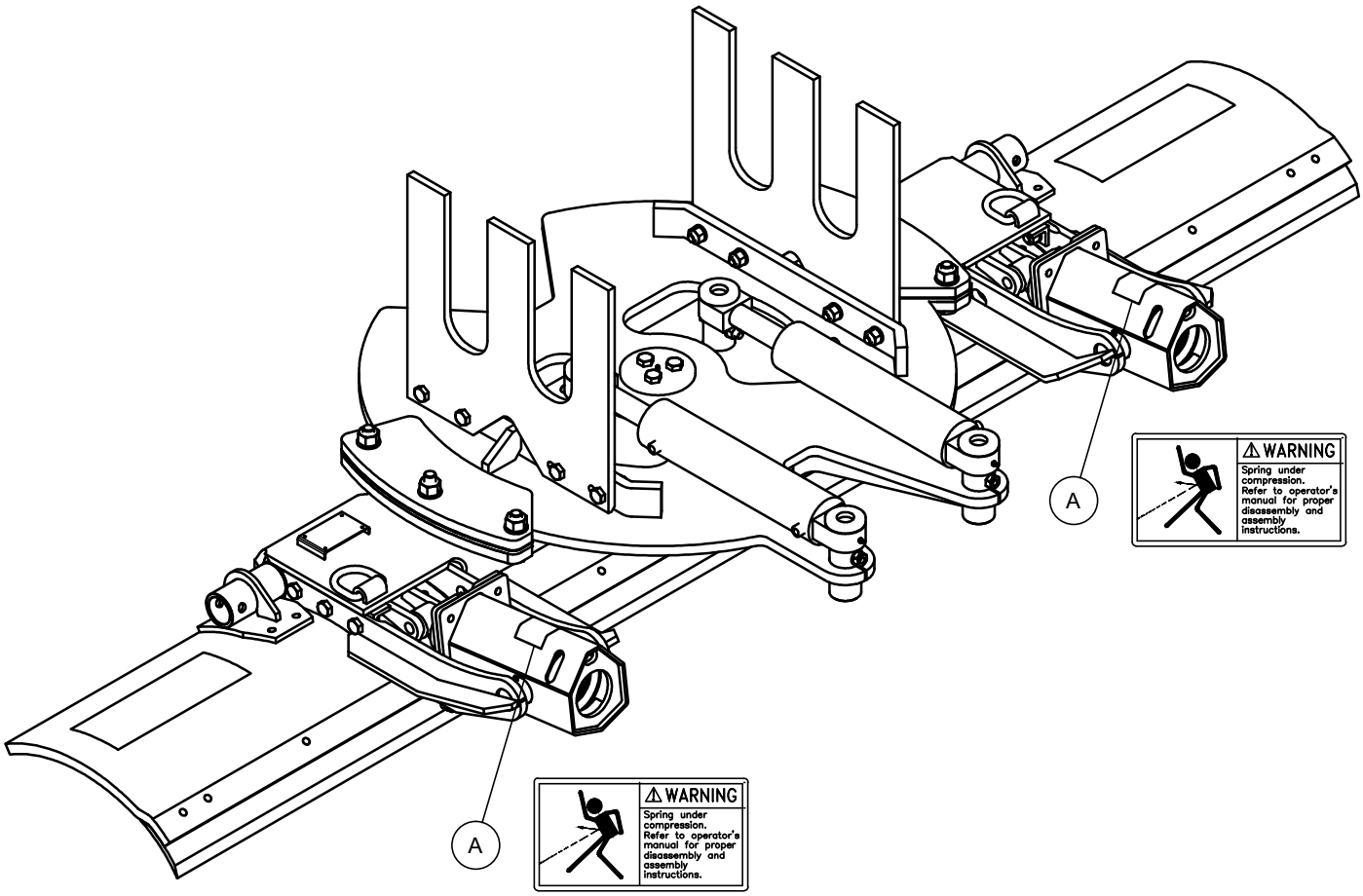
   Henderson Products, Inc.
   Parts Department
   1085 South Third Street
   Manchester, IA 52057

   Telephone: (563) 927-2828



81679

PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
A	2	81679	DECAL,WARNING,SPRINGS



SNOW FOE SERIES:

UNDERBODY SCRAPER

INSTALLATION

PROCEDURES

Use caution when installing Underbody Scraper. Stay clear of areas under Underbody Scraper while installing. BE ALERT AND SAFETY CONSCIOUS.

1. Determine the clear area required on the truck chassis to mount the Underbody Scraper. 26 inches of ground clearance is required above the circle plate / hangerboard operating area and 18 inches of ground clearance is required above the blade operating area. See Pages 2-3 to 2-4. Clear outside of truck chassis frame rails to allow for mounting plate installation.

2. Position Underbody Scraper under truck chassis and raise to mounted position. Distance from ground to the bottom of the circle plate should be 20 inches for 20" moldboard or 17" for 15.5" moldboard. See page 2-5.

3. Attach mounting plates to circle plate. If chassis frame rails are wider than 34 inches, insert shims between mounting plate and circle plate. If chassis frame rails are under 34 inches wide, insert shims between mounting plate and frame rails. 34 inch wide frame rails require no shims.

4. Check location of Underbody Scraper. Be sure Scraper is square to chassis frame rails and parallel to the ground. Refer to Truck Chassis Manufacturer's recommendations for allowable hole locations in frame rails. Drill 6 - .8125 diameter mounting holes through each mounting plate and chassis frame rails. Install mounting bolts. If required, trim off top of mounting plates above frame rails.

5. Slowly rotate Underbody Scraper blade through entire area of operation. Check for proper clearance between scraper and truck chassis. If full rotation is not desired, stops (PN 62220) may be welded to circle plate to limit rotation. See page 2-2

6. Attach hydraulic plumbing to reversing cylinders and to actuating cylinders. See Page 2-6 Operate hydraulic system and check for leaks.

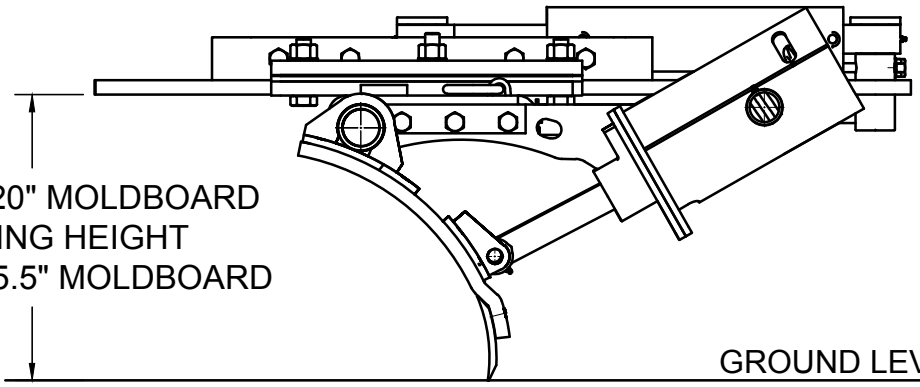
7. Hydraulic System Requirements:

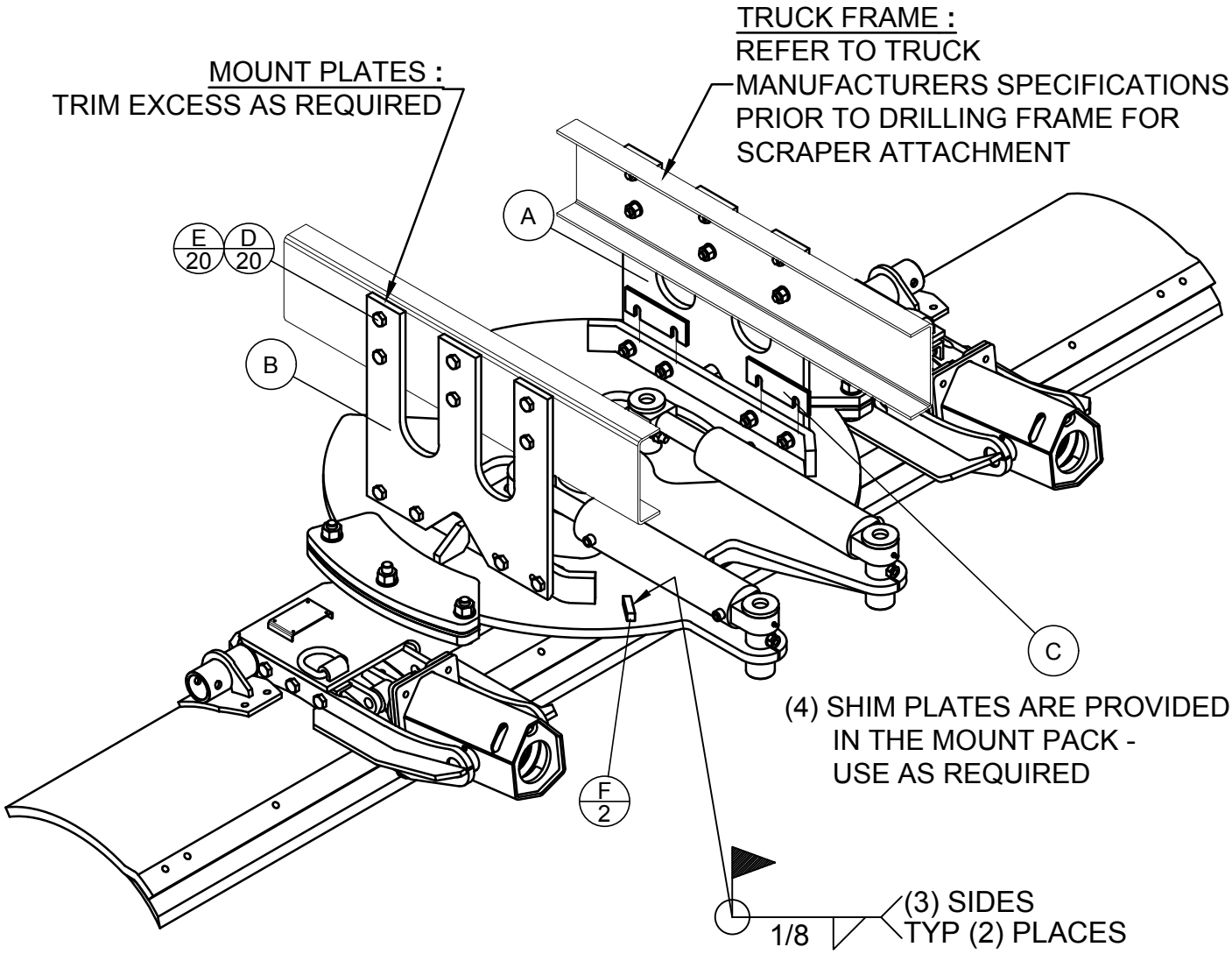
Control Valves	7-10 gpm (Reversing and Raise/Lower functions)
Relief Pressure	2000 psi

The mounting instructions given here are to be used as a guide. Each installation will vary due to chassis model, tires, suspension, preferences and other items installed on truck chassis. Review truck chassis, Underbody Scraper, and application fully before beginning installation.

SEE MOUNTING PLATE AND OSCILLATOR SECTIONS FOR PART NUMBERS.

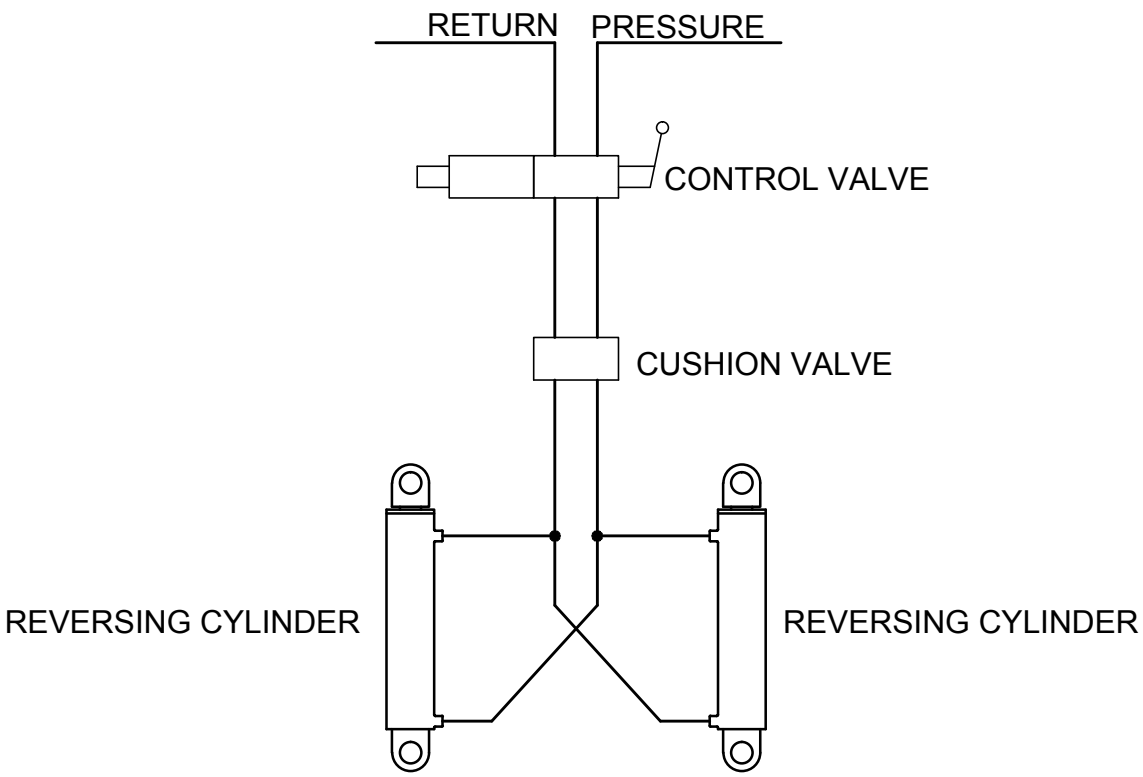
PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
A	1	---	PLATE,MOUNTING,WLDT,PS,UBS,AK
B	1	---	PLATE,MOUNTING,WLDT,DS,UBS,AK
C	2	135101	PLATE,SPACER,UBS
D	20	83130	3/4" NC HEX BOLT, GRADE 8
E	20	83304	3/4"-10NC GRADE 8 TOP LOCK NUT
F	2	62220	STOP, REAR



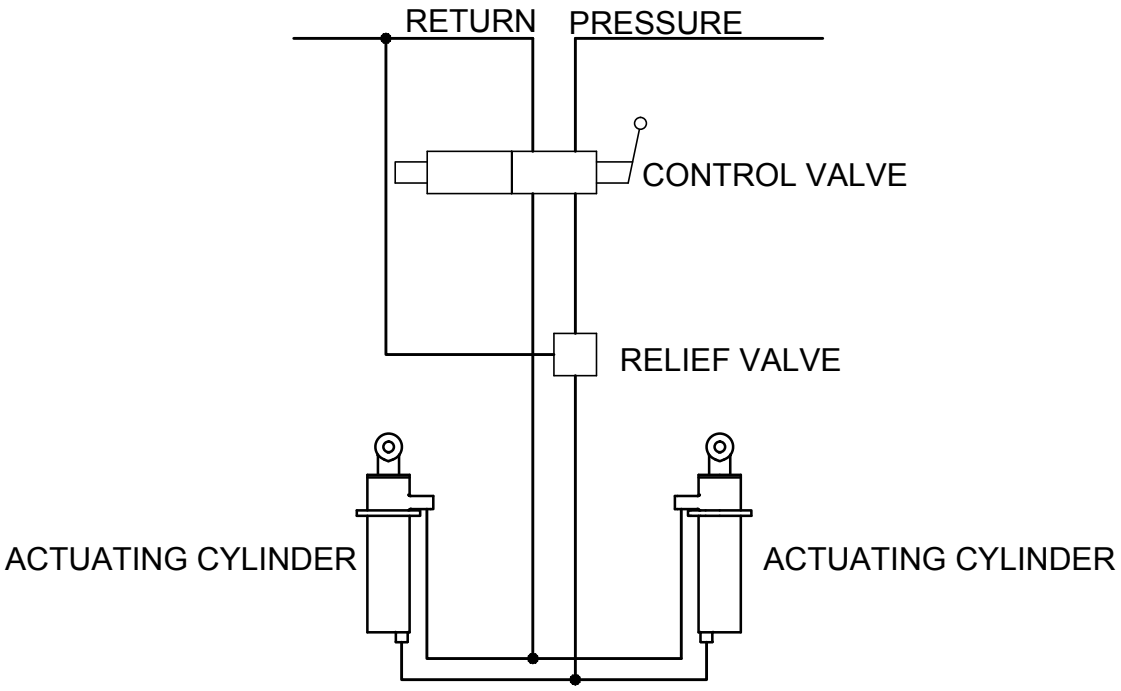


UBS_2-03

REVERSING CYLINDERS



ACTUATING CYLINDERS



UBS 2-22

HYDRAULIC SYSTEM REQUIREMENTS

PUMP SIZE	20 gpm	
CONTROL VALVES		
Reversing function	7-10 gpm	
Raise/Lower function	7-10 gpm	
Osclilating function	7-10 gpm	
SYSTEM PRESSURE	2000 psi Relief Pressure 500 psi Maximum to Blade Canister Cylinders - Down.	
CONTROLS FUNCTIONS	Reversing Raise/Lower Oscillating, RH, Raise/Lower Oscillating, LH, Raise/Lower	
FILTRATION	10 Micron rating	
RESERVOIR	30 Gal., with site gage	
HOSE	Reversing Cylinders	0.50 dia. SAE 100R2
	Blade Canister Cylinders	0.50 dia. SAE 100R2
	Oscillating Cylinders	0.50 dia. SAE 100R2

SNOW FOE SERIES:

UNDERBODY SCRAPER

SERVICE
AND
MAINTENANCE

IN SEASON MAINTENANCE

- Snow removal equipment must be cared for and maintained regularly. Daily or pre-route inspection and maintenance are necessary. Failure to do so may affect efficiency, wear life or safety.

- A visual inspection must be carried out after every eight hours of operation. Look for damaged components, bends, cracked welds or hydraulic leaks. Repair immediately. It is recommended to re-torque all bolts after the first eight hours of use and to regularly check for loosened or missing fasteners. Replace any damaged fasteners immediately.

- Because of the environment in which snow equipment is expected to operate, hydraulic lines, fasteners, wearable or replaceable items and warning decals may become damaged by snow, ice and road debris. These items must be inspected daily and replaced if necessary to avoid equipment damage or personal injury.

- Lubrication of moving parts is of utmost importance. Exposure to snow, ice, salt and road debris will wash away lubrication quickly and it may be necessary to inspect and reapply lubrication more than once a day.

OFF SEASON MAINTENANCE

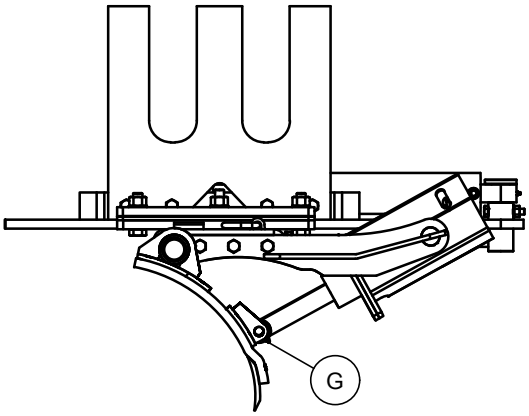
- Check cutting edge for wear. Replace cutting edge if within 1/2” of blade.

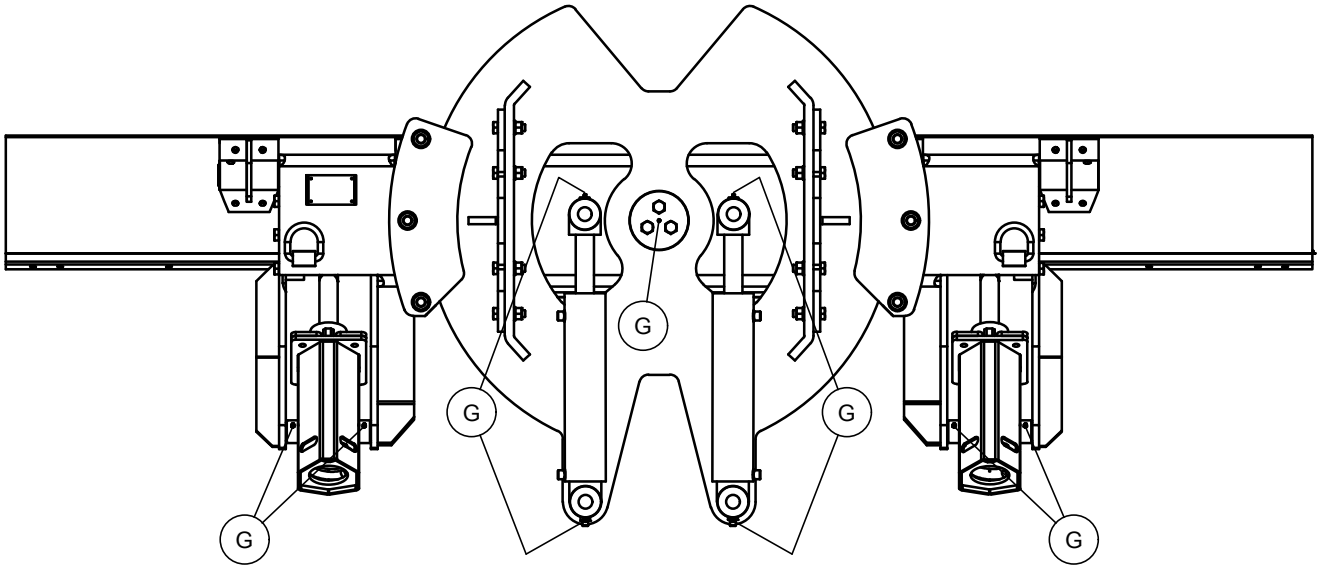
- Mounting bolts are Grade 8 cap screws. Care should be taken not to mix or misplace them if the scraper is removed during the off-season. Be sure to replace any fasteners with damaged threads. Retain blade from falling when removing scraper.

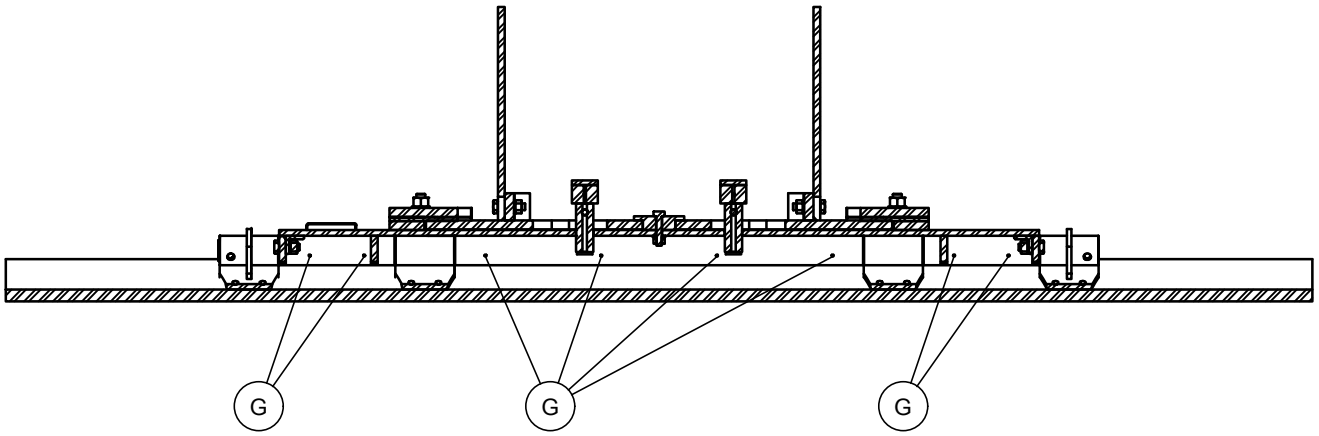
- All hydraulic cylinders should be fully retracted when stored, if possible, during the off-season to prevent damage, corrosion, or contamination. Remaining exposed shaft surface is to be coated with a moisture displacement, such as a thick grease, which should be removed before returning to regular service.

- When disconnecting hydraulic lines and valves, use caps and plugs to insure that dirt and other forms of contamination do not enter the hydraulic system.

Lubricate ALL grease fittings every ten (10) hours of operation.
Grease fittings are indicated with (G)





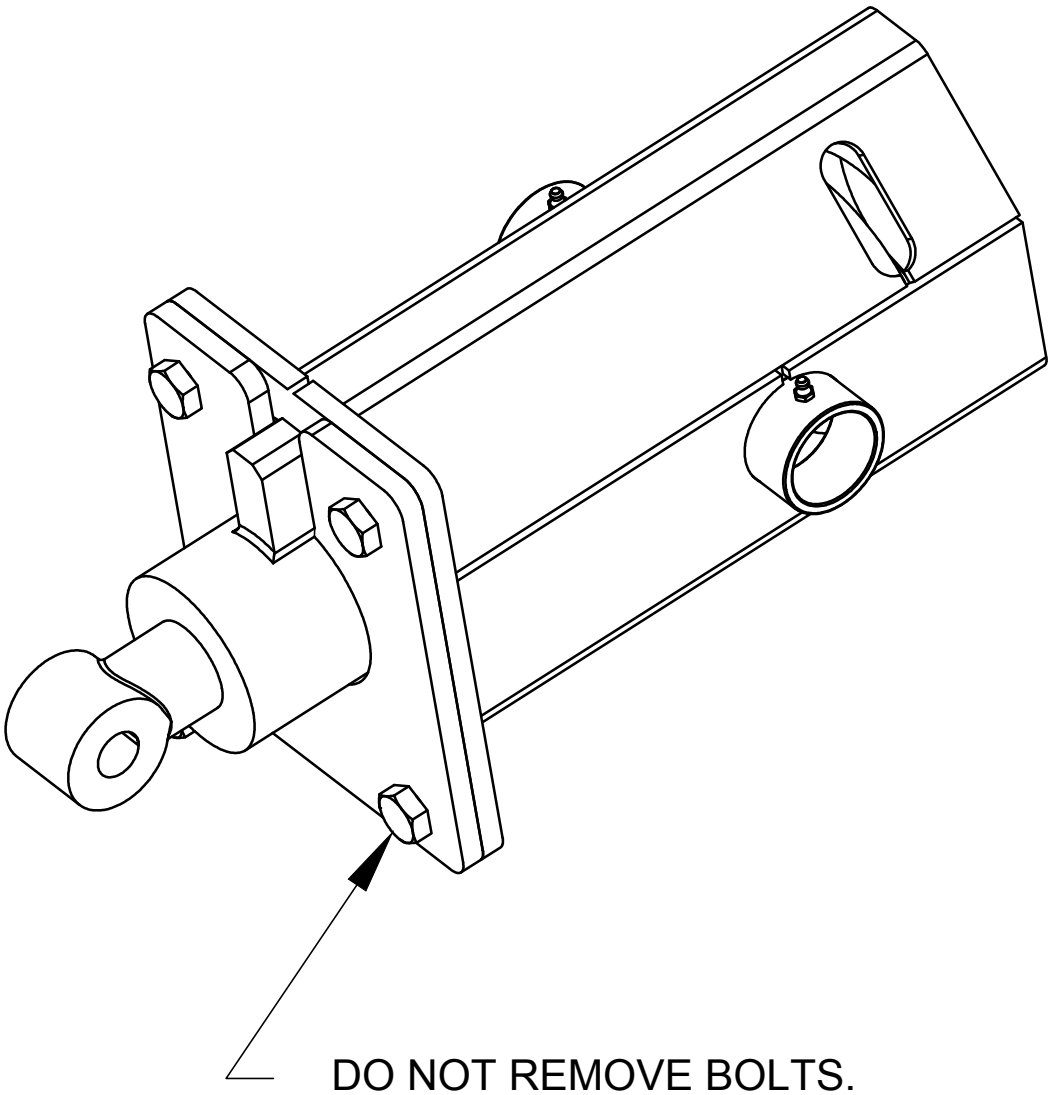


UBS_2-24

WARNING

CANISTER CONTAINS A SPRING UNDER COMPRESSION. DO NOT DISASSEMBLE. SEVERE PERSONAL INJURY OR DEATH COULD OCCUR.

IF DISASSEMBLY IS REQUIRED, CONTACT FACTORY.



THIS PAGE

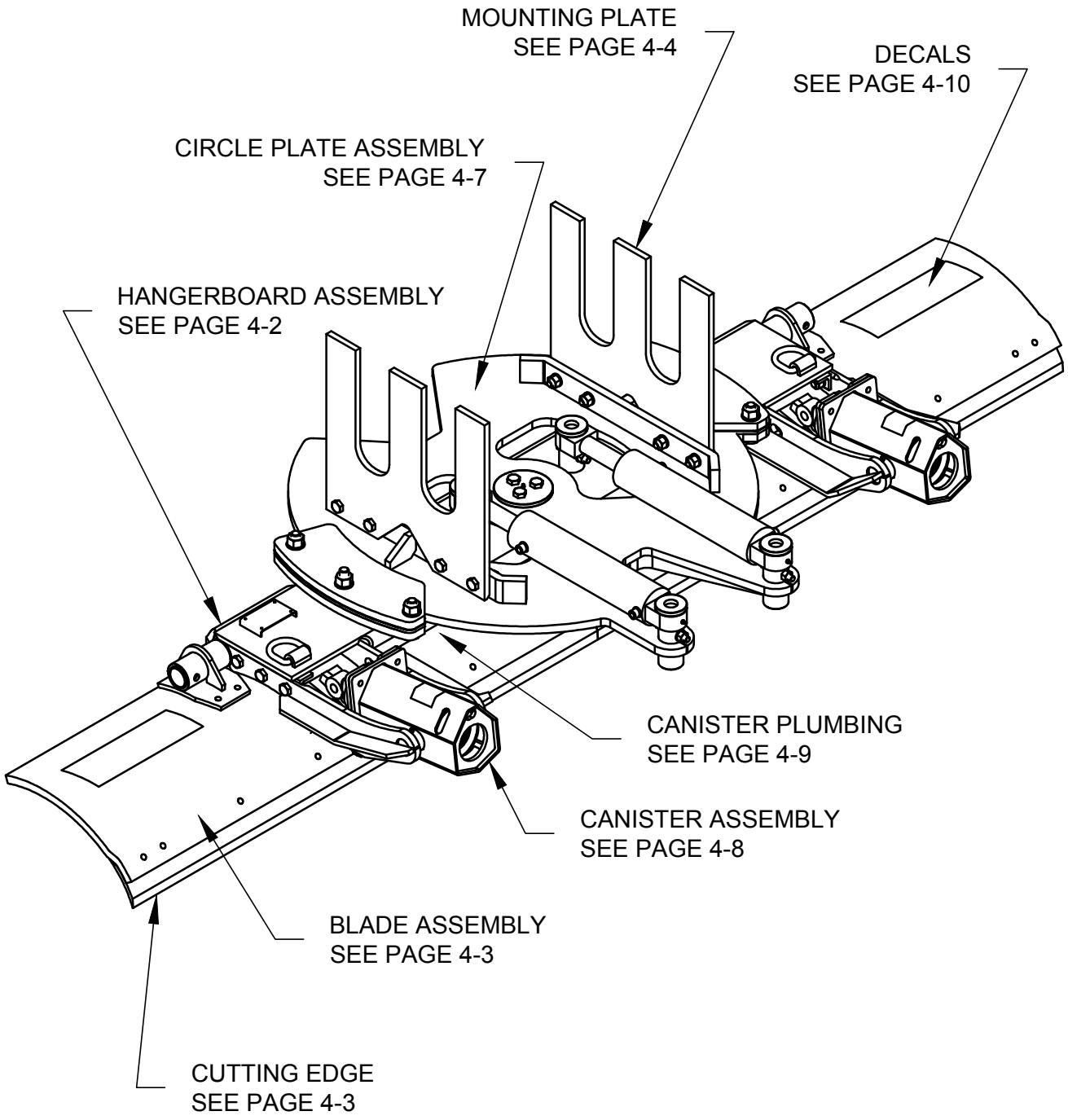
IS LEFT BLANK

INTENTIONALLY.

SNOW FOE SERIES:

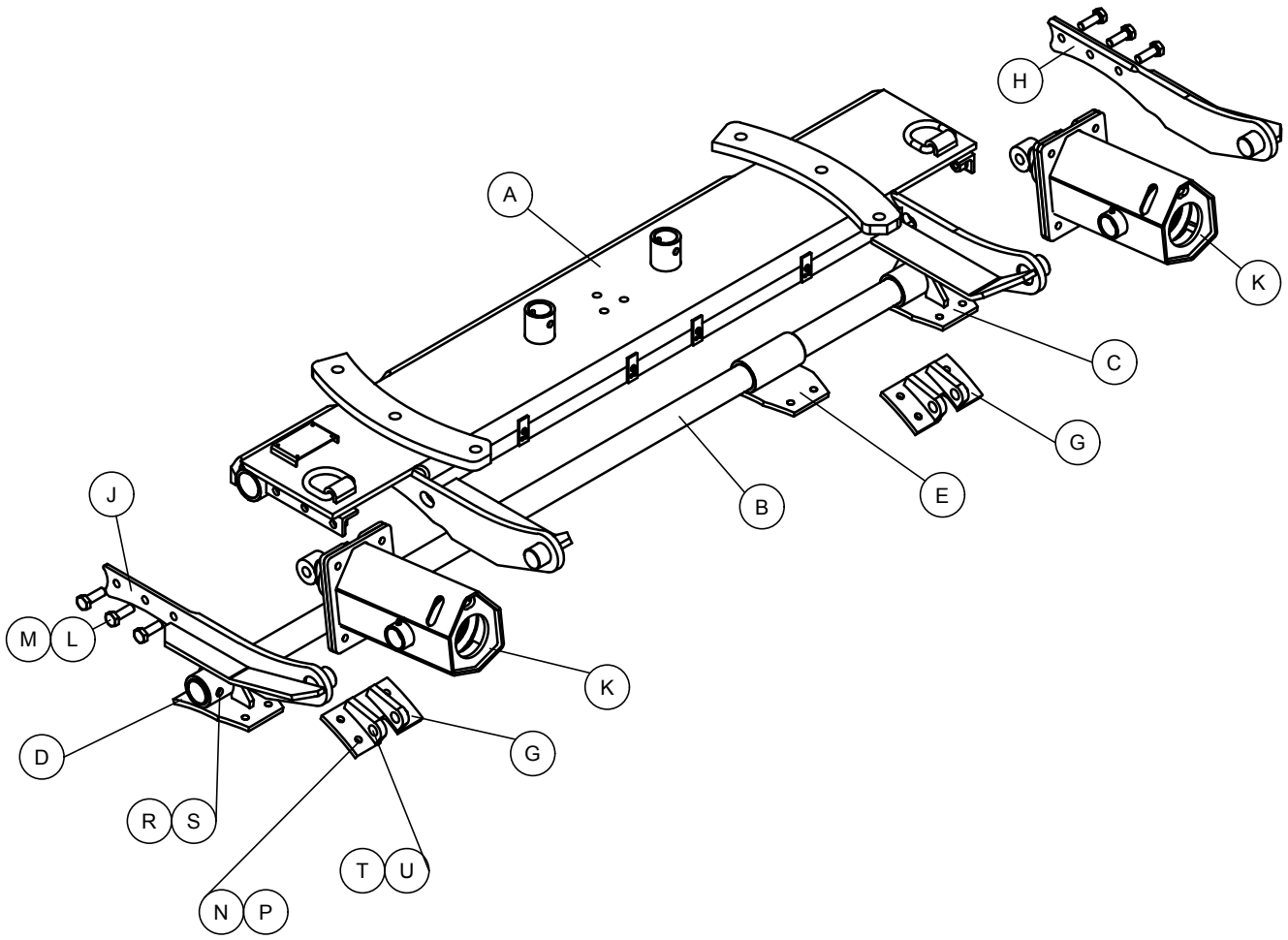
UNDERBODY SCRAPER

PARTS


MOUNTING PLATE
SEE PAGE 4-4
DECALS
SEE PAGE 4-10
CIRCLE PLATE ASSEMBLY
SEE PAGE 4-7
HANGERBOARD ASSEMBLY
SEE PAGE 4-2
CANISTER PLUMBING
SEE PAGE 4-9
CANISTER ASSEMBLY
SEE PAGE 4-8
BLADE ASSEMBLY
SEE PAGE 4-3
CUTTING EDGE
SEE PAGE 4-3

UBS 2-10

PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
A	1	130365	HANGER BOARD, WLDT, UBS
B	1	86998	SHAFT, PIVOT, 2.50 x 97.00, UBS
C	1	87264	PIVOT,WLDT,BLADE,OUTSIDE,RH
D	1	87265	PIVOT,WLDT,BLADE,OUTSIDE,LH
E	2	87266	PIVOT,WLDT,INTERMEDIATE, UBS
G	2	87279	PIVOT,WLDT,CYLINDER,UBS
H	1	87298	ARM,CANISTER MOUNT,WLDT,RH
J	1	87299	ARM,CANISTER MOUNT,WLDT,LH
K	2	87303	ASSY, CANISTER, UB SCRAPER
L	6	83303	SCREW,CP,HX, 3/4NC x 2 1/4, G8
M	6	83304	NUT, TOPLOCK, 3/4-10NC, G8
N	24	87319	SCRW,FLT HD,SCKT, 5/8NC x 2 1/2,G8
P	24	81861	NUT, TOPLOCK, 5/8-11NC, G8
R	2	83182	SCREW,CP,HX, 3/4NC x 4, G8
S	2	83304	NUT, TOPLOCK, 3/4-10NC, G8
T	2	81870	PIN, CYLINDER, 1.00 x 4.62
U	4	00366	PIN,COTTER, 1/4 x 2.00

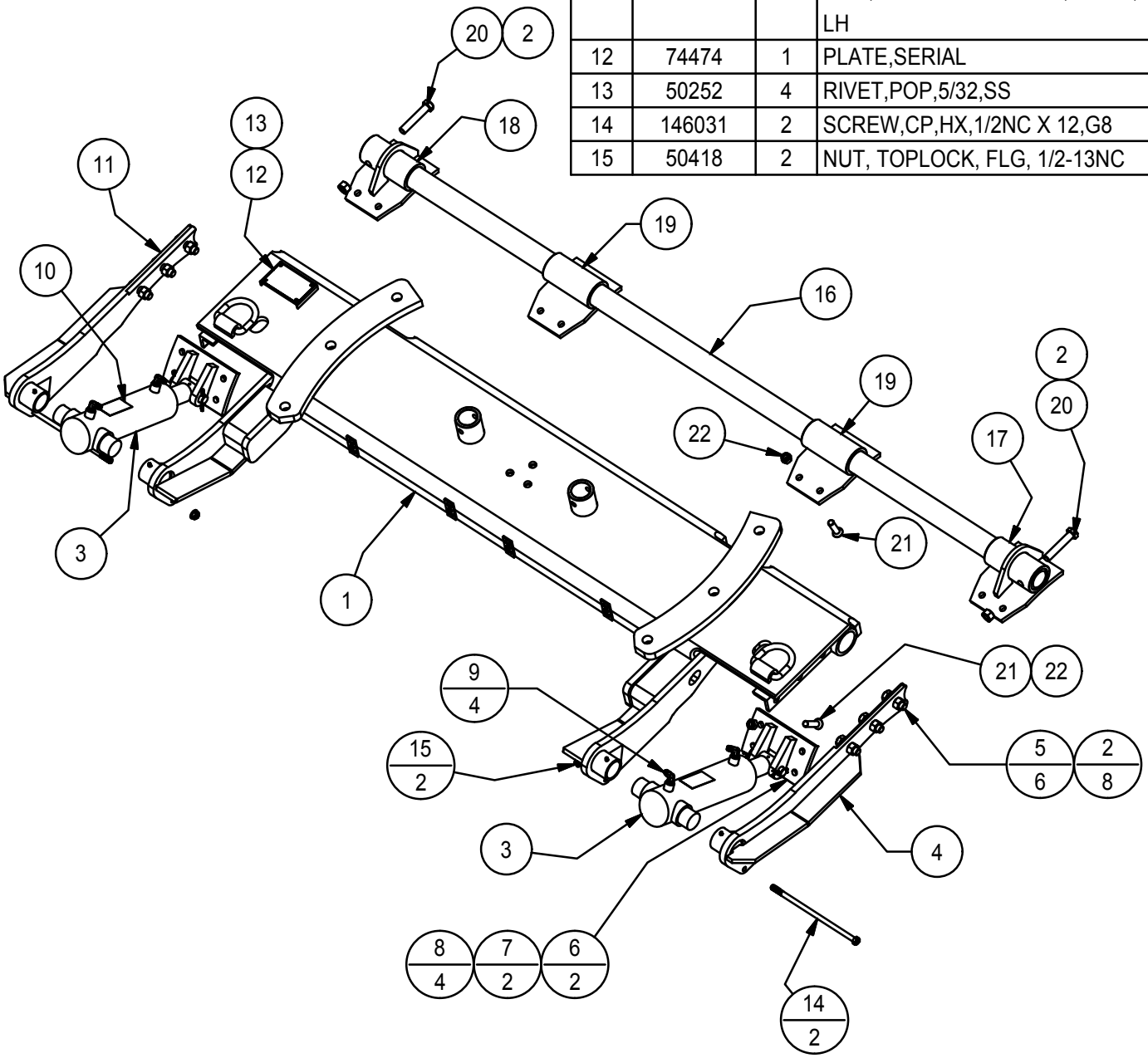


UBS_2-12

HANGERBOARD ASSEMBLY - 20" MOLDBOARD,ACCUMULATOR

BILL OF MATERIALS			
ITEM	PART NO	QTY	DESCRIPTION
16	86998	1	SHAFT, PIVOT
17	87264	1	PIVOT, WLDT, BLADE, RH
18	87265	1	PIVOT, WLDT, BLADE, LH
19	87266	2	PIVOT, WLDT, BLADE, CENTER
20	83182	2	SCREW,CP,HX,3/4NC X 4,G8
21	87319	24	SCREW,FLATHEAD,SOCKETHEAD,5/8NC X 2 1/2,G8
22	81861	24	NUT, TOPLOCK, 5/8-11NC, G8

BILL OF MATERIALS			
ITEM	PART NO	QTY	DESCRIPTION
1	139911	1	HANGER BOARD,WLDT,TRUNNION CYL
2	83304	8	NUT, TOPLOCK, 3/4-10NC, G8
3	139912	2	CYLINDER,3.5-9,2.0,DA,NITR,TRN
4	139914	1	ARM,TRUNNION MOUNT,WLDT,RH
5	83303	6	SCREW, CP, HX, 3/4 X 2 1/4, G8
6	87279	2	PIVOT, WLDT, CYLINDER
7	81870	2	PIN,1.00 X 4.62
8	50601	4	PIN, COTTER, 1/4 X 2 1/4
9	84785	4	ELBOW, 06MB/06MJ
10	138428	2	DECAL,WARNING,PRESSURE
11	139915	1	ARM,TRUNNION MOUNT, WLDT, LH
12	74474	1	PLATE,SERIAL
13	50252	4	RIVET,POP,5/32,SS
14	146031	2	SCREW,CP,HX,1/2NC X 12,G8
15	50418	2	NUT, TOPLOCK, FLG, 1/2-13NC

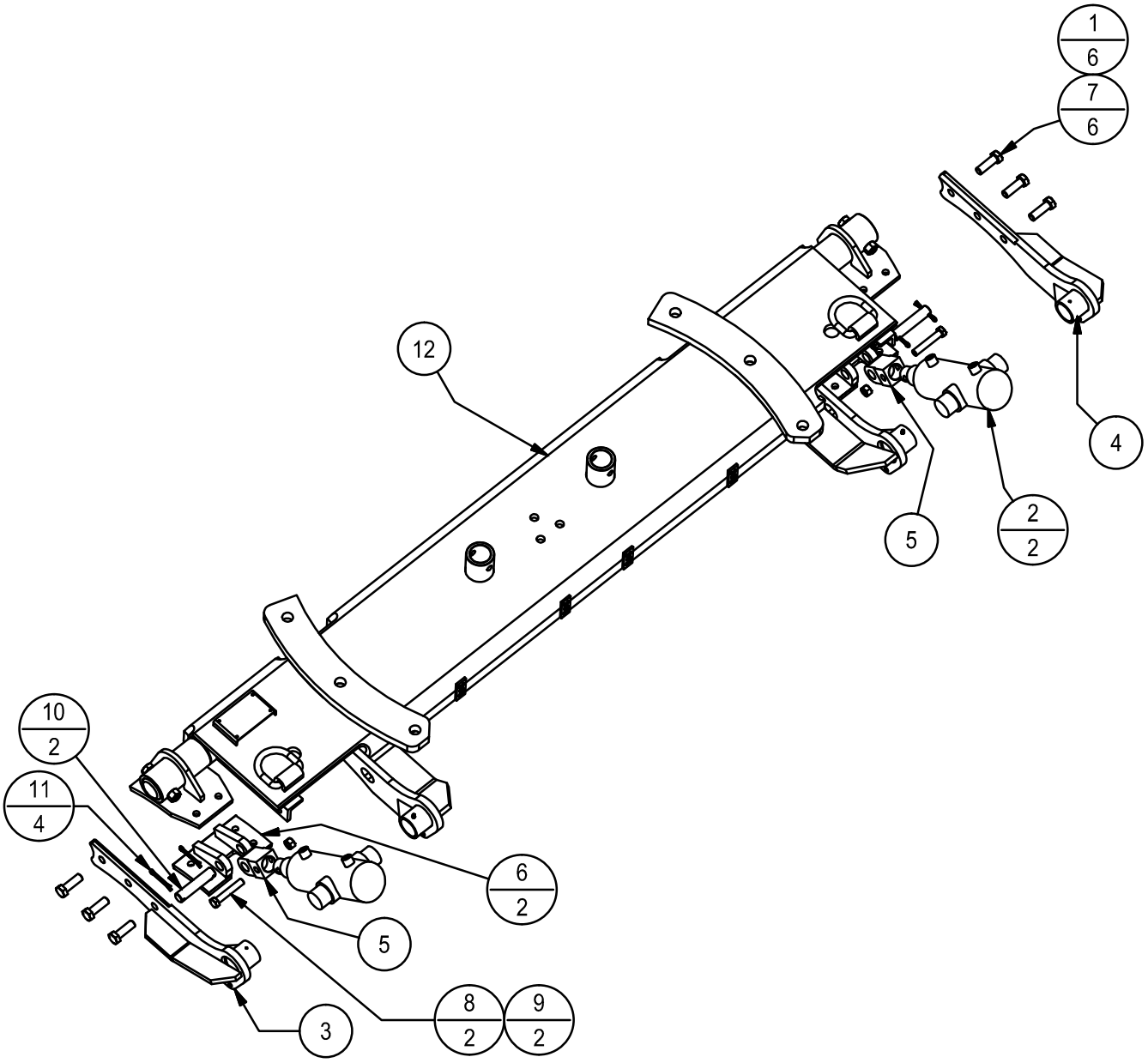


139910_HANGERBOARD

HANGERBOARED ASSEMBLY - 15.5" MOLDBOARD,ACCUMULATOR

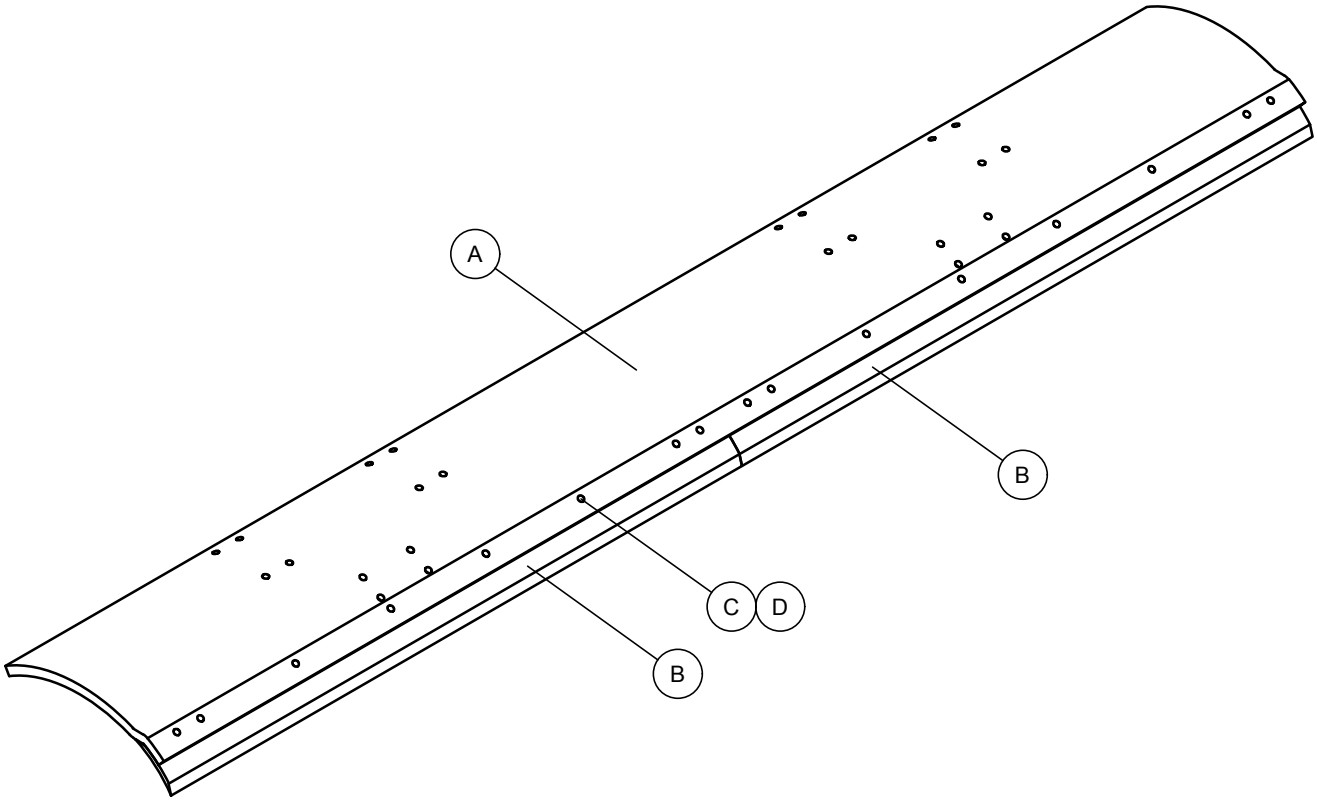
PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	83304	6	NUT, TOPLOCK, 3/4-10NC, G8
2	132239	2	CYLINDER,3.5-6,2.00,DA,NITR,TRUNNION
3	132243	1	ARM, TRUNNION MOUNT, WLDT, LH
4	132242	1	ARM, TRUNNION MOUNT, WLDT, RH
5	132250	2	ROD END, SHEAR PIN
6	87279	2	PIVOT, WLDT, CYLINDER

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
7	83303	6	SCREW, CP, HX, 3/4 X 2 1/4, G8
8	76519	2	SCREW, CP, HX, 5/8NC X 3 1/2
9	81861	2	NUT, TOPLOCK, 5/8-11NC, G8
10	81870	2	PIN,1.00 X 4.62
11	50601	4	PIN, COTTER, 1/4 X 2 1/4
12	132320	1	HANGER BOARD, WLDT, TRUNNION CYL



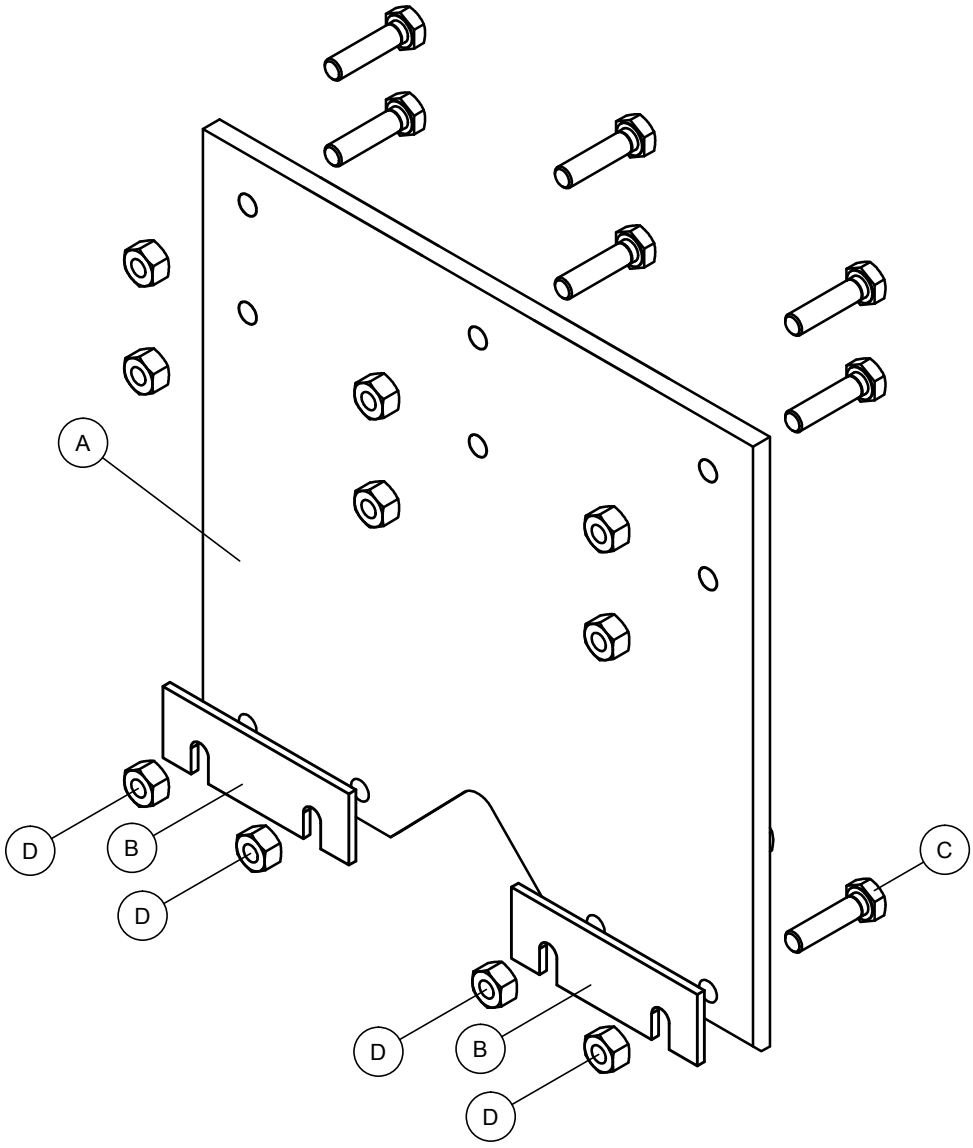
UBS 2-12B

PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
			12FT BLADE
A	1	133086	MLDBRD,WLDT,UBS,20" x 12',ALASKA, 8" OFFSET
A	1	138482	MLDBRD,WLDT,UBS,20" X 12',ALASKA, CENTERED
A	1	138417	MLDBRD,WLDT,UBS,15.5" X 12',ALASKA, CENTERED
B	2	133082	CUTTING EDGE,5/8 X 8 X 6'
C	26	81861	5/8-11NC, TOP LOCK NUT, GRADE 8
D	26	81751	BOLT,PLOW, 5/8-11NC, GRADE 8



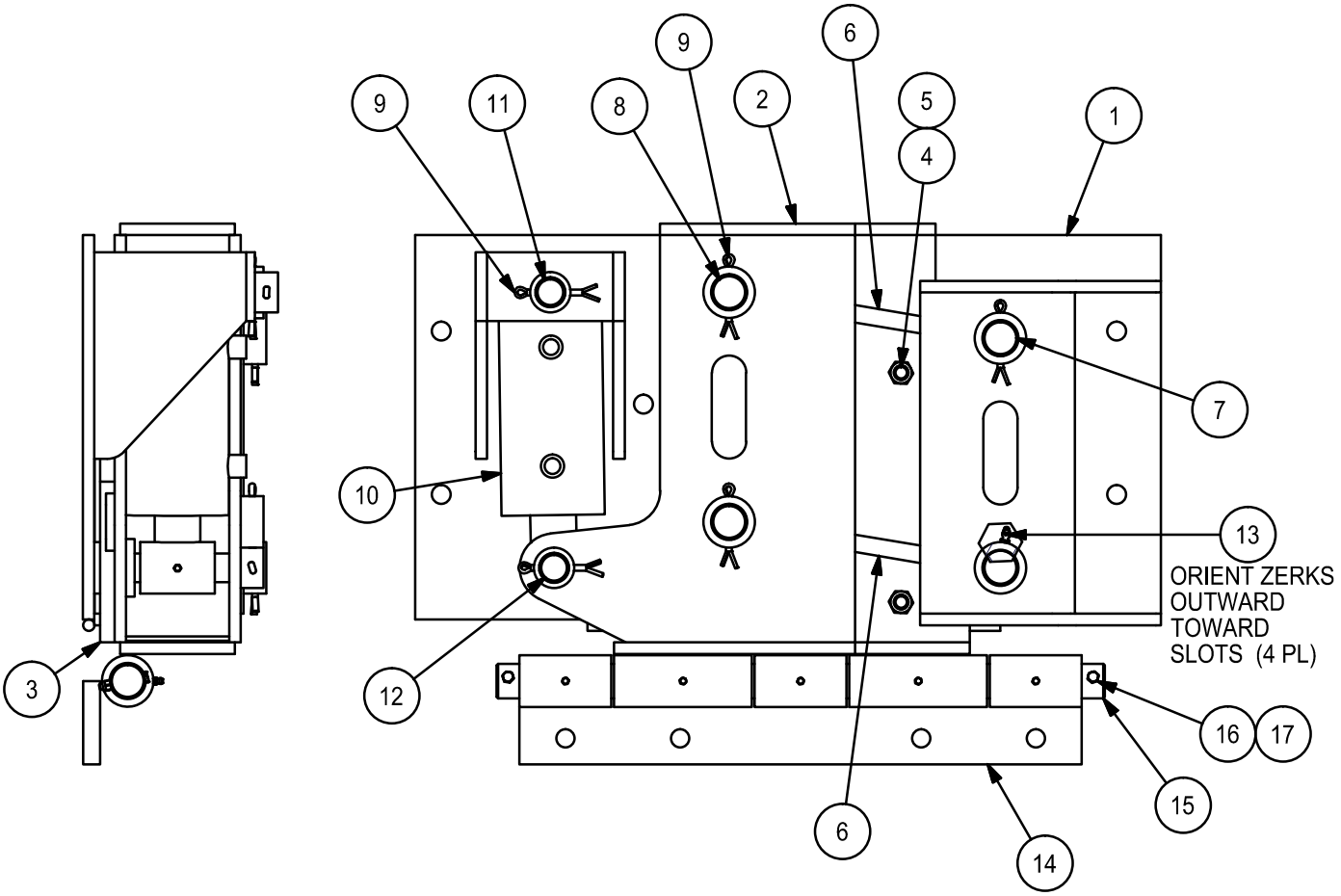
UBS_2/05

PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
A	1	137272	PLATE,MOUNTING,WLDT,PS,UBS,AK
A	1	137273	PLATE,MOUNTING,WLDT,DS,UBS,AK
B	2	135101	PLATE,SPACER,UBS
C	20	83130	3/4" NC HEX BOLT, GRADE 8
D	20	83304	3/4"-10NC GRADE 8 TOP LOCK NUT



COMPLETE ASSEMBLY
#135107 - LIFTER,ASSY,UBS,RH,AK

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	135104	1	MOUNT, WLDT, BASE, RH,AK
2	129962	1	LIFTER, WLDT, RH
3	130069	1	WEAR PLATE, POLY, RH
4	88200	4	SCREW,FLATHEAD,SOCKETHEAD
5	11484	4	NUT, HEX, 5/8NC, SLFLKG, NYLON
6	129972	2	ARM, WLDT, LIFTER
7	130073	2	PIN,1.50 X 8.00
8	130074	2	PIN,1.50 X 6.88
9	74643	6	PIN, COTTER, 1/4 X 3
10	129958	1	CYLINDER,4-4,2.0,DA,NITR
11	130071	1	PIN,1.25 X 8.50
12	130072	1	PIN,1.25 X 6.50
13	95997	4	ZERK,GREASE,1/4-28 X 45
14	130077	1	HINGE, WLDT, UBS
15	130079	1	PIN,1.50 X 26.50
16	105332	2	SCREW, CP, HX, 1/4NC X 2
17	115730	2	NUT,HEX,1/4-20NC,SLFLKG,NYLON



135107

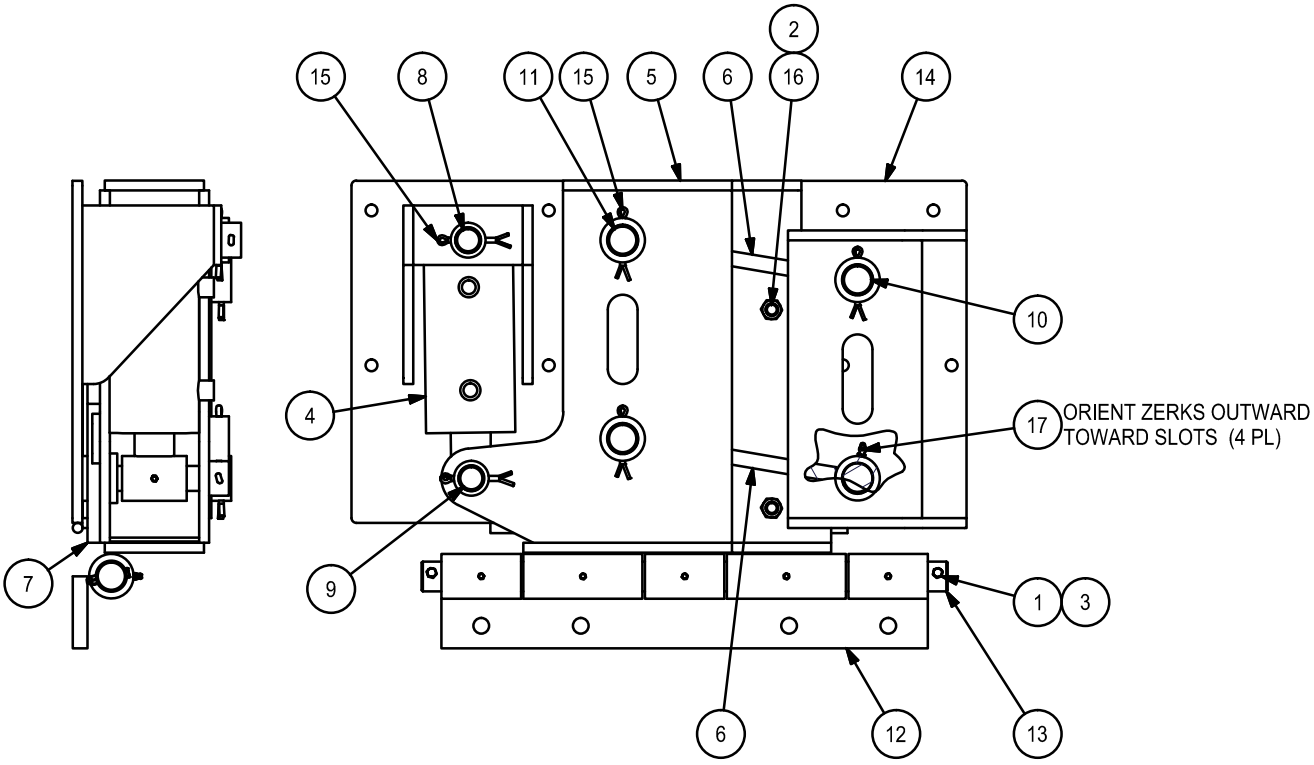
THIS PAGE

IS LEFT BLANK

INTENTIONALLY.

COMPLETE ASSEMBY:
#139105

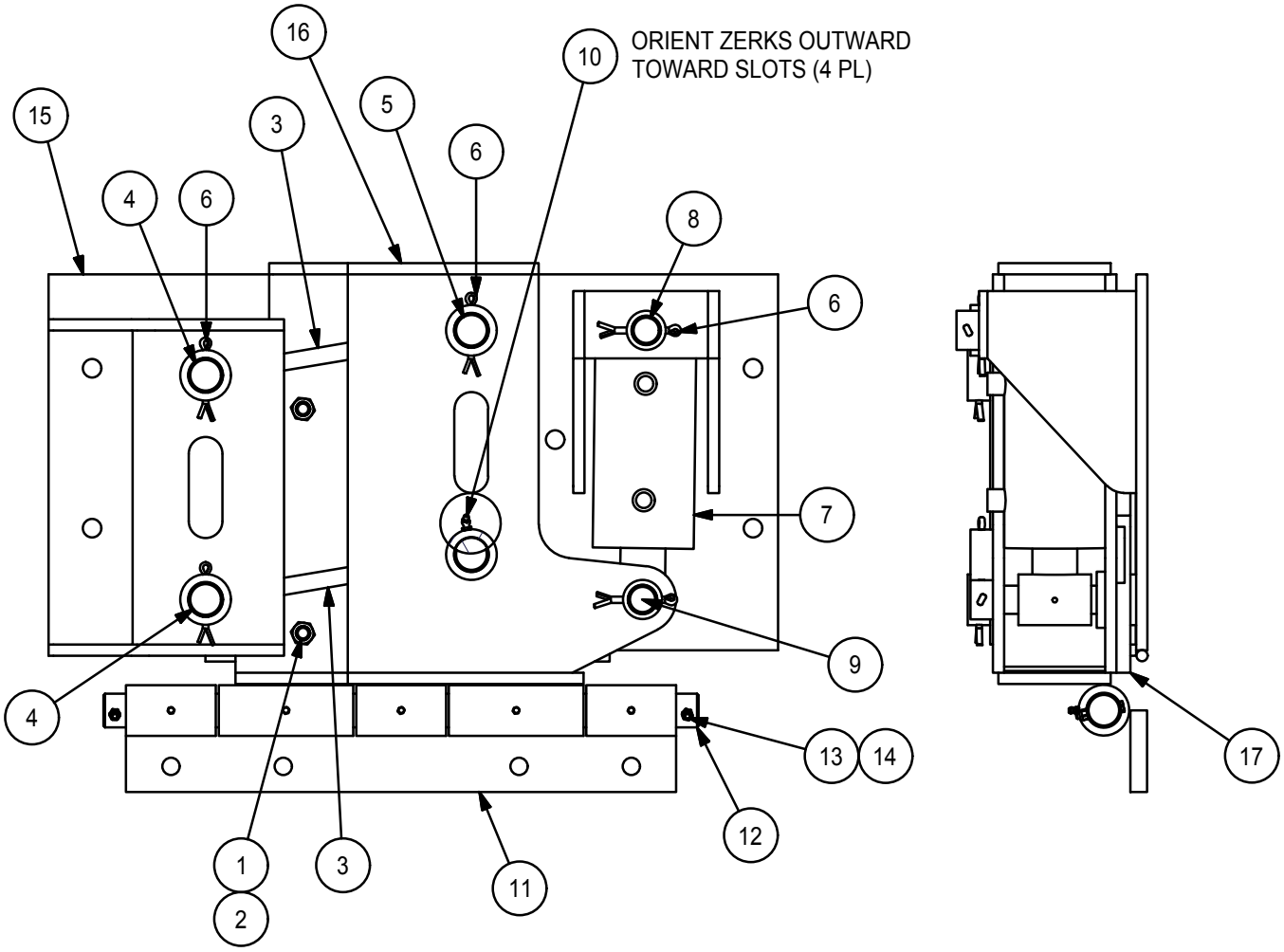
PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	105332	2	SCREW, CP, HX, 1/4NC X 2
2	11484	4	NUT, HEX, 5/8NC, SLFLKG, NYLON
3	115730	2	NUT,HEX,1/4-20NC,SLFLKG,NYLON
4	129958	1	CYLINDER,4-4,2.0,DA,NITR
5	129962	1	LIFTER, WLDT, RH
6	129972	2	ARM, WLDT, LIFTER
7	130069	1	WEAR PLATE, POLY, RH
8	130071	1	PIN,1.25 X 8.50
9	130072	1	PIN,1.25 X 6.50
10	130073	2	PIN,1.50 X 8.00
11	130074	2	PIN,1.50 X 6.88
12	130077	1	HINGE, WLDT, UBS
13	130079	1	PIN,1.50 X 26.50
14	139106	1	MOUNT,WLDT,BASE,RH,AKDOT
15	74643	6	PIN, COTTER, 1/4 X 3
16	88200	4	SCREW,FLATHEAD,SOCKETHEAD
17	95997	4	ZERK,GREASE,1/4-28 X 45



139105

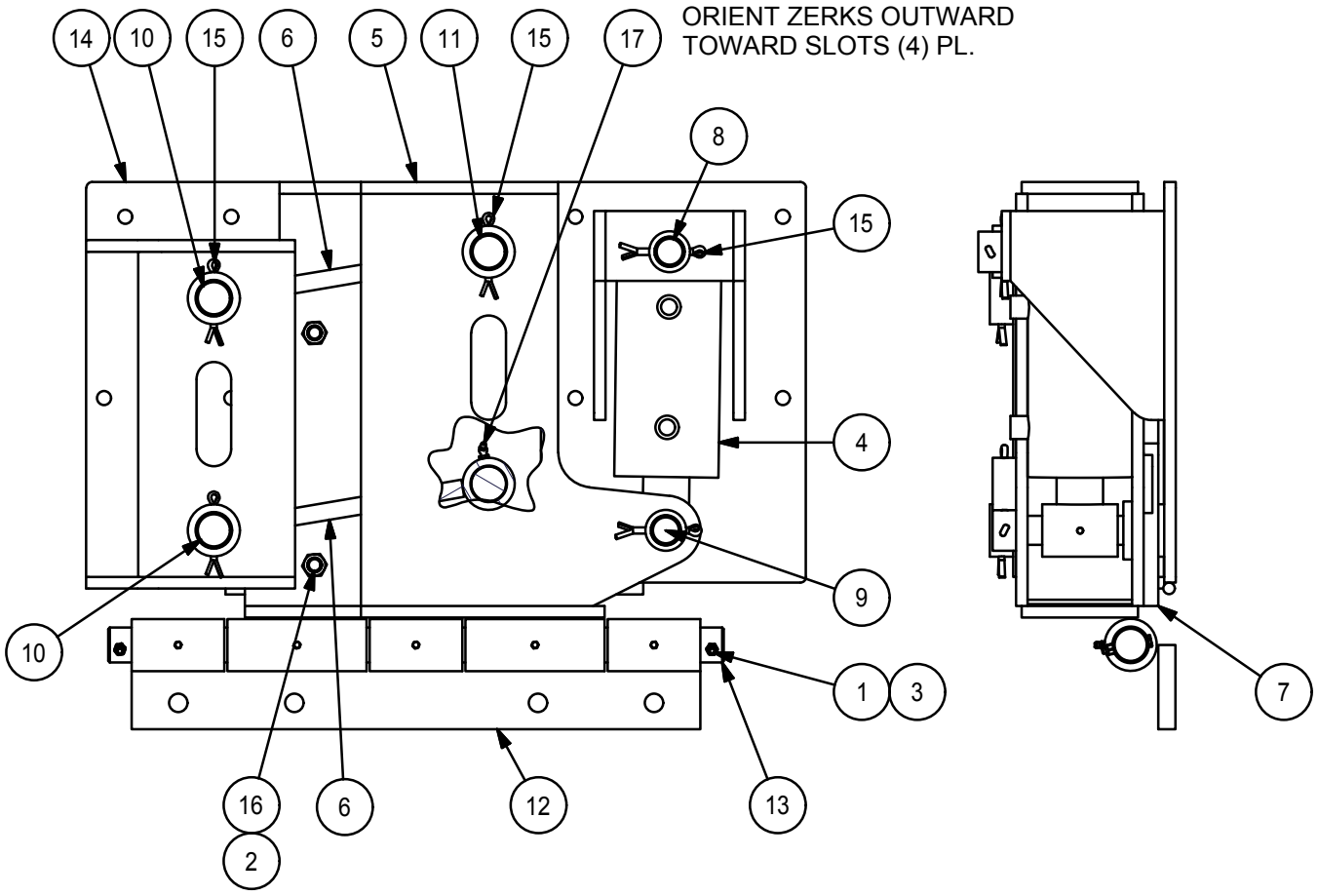
COMPLETE ASSEMBLY
#135105 - LIFTER,ASSY,UBS,LH,AK

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	88200	4	SCREW,FLATHEAD,SOCKETHEAD
2	11484	4	NUT, HEX, 5/8NC, SLFLKG, NYLON
3	129972	2	ARM, WLDT, LIFTER
4	130073	2	PIN,1.50 X 8.00
5	130074	2	PIN,1.50 X 6.88
6	74643	6	PIN, COTTER, 1/4 X 3
7	129958	1	CYLINDER,4-4,2.0,DA,NITR
8	130071	1	PIN,1.25 X 8.50
9	130072	1	PIN,1.25 X 6.50
10	95997	4	ZERK,GREASE,1/4-28 X 45
11	130077	1	HINGE, WLDT, UBS
12	130079	1	PIN,1.50 X 26.50
13	105332	2	SCREW, CP, HX, 1/4NC X 2
14	115730	2	NUT,HEX,1/4-20NC,SLFLKG,NYLON
15	135103	1	MOUNT, WLDT, BASE, LH,AK
16	129963	1	LIFTER, WLDT, LH
17	130070	1	WEAR PLATE, POLY, LH



135105

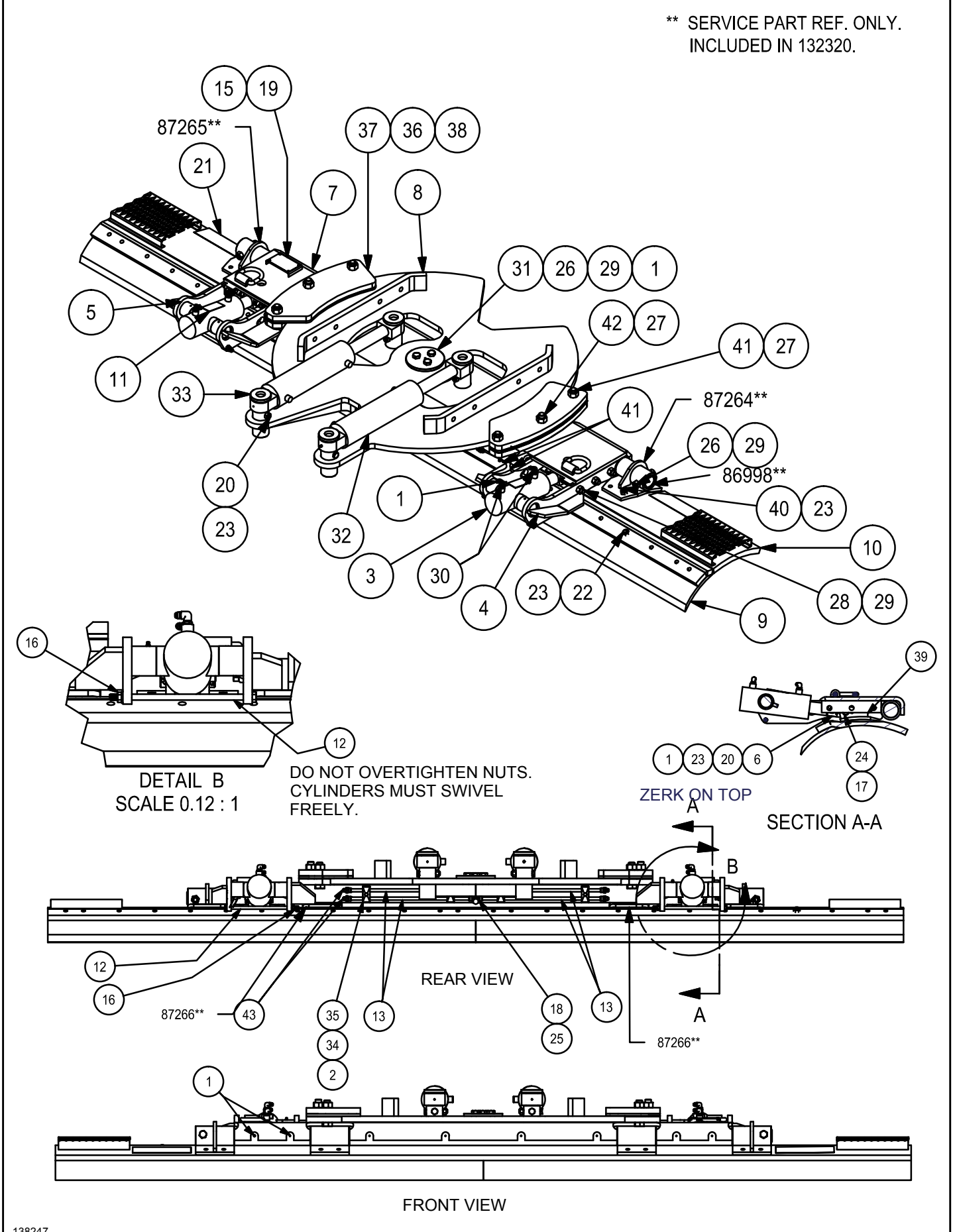
PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	105332	2	SCREW, CP, HX, 1/4NC X 2
2	11484	4	NUT, HEX, 5/8NC, SLFLKG, NYLON
3	115730	2	NUT,HEX,1/4-20NC,SLFLKG,NYLON
4	129958	1	CYLINDER,4-4,2.0,DA,NITR
5	129963	1	LIFTER, WLDT, LH
6	129972	2	ARM, WLDT, LIFTER
7	130070	1	WEAR PLATE, POLY, LH
8	130071	1	PIN,1.25 X 8.50
9	130072	1	PIN,1.25 X 6.50
10	130073	2	PIN,1.50 X 8.00
11	130074	2	PIN,1.50 X 6.88
12	130077	1	HINGE, WLDT, UBS
13	130079	1	PIN,1.50 X 26.50
14	139110	1	MOUNT,WLDT,BASE,LH,AKDOT
15	74643	6	PIN, COTTER, 1/4 X 3
16	88200	4	SCREW,FLATHEAD,SOCKETHEAD
17	95997	4	ZERK,GREASE,1/4-28 X 45



139109

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	00155	15	ZERK,GREASE,1/4-28 STR
2	00219	4	SCREW,CP,HX,5/16NC X 1 3/4 G5
3	132239	2	CYLINDER,3.5-6,2.00,DA,NITR,TRN
4	132242	1	ARM, TRUNNION MOUNT, WLDT, RH
5	132243	1	ARM, TRUNNION MOUNT, WLDT, LH
6	132250	2	ROD END, SHEAR PIN
7	132320	1	HANGER BOARD, WLDT, TRUNNION CYL
8	132321	1	CIRCLE PLATE, WLDT,UBS, OSC
9	133082	2	EDGE, CUTTING, 5/8" X 8" x 6', CURVED, DB
10	138417	1	MLDBRD, WLDT, UBS, 15.5" X 12', ALASKA
11	138428	2	DECAL,WARNING,PRESSURE
12	146031	2	SCREW,CP,HX,1/2NC X 12,G8
13	301202	4	TUBE,ASSY,1/2 X 20
14	301655	4	HOSE,ASM,06-06FJX/06FJX,28.0
15	50252	4	RIVET,POP,5/32,SS
16	50418	2	NUT, TOPLOCK, FLG, 1/2-13NC
17	50601	4	PIN, COTTER, 1/4 X 2 1/4
18	73905	2	TEE,08MJ/08MJ/08MJ
19	74474	1	PLATE,SERIAL
20	76519	6	SCREW, CP, HX, 5/8NC X 3 1/2
21	81227	2	DECAL,LOGO, 3.8 x 9.8
22	81751	26	BOLT, PLOW, 5/8-11NC X 2 1/2, G8
23	81861	56	NUT, TOPLOCK, 5/8-11NC, G8
24	81870	2	PIN,1.00 X 4.62
25	81880	2	CAP, 08FJ
26	83182	5	SCREW,CP,HX,3/4NC X 4,G8
27	83183	6	NUT, TOPLOCK, 1-8NC, G8
28	83303	6	SCREW, CP, HX, 3/4 X 2 1/4, G8
29	83304	11	NUT, TOPLOCK, 3/4-10NC, G8
30	84785	4	ELBOW, 06MB/06MJ
31	86967	1	PIVOT, HANGERBOARD, UBS
32	86973	2	CYLINDER,4-12.5,2.00,DA,NITR
33	86993	4	PIN,WLDT,2.00 X 7.41
34	87112	4	CLAMP, COVER PLATE, 08/08
35	87115	8	CLAMP,BODY,TUBE,08/08,PLASTIC
36	87271	2	WEAR PLATE, UHMW
37	87272	2	PLATE, CLAMP
38	87273	2	SHIM, WEAR PLATE, UBS
39	87279	2	PIVOT, WLDT, CYLINDER
40	87319	24	SCREW,FLATHEAD,SOCKETHEAD,5/8NC X 2 1/2,G8
41	87434	4	SCREW, CP, HX, 1NC X 3 3/4, G8
42	87435	2	SCREW, CP, HX, 1NC X 4 1/2, G8
43	87436	4	ADAPTER,08MJ/06MJ

138427


** SERVICE PART REF. ONLY.
INCLUDED IN 132320.
87265**
87264**
86998**
DETAIL B
SCALE 0.12 : 1
DO NOT OVERTIGHTEN NUTS.
CYLINDERS MUST SWIVEL
FREELY.
ZERK ON TOP
SECTION A-A
REAR VIEW
87266**
FRONT VIEW
138247

THIS PAGE

IS LEFT BLANK

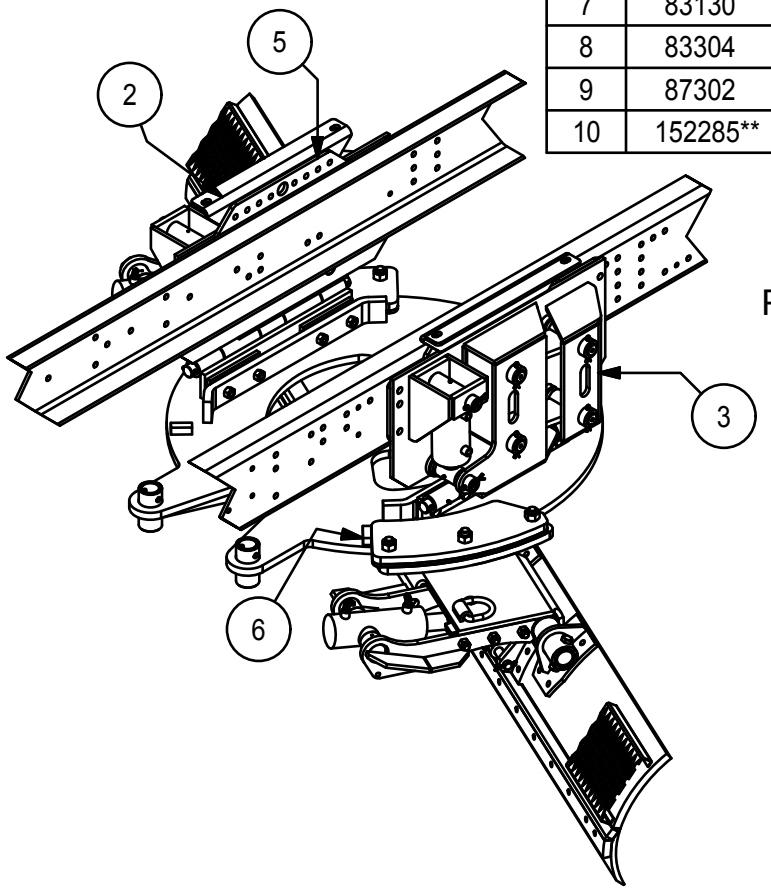
INTENTIONALLY.

COMPLETE MOUNT PACK:
#140587

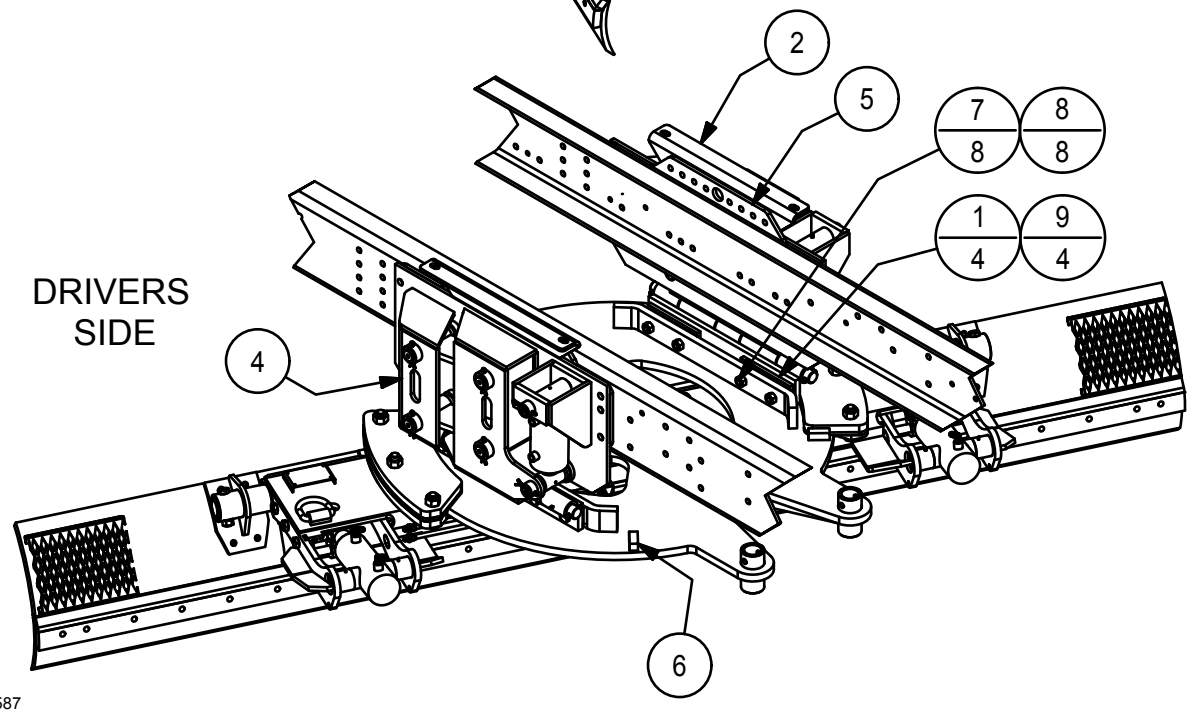
NOTE: UBS SERIAL # REQUIRED FOR IDENTIFYING CORRECT MOUNT PACK #.

PART LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	135315	4	SHIM,MOUNTING PLATE,UBS, 1/2"
2	140567	2	ANGLE,MNT,TANK,FUEL,AKDOT
3	140576	1	LIFTER, ASSY, UBS, RH
4	140578	1	LIFTER, ASSY, UBS, LH
5	140586	2	PLATE, SPACER, OSC, AK 2015
6	148746	4	STOP, UBS, AK, 1 X 2 X 2-1/2
7	83130	8	SCREW, CP, HX, 3/4NC X 3 1/4, G8
8	83304	8	NUT, TOPLOCK, 3/4-10NC, G8
9	87302	4	SHIM,MOUNTING PLATE,UBS
10	152285**	1	VALVE,CUSHION,ADJ,500-1500 PSI

** PARTS NOT SHOWN



PASSENGER SIDE

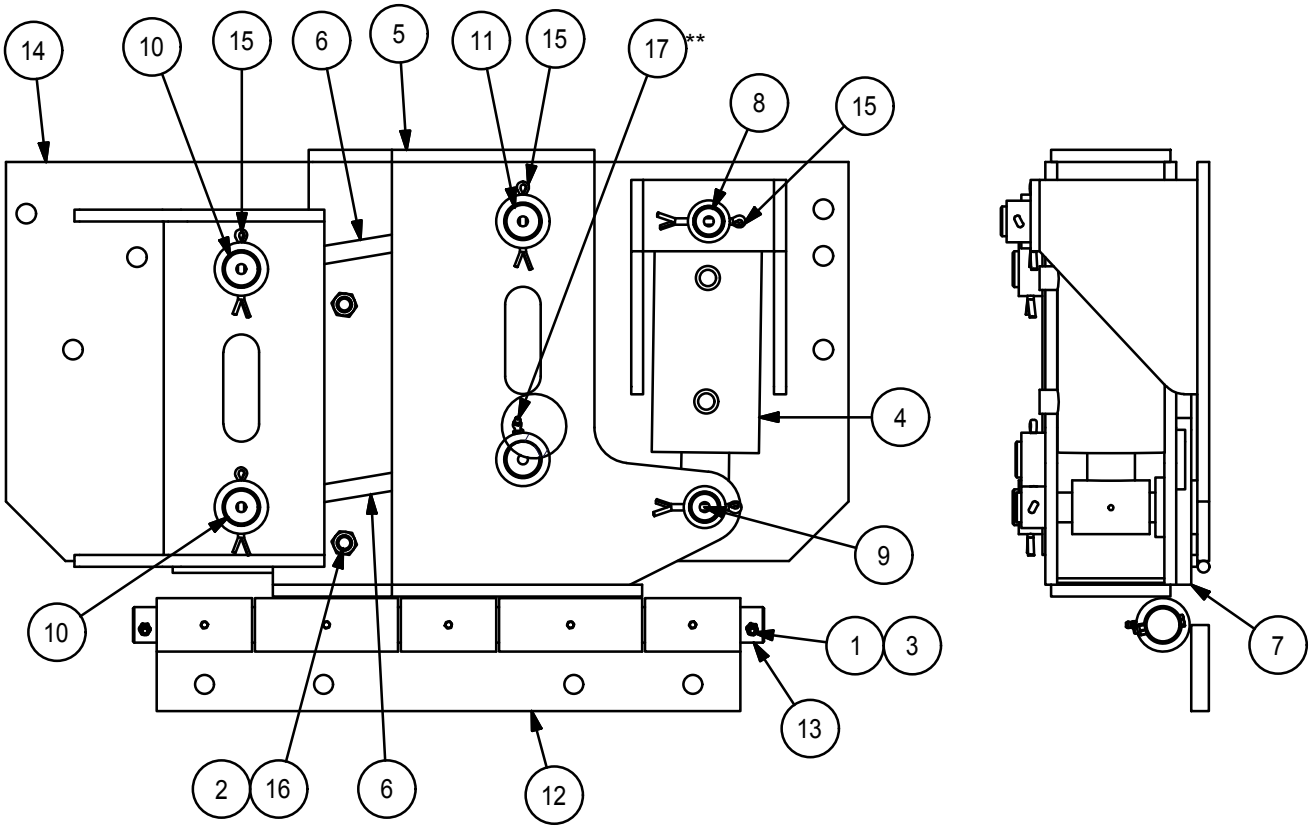


DRIVERS SIDE

140587

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	105332	2	SCREW, CP, HX, 1/4NC X 2
2	11484	4	NUT, HEX, 5/8NC, SLFLKG, NYLON
3	115730	2	NUT,HEX,1/4-20NC,SLFLKG,NYLON
4	129958	1	CYLINDER,4-4,2.0,DA,NITR
5	129963	1	LIFTER, WLDT, LH
6	129972	2	ARM, WLDT, LIFTER
7	130070	1	WEAR PLATE, POLY, LH
8	130071	1	PIN,1.25 X 8.75
9	130072	1	PIN,1.25 X 6.75
10	130073	2	PIN,1.50 X 8.25
11	130074	2	PIN,1.50 X 7.13
12	130077	1	HINGE, WLDT, UBS
13	130079	1	PIN,1.50 X 26.50
14	140577	1	MOUNT, WLDT, BASE, LH
15	74643	6	PIN, COTTER, 1/4 X 3
16	88200	4	SCREW,FLATHEAD,SOCKETHEAD
17	95997	4	ZERK,GREASE,1/4-28 X 45

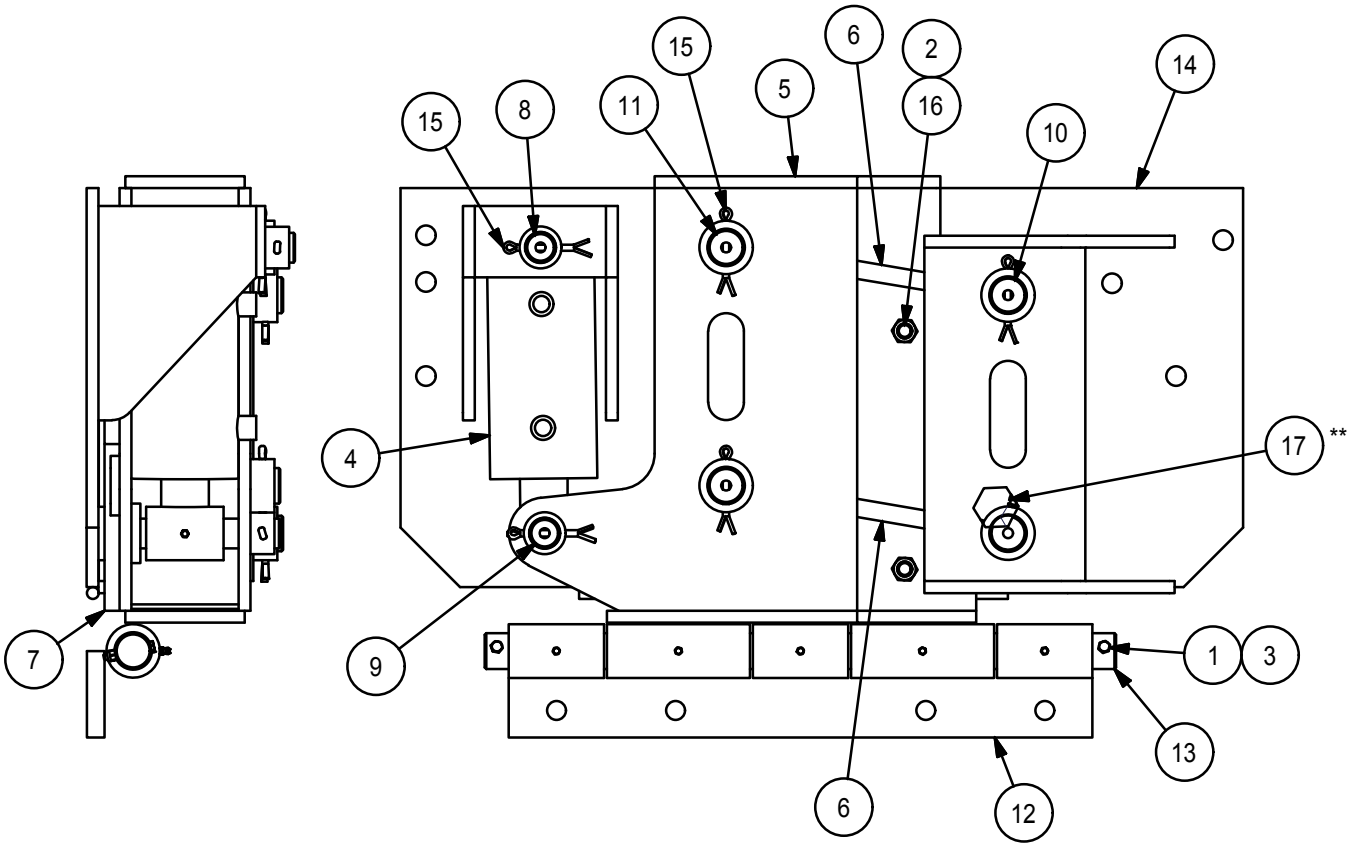
**ORIENT ZERKS OUTWARD
TOWARD SLOTS (4 PL)



140578

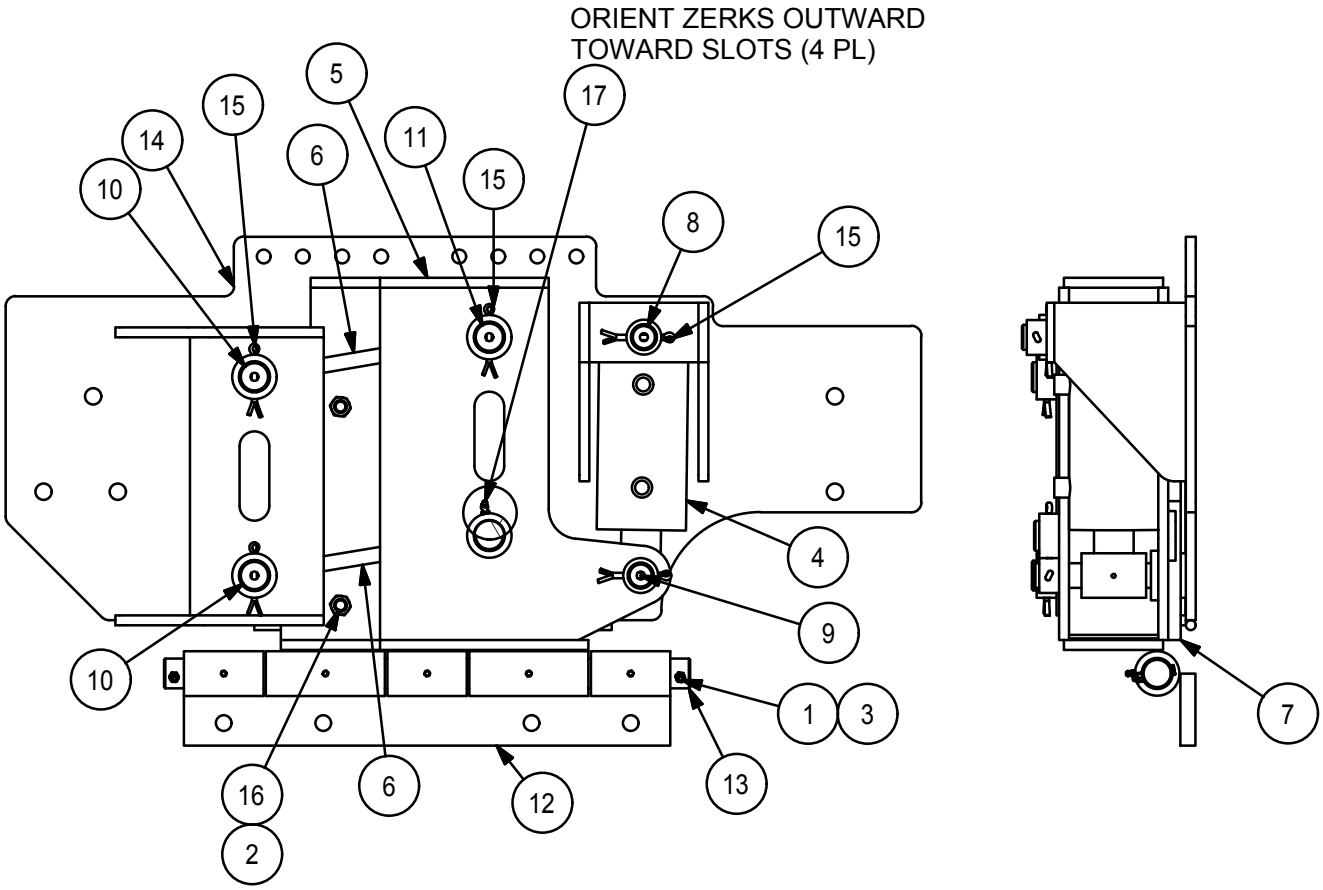
PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	105332	2	SCREW, CP, HX, 1/4NC X 2
2	11484	4	NUT, HEX, 5/8NC, SLFLKG, NYLON
3	115730	2	NUT,HEX,1/4-20NC,SLFLKG,NYLON
4	129958	1	CYLINDER,4-4,2.0,DA,NITR
5	129962	1	LIFTER, WLDT, RH
6	129972	2	ARM, WLDT, LIFTER
7	130069	1	WEAR PLATE, POLY, RH
8	130071	1	PIN,1.25 X 8.75
9	130072	1	PIN,1.25 X 6.75
10	130073	2	PIN,1.50 X 8.25
11	130074	2	PIN,1.50 X 7.13
12	130077	1	HINGE, WLDT, UBS
13	130079	1	PIN,1.50 X 26.50
14	140575	1	MOUNT, WLDT, BASE, RH
15	74643	6	PIN, COTTER, 1/4 X 3
16	88200	4	SCREW,FLATHEAD,SOCKETHEAD
17	95997	4	ZERK,GREASE,1/4-28 X 45

**ORIENT ZERKS OUTWARD
TOWARD SLOTS (4 PL)



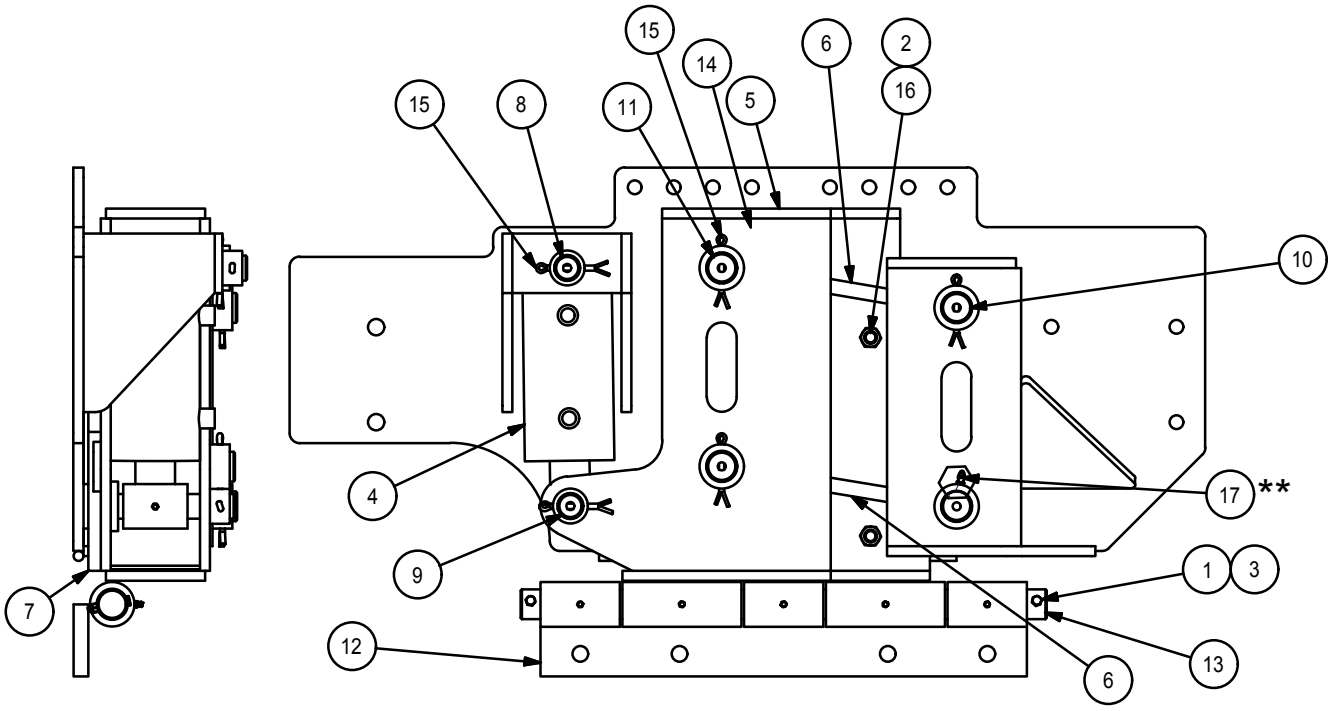
140576

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	105332	2	SCREW, CP, HX, 1/4NC X 2
2	11484	4	NUT, HEX, 5/8NC, SLFLKG, NYLON
3	115730	2	NUT,HEX,1/4-20NC,SLFLKG,NYLON
4	129958	1	CYLINDER,4-4,2.0,DA,NITR
5	129963	1	LIFTER, WLDT, LH
6	129972	2	ARM, WLDT, LIFTER
7	130070	1	WEAR PLATE, POLY, LH
8	130071	1	PIN,1.25 X 8.75
9	130072	1	PIN,1.25 X 6.75
10	130073	2	PIN,1.50 X 8.25
11	130074	2	PIN,1.50 X 7.13
12	130077	1	HINGE, WLDT, UBS
13	130079	1	PIN,1.50 X 26.50
14	141141	1	MOUNT, WLDT, BASE, LH
15	74643	6	PIN, COTTER, 1/4 X 3
16	88200	4	SCREW,FLATHEAD,SOCKETHEAD
17	95997	4	ZERK,GREASE,1/4-28 X 45



141140

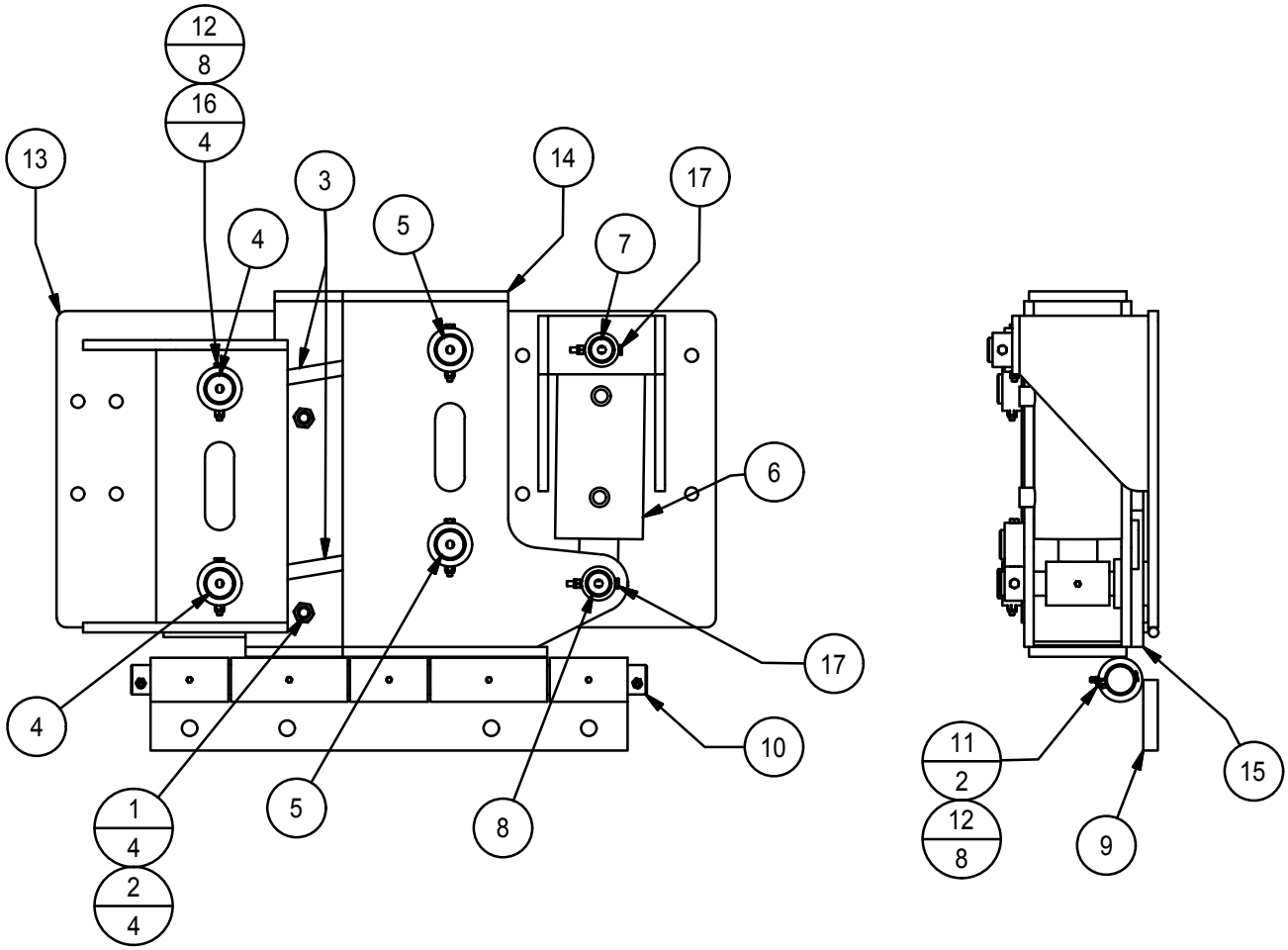
PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	105332	2	SCREW, CP, HX, 1/4NC X 2
2	11484	4	NUT, HEX, 5/8NC, SLFLKG, NYLON
3	115730	2	NUT,HEX,1/4-20NC,SLFLKG,NYLON
4	129958	1	CYLINDER,4-4,2.0,DA,NITR
5	129962	1	LIFTER, WLDT, RH
6	129972	2	ARM, WLDT, LIFTER
7	130069	1	WEAR PLATE, POLY, RH
8	130071	1	PIN,1.25 X 8.75
9	130072	1	PIN,1.25 X 6.75
10	130073	2	PIN,1.50 X 8.25
11	130074	2	PIN,1.50 X 7.13
12	130077	1	HINGE, WLDT, UBS
13	130079	1	PIN,1.50 X 26.50
14	141144	1	MOUNT, WLDT, BASE, RH
15	74643	6	PIN, COTTER, 1/4 X 3
16	88200	4	SCREW,FLATHEAD,SOCKETHEAD
17	95997	4	ZERK,GREASE,1/4-28 X 45



**ORIENT ZERKS OUTWARD
TOWARD SLOTS (4 PL)

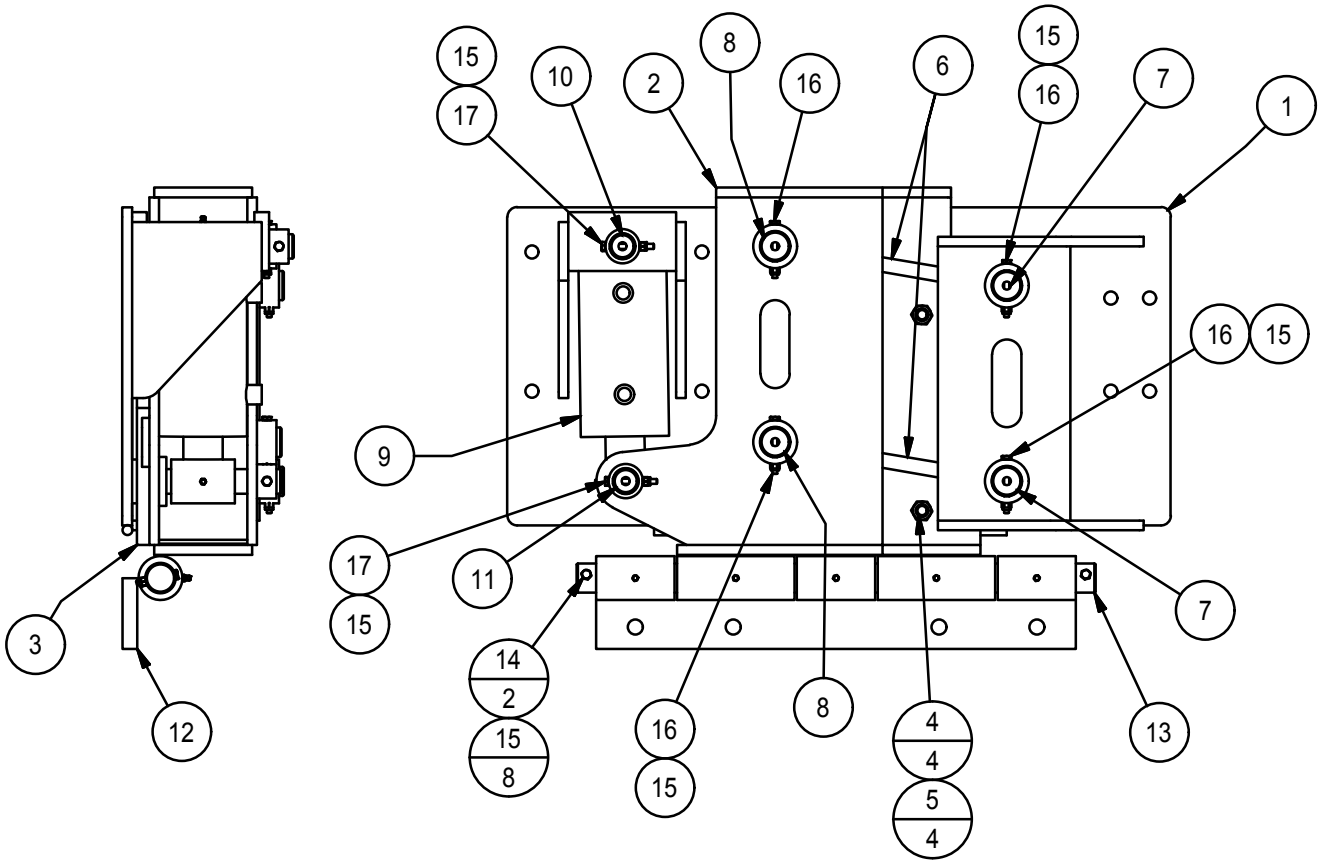
141145

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	88200	4	SCREW,FLATHEAD,SOCKETHEAD
2	11484	4	NUT, HEX, 5/8NC, SLFLKG, NYLON
3	129972	2	ARM, WLDT, LIFTER
4	130073	2	PIN,1.50 X 8.25
5	130074	2	PIN,1.50 X 7.13
6	129958	1	CYLINDER,4-4,2.0,DA,NITRIDED
7	130071	1	PIN,1.25 X 8.75
8	130072	1	PIN,1.25 X 6.75
9	130077	1	HINGE, WLDT, UBS
10	130079	1	PIN,1.50 X 26.50
11	105332	2	SCREW, CP, HX, 1/4NC X 2
12	115730	8	NUT,HEX,1/4-20NC,SLFLKG,NYLON
13	146838	1	MOUNT,WLDT,BASE,LH
14	129963	1	LIFTER, WLDT, LH
15	130070	1	WEAR PLATE, POLY, LH
16	11662	4	SCREW, CP, HX, 1/4 X 3, G5
17	11062	2	SCREW,CP,HEX,1/4 NC X 2 1/2



146836_LH

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	146837	1	MOUNT,WLDT,BASE,RH
2	129962	1	LIFTER, WLDT, RH
3	130069	1	WEAR PLATE, POLY, RH
4	88200	4	SCREW,FLATHEAD,SOCKETHEAD
5	11484	4	NUT, HEX, 5/8NC, SLFLKG, NYLON
6	129972	2	ARM, WLDT, LIFTER
7	130073	2	PIN,1.50 X 8.25
8	130074	2	PIN,1.50 X 7.13
9	129958	1	CYLINDER,4-4,2.0,DA,NITRIDED
10	130071	1	PIN,1.25 X 8.75
11	130072	1	PIN,1.25 X 6.75
12	130077	1	HINGE, WLDT, UBS
13	130079	1	PIN,1.50 X 26.50
14	105332	2	SCREW, CP, HX, 1/4NC X 2
15	115730	8	NUT,HEX,1/4-20NC,SLFLKG,NYLON
16	11662	4	SCREW, CP, HX, 1/4 X 3, G5
17	11062	2	SCREW,CP,HEX,1/4 NC X 2 1/2



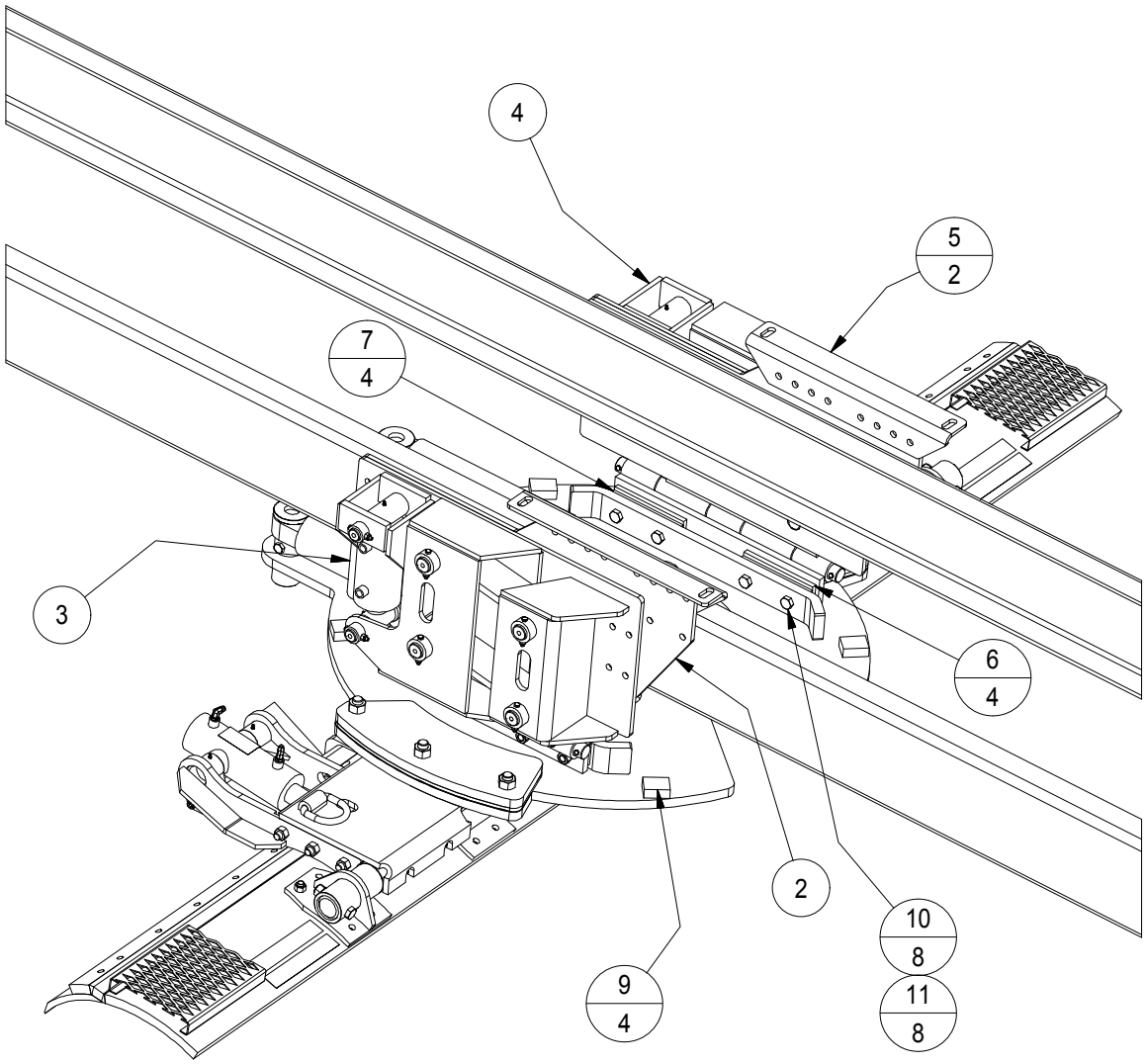
146835_RH

COMPLETE MOUNT PACK:
#148359

NOTE: UBS SERIAL # REQUIRED FOR IDENTIFYING CORRECT MOUNT PACK #.

BILL OF MATERIALS			
ITEM	PART NO	QTY	DESCRIPTION
10	83130	8	SCREW, CP, HX, 3/4NC X 3 1/4, G8
11	83304	8	NUT, TOPLOCK, 3/4-10NC, G8
7	87302	4	SHIM,MOUNTING PLATE,UBS
6	135315	4	SHIM,MOUNTING PLATE,UBS, 1/2"
5	140567	2	ANGLE,MNT,TANK,FUEL,AKDOT
3	146835	1	LIFTER,ASSY,UBS,RH
4	146836	1	LIFTER,ASSY,UBS,LH
2	148358	2	PLATE, SPACER,UBS,OSC,AK 2017
9	148746	4	STOP,UBS,AK
10	152285**	1	VALVE,CUSHION,ADJ,500-1500 PSI

** PARTS NOT SHOWN



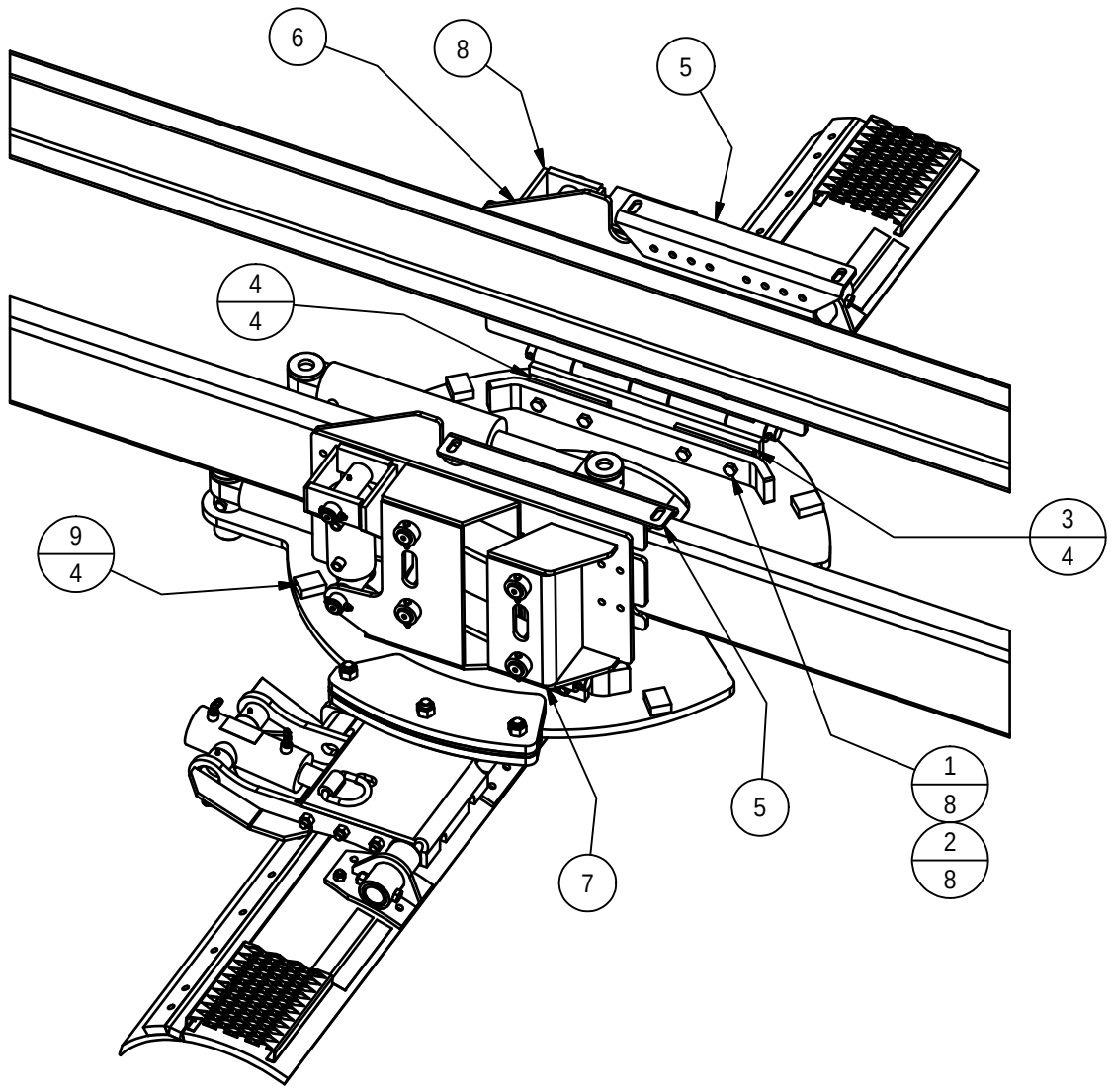
148359_MTPK.idw

COMPLETE MOUNT PACK:
#146831

NOTE: UBS SERIAL # REQUIRED FOR IDENTIFYING CORRECT MOUNT PACK #.

BILL OF MATERIALS			
ITEM	PART NO	QTY	DESCRIPTION
1	83130	8	SCREW, CP, HX, 3/4NC X 3 1/4, G8
2	83304	8	NUT, TOPLOCK, 3/4-10NC, G8
3	87302	4	SHIM,MOUNTING PLATE,UBS
4	135315	4	SHIM,MOUNTING PLATE,UBS, 1/2"
5	140567	2	ANGLE,MNT,TANK,FUEL,AKDOT
6	146834	2	PLATE, SPACER,UBS,OSC,AK 2017
7	146835	1	LIFTER,ASSY,UBS,RH
8	146836	1	LIFTER,ASSY,UBS,LH
9	148746	4	STOP,UBS,AK
10	152285**	1	VALVE,CUSHION,ADJ,500-1500 PSI

** PARTS NOT SHOWN

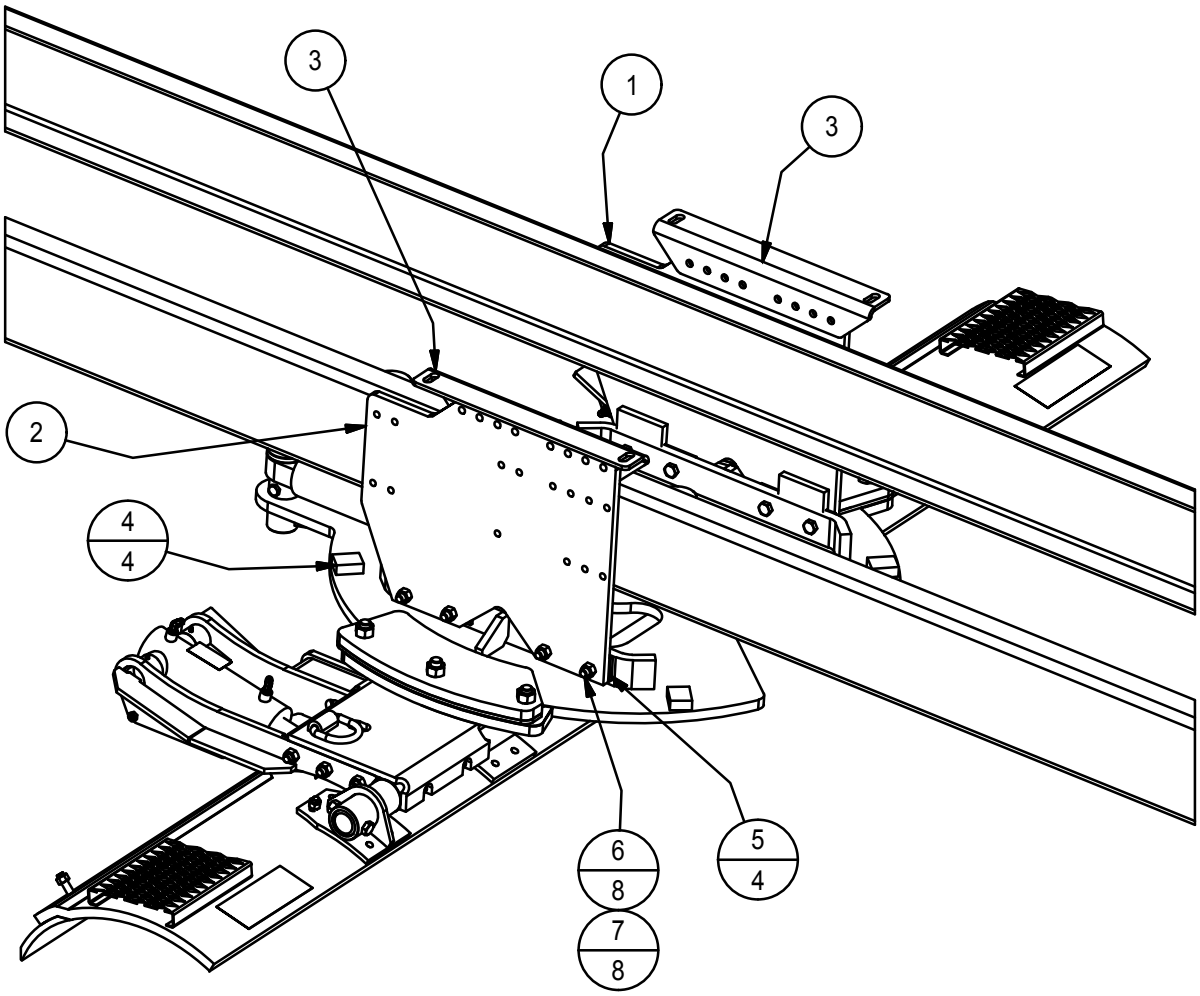


146831_MTPK.idw

COMPLETE MOUNT PACK:
#146810

NOTE: UBS SERIAL # REQUIRED FOR IDENTIFYING CORRECT MOUNT PACK #.

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	146807	1	PLATE,MOUNTING,WLDT,UBS,LH
2	146808	1	PLATE,MOUNTING,WLDT,UBS,RH
3	140567	2	ANGLE,MNT,TANK,FUEL,AKDOT
4	148746	4	STOP,UBS,AK
5	87302	4	SHIM,MOUNTING PLATE,UBS
6	83130	8	SCREW, CP, HX, 3/4NC X 3 1/4, G8
7	83304	8	NUT, TOPLOCK, 3/4-10NC, G8



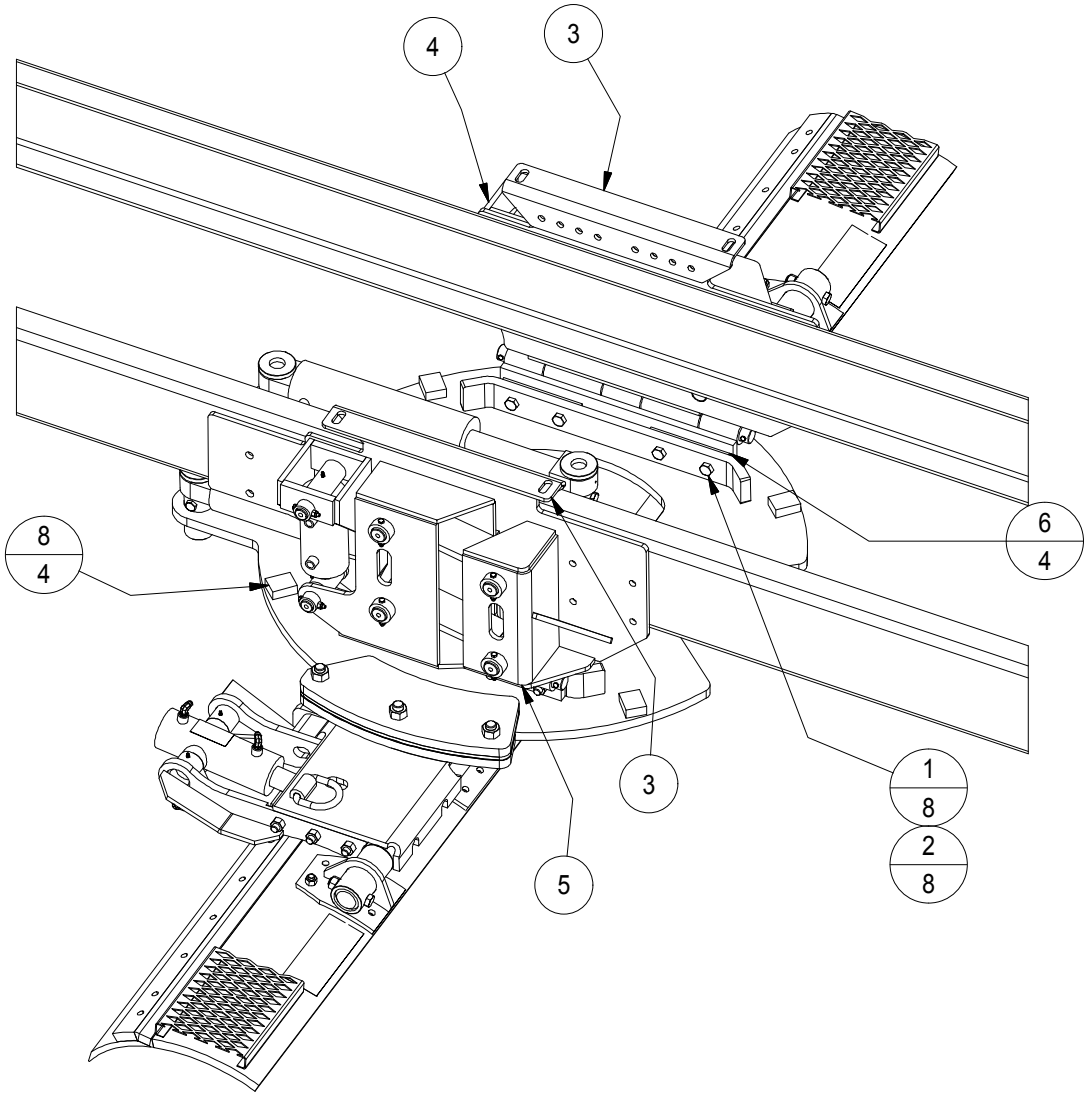
146810_MTPK

COMPLETE MOUNT PACK:
#141248

NOTE: UBS SERIAL # REQUIRED FOR IDENTIFYING CORRECT MOUNT PACK #.

BILL OF MATERIALS			
ITEM	PART NO	QTY	DESCRIPTION
1	83130	8	SCREW, CP, HX, 3/4NC X 3 1/4, G8
2	83304	8	NUT, TOPLOCK, 3/4-10NC, G8
3	140567	2	ANGLE,MNT,TANK,FUEL,AKDOT
4	141140	1	LIFTER, ASSY, UBS, LH, INTL AK 2015
5	141145	1	LIFTER, ASSY, UBS, RH, INTL AK 2015
6	141148	4	SHIM,MOUNTING PLATE,UBS, 3/8
7	141151**	2	PLATE, CROSSMEMBER SUPPORT
8	148746	4	STOP,UBS,AK
9	152285**	1	VALVE,CUSHION,ADJ,500-1500 PSI

** PARTS NOT SHOWN



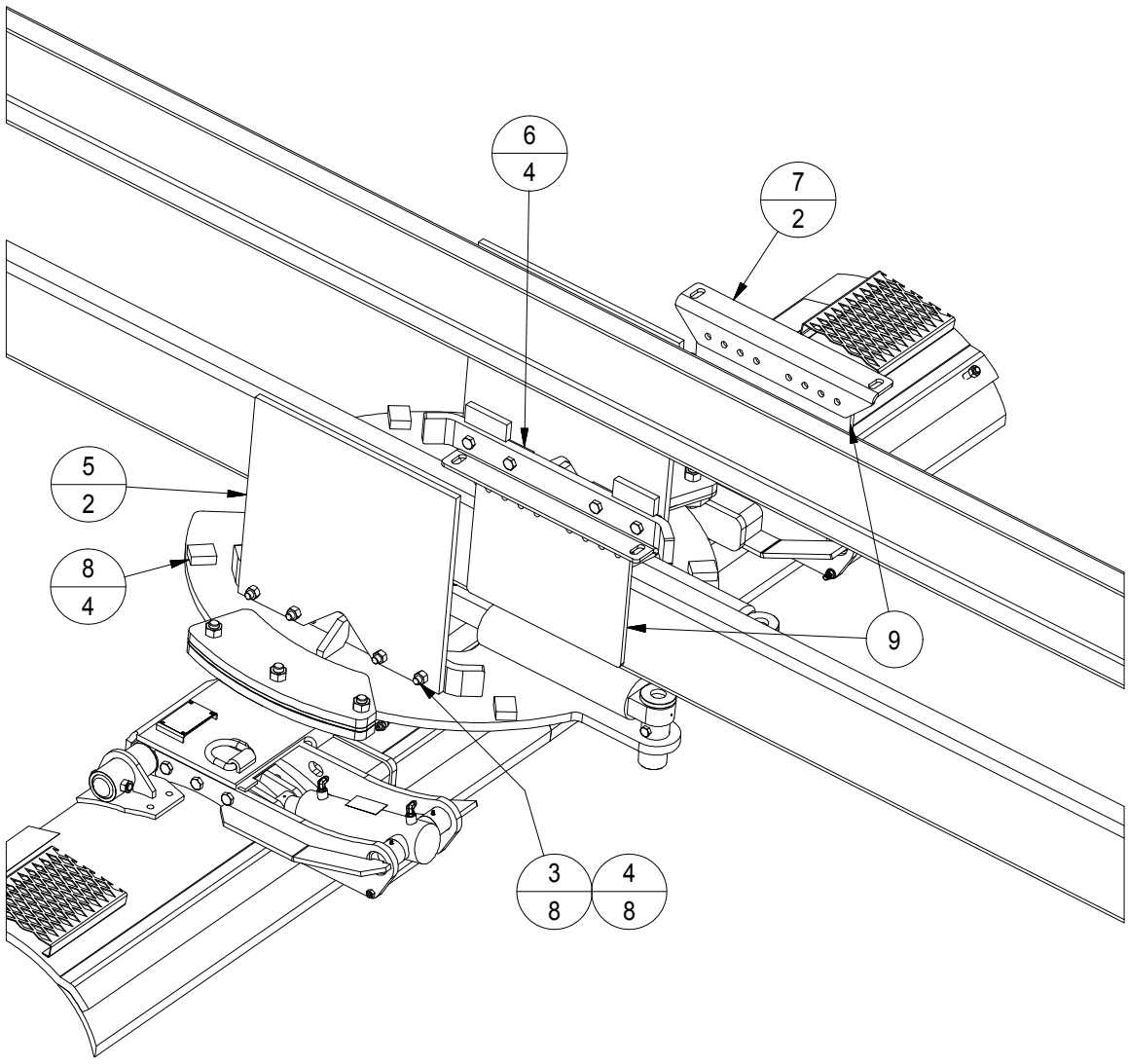
141248_MTPK.idw

COMPLETE MOUNT PACK:
#150964

NOTE: UBS SERIAL # REQUIRED FOR IDENTIFYING CORRECT MOUNT PACK #.

BILL OF MATERIALS			
ITEM	PART NO	QTY	DESCRIPTION
1	76487**	20	SCREW,CP,HX,5/8NC X 3,G8
2	81861**	20	NUT,TOPLOCK,5/8-11NC,G8
3	83130	8	SCREW, CP, HX, 3/4NC X 3 1/4, G8
4	83304	8	NUT, TOPLOCK, 3/4-10NC, G8
5	87275	2	PLATE,MOUNTING,WLDT,UBS
6	87302	4	SHIM,MOUNTING PLATE,UBS
7	140567	2	ANGLE,MNT,TANK,FUEL,AKDOT
8	148746	4	STOP,UBS,AK
9	150966	2	PLATE,MNT,TANK,FUEL,AKDOT

** PARTS NOT SHOWN



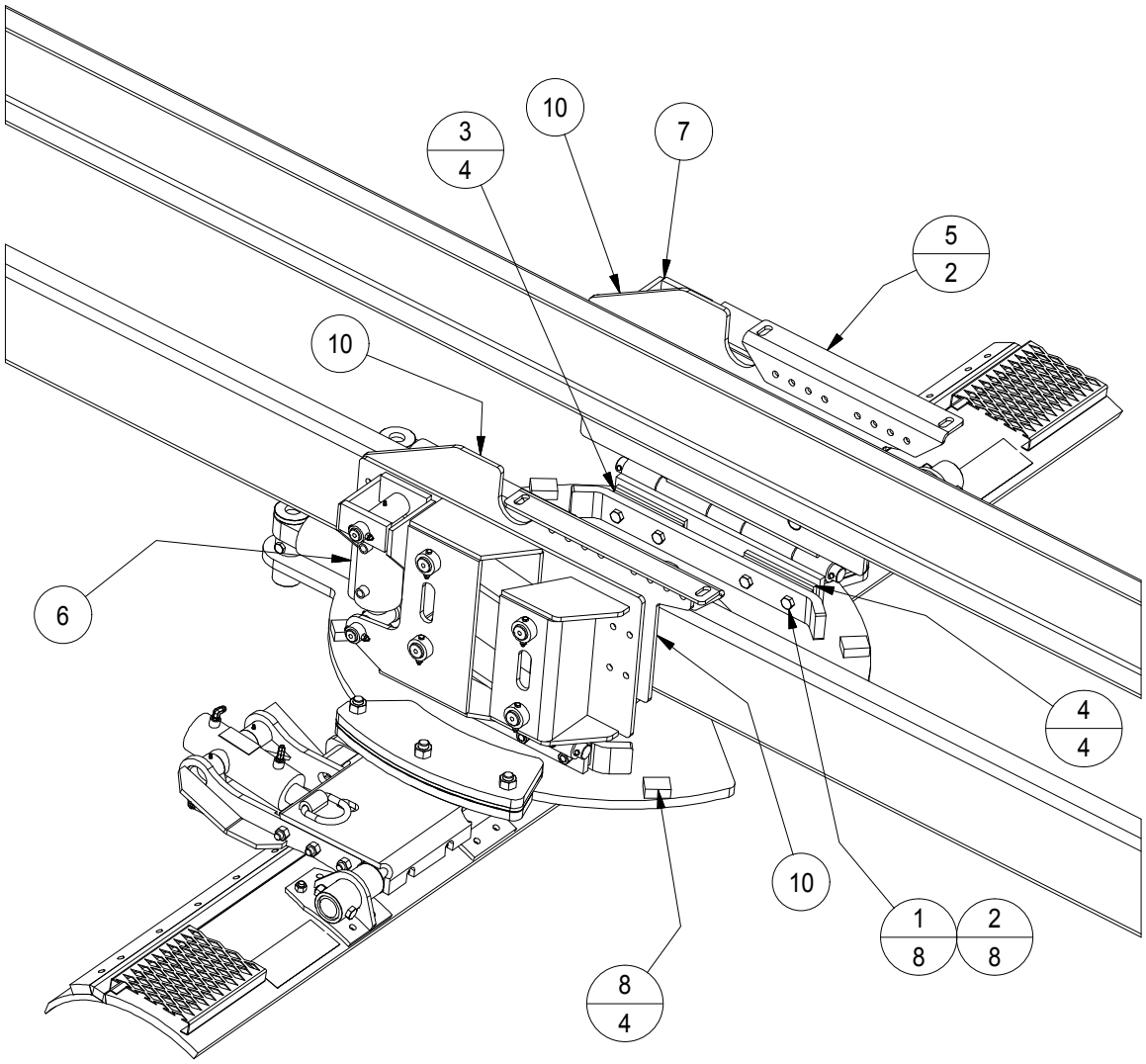
150964_MTPK.idw

COMPLETE MOUNT PACK:
#153065

NOTE: UBS SERIAL # REQUIRED FOR IDENTIFYING CORRECT MOUNT PACK #.

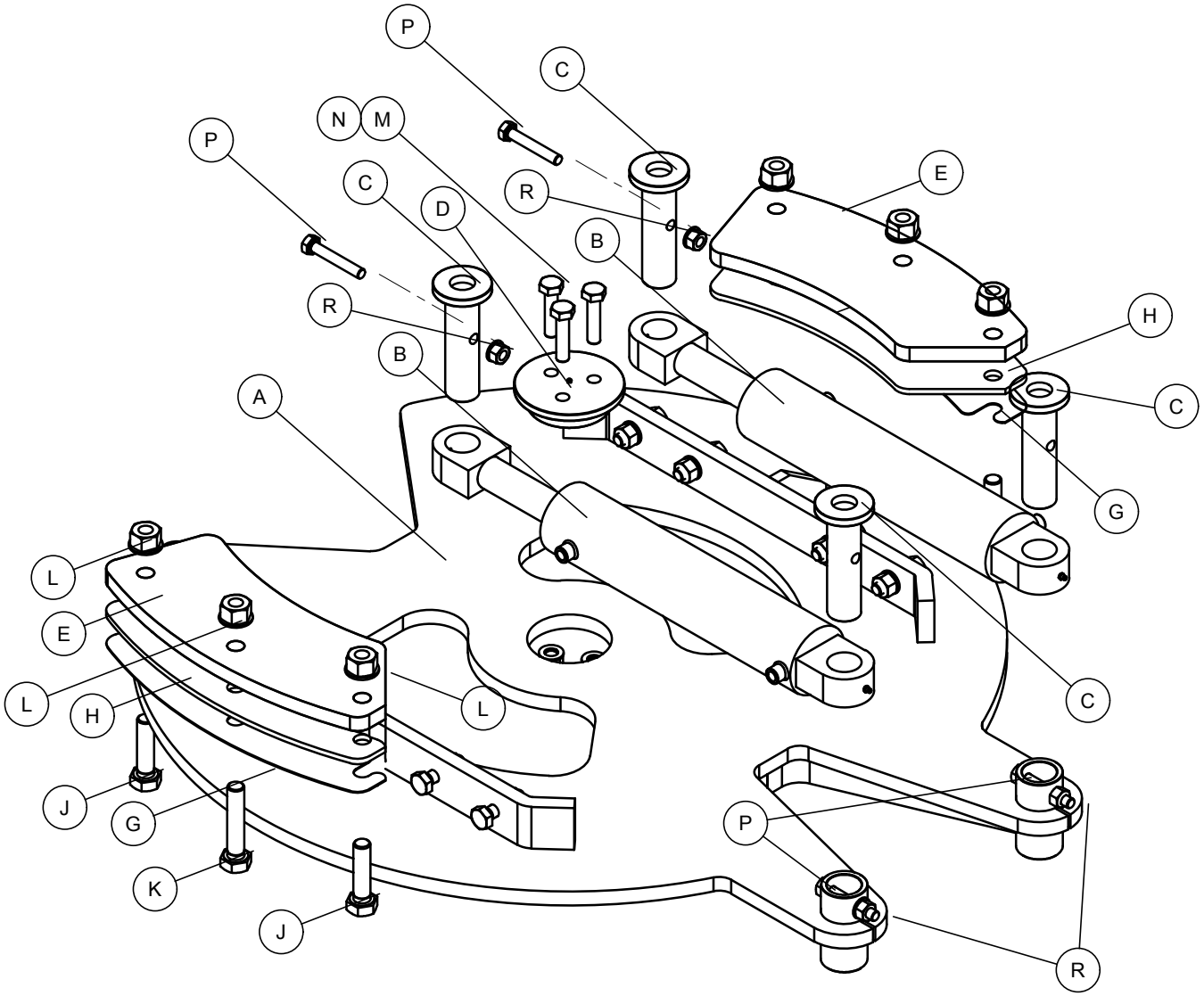
BILL OF MATERIALS			
ITEM	PART NO	QTY	DESCRIPTION
1	83130	8	SCREW, CP, HX, 3/4NC X 3 1/4, G8
2	83304	8	NUT, TOPLOCK, 3/4-10NC, G8
3	87302	4	SHIM,MOUNTING PLATE,UBS
4	135315	4	SHIM,MOUNTING PLATE,UBS, 1/2"
5	140567	2	ANGLE,MNT,TANK,FUEL,AKDOT
6	146835	1	LIFTER,ASSY,UBS,RH
7	146836	1	LIFTER,ASSY,UBS,LH
8	148746	4	STOP,UBS,AK
9	152285**	1	VALVE,CUSHION,ADJ,500-1500 PSI
10	152588	2	PLATE,SPACER,UBS,OSC,AK 2018

** PARTS NOT SHOWN



153065_MTPK.idw

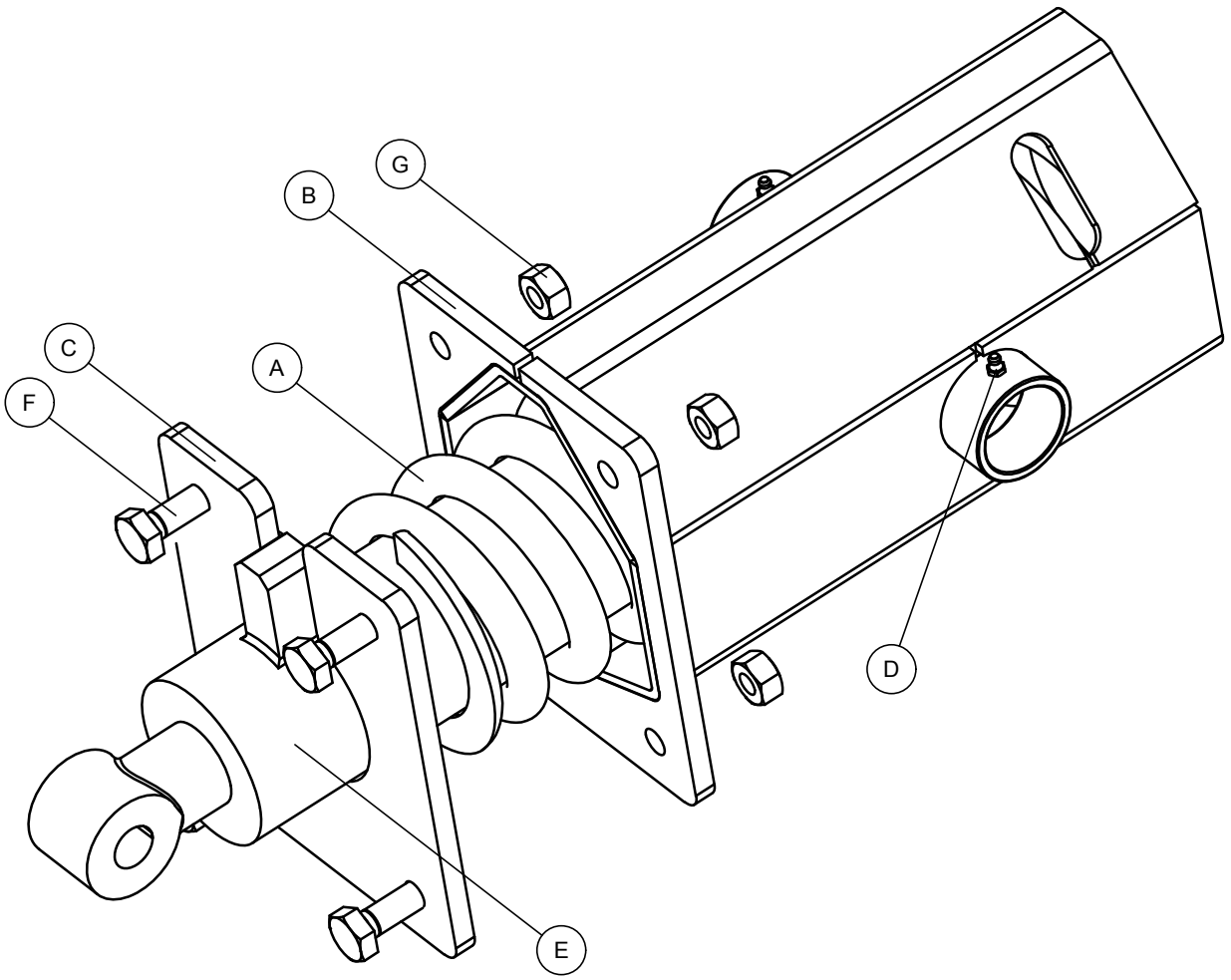
PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
A	1	132321	CIRCLE PLATE,WLDT,UBS,OSC
A	1	87300	CIRCLE PLATE,WLDT,UBS (SHORT)
B	2	86973	CYL,4.0"-12.50,2.0" ROD,DA,NITRIDED
C	4	86993	PIN, WLDT, 2.00 x 7.41
D	1	86967	PIVOT, HANGERBOARD, UBS
E	2	87272	PLATE, CLAMP, UBS
G	2	87273	SHIM, WEAR PLATE, UBS
H	2	87271	WEAR PLATE, UHMW, UBS
J	4	87434	SCREW,CP,HX, 1NC x 3 3/4, G8
K	2	87435	SCREW,CP,HX, 1NC x 4 1/2, G8
L	6	83183	NUT, TOPLOCK, 1-8NC, G8
M	3	83182	SCREW,CP,HX, 3/4NC x 4, G8
N	3	83304	NUT, TOPLOCK, 3/4-10NC, G8
P	4	76519	SCREW,CP,HX, 5/8NC x 3 1/2, G8
R	4	81861	NUT, TOPLOCK,5/8-11NC, G8



UBS_2-11

CANISTER ASSEMBLY
PN 87303

PARTS LIST			
ITEM	QTY.	PART NO.	DESCRIPTION
A	1	86947	SPRING,COMP .875 x 5.875 x 18.00
B	1	86948	CANISTER, WLDT, UBS
C	1	86945	PLATE,RETAINER,CANISTER,UBS
D	2	00155	ZERK,GREASE, 1/4-28 STR
E	1	86972	CYL,3.5-9,2" ROD,NITRIDED
F	4	82819	SCREW,CP,HX,5/8NC x 2, G8
G	4	81861	NUT,TOPLOCK,5/8-11NC, G8



WARNING

CANISTER CONTAINS A SPRING UNDER COMPRESSION. DO NOT DISASSEMBLE. SEVERE PERSONAL INJURY OR DEATH COULD OCCUR.

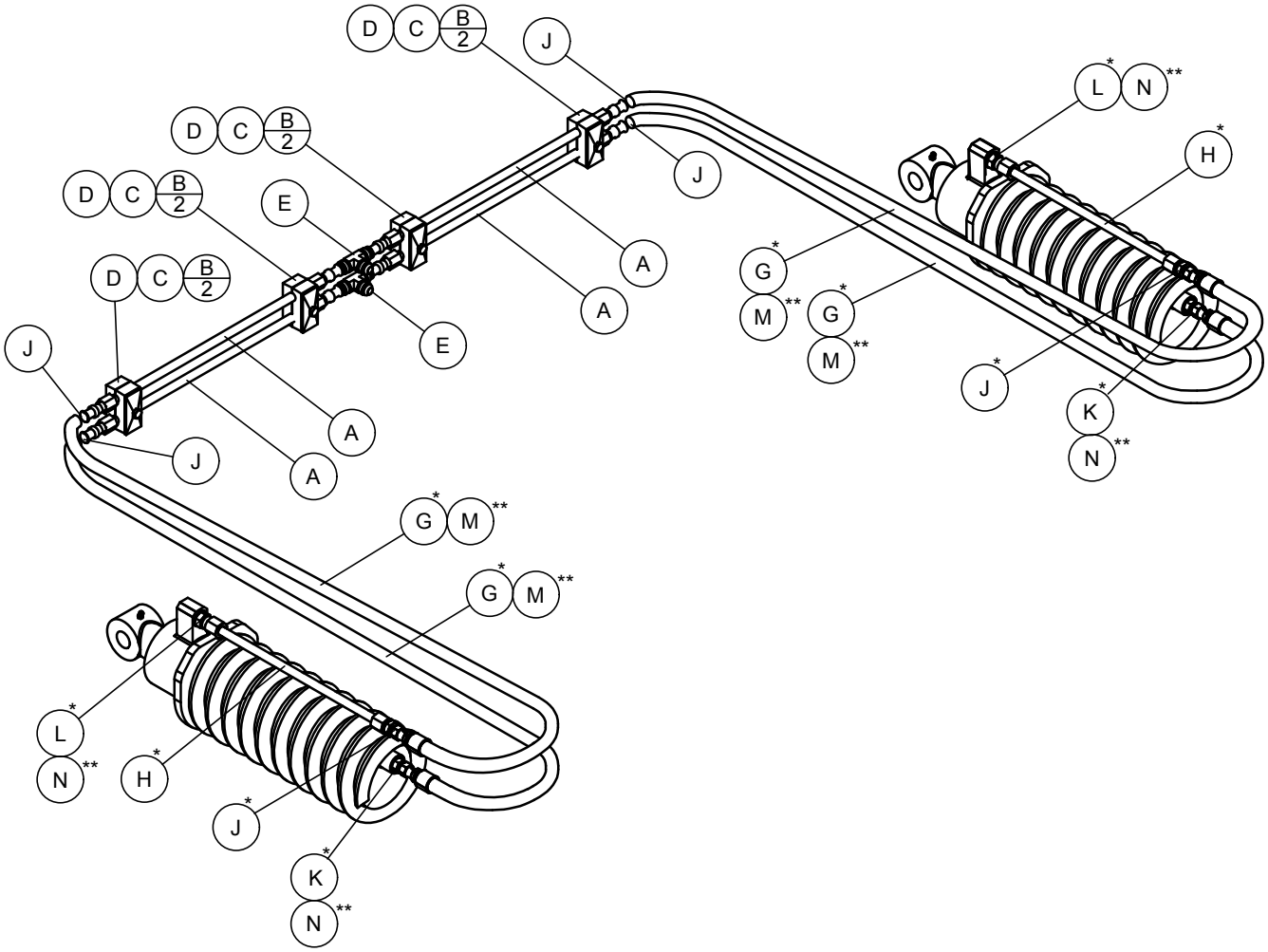
IF DISASSEMBLY IS REQUIRED CONTACT FACTORY.

UBS_2-04

* SPRING CANISTER OPTION

** ACCUMULATOR OPTION

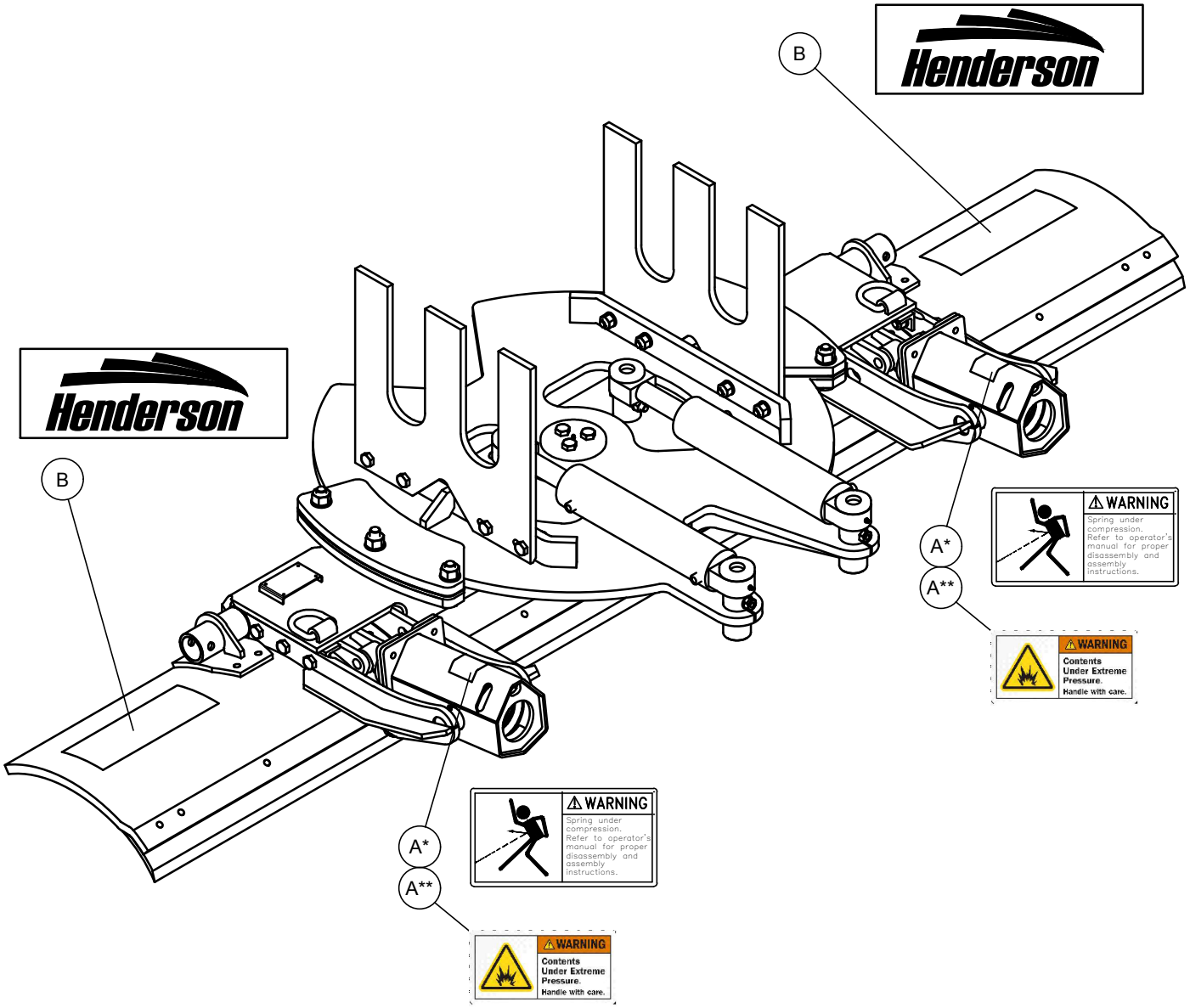
PARTS LIST				
	ITEM	QTY.	PART NO.	DESCRIPTION
	A	4	301202	TUBE, ASSY, 1/2" x 20.00
	B	8	87115	CLAMP BODY, TWIN, 1/2" OD TUBE
	C	4	87112	PLATE, COVER
	D	4	00333	SCREW, CP, HX, 5/16NC x 2, G5
	E	2	73905	TEE,08MJ/08MJ/08MJ
*	G	4	301604	HOSE,ASM,06-06FJX/06FJX-43.00
*	H	2	301206	TUBE,ASSY, 1/2 x 13.25
*	J	6	87436	ADAPTER,08MJ/06MJ
*	K	2	86818	ADAPTER, 06MB/06MJ
*	L	2	301003	ADAPTER, 08MJ/06MB
**	M	4	301655	HOSE,ASM,06-06FJX/06FJX,28.0"
**	N	4	84785	ELBOW,09MB/06MJ



UBS_2-13

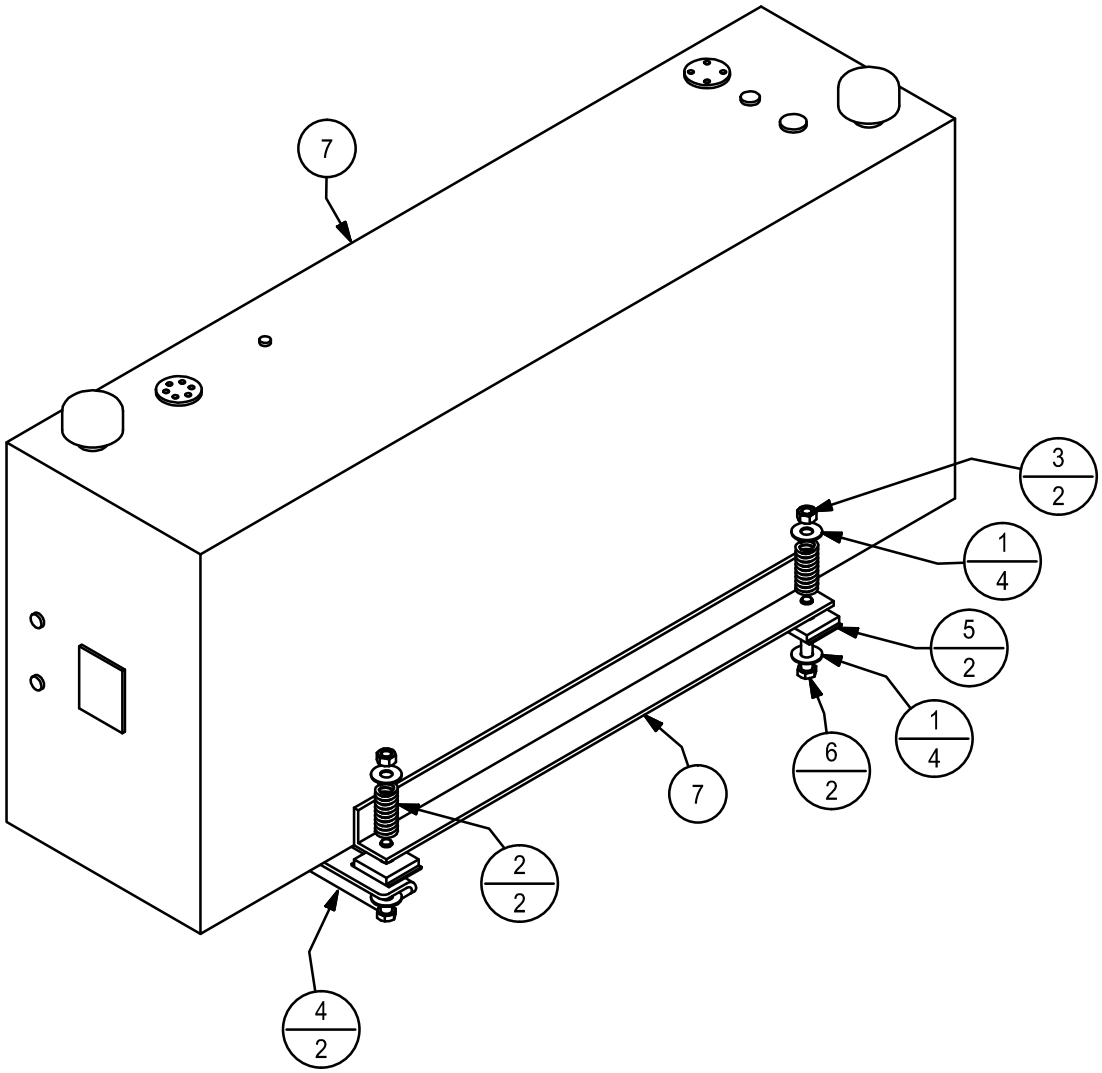
* SPRING CANISTER OPTION
** ACCUMULATOR OPTION

	PARTS LIST			
	ITEM	QTY.	PART NO.	DESCRIPTION
*	A	2	81679	DECAL, WARNING,SPRINGS
**	A	2	138428	DECAL,WARNING,PRESSURE
	B	2	81227	DECAL, LOGO, 4.40 x 13.20



UBS_2-20

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	00184	4	WASHER, FLAT, STD, 3/4 ID
2	03072	2	SPRING,IDLER
3	11483	2	NUT, HEX, 3/4NC, SLFLKG, NYLON
4	140567	2	ANGLE,MNT,TANK,FUEL,AKDOT
5	145609	2	RUBBER,PAD,MOLDED,3",AKDOT
6	89152	2	SCREW,CP,HX,3/4NC X 5 1/2, G8
7	TANK	1	120 GAL FUEL/ 40 GAL HYD TANK



146457

THIS PAGE

IS LEFT BLANK

INTENTIONALLY.

SNOW FOE SERIES:

UNDERBODY SCRAPER

GENERAL INFORMATION

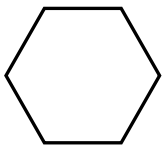
BOLT TORQUE DATA

The chart provided contains information concerning standard hardware used on this machine. It is recommended that all fasteners be tightened to the torque values specified. The grade of the bolt is identified by the markings on the head of the bolt.

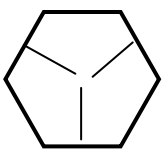
GENERAL BOLT TORQUE DATA IN FT/LB.

BOLT SIZE	SAE-GRADE 2 DRY	SAE-GRADE 2 LUB	SAE-GRADE 5 DRY	SAE-GRADE 5 LUB	SAE-GRADE 8 DRY	SAE-GRADE 8 LUB
1/4-20	5	4	8	6	12	9
1/4-28	6	5	9	7	13	10
5/16-18	11	8	17	13	25	18
5/16-24	12	9	19	14	25	20
3/8-16	20	15	30	23	45	35
3/8-24	23	17	35	25	50	40
7/16-14	30	24	50	35	70	50
7/16-20	35	25	55	40	80	60
1/2-13	50	35	75	55	110	80
1/2-20	55	40	90	65	120	90
9/16-12	70	55	110	80	150	110
9/16-18	80	60	120	90	170	130
5/8-11	100	75	150	110	220	170
5/8-18	110	85	170	130	240	180
3/4-10	175	130	260	200	380	280
3/4-16	195	145	300	220	420	320
7/8-9	165	125	430	320	600	460
7/8-14	185	140	470	350	660	500
1-8	250	190	800	600	900	680
1-14	270	200	700	530	1000	740

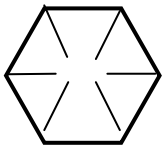
NOTE:
1. Multiply by 1.356 for metric N-M.
2. Do not use above values in place of those specified in other sections of this manual.



GRADE 2
(PLAIN)



GRADE 5
(3 MARKS)



GRADE 8
(6 MARKS)

DIMENSION CHART

DECIMALS OF AN INCH
For each 1/64 of an inch
With Millimeter Equivalents

Fraction	1/64	Decimal	Millimeters (Approx.)		Fraction	1/64	Decimal	Millimeters (Approx.)
- -	1	.015625	0.397		- -	33	.515625	13.097
1/32	2	.03125	0.794		17/32	34	.53125	13.494
- -	3	.046875	1.191		- -	35	.546875	13.891
1/16	4	.0625	1.588		9/16	36	.5625	14.288
- -	5	.078125	1.984		- -	37	.578125	14.684
3/32	6	.09375	2.381		19/32	38	.59375	15.081
- -	7	.109375	2.778		- -	39	.609375	15.478
1/8	8	.125	3.175		5/8	40	.625	15.875
- -	9	.140625	3.572		- -	41	.640625	16.272
5/32	10	.15625	3.969		21/32	42	.65625	16.669
- -	11	.171875	4.366		- -	43	.671875	17.066
3/16	12	.1875	4.763		11/16	44	.6875	17.463
- -	13	.203125	5.159		- -	45	.703125	17.859
7/32	14	.21875	5.556		23/32	46	.71875	18.256
- -	15	.234375	5.953		- -	47	.734375	18.653
1/4	16	.25	6.350		3/4	48	.750	19.050
- -	17	.265625	6.747		- -	49	.765625	19.447
9/32	18	.28125	7.144		25/32	50	.78125	19.844
- -	19	.296875	7.541		- -	51	.796875	20.241
5/16	20	.3125	7.938		13/16	52	.8125	20.638
- -	21	.328125	8.334		- -	53	.828125	21.034
11/32	22	.34375	8.731		27/32	54	.84375	21.431
- -	23	.359375	9.128		- -	55	.859375	21.828
3/8	24	.375	9.525		7/8	56	.875	22.225
- -	25	.390625	9.922		- -	57	.890625	22.622
13/32	26	.40625	10.319		29/32	58	.90625	23.019
- -	27	.421875	10.716		- -	59	.921875	23.416
7/16	28	.4375	11.113		15/16	60	.9375	23.813
- -	29	.453125	11.509		- -	61	.953125	24.209
15/32	30	.46875	11.906		31/32	62	.96875	24.606
- -	31	.484375	12.303		- -	63	.984375	25.003
1/2	32	.500	12.700		1	64	1.000	25.400

APPROXIMATE DENSITY OF COMMON MATERIALS

MATERIAL	$\#/FT^3$	KG/M^3	LBS/GAL
Ashes	35-40	560-640	
Cargill CG-90 surface saver			10.15-10.45
Cement	90-118	1440-1890	
Clay, damp	110	1,761	
Coal-anthracite, lumpy	50-54	800-860	
Coal-bituminous, lump	50-60	800-960	
Coal-lignite	78	1,250	
Coke	23-32	369-513	
Earth, moist	78	1,250	
Earth, mud	108	1,730	
Flue, dirt	100	1,600	
Fly ash	35,45	560-720	
Granite, piled	96	1,579	
Gravel, wet	126	2,019	
Iron ore	325	5,206	
Iron slag	172	2,755	
Limestone, piled	95	1,572	
River mud	90	1,432	
Salt, deicing rock	66-72	1055-1150	
Salt, granulated, piled	48	769	
Salt, northern rock (deep mine)	74-82	1185-1310	
Sand, dry	100	1,602	
Sand, wet	126	2,019	
Shale, piled	92	1,474	
Snow, fresh fallen	8	128	
Riprap	105	1,681	
Wheat	48	770	
Wood Chips	18-20	290-320	
Pine	30-42	481-673	
Oak	45-54	673-866	

TABLE OF WEIGHTS AND MEASURES

Dry Measure

2 pints = 1 quart
1 quart = 67.2 cu. in.
1 British bushel = 1.032 U.S. bushel
8 quarts = 1 peck
4 pecks = 1 bushel
4 pecks = 1 bushel

Liquid Measure

4 gills = 1 pint
16 fluid ounces = 1 pint
2 pints = 1 quart
4 quarts = 1 gallon
1 British Imperial gallon = 1.2 U.S. gals.
1 cu. ft of water contains 7.48 gallons and weighs 62.321 lbs.
1 gallon = 231 cubic inches
31-1/2 gallons = 1 barrel
2 barrels = 1 hogshead

Weight of:

1 gal. water = approx. 8.33 lbs.
1 gal. gasoline = approx. 6.1 lbs.
1 gal. L.PG. = approx. 4.25 lbs.
1 gal. Diesel Fuel = approx. 7.0 lbs.

Linear Measure

1 mil. = 0.001 inch
12 inches = 1 foot
3 feet = 1 yard
5-1/2 yards = 1 rod
40 rods = 1 furlong
8 furlongs = 1 statute mile
5280 feet = 1 statute mile
3 miles = 1 league

Square Measure

1 circular mil. = 0.7854 square mils.
1,000,000 sq. mils. = 1 square inch
144 square inches = 1 sq. ft.
9 sq. ft. = 1 sq. yd.
30-1/4 sq. yds. - 1 sq. rod
40 sq. rods = 1 rood
4 roods - 1 acre = 43560 sq. ft.
640 acres = 1 sq. mile

Surveyor's Measure

7.92 inches = 1 link
25 links = 1 rod
4 rods = 1 chain
10 sq. chains or 160 sq. rods = 1 acre
36 sq. miles (6 miles square) = 1 township
43560 sq. ft. = 1 acre
640 acres = 1 sq. mile

Cubic Measure

1 cu. cm. = .061 cu. in.
27 cu. ft. = 1 cu. yd.
40 cu. ft. = 1 ton (shipping)
231 cu. in. = 1 U.S. gallon
1728 cu. in. = 1 cu. ft.
128 cu. ft. = 1 cord (wood)
2150.42 cu. in. = 1 std. bushel
1 cu. ft. = 4/5 of a bushel

Linear Measure

1 millimeter = 0.03937 inches
1 centimeter = 0.3937 inches
1 decimeter = 3.937 in. = 0.328 ft.
1 meter = 39.37 in. = 1.0936 yards
1 decameter = 1.9884 rods
1 kilometer = 0.62137 mile
1 inch = 2.54 centimeters
1 foot = 3.048 decimeters
1 rod = 9.5029 decameters
1 yard = .09144 meter
1 mile = 1.6093 kilometers

Square Measure

1 sq. cm. = 0.1550 sq. in.
1 sq. decimeter = 0.1076 sq. ft.
1 sq. meter = 1.196 sq. yds.
1 hectare = 2.47 acres
1 sq. kilometer = 0.386 sq. miles
1 sq. in. = 6.452 sq. cm.
1 sq. ft. = 9.2903 sq. decimeters
1 sq. yd. = 0.8361 sq. meter
1 sq. mile = 2.59 sq. kilometers

Weights

1 gram = 0.03527 ounces
1 kilogram = 2.2046 lbs.
1 metric ton = 2205 lbs.
1 pound = 0.4536 kilograms
1 metric ton = 1.1023 short tons
1 ounce = 28.35 grams = 437.5 grains

SNOWFOE® SERIES
ALASKA DOT 2014 - 2015
MODEL: OWP
SERIAL #: _____

INSTRUCTIONS FOR ORDERING PARTS

Order parts from the authorized dealer covering your area.

DEALER:_____
Phone #: _____

ALWAYS GIVE THE MODEL AND SERIAL NUMBER.

To obtain parts promptly, give part name and part number.

Give post office address, town, and state where the parts are to be shipped. UPS (United Parcel Service) and other carriers will not ship to a post office box. You must use a street address. Also be sure to specify whether material is to be shipped by freight, express, parcel post, or UPS. All UPS shipments will be normal surface routing unless specified otherwise.

Confirm all telephone or FAX orders in writing.

Credit for new parts not needed must be obtained from the dealer from whom they were purchased.

Unless claims for shortages or errors are made immediately upon receipt of goods, they will not be considered.

Inspect all goods received immediately upon receipt. When damaged goods are received, insist that a full description of the damage be made by the carrier agent on the freight bill. If this description is insisted upon, full damage can be collected from the transportation company.

No responsibility is assumed for delay or damage to merchandise while in transit. Dealer's responsibility ceases upon delivery of shipment to the transportation company from whom a receipt is received showing that shipment was in good condition when delivered to them; therefore, claims (if any) should be filed with the transportation company and not with the dealer.

ALASKA 2014 - 2015

ONE WAY SNOWPLOW

TABLE OF CONTENTS

ALASKA 2014 - 2015
ONE WAY PLOW
SLOTTED BUFFER

OPERATION INSTRUCTIONS

Operation Instructions
OWP (One Way Plow)
Slotted Buffer

BE SURE TO ADHERE TO ALL SAFETY AND CAUTION INFORMATION WHILE OPERATING THE EQUIPMENT. THIS MANUAL SHOULD BE COMPLETELY READ BEFORE OPERATING THIS EQUIPMENT.

Initial Start-up

The initial start-up of the equipment should be done with a partner that can watch the operation of the plow at a safe distance. Be sure the hydraulic reservoir is filled with oil, retaining pins are in place and all fasteners are tightened. Start the truck with the pump engaged and raise the plow 6-10" above the ground. Have your partner verify that there are no hydraulic leaks and that there are no interferences with all moving parts when raising and lowering the plow. Watch for clearance between the discharge end of the plow and any bumpers or leveling wings and front masts. Also watch for clearance between the lift arm, lift chains and moldboard brace. If there is any interference with the chassis or other equipment, return the unit to your installer or mechanic for adjustment.

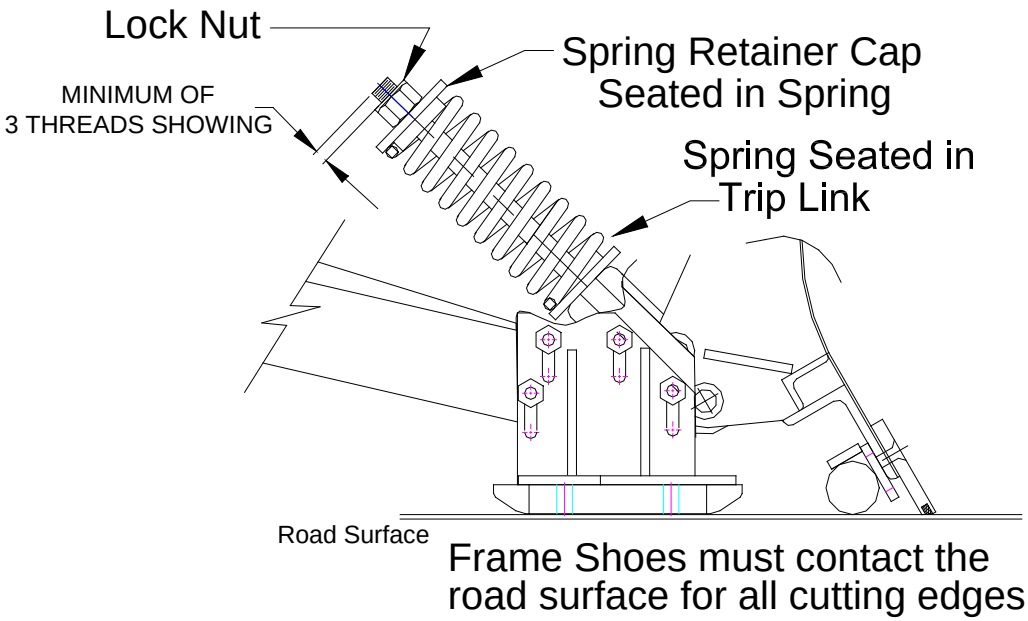
Note: The hydraulic system is under extreme pressure and can cause serious personal injury if released. Never use your hands to check for leaks with the system under pressure. Always wear safety glasses.

Never let any part of your body be under the plow, cutting edge or shoes. Serious personal injury can occur.

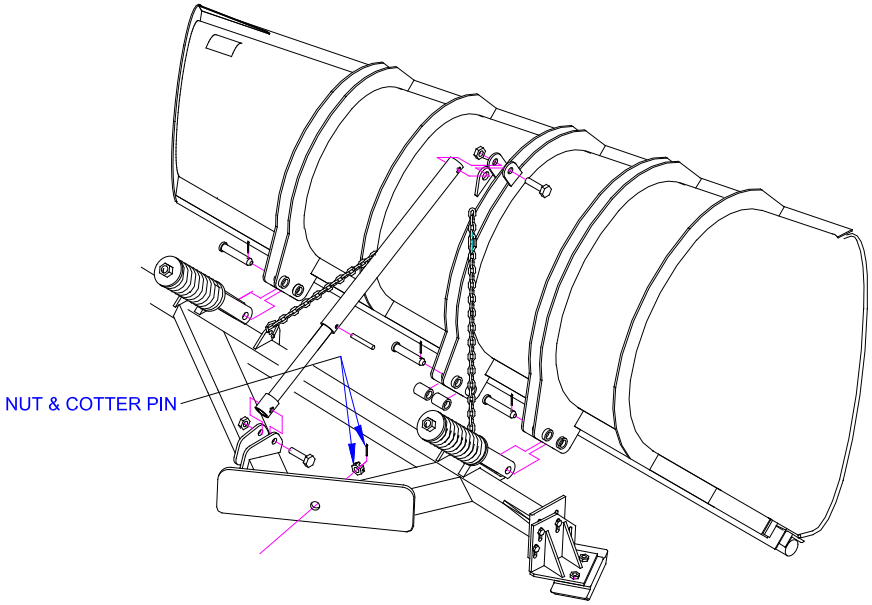
All operations should be smooth without any hang-ups or abnormal noises.

General Operation

At the beginning of the shift, the operator should walk around the equipment and do a visual inspection. The operator should make sure all bolts are in place and not loose, chains are not worn, clevis and cold shuts are not broken. The operator should inspect the plow moldboard and drive frame for bent, broken and missing parts. The cutting edge and all shoes should be inspected for wear. Never let the cutting edge wear up to the moldboard bottom angle. All wear parts (blades and shoes) should be replaced before damage occurs to the plow and drive frame. The drive frame should be inspected for broken or weak springs. The spring retaining caps and lock nuts should be properly installed, as shown below. Inspect the nylon insert and replace the locknut if the nylon insert is cracked or split.



Inspect the oscillating drive bar and pivot bolt. The pivot bolt and nut should be checked for wear or damage. Make certain the nut shown below has a properly installed cotter pin.



Inspect the hydraulic system for leaks and damage. Hoses and fittings should be inspected for cuts, damage, or corrosion. The hydraulic reservoir should be inspected for leaks. The hydraulic oil level and condition should be checked. The oil filter condition should be checked. The hydraulic pump and driveline should be checked for leaks, wear, and damage. If any deficiencies are discovered, they ***must*** be repaired before the equipment goes into service.

Once the visual inspection is complete and the equipment is in satisfactory condition, start and warm up the truck and the hydraulic system. Operate all the hydraulic functions. All functions should move smoothly without any binding or hesitation. Make sure all other safety equipment on the truck is operational (i.e. Lights, reflectors, horns, seat belts, etc.).

During the operation of the equipment, several items must be kept in mind:

CAUTION

Severe equipment and road damage will occur with the possibility of personal injury if this equipment is used improperly.

CAUTION

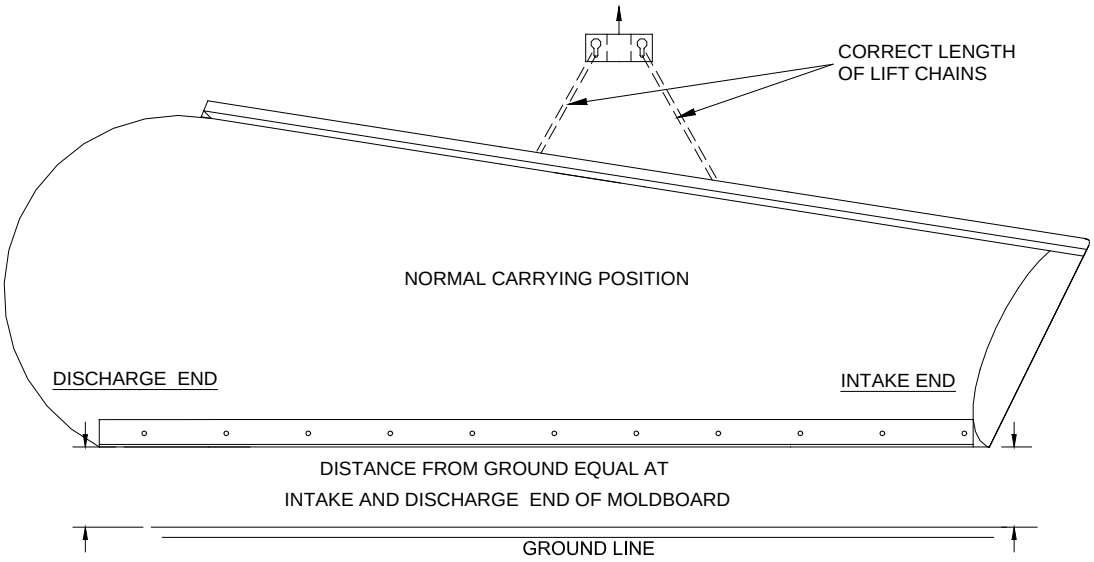
The condition of the shoes and cutting edge limit the height of the obstructions that this unit will safely operate over. Do not attempt to operate this equipment over any obstructions higher than 2". The contour of the lane being plowed must be considered when evaluating the height of obstructions to be encountered. Bridge expansion joints, frost heaves and railroad crossings should also be carefully evaluated. Any such items that cross the lane at an angle of between 30 and 40 degrees should be observed and noted as there is a possibility that the cutting edge could drop into these and cause damage or injury. Proper shoe adjustment and road contact is very important.

Operators should travel over plowing routes in good weather and observe any obstructions that may be encountered while plowing.

CAUTION

Caution should be observed when plowing routes that are unfamiliar to the operator. The height of the obstructions that this unit will safely operate over are limited by the condition of the shoes and cutting edge and the length of travel of the slides and roller on the drive angle. The frame shoes must contact the ground. The buffer action will not work correctly until the shoes contact the ground. Equipment damage or injury can occur.

Carry Position: The OWP should be 10-12" from the ground and level with the ground, as shown below. When traveling at high speeds, slow the vehicle before crossing large bumps and frost heaves. Failing to do this could cause the plow to bounce and put extreme loads on the lift chains and fasteners.



Road plowing mode: It is recommended that the cylinders controlling the plow lift chains be relaxed, allowing the plow to "float" with the road contours. Truck speeds in this mode should be between 25 – 40 MPH. Some conditions may require slower speeds. It is very important not to overdrive the equipment given the plowing conditions. Doing so will shorten the life cycle of the equipment.

It is important to note the position of the intake end and discharge ends of the plow in relation to the edge of the lane being plowed. The plow is wider than the truck and may protrude into traffic lanes on either side of the vehicle.

The operator should also be aware of the surface being driven on. Keep the truck on hard, level ground.

ALASKA 2014 - 2015
ONE WAY PLOW
SLOTTED BUFFER

INSTALLATION INSTRUCTIONS

Installation Instructions
OWP
Slotted Buffer

The Henderson OWP (One Way Plow) has been designed and built with safety of operation in mind. It incorporates a buffer mechanism to absorb shock loads if the plow blade hits obstructions, such as manholes, expansion joints, rough pavement, etc.

The best safety device may be useless unless it is correctly adjusted and the OWP is properly maintained and in good working order.

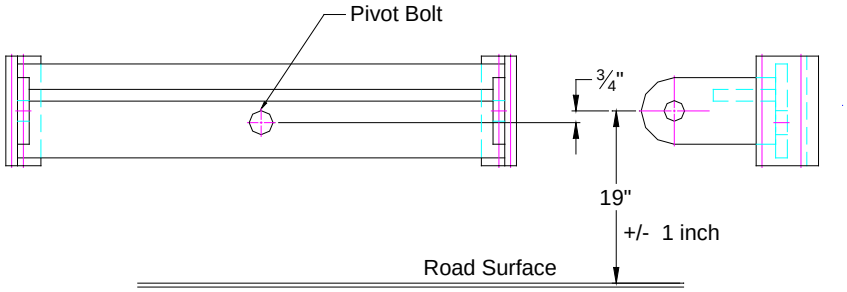
Henderson Manufacturing. Inc. will not approve any modifications to its products without checking into the end effects of such modifications and how they influence the performance and safety of operation.

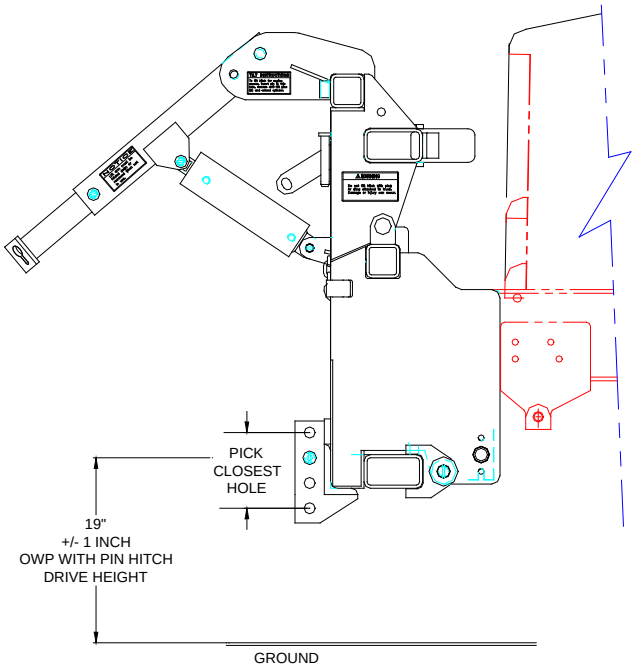
Any modifications performed without the expressed knowledge of Henderson Manufacturing, Inc. will be the responsibility of the party making the modifications.

To ensure proper operation of the plow and buffer mechanism, careful attention must be paid to the few adjustments provided during the initial installation and assembly of the equipment. All adjustments should be made with all the equipment installed, i.e. dump body, spreader, ballast block installed on the chassis. The normal plowing ballast load should be in the body with the vehicle on level ground and the OWP and any wing(s) down contacting the ground. The hydraulic system should be fully functional.

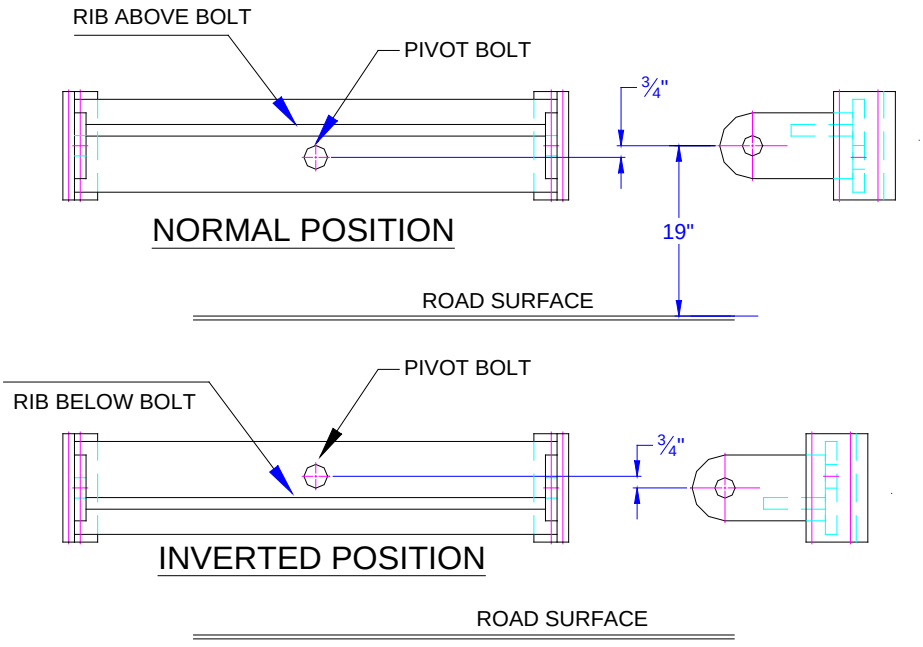
To install:

1. Attach the oscillating drive bar (pin hitch, plow portion) ears to the drive ears on the front of the hitch, truck portion.



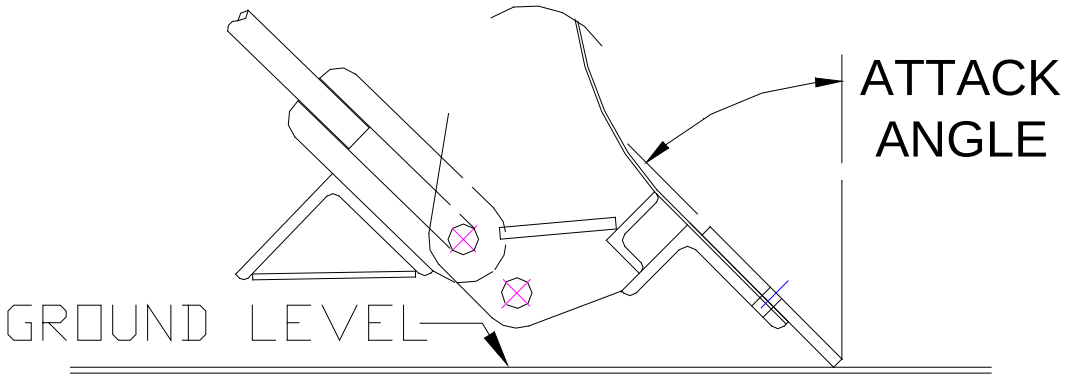


The recommended drive height for the OWP is 19 inches, plus or minus one inch. Select the hole in the drive ear on the truck closest to the recommended 19" and pin the oscillating drive bar to the truck drive ear. Secure the drive pins with lynch pins.

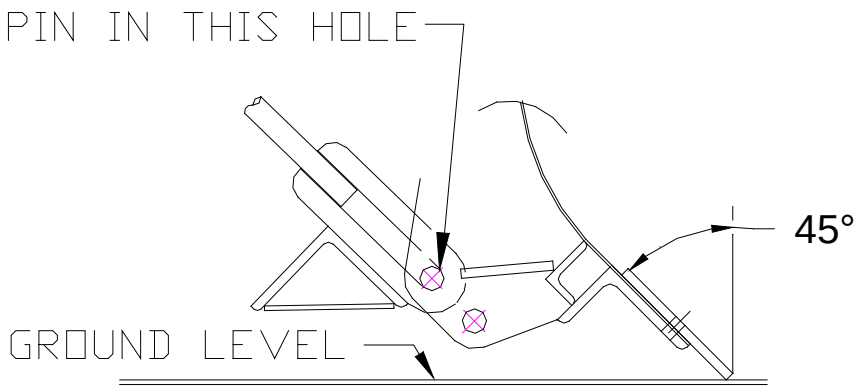


Do not invert the drive bar as shown above. This would require a drive point on the truck at 18-1/4 inches off the ground.

ATTACK ANGLE

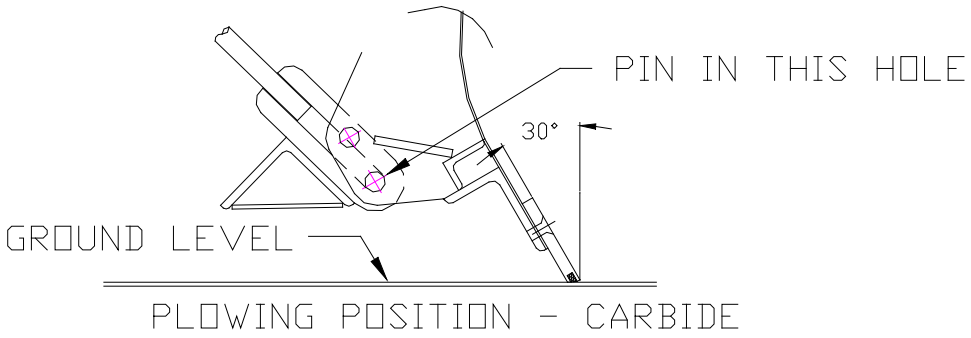


2. Check the attack angle of the cutting edge and adjust if necessary. The cutting edge attack angle (approach angle) for a OWP equipped with standard steel 8-inch high center punched cutting edge should be 45 degrees.

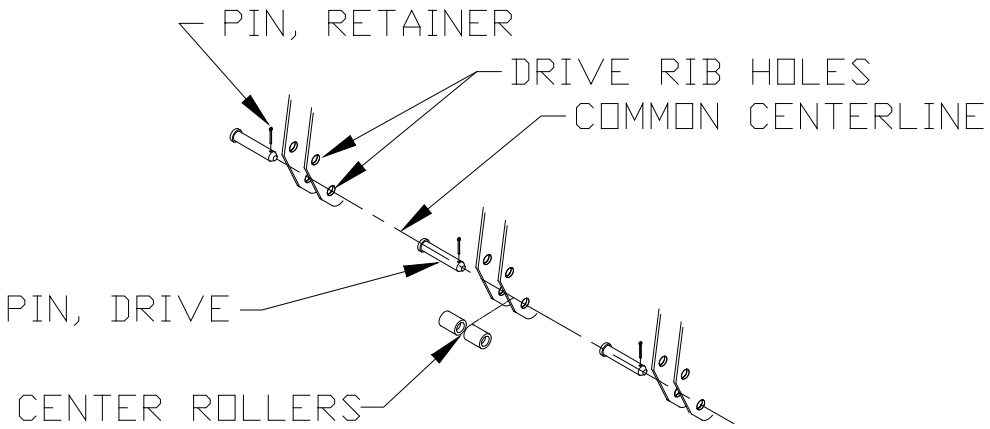


PLOWING POSITION - STEEL EDGE

The recommended attack angle (approach angle) for the OWP equipped with carbide insert 6-inch high cutting edges, punched 4 inches up from the bottom, is 30 degrees.

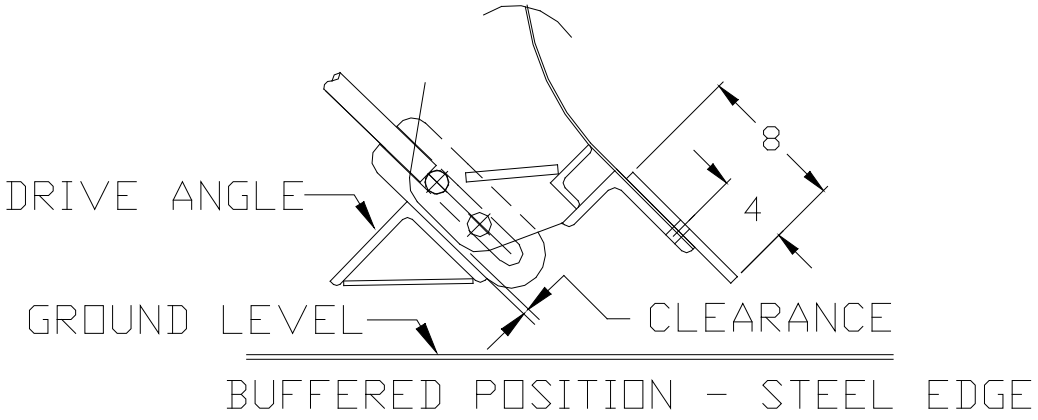


3. The first step in the attack angle adjustment is to pin the moldboard to the drive frame using the correct holes, in the OWP drive ribs as shown in paragraph 2. Make sure that the moldboard drive pins and the roller between the center moldboard drive ribs are properly installed using the corresponding holes on the same centerline. A roller is not required on units utilizing three slotted members welded to the drive angle of the drive frame.

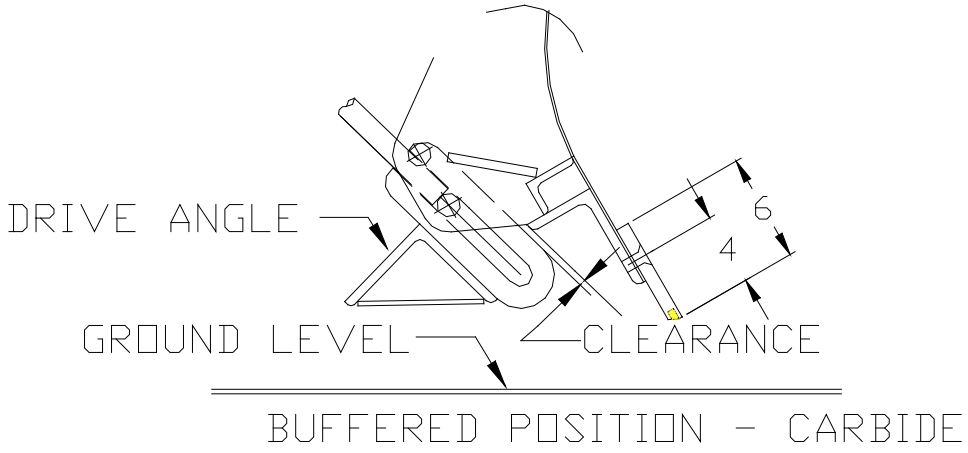


CAUTION

If the upper holes are used for the standard steel blade and the attack angle exceeds 45 degrees, make certain the bottom portion of the OWP drive ribs does not come in contact with the drive frame angle when hitting obstructions. Clearance must be maintained as shown on next page.

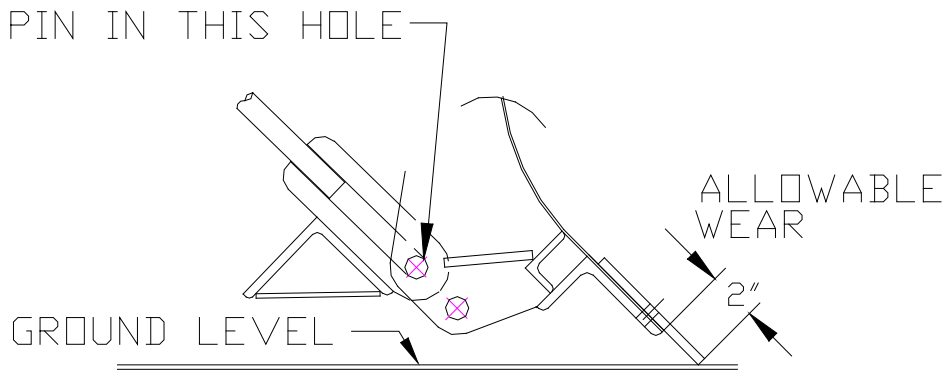


If the lower holes are used for the carbide insert blade and the attack angle exceeds 30 degrees, make certain the bottom portion of the OWP drive ribs do not come in contact with the drive frame angle when hitting obstructions. Clearance must be maintained as shown below.



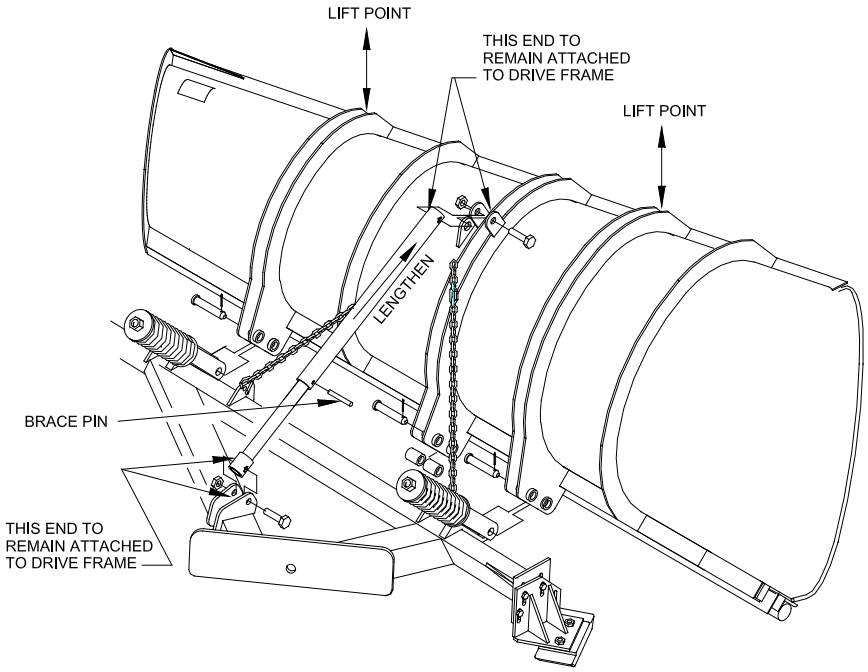
If for some reason the drive frame attached to the truck at a point lower than 19 inches to the ground, the ribs on the plow may contact the ground and be worn away as the cutting edge nears the end of its allowable wear.

The illustration below shows that with the steel cutting edge, 2” of blade wear will leave the bottom of the drive ribs slightly above the ground level.



PLOWING POSITION - STEEL EDGE

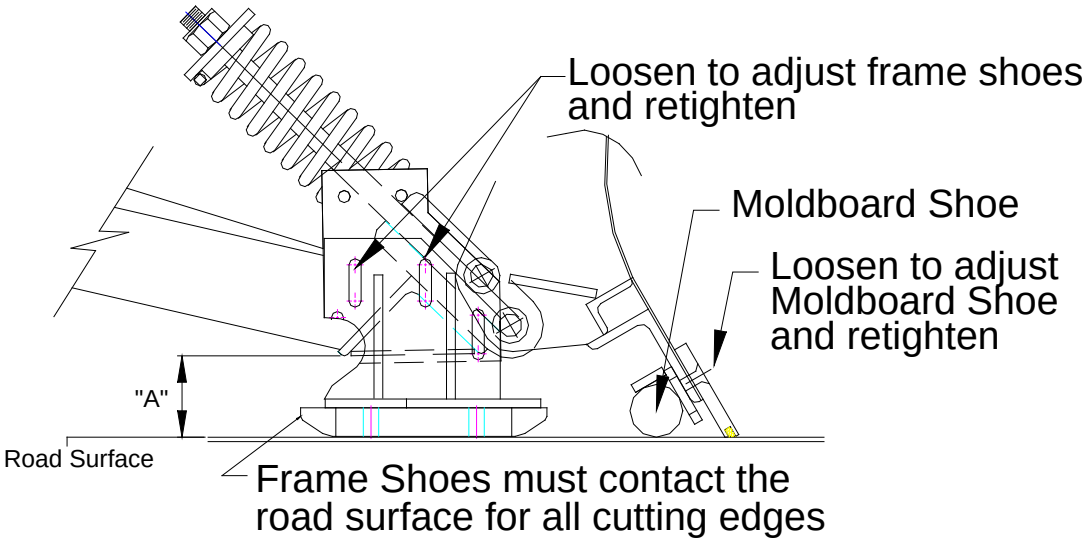
If the cutting edge is not touching the ground, lengthen the moldboard brace to tip the top of the moldboard forward, see below. Shorten the moldboard brace to tip the top of the moldboard backward. Remove the adjusting pin and slide the solid portion of the brace in or out as needed.



CAUTION

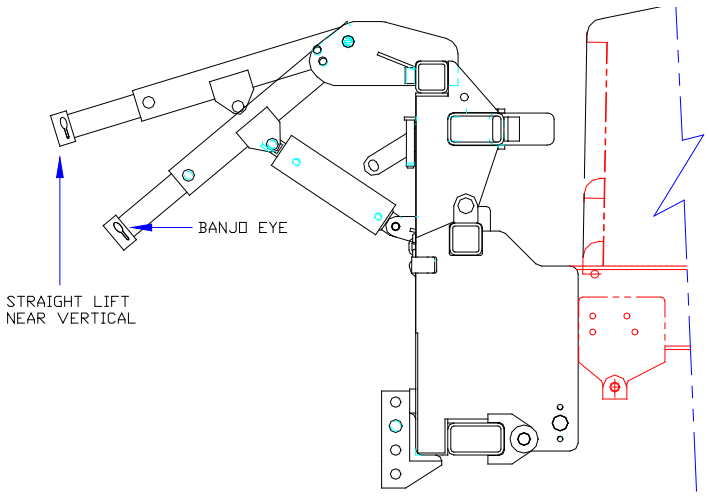
Do not stand in front of the plow when changing the length of the moldboard brace. The moldboard may tip forward and cause personal injury. The top of the leading edge of the moldboard must be supported at the lift points indicated on illustration above and both ends of the brace should remain attached to the moldboard and drive frame while this adjustment is being made.

4. Adjust the drive frame shoes by loosening up the bolts holding the shoe brackets onto the drive frame and sliding the bracket up or down as needed to comply as closely as possible with the dimension “A”, shown below. Dimension “A” with standard shoes should be 4-5/8 inches for the carbide edge and 4 inches for the steel cutting edge.



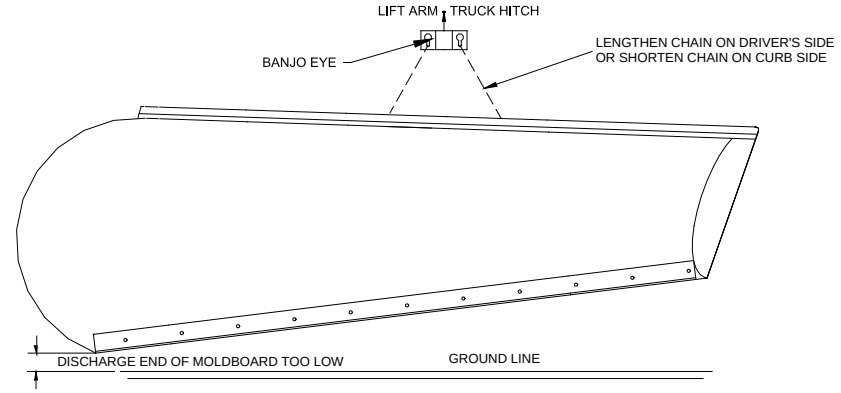
5. If the moldboard will not contact the ground, the bolts holding the moldboard shoe on the discharge end of the moldboard, shown above, must be loosened to raise the shoe. Be sure to retighten these bolts when finished adjusting the shoes. All the shoes should be flat on the ground at all times.

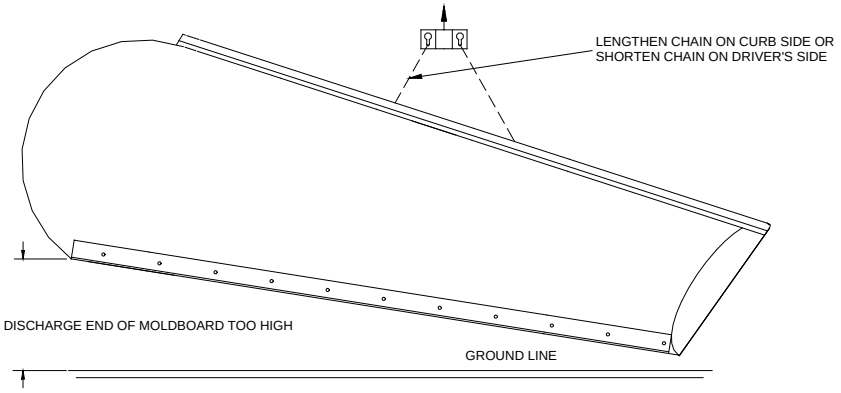
6. Connect the lift chains to the lift arm on the hitch. One chain should be inserted into each chain slot (banjo eye).



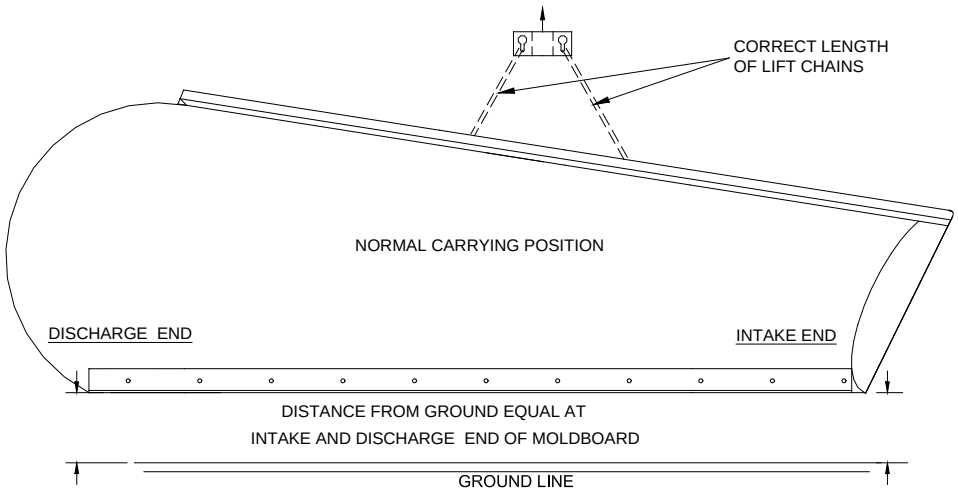
The lift arm should be positioned so that the chains pull up as close to vertically as possible, as shown above.

7. Raise the plow until the lifting device cylinder reaches its full stroke, typically 10 inches of rod extension (stroke)

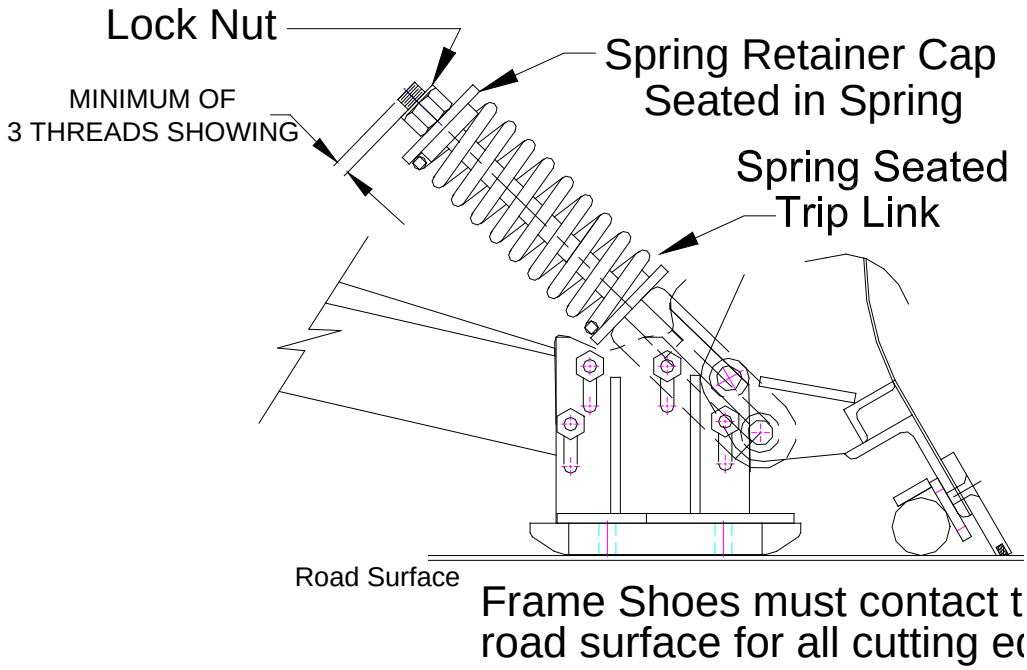




8. Check the position of the drive frame (plow push frame) and moldboard in relation to the ground, as shown below. When the plow is raised, the moldboard cutting edge should be parallel to the ground. Readjust the lift chains as necessary to make the cutting edge parallel with the ground.



9. The lock nut on the buffer spring end cap should be tightened until three full threads are showing past the nylon insert in the nut, dimension “B” shown below. Inspect the nylon insert for cracked or distorted nylon. Nylon insert lock nuts should be replaced after they have been removed. The spring must be centered and seated on the trip link and the spring retainer cap must be centered and seated on the spring.



THIS PAGE

IS LEFT

BLANK

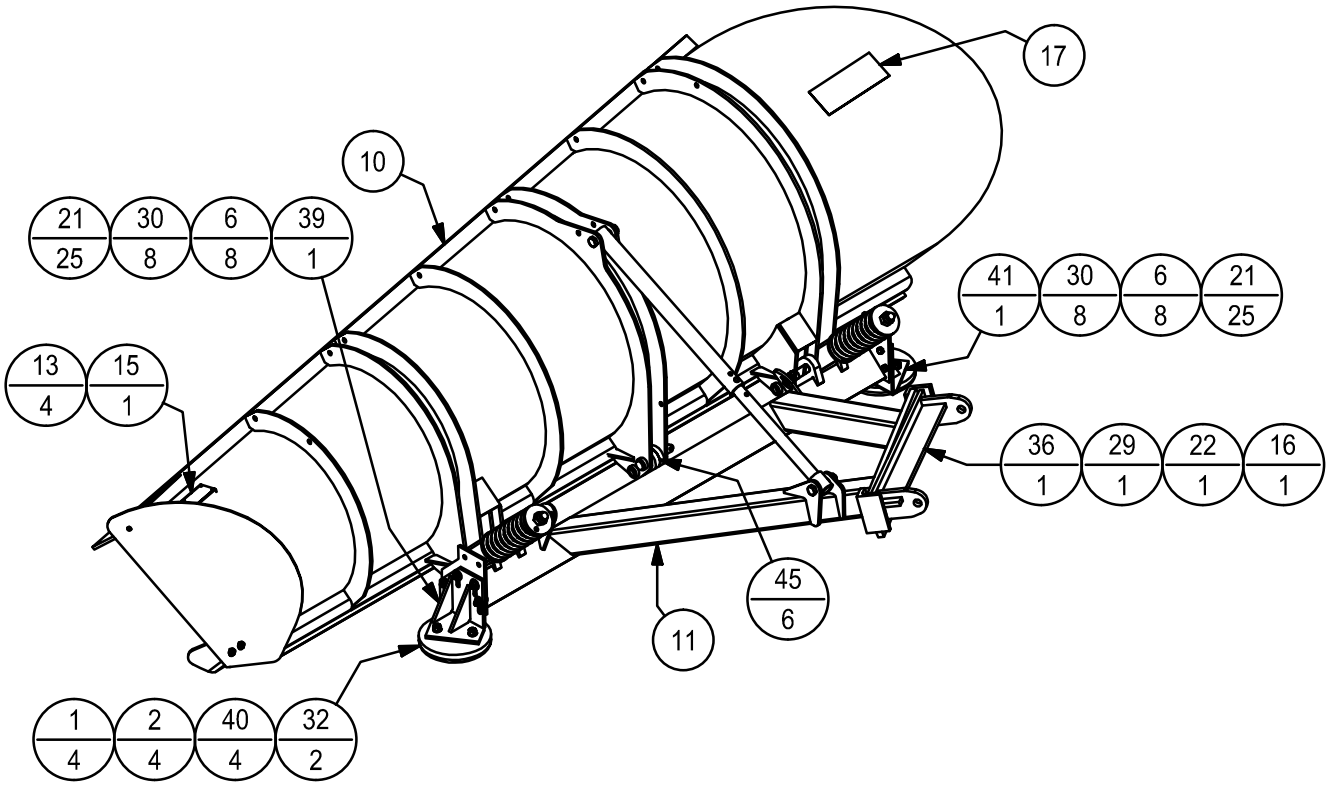
INTENTIONALLY.

ALASKA 2014 - 2015
ONE WAY PLOW
SLOTTED BUFFER

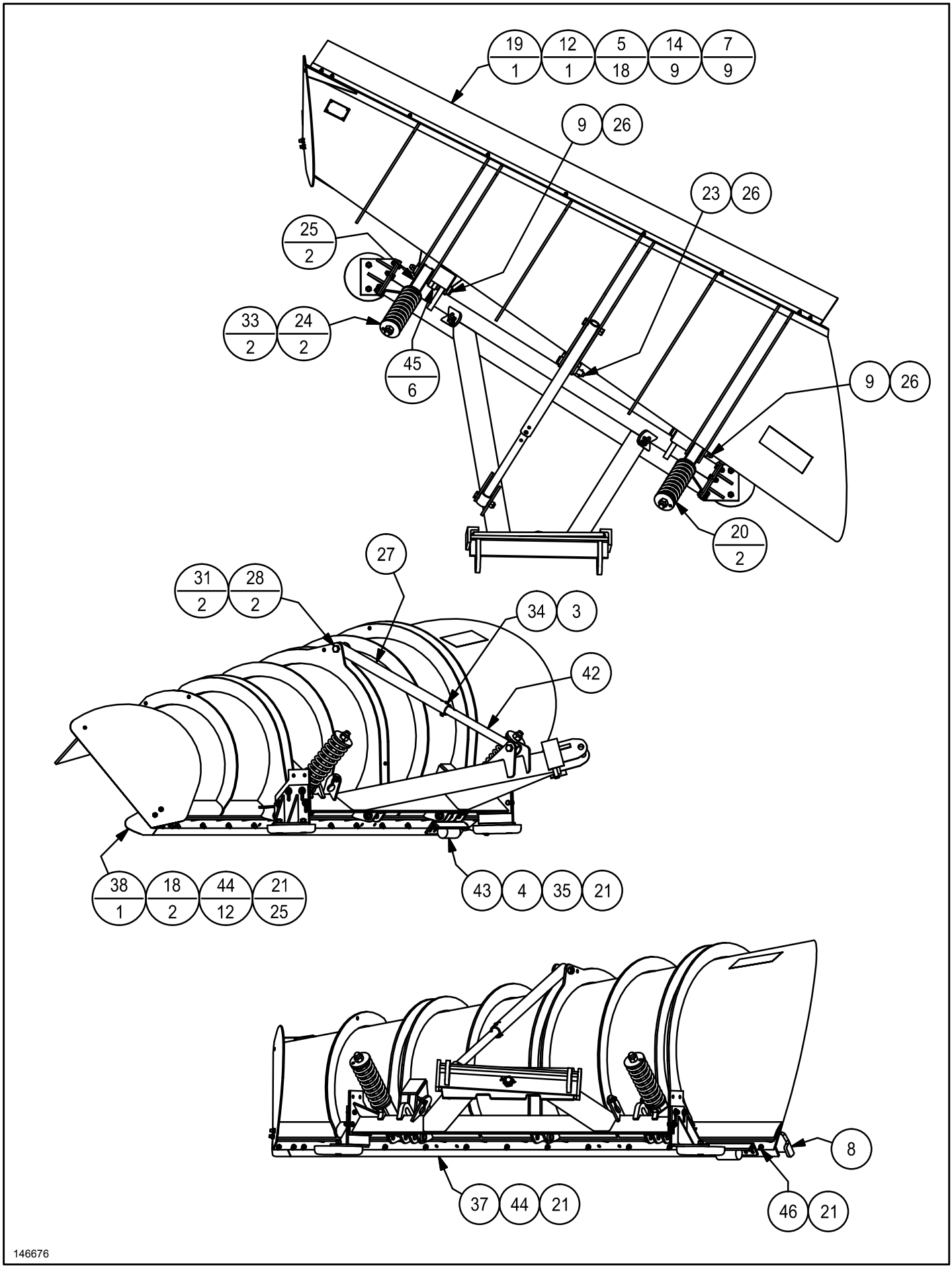
PARTS

29-54-12 SLOTTED TRIP ONE WAY

PARTS LIST				PARTS LIST CONT			
ITEM	PART NO	QTY	DESCRIPTION	ITEM	PART NO	QTY	DESCRIPTION
1	00188	4	NUT,HEX,3/4-10NC	24	81994	2	CAP, SPRING, WLDT, 1 3/8 ID
2	00189	4	WASHER,LOCK,3/4 ID,SPRING,CP	25	81996	2	GUIDE, SPRING, WLDT
3	10098	1	PIN,COTTER,1/8 X 1 1/2	26	82150	3	PIN,EXPNSN,1/4 X 2
4	105343	2	WASHER,FLAT, .69 ID HARDENED	27	82208	1	TUBE, WLDT, TOP
5	10538	18	WASHER, FLAT, STD, 3/8 ID	28	82217	2	SCREW, CP, HX, 1 NC X 5, G8
6	10557	8	WASHER,FLAT,5/8	29	82439	1	SCREW, CP, HX, 1 1/2NC X 4, WHOLE
7	111430	9	NUT,HEX,3/8-16NC,SLFLKG,NYLON	30	82819	8	SCREW, CP, HX, 5/8NC X 2, G8
8	132865	1	CURB GUARD, WRAPAROUND, 6"	31	83183	2	NUT, TOPLOCK, 1-8NC, G8
9	133619	2	PIN,1.25 X 11.75	32	83287H	2	SHOE, MUSHROOM, GREY IRON
10	146677	1	MLDBRD,WLDT,29-54-12,ST	33	83318	2	NUT, HEX, 1 1/4-7NC, SLFLKG
11	146678	1	PUSHFRAME, WLDT, SLOTTED TRIP	34	83407	1	PIN, CLEVIS, 5/8 X 3 1/2
12	342805.201	1	PLATE, BACKING, 12'	35	83680	2	BOLT,CRRG,5/8NC X 3,G8
13	50252	4	RIVET,POP,5/32,SS	36	87861	1	DRIVE BAR,WLDT,PIN,30.5
14	50338	9	SCREW,CP,HX,3/8NC X 2 G5	37	95361	1	EDGE, CUTTING, 1/2 X 8 X 12', CP
15	74474	1	PLATE,SERIAL	38	95438	1	SHOE, NOSE, RH
16	74643	1	PIN, COTTER, 1/4 X 3	39	95448	1	BRACKET, SHOW, LH
17	81228	1	DECAL,LOGO, 5.3 X 13.4	40	95458	4	SCREW, SQHCS, 3/4NC X 2 1/2
18	81640	2	BOLT,CRRG,5/8NC X 2 G8	41	95507	1	BRACKET, SHOE, RH
19	81655	1	DEFLECTOR, RUBBER, 12'	42	95510	1	SHAFT, WLDT, OWP
20	81701	2	SPRING, COMP, .719 X 5.313 X 23.25	43	95542	1	SHOE, MOLDBOARD, OWP
21	81861	25	NUT, TOPLOCK, 5/8-11NC, G8	44	95580	12	BOLT,CRRG,3/8NC X 2 1/2, G8
22	81929	1	NUT, HEX, SLOTTED, 1 1/2NC, G8	45	96039	6	ROLLER, 3.75 OD, OWP
23	81991	1	PIN,1.25 X 7.25	46	96371	1	BOLT,CRRG,5/8NC X 3,G8

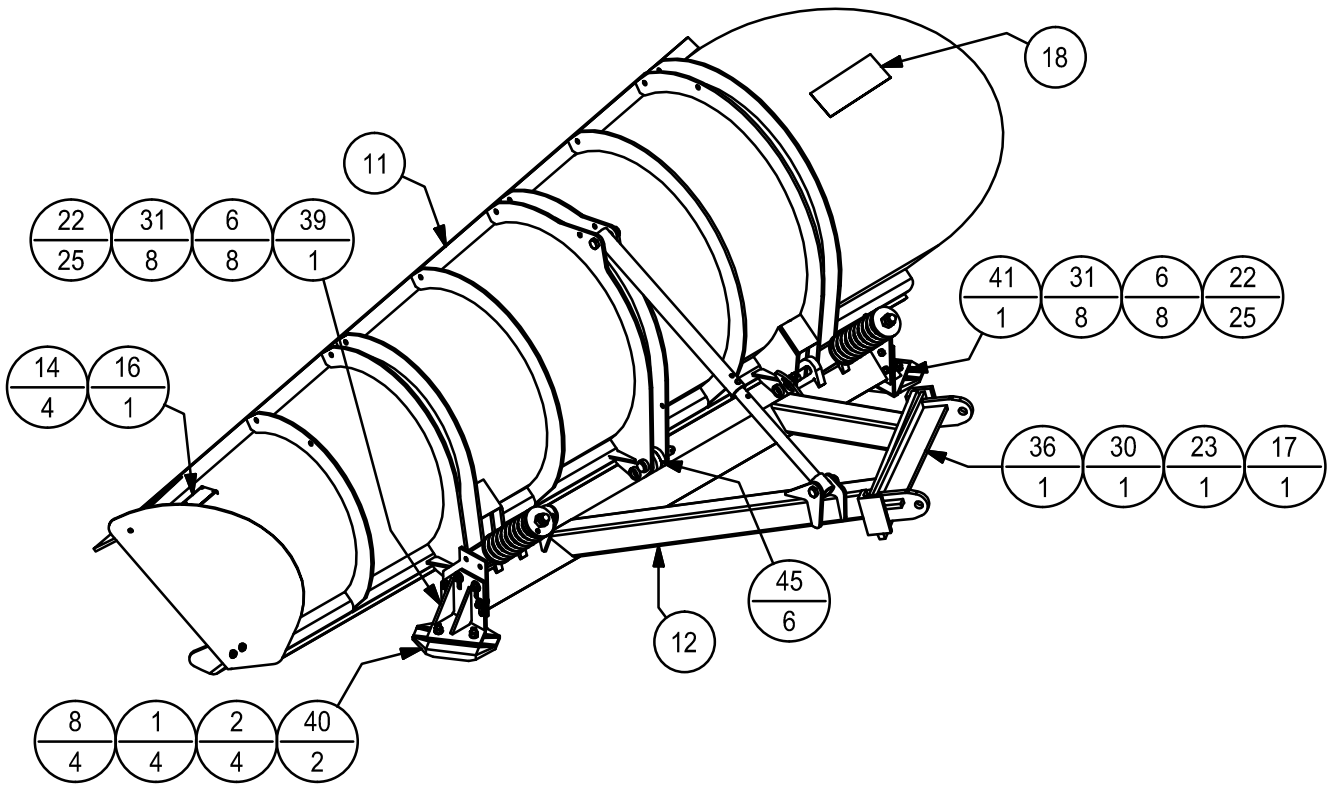


146676

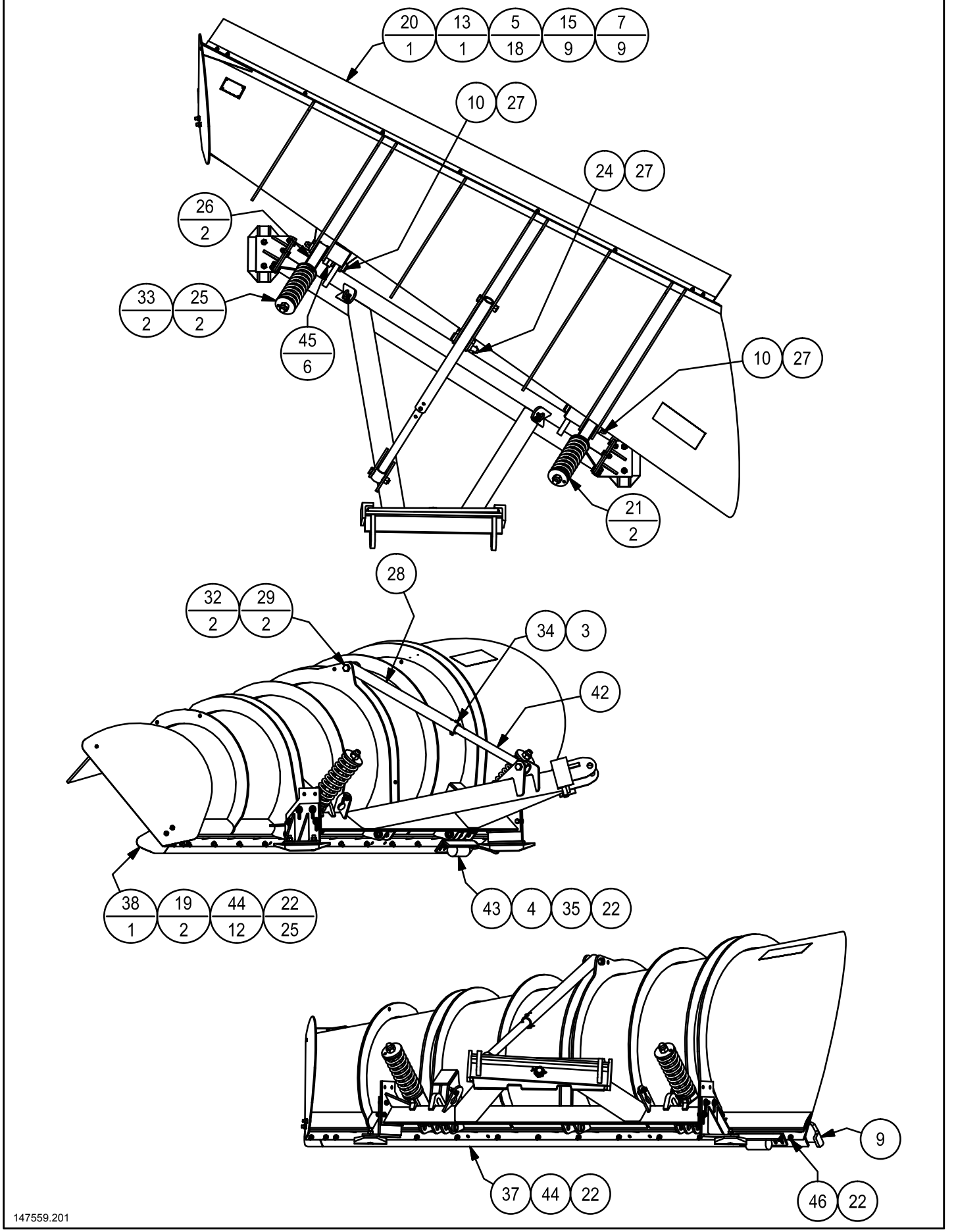

19/1
12/1
5/18
14/9
7/9
9
26
23
26
25/2
33/2
24/2
45/6
9
26
20/2
27
31/2
28/2
34
3
42
38/1
18/2
44/12
21/25
43
4
35
21
8
37
44
21
46
21
146676

29-54-12 SLOTTED TRIP OWP W/SKID SHOES

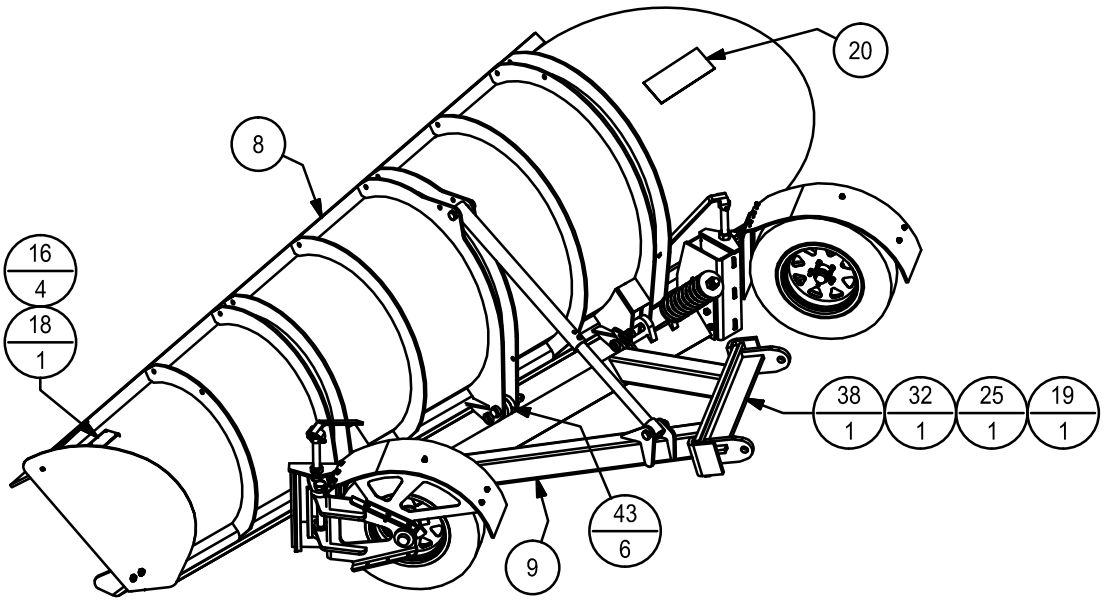
PARTS LIST				PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION	ITEM	PART NO	QTY	DESCRIPTION
1	00188	4	NUT,HEX,3/4-10NC	24	81991	1	PIN,1.25 X 7.25
2	00189	4	WASHER,LOCK,3/4 ID,SPRING,CP	25	81994	2	CAP, SPRING, WLDT, 1 3/8 ID
3	10098	1	PIN,COTTER,1/8 X 1 1/2	26	81996	2	GUIDE, SPRING, WLDT
4	105343	2	WASHER,FLAT, .69 ID HARDENED	27	82150	3	PIN,EXPNSN,1/4 X 2
5	10538	18	WASHER, FLAT, STD, 3/8 ID	28	82208	1	TUBE, WLDT, TOP
6	10557	8	WASHER,FLAT,5/8	29	82217	2	SCREW, CP, HX, 1 NC X 5, G8
7	111430	9	NUT,HEX,3/8-16NC,SLFLKG,NYLON	30	82439	1	SCREW, CP, HX, 1 1/2NC X 4, WHOLE
8	112476	4	SCREW,CP,HX,3/4NC X 2 1/2,G8	31	82819	8	SCREW, CP, HX, 5/8NC X 2, G8
9	132865	1	CURB GUARD, WRAPAROUND, 6"	32	83183	2	NUT, TOPLOCK, 1-8NC, G8
10	133619	2	PIN,1.25 X 11.75	33	83318	2	NUT, HEX, 1 1/4-7NC, SLFLKG
11	146677	1	MLDBRD,WLDT,29-54-12,ST	34	83407	1	PIN, CLEVIS, 5/8 X 3 1/2
12	146678	1	PUSHFRAME, WLDT, SLOTTED TRIP	35	83680	2	BOLT,CRRG,5/8NC X 3,G8
13	342805.201	1	PLATE, BACKING, 12'	36	87861	1	DRIVE BAR,WLDT,PIN,30.5
14	50252	4	RIVET,POP,5/32,SS	37	95361	1	EDGE, CUTTING, 1/2 X 8 X 12', CP
15	50338	9	SCREW,CP,HX,3/8NC X 2 G5	38	95438	1	SHOE, NOSE, RH
16	74474	1	PLATE,SERIAL	39	95448	1	BRACKET, SHOW, LH
17	74643	1	PIN, COTTER, 1/4 X 3	40	95456	2	SHOE, SKID, CAST
18	81228	1	DECAL,LOGO, 5.3 X 13.4	41	95507	1	BRACKET, SHOE, RH
19	81640	2	BOLT,CRRG,5/8NC X 2 G8	42	95510	1	SHAFT, WLDT, OWP
20	81655	1	DEFLECTOR, RUBBER, 12'	43	95542	1	SHOE, MOLDBOARD, OWP
21	81701	2	SPRING, COMP, .719 X 5.313 X 23.25	44	95580	12	BOLT,CRRG,3/8NC X 2 1/2, G8
22	81861	25	NUT, TOPLOCK, 5/8-11NC, G8	45	96039	6	ROLLER, 3.75 OD, OWP
23	81929	1	NUT, HEX, SLOTTED, 1 1/2NC, G8	46	96371	1	BOLT,CRRG,5/8NC X 3,G8



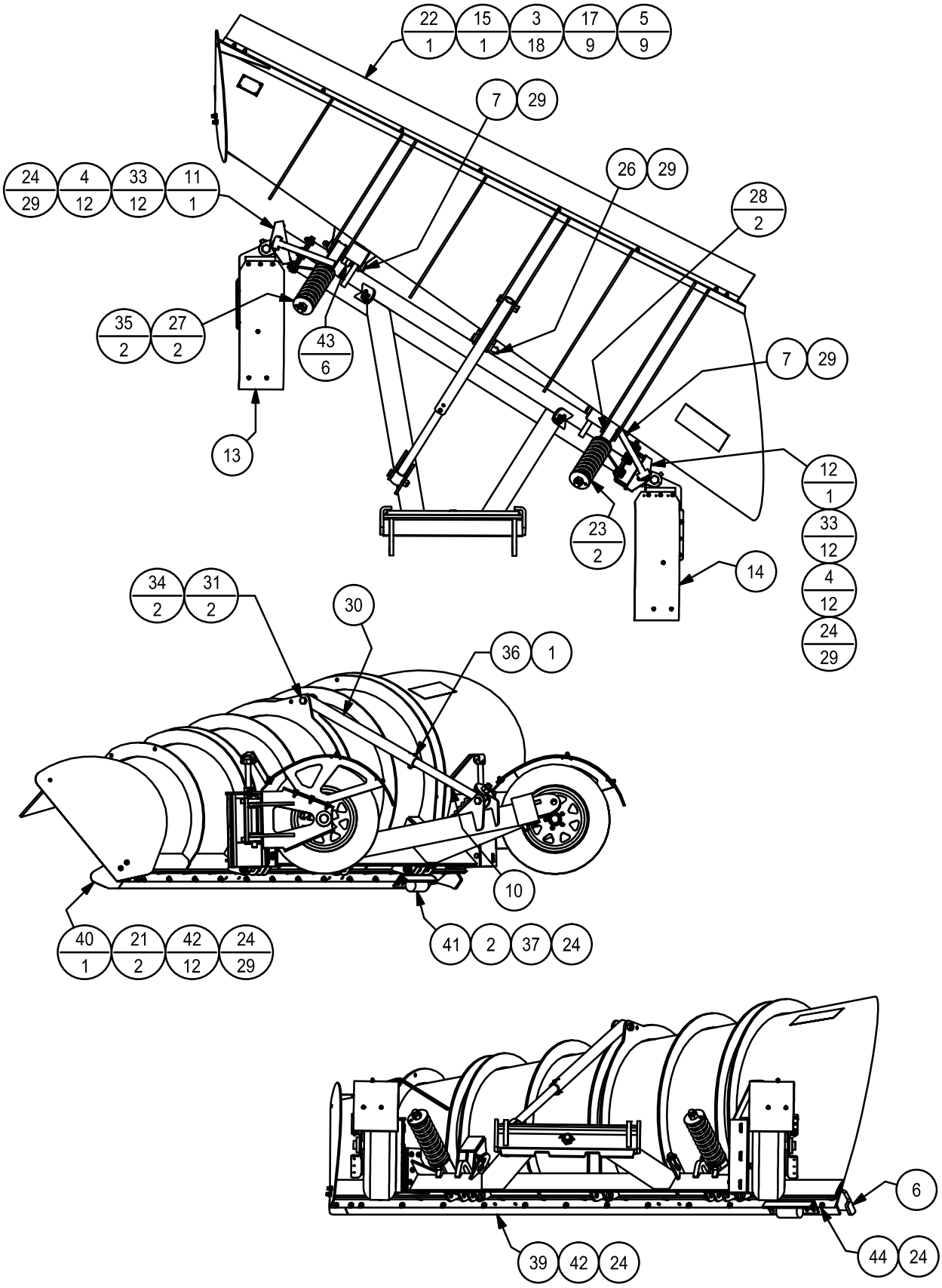
147559.201


20 / 1
13 / 1
5 / 18
15 / 9
7 / 9
10 27
24 27
26 / 2
33 / 2
25 / 2
45 / 6
10 27
21 / 2
28
32 / 2
29 / 2
34 3
42
38 / 1
19 / 2
44 / 12
22 / 25
43 4 35 22
9
37 44 22
46 22
147559.201

PARTS LIST				PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION	ITEM	PART NO	QTY	DESCRIPTION
1	10098	1	PIN,COTTER,1/8 X 1 1/2	22	81655	1	DEFLECTOR, RUBBER, 12'
2	105343	2	WASHER,FLAT, .69 ID HARDENED	23	81701	2	SPRING, COMP, .719 X 5.313 X 23.25
3	10538	18	WASHER, FLAT, STD, 3/8 ID	24	81861	29	NUT, TOPLOCK, 5/8-11NC, G8
4	10557	12	WASHER,FLAT,5/8	25	81929	1	NUT, HEX, SLOTTED, 1 1/2NC, G8
5	111430	9	NUT,HEX,3/8-16NC,SLFLKG,NYLON	26	81991	1	PIN,1.25 X 7.25
6	132865	1	CURB GUARD, WRAPAROUND, 6"	27	81994	2	CAP, SPRING, WLDT, 1 3/8 ID
7	133619	2	PIN,1.25 X 11.75	28	81996	2	GUIDE, SPRING, WLDT
8	146677	1	MLDBRD,WLDT,29-54-12,ST	29	82150	3	PIN,EXPNSN,1/4 X 2
9	146678	1	PUSHFRAME, WLDT, SLOTTED TRIP	30	82208	1	TUBE, WLDT, TOP
10	147885	1	SHAFT, WLDT, OWP	31	82217	2	SCREW, CP, HX, 1 NC X 5, G8
11	147892	1	JACK,ASSY,LH,OWP,AKDOT 2017	32	82439	1	SCREW, CP, HX, 1 1/2NC X 4, WHOLE
12	147903	1	JACK,ASSY,RH,OWP,15" PNEUMATIC	33	82819	12	SCREW, CP, HX, 5/8NC X 2, G8
13	147906	1	PNEUMATIC TIRE	34	83183	2	NUT, TOPLOCK, 1-8NC, G8
			ASSEMBLY,15",LH,AKDOT 2017	35	83318	2	NUT, HEX, 1 1/4-7NC, SLFLKG
14	147917	1	PNEUMATIC TIRE	36	83407	1	PIN, CLEVIS, 5/8 X 3 1/2
			ASSEMBLY,15",RH,AKDOT 2017	37	83680	2	BOLT,CRRG,5/8NC X 3,G8
15	342805.201	1	PLATE, BACKING, 12'	38	148136	1	DRIVE BAR,WLDT,PIN,30.5
16	50252	4	RIVET,POP,5/32,SS	39	95361	1	EDGE, CUTTING, 1/2 X 8 X 12', CP
17	50338	9	SCREW,CP,HX,3/8NC X 2 G5	40	95438	1	SHOE, NOSE, RH
18	74474	1	PLATE,SERIAL	41	95542	1	SHOE, MOLDBOARD, OWP
19	74643	1	PIN, COTTER, 1/4 X 3	42	95580	12	BOLT,CRRG,3/8NC X 2 1/2, G8
20	81228	1	DECAL,LOGO, 5.3 X 13.4	43	96039	6	ROLLER, 3.75 OD, OWP
21	81640	2	BOLT,CRRG,5/8NC X 2 G8	44	96371	1	BOLT,CRRG,5/8NC X 3,G8



147918


22 / 1
15 / 1
3 / 18
17 / 9
5 / 9
7 / 29
26 / 29
28 / 2
24 / 29
4 / 12
33 / 12
11 / 1
35 / 2
27 / 2
43 / 6
13
7 / 29
12 / 1
33 / 12
4 / 12
24 / 29
23 / 2
14
34 / 2
31 / 2
30
36 / 1
10
40 / 1
21 / 2
42 / 12
24 / 29
41
2
37
24
6
39
42
24
44
24

147918

SNOWFOE® SERIES
MODEL: Headache Rack
SERIAL #: _____

INSTRUCTIONS FOR ORDERING PARTS

Order parts from the authorized dealer covering your area.

DEALER:_____
Phone #: _____

ALWAYS GIVE THE MODEL AND SERIAL NUMBER.

To obtain parts promptly, give part name and part number.

Give post office address, town, and state where the parts are to be shipped. UPS (United Parcel Service) and other carriers will not ship to a post office box. You must use a street address. Also be sure to specify whether material is to be shipped by freight, express, parcel post, or UPS. All UPS shipments will be normal surface routing unless specified otherwise.

Confirm all telephone or FAX orders in writing.

Credit for new parts not needed must be obtained from the dealer from whom they were purchased.

Unless claims for shortages or errors are made immediately upon receipt of goods, they will not be considered.

Inspect all goods received immediately upon receipt. When damaged goods are received, insist that a full description of the damage be made by the carrier agent on the freight bill. If this description is insisted upon, full damage can be collected from the transportation company.

No responsibility is assumed for delay or damage to merchandise while in transit. Dealer's responsibility ceases upon delivery of shipment to the transportation company from whom a receipt is received showing that shipment was in good condition when delivered to them; therefore, claims (if any) should be filed with the transportation company and not with the dealer.

ALASKA

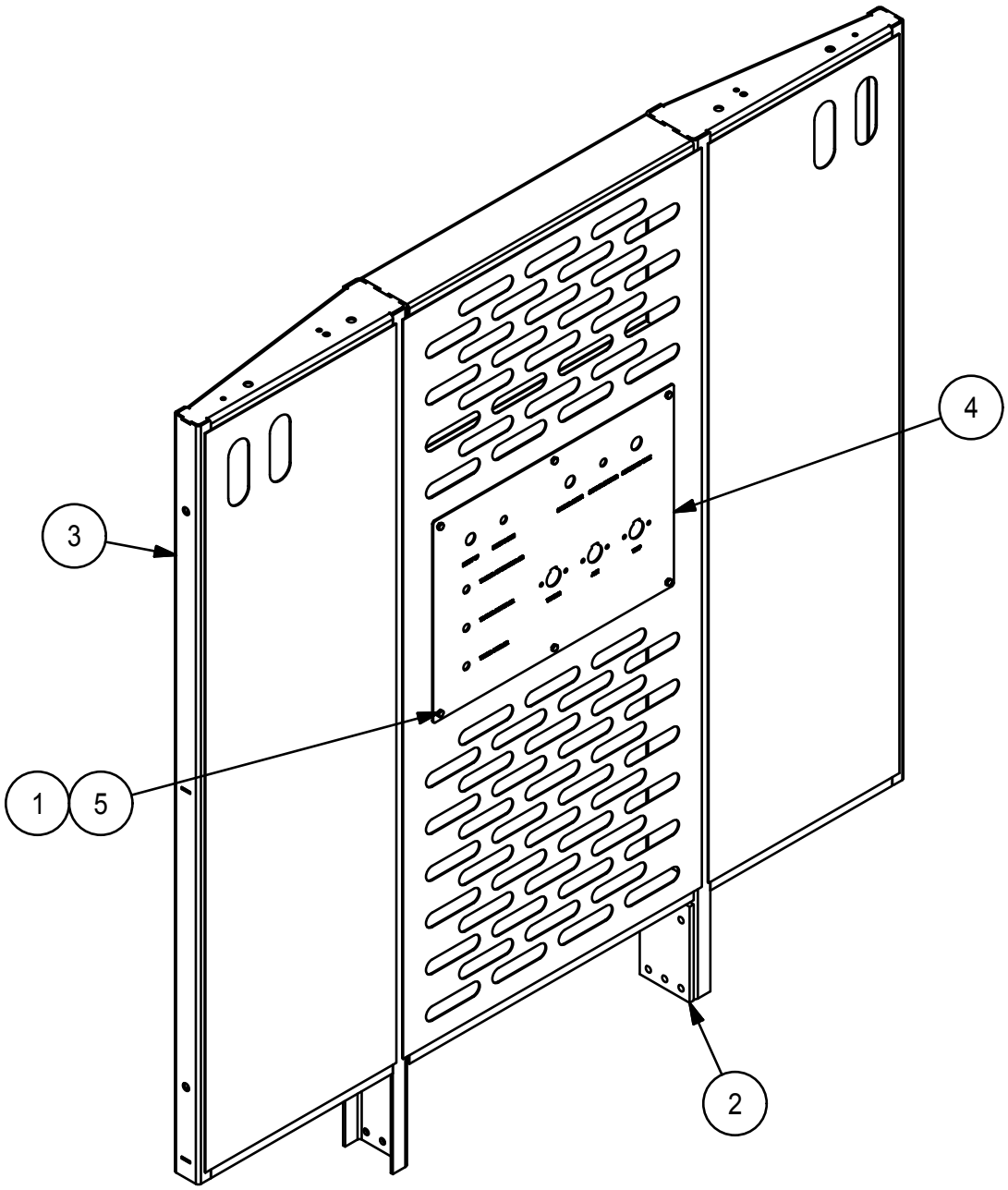
HEADACHE RACK

TABLE OF CONTENTS

Page Number

ALASKA
HEADACHE RACK
ASSEMBLIES

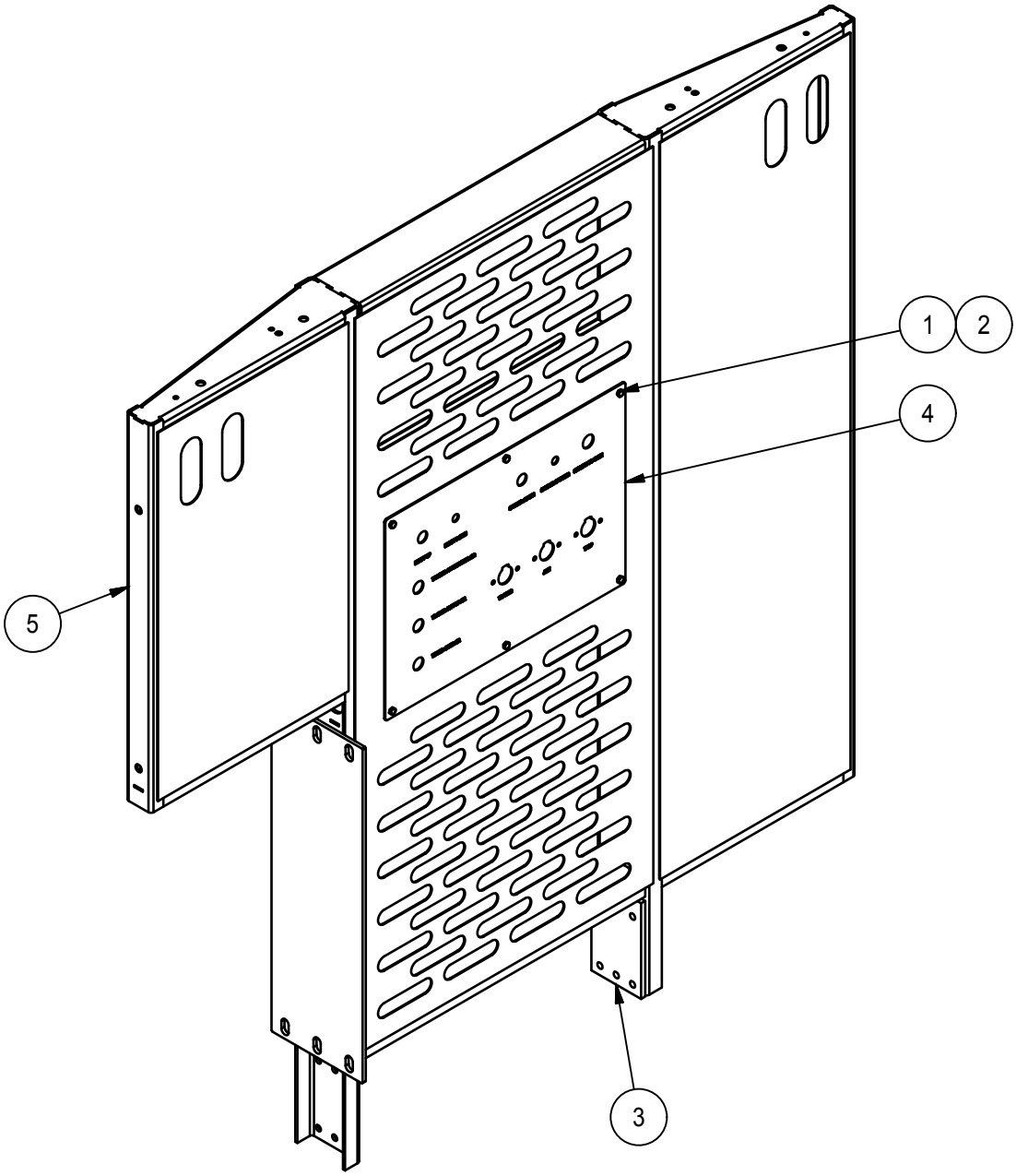
PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	111430	6	NUT,HEX,3/8-16NC,SLFLKG,NYLON
2	146846	1	PLATE,SPACER,HEADACHE,RACK
3	146882	1	RACK,HEADACHE,WLDT,AKDOT
4	146884	1	PLATE,BULKHEAD,RACK,HEADACHE
5	50335	6	SCREW,CP,HX,3/8NC X 1 G5



146881

HEADACHE RACK ASSEMBLY W/ VALVE MOUNT

PARTS LIST			
ITEM	PART NO	QTY	DESCRIPTION
1	50335	6	SCREW,CP,HX,3/8NC X 1 G5
2	111430	6	NUT,LOCK,NYLON INSERT,3/8-16NC
3	146846	1	PLATE,SPACER,HEADACHE,RACK
4	146884	1	PLATE,BULKHEAD,RACK,HEADACHE
5	152205	1	RACK,HEADACHE,WLDT,AKDOT



152204

ELECTRICAL & PURCHASED

REFERENCE MATERIAL

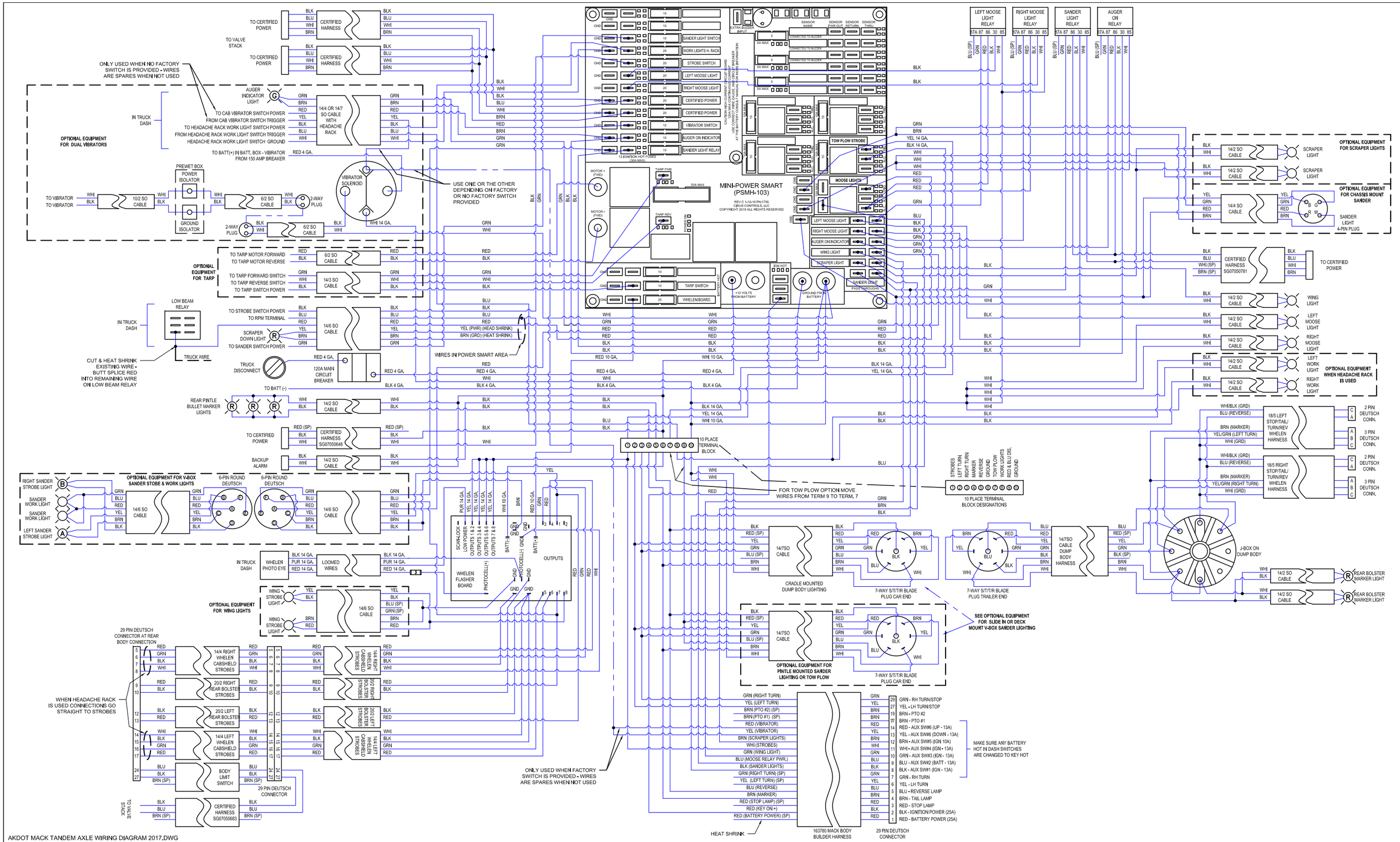
ALASKA 2017 – 2018

ELECTRICAL & PURCHASED REFERENCE MATERIAL

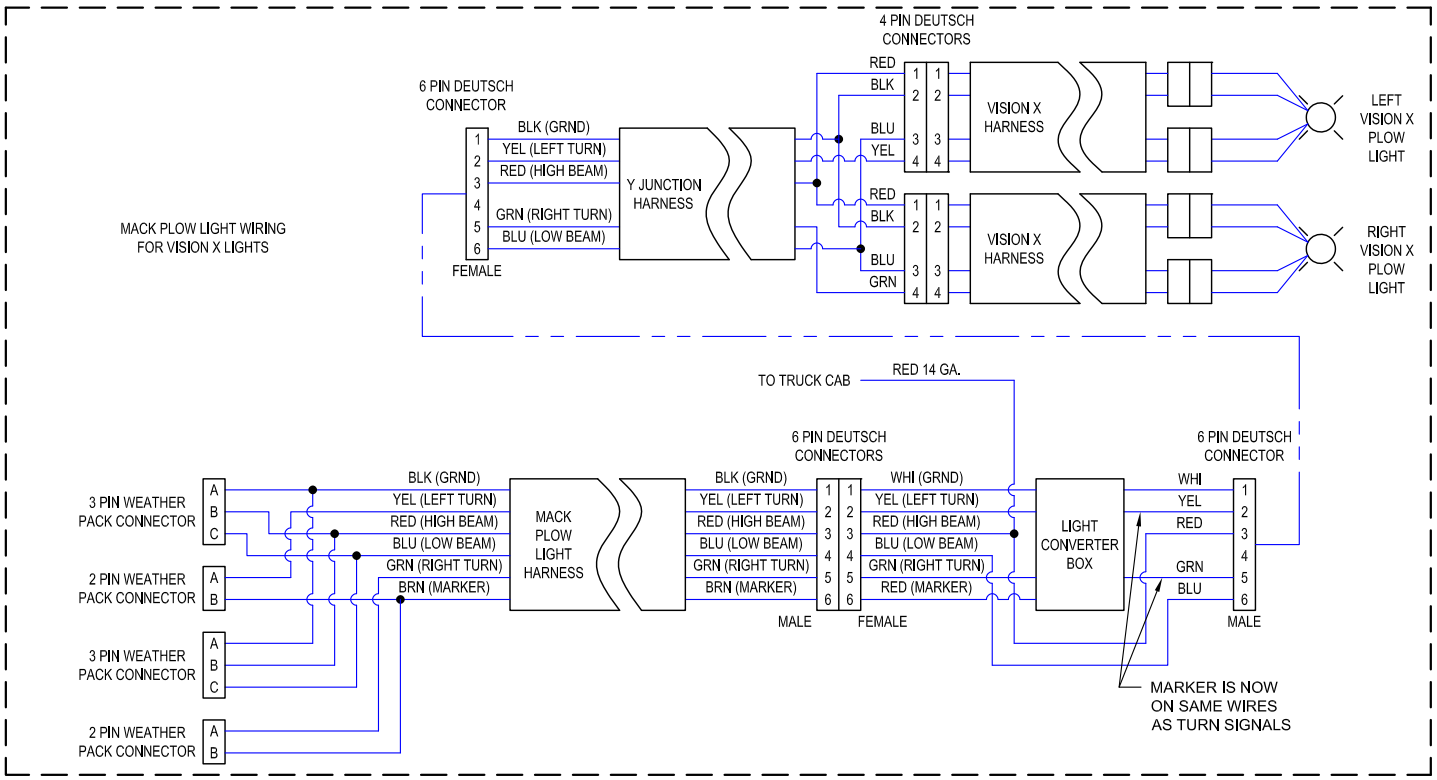
TABLE OF CONTENTS

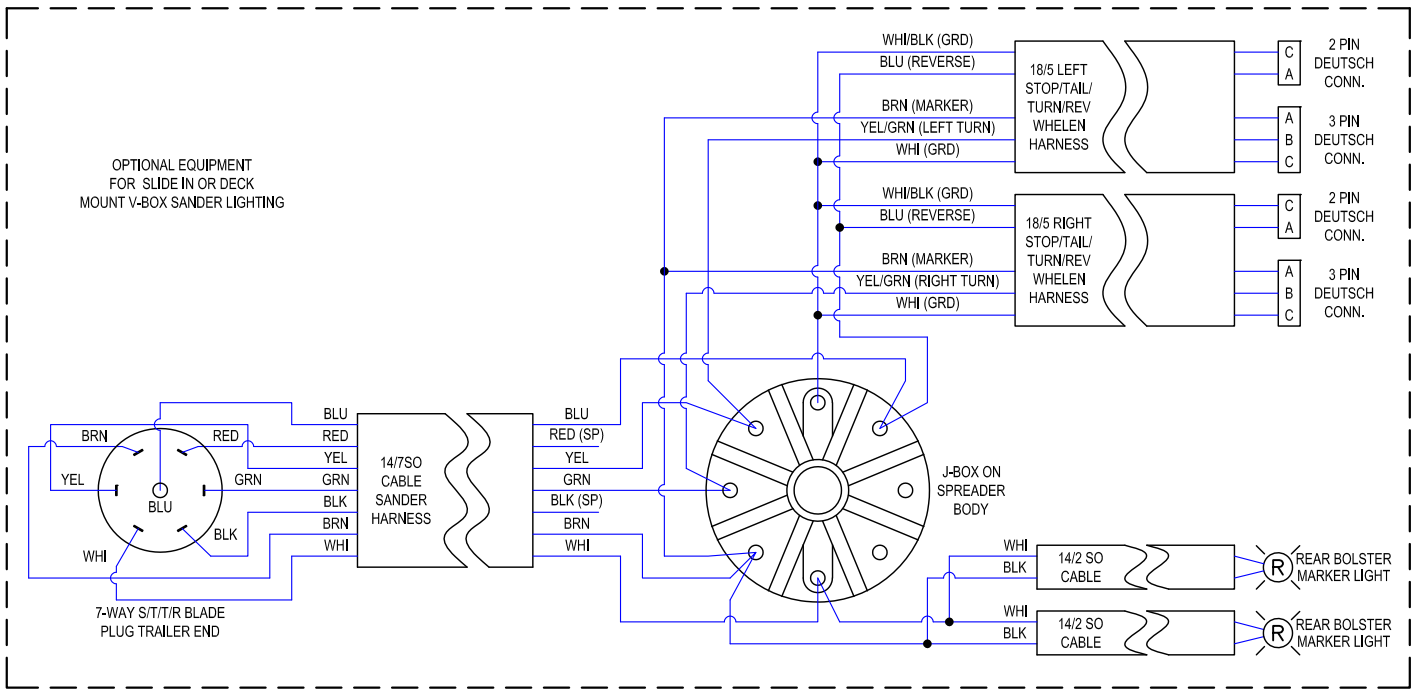
Electrical Wiring Diagrams

AKDOT MACK TANDEM AXLE WIRING DIAGRAM 2017

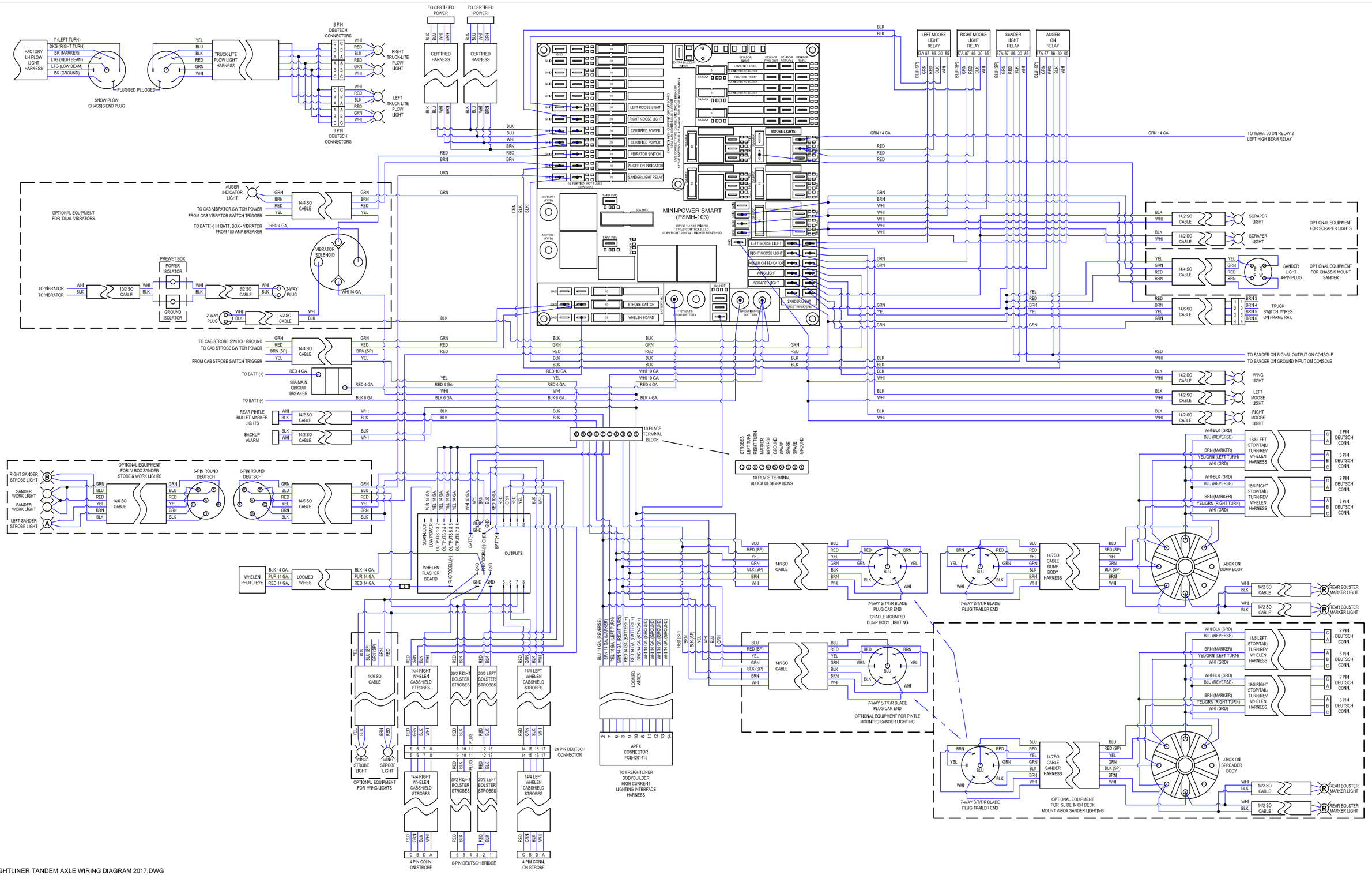


AKDOT MACK TANDEM AXLE WIRING DIAGRAM 2017



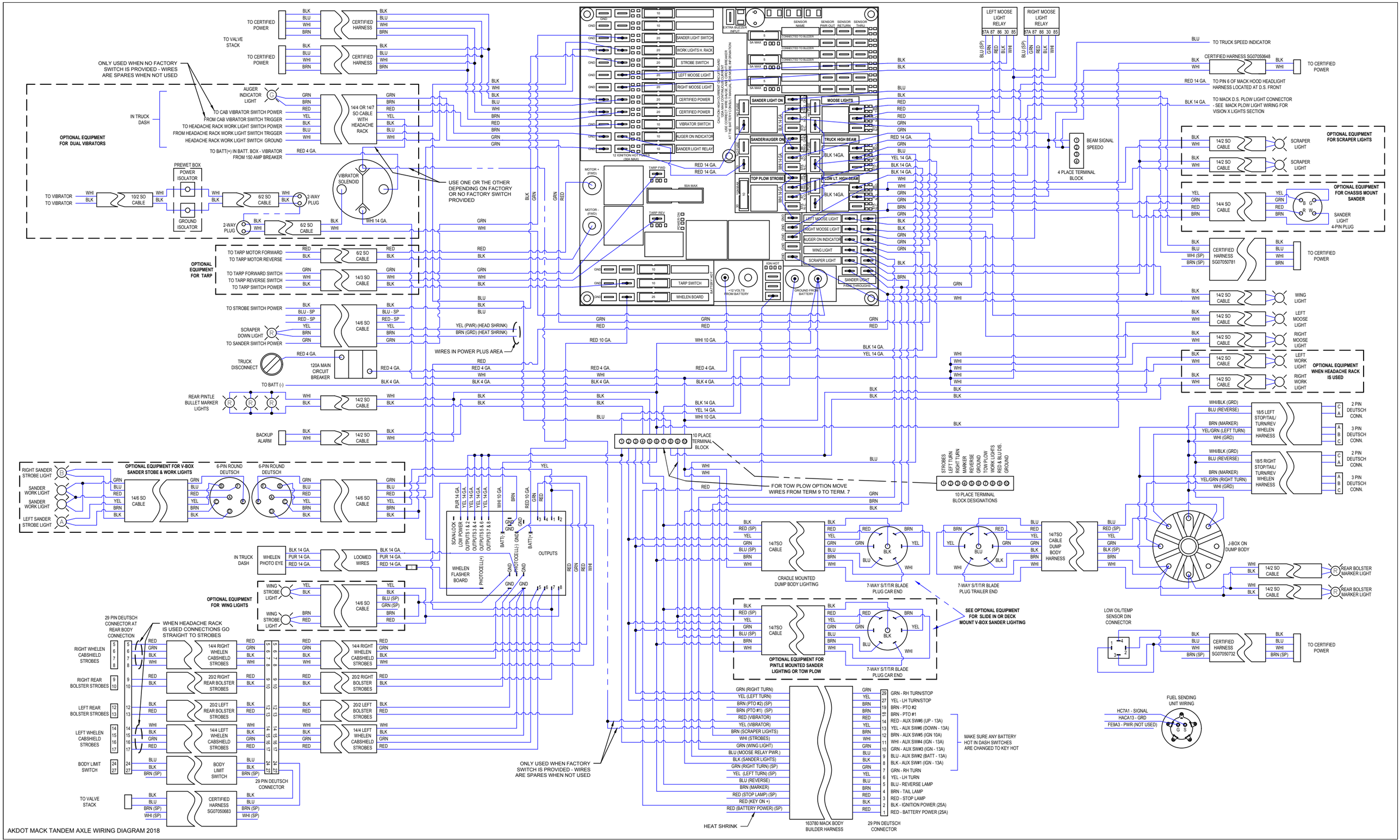


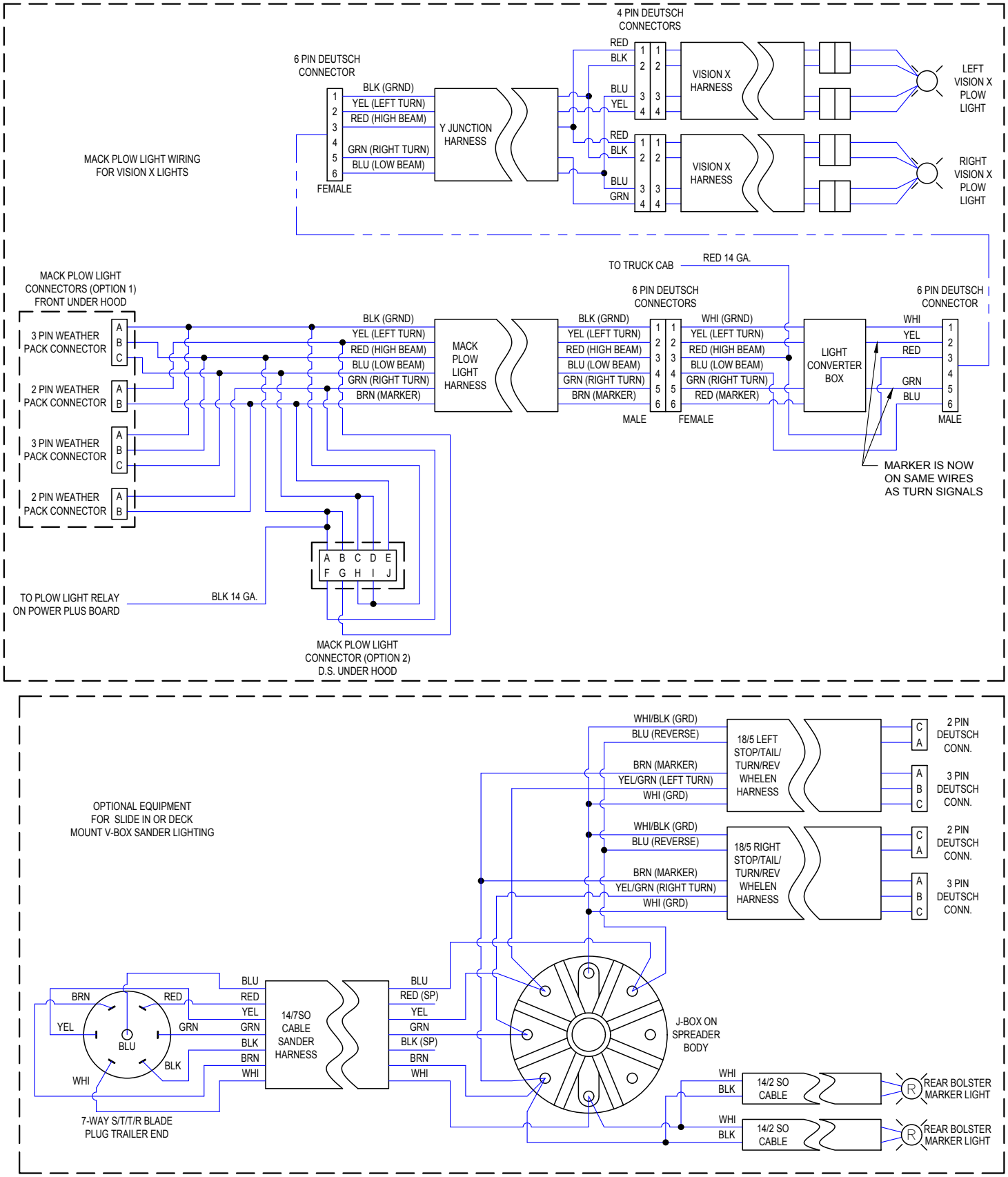
AKDOT FREIGHTLINER TANDEM AXLE WIRING DIAGRAM 2017



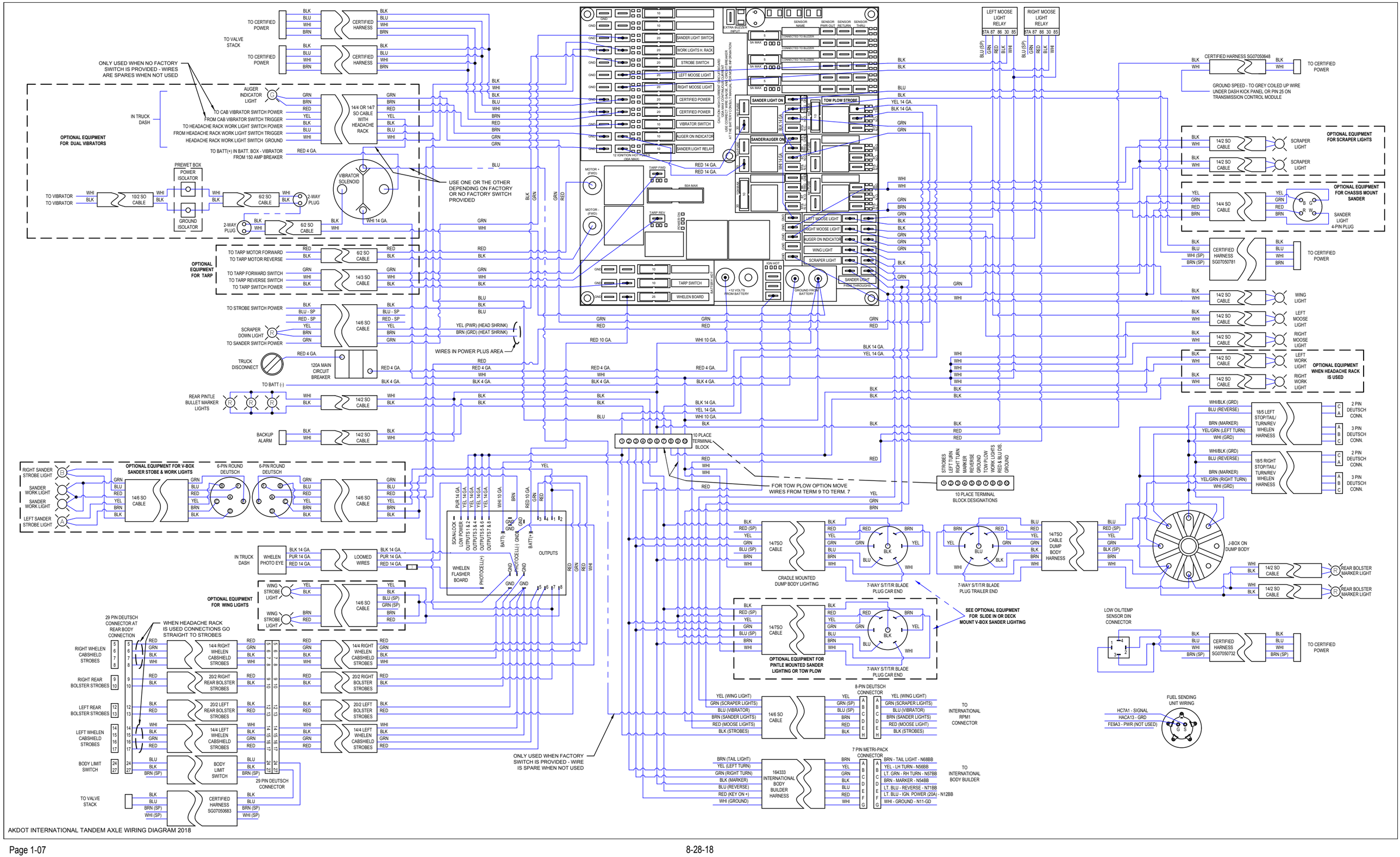
AKDOT FREIGHTLINER TANDEM AXLE WIRING DIAGRAM 2017.DWG

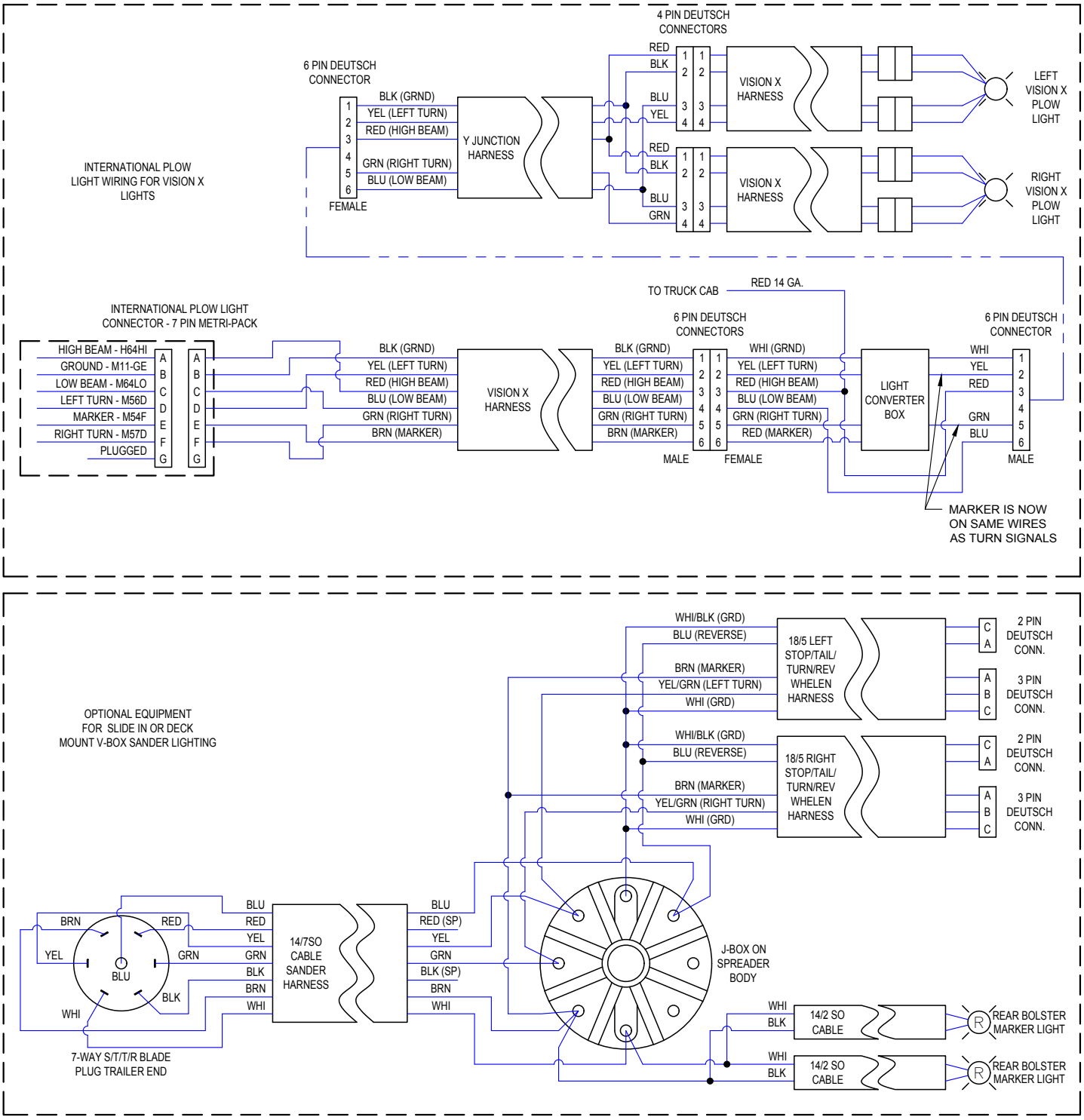
AKDOT MACK TANDEM AXLE WIRING DIAGRAM 2018




MACK PLOW LIGHT WIRING FOR VISION X LIGHTS
6 PIN DEUTSCH CONNECTOR
FEMALE
BLK (GRND)
YEL (LEFT TURN)
RED (HIGH BEAM)
GRN (RIGHT TURN)
BLU (LOW BEAM)
Y JUNCTION HARNESS
4 PIN DEUTSCH CONNECTORS
RED
BLK
BLU
YEL
GRN
VISION X HARNESS
LEFT VISION X PLOW LIGHT
RIGHT VISION X PLOW LIGHT
MACK PLOW LIGHT CONNECTORS (OPTION 1) FRONT UNDER HOOD
3 PIN WEATHER PACK CONNECTOR
2 PIN WEATHER PACK CONNECTOR
BRN (MARKER)
MACK PLOW LIGHT HARNESS
TO TRUCK CAB
RED 14 GA.
6 PIN DEUTSCH CONNECTORS
MALE
FEMALE
WHI (GRND)
RED (MARKER)
LIGHT CONVERTER BOX
WHI
GRN
BLU
MARKER IS NOW ON SAME WIRES AS TURN SIGNALS
TO PLOW LIGHT RELAY ON POWER PLUS BOARD
BLK 14 GA.
A B C D E
F G H I J
MACK PLOW LIGHT CONNECTOR (OPTION 2) D.S. UNDER HOOD
OPTIONAL EQUIPMENT FOR SLIDE IN OR DECK MOUNT V-BOX SANDER LIGHTING
WHI/BLK (GRD)
BLU (REVERSE)
YEL/GRN (LEFT TURN)
WHI (GRD)
18/5 LEFT STOP/TAIL/ TURN/REV WHELEN HARNESS
2 PIN DEUTSCH CONN.
3 PIN DEUTSCH CONN.
18/5 RIGHT STOP/TAIL/ TURN/REV WHELEN HARNESS
YEL/GRN (RIGHT TURN)
14/7SO CABLE SANDER HARNESS
RED (SP)
BLK (SP)
J-BOX ON SPREADER BODY
7-WAY S/T/T/R BLADE PLUG TRAILER END
14/2 SO CABLE
REAR BOLSTER MARKER LIGHT

AKDOT INTERNATIONAL TANDEM AXLE WIRING DIAGRAM 2018




INTERNATIONAL PLOW LIGHT WIRING FOR VISION X LIGHTS
6 PIN DEUTSCH CONNECTOR
FEMALE
BLK (GRND)
YEL (LEFT TURN)
RED (HIGH BEAM)
GRN (RIGHT TURN)
BLU (LOW BEAM)
Y JUNCTION HARNESS
4 PIN DEUTSCH CONNECTORS
RED
BLK
BLU
YEL
VISION X HARNESS
LEFT VISION X PLOW LIGHT
RIGHT VISION X PLOW LIGHT
INTERNATIONAL PLOW LIGHT CONNECTOR - 7 PIN METRI-PACK
HIGH BEAM - H64HI
GROUND - M11-GE
LOW BEAM - M64LO
LEFT TURN - M56D
MARKER - M54F
RIGHT TURN - M57D
PLUGGED
BRN (MARKER)
TO TRUCK CAB
RED 14 GA.
6 PIN DEUTSCH CONNECTORS
MALE
FEMALE
WHI (GRND)
RED (MARKER)
LIGHT CONVERTER BOX
6 PIN DEUTSCH CONNECTOR
WHI
GRN
MARKER IS NOW ON SAME WIRES AS TURN SIGNALS
OPTIONAL EQUIPMENT FOR SLIDE IN OR DECK MOUNT V-BOX SANDER LIGHTING
WHI/BLK (GRD)
BLU (REVERSE)
YEL/GRN (LEFT TURN)
WHI (GRD)
18/5 LEFT STOP/TAIL/ TURN/REV WHELEN HARNESS
2 PIN DEUTSCH CONN.
3 PIN DEUTSCH CONN.
YEL/GRN (RIGHT TURN)
18/5 RIGHT STOP/TAIL/ TURN/REV WHELEN HARNESS
BRN
RED
YEL
GRN
BLK
WHI
7-WAY S/T/T/R BLADE PLUG TRAILER END
14/7SO CABLE SANDER HARNESS
BLU (SP)
RED (SP)
BRN (SP)
WHI (SP)
J-BOX ON SPREADER BODY
14/2 SO CABLE
REAR BOLSTER MARKER LIGHT

Certified Power – HYDRAULICS, ALASKA

INSTALL & OWNER'S MANUAL
FR6110049

SPREADER-PLOW TRUCK
ELECTRIC HYDRAULIC
CONTROL SYSTEM

PART NUMBER: SG07100178-049
REV: C DATE: 06/14/17

Certified Power Inc.

List of Included Documents

Description	Drawing Numbers
Product Overview Drawing	FR6110049
Console Internal Wiring	SG07060083-049
External Harness Wiring Overviews	SG07080148-049
Cable Mounting, Routing, and Dressing	SG07080025
MPH Wiring (Transmission signal)	SG07080086-001
Horizontal float switch install (Oil)	SG07080087-001
Horizontal float switch install (Liquid)	SG07080087-003
Plow Balance Setup	SG07230012

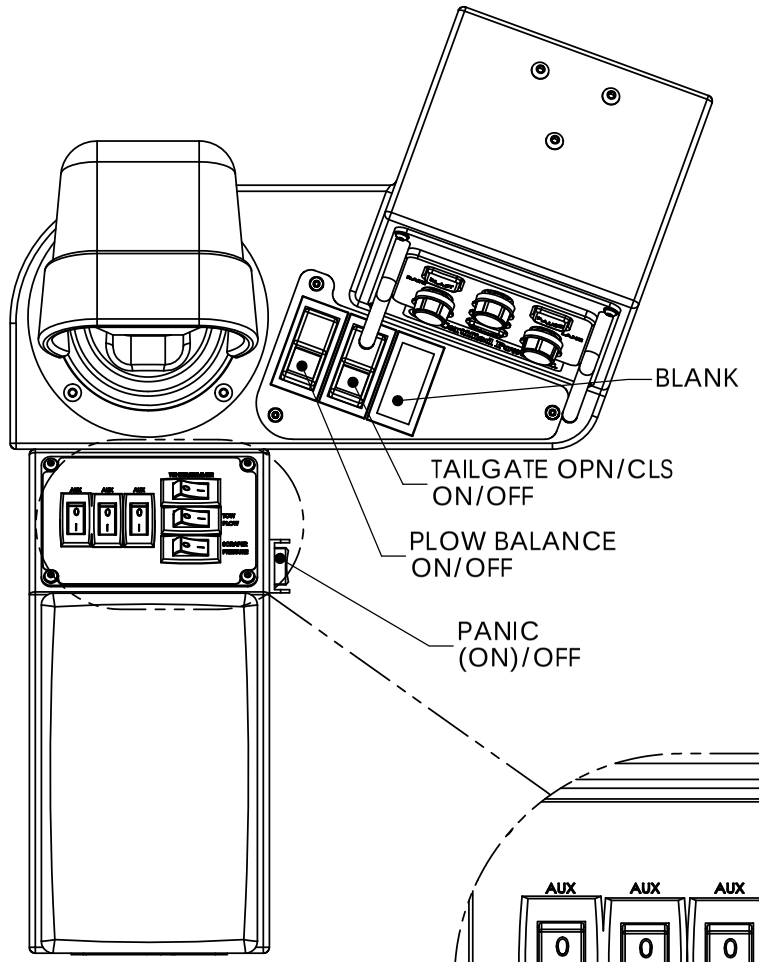
Reference Documents available on the Certified Power Website
http://www.certifiedpower.com/cpi_comp_storm.aspx

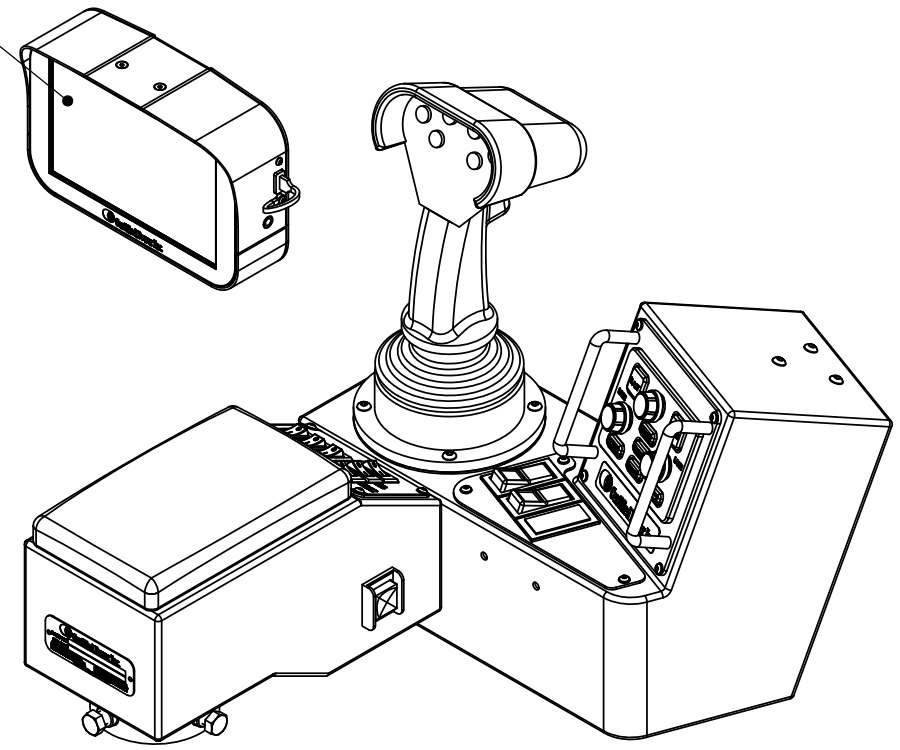
Description	Drawing Numbers
Freedom XDS Operator Manual	SG07230040
Freedom XDS Calibration Manual	SG07230041
Freedom XDS Admin Guide	SG07230042

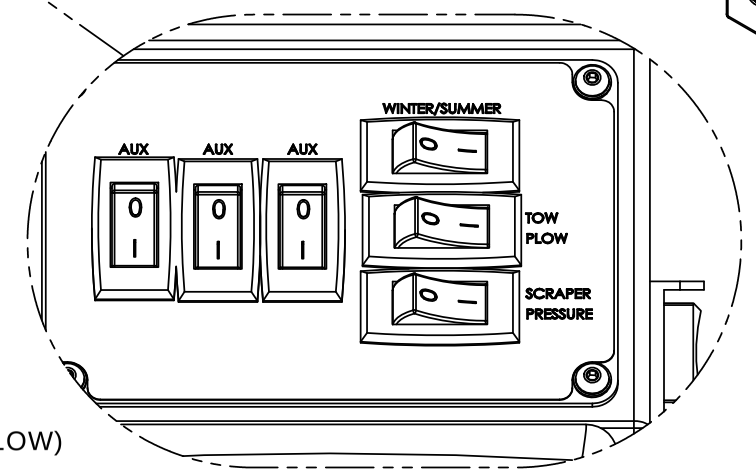
SPECIFICATIONS

DESCRIPTION	UNITS	MIN	TYP	MAX
ELECTRICAL				
COMMUNICATIONS	CAN OPEN 2.0, PROPRIETARY			
SUPPLY VOLTAGE	V	9	13.8	16
SUPPLY CURRENT, NO COIL LOAD	A			2.5
RFI	V/M			
EMC				
SPEED INPUT SIGNAL	MECHANICAL SOURCE/SINK, WA ELEC.			
ROAD/AIR TEMP INPUT	SPRAGUE, RS232 OR J1708			
DISPLAY TYPE	7 IN COLOR TOUCHSCREEN LCD			
4-20mA SENSOR INPUTS	EA	1	1	4
CLOSED LOOP INPUTS	EA	4	4	16
DIGITAL INPUTS	EA	10	10	40
PWM OUTPUTS	EA	14	14	56
DIGITAL OUTPUTS (DISPLAY)	EA			4
DIGITAL OUTPUTS (DISPLAY)	mA			400
DIGITAL OUTPUTS (OPERATOR PANEL	EA			2
DIGITAL OUTPUTS (OPERATOR PANEL	mA			18
MECHANICAL				
DOWNWARD LOAD AT JOYSTICKS	LBS			300
CONSOLE ROTATION	DEG		360	
HEIGHT TO ARMREST	IN.	31.75		34.75
ENVIRONMENTAL				
OPERATING TEMPERATURE	°C	-20		80
STORAGE TEMPERATURE	°C	-40		80
MOISTURE RESISTANCE		IP54		
SHOCK	G			4
MINIMUM VIBRATION WITHSTAND	4G PEAK SWEPT SINUSOIDAL, 4 HZ TO 2KHz, 24 HOURS			

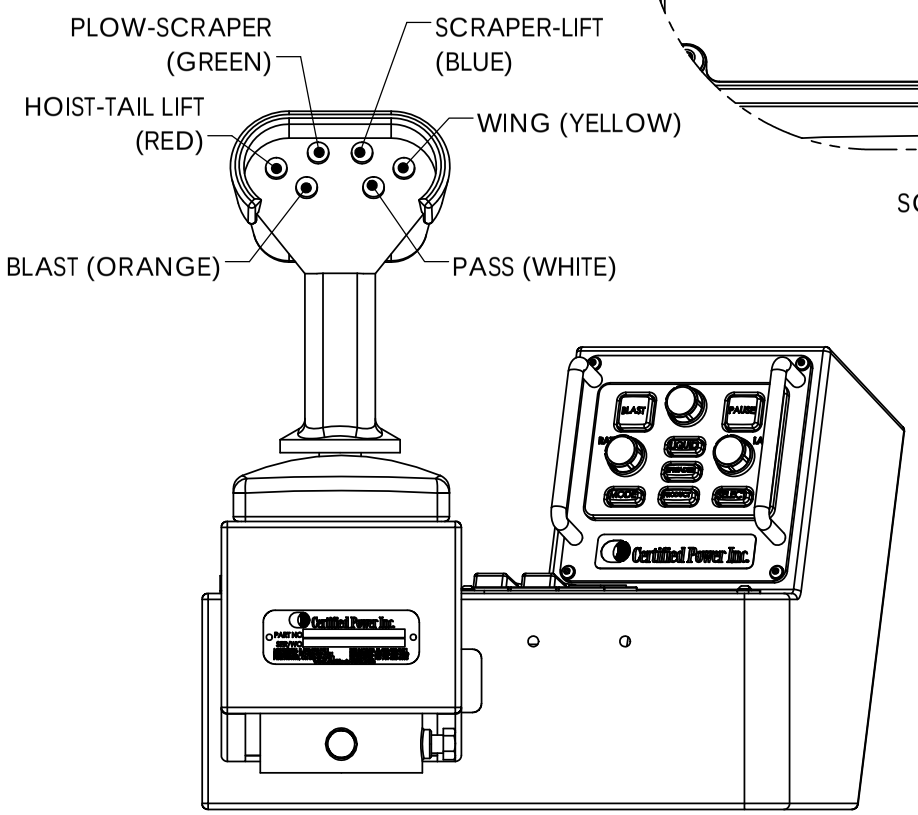
MATERIALS	
CONSOLE OVERLAY	PRINTED POLYESTER/POLYCARBONATE
OPERATOR PANEL	PRINTED SILICONE RUBBER
DISPLAY OVERLAY	PRINTED POLYESTER/POLYCARBONATE
CONSOLE METAL	POLYESTER POWDER COATED CRS
WIRE HARNESSES	TPE JACKET OVER PVC PRIMARY







DETAIL A
SCALE 1 : 1.5



NOTE: PARTS MARKED * SHIP LOOSE.

REV	DATE	CCN#	DWN BY	APPD
A	01/17/17	4599	KEO	NK

UNLESS OTHERWISE SPECIFIED
ANGLES ± 0°30'
ONE PLACE (.X) ± .02
TWO PLACE (.XX) ± .010
THREE PLACE (.XXX) ± .005

THREADS: UNIFIED NATIONAL FORM R.H. CLASS 2

THIRD ANGLE PROJECTION

SYMBOLS INSPECTION
CRITICAL
SPC

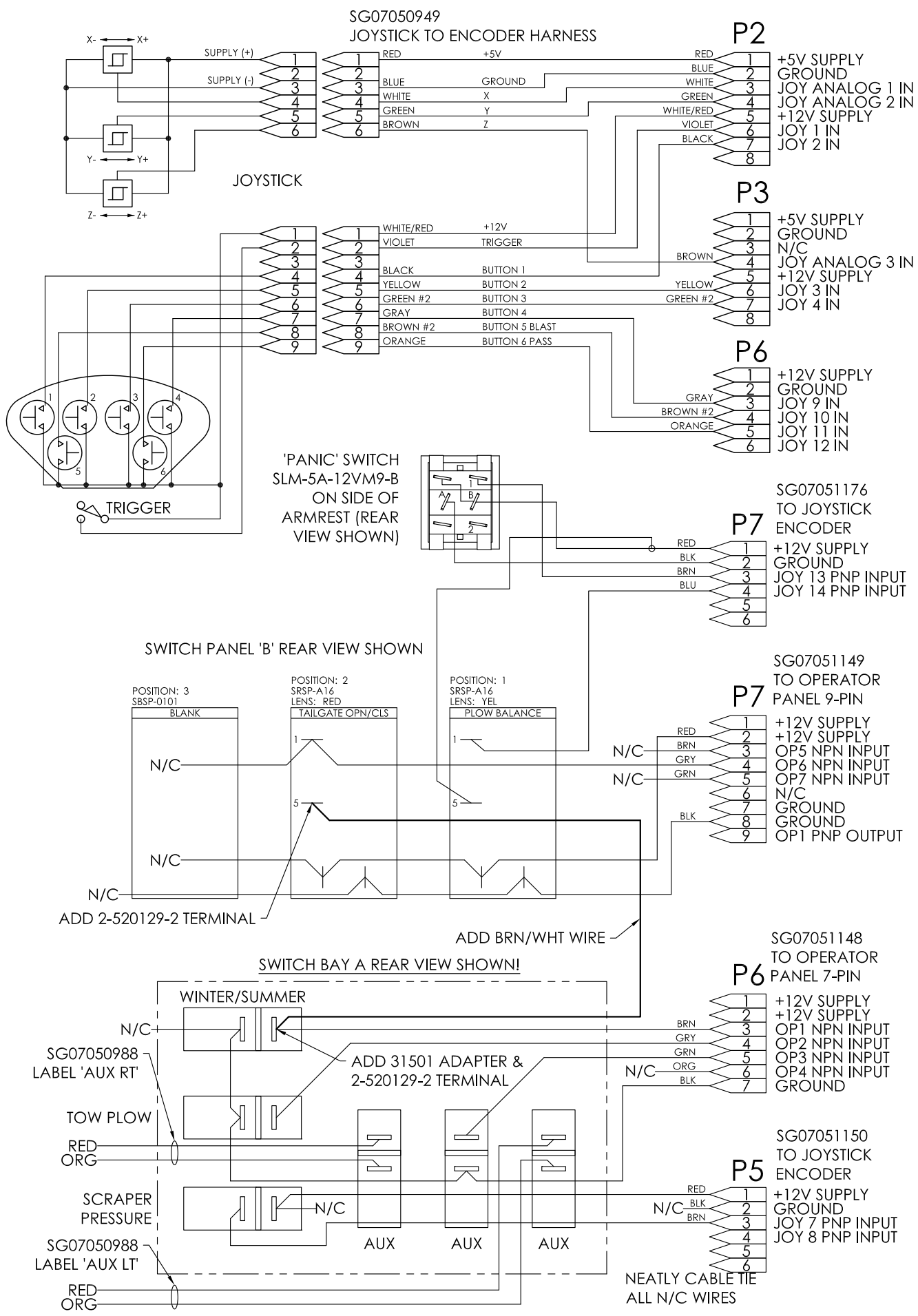
Certified Power Inc.

FXDS CONSOLE

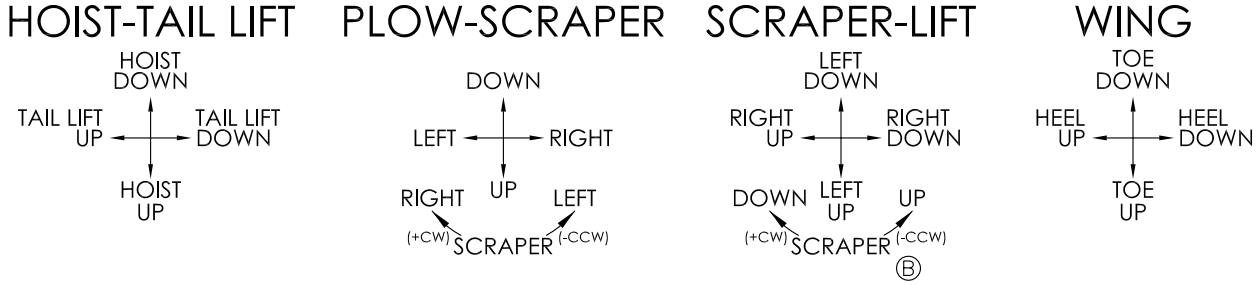
Keith E. Ockelmann	01/03/17	1-1
Nicholas Komoroski	01/17/17	1:7

FR6110049 — REVISION: A

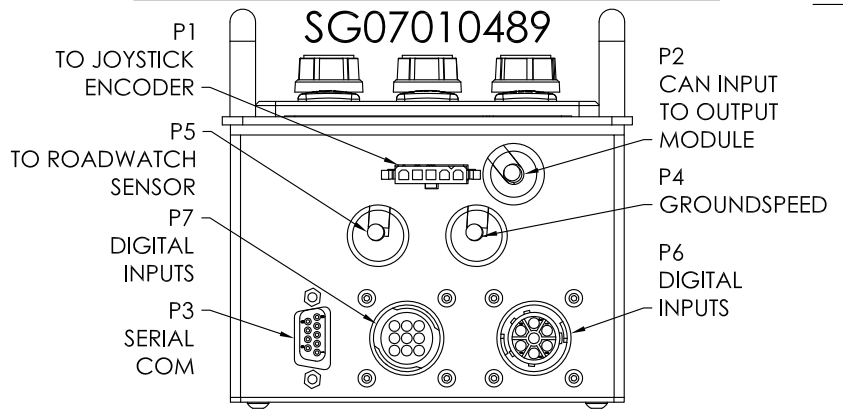
DWG. SIZE B



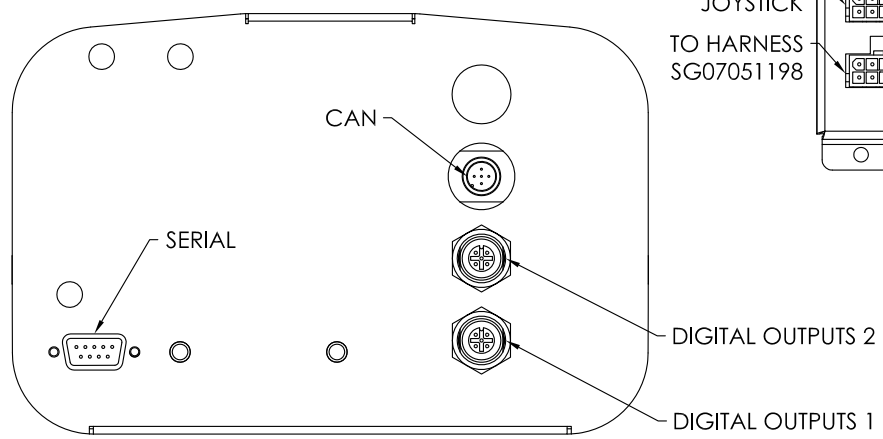
JOYSTICK LAYOUT



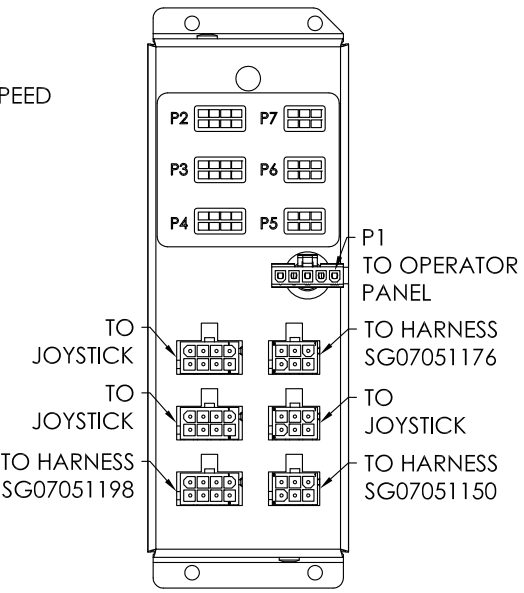
OPERATOR PANEL ASSEMBLY
SG07010489



FXDS LCD DISPLAY
SG07010488-0070



JOYSTICK ENCODER ASSEMBLY
SG07010311-001



SG07051198
TO JOYSTICK
ENCODER
P4
BLU N/C
GROUND
N/C
N/C
N/C
BLK JOY 5 IN
N/C
N/C
WHT
BLU
BLK
ROUTE CABLE THRU BOTTOM OF
ARMREST, COIL & CABLE TIE

REV	DATE	CCN#	DWN-BY	APPD
B	06/14/17	4779	KEO	JM
A	01/17/17	4599	KEO	NK

SYMBOLS INSPECTION
△ CRITICAL
▲ SPC

UNLESS OTHERWISE SPECIFIED
ANGLES ± 0°30′
ONE PLACE (.X) ± .025
TWO PLACE (.XX) ± .015
THREE PLACE (.XXX) ± .005
THREADS: UNIFIED NATIONAL FORM R.H. CLASS 2
THIRD ANGLE PROJECTION.

Certified Power Inc.

TITLE: FR6110049 SCHEMATIC

DRAWN BY	SHEET
Keith E. Ockelmann	1 OF 1
DATE 01/03/17	CUST
DWG SIZE B	SCALE NTS
DRAWING NO. SG07060083-049	REVISION B

FXDS LCD
DISPLAY
SG07010488-0070

CAN
SERIAL
DIGITAL OUTPUTS 2
DIGITAL OUTPUTS 1

CONTROL CONSOLE
FR6110049

SG07010524-001
XDS DISPLAY
BRACKET MOUNT KIT

SG07010524-002
XDS DISPLAY
RAM MOUNT KIT

SG07051198
CONSOLE HARNESS (5FT)

SG07050798
9FT ROADWATCH EXTENSION

12FT ROADWATCH SS ASM
SG07010336

SG07050781
23FT CONSOLE HARNESS

TO SANDER LIGHTS RELAY
BROWN - N/C (GND)
WHITE - N/C
BLUE - RELAY COIL GROUND
BLACK - RELAY COIL 12V

SG07050648
16FT GROUND SPEED CABLE

SEE INCLUDED DRAWING SG07080086-001 FOR WIRING & ASSEMBLY INFORMATION RELATED TO ATTACHING THE GROUND SPEED CABLE.

SG07050742-001
3.2FT CAN EXTENSION
ALTERNATES:
SG07050687 (20FT)
SG07050687-002 (5.2FT)
SG07050742-002 (13FT)

SG07050685
CAN TEE

ALTERNATE 16FT BULKHEAD EXTENSIONS:
SG07050722-002
(2X CAPS INCLUDED)

OPTIONAL
(2X) SG07070362
(M) CAP & CHAIN

SG07050686
18FT CAN EXTENSION

(2X) SG07070362
(M) CAP & CHAIN

(2X) SG07070361
(F) CAP & CHAIN

SG07050411
12FT SENSOR CABLE

TO PREWET
1 -BROWN - +12V
2 -WHITE - LIQUID FLOAT SWITCH
3 -BLUE - SWITCH/FLOWMETER GROUND
4 -BLACK - FLOWMETER SIGNAL

(2X) SG07050642
16FT BULKHEAD EXTENSION

(2X) SG07050642
16FT BULKHEAD EXTENSION

SG07050245
8.2FT SENSOR CABLE

TO AUGER
SENSOR

KEEP UNUSED PORTS SEALED!
(2X) SG07070362

OUT3 FB3 | OUT4 FB4 | OUT5 FB1 | OUT6 FB2

OUTPUT MODULE-NODE 1
SG07010511-005

J1 J2 J3 J4 J5 J6 J7 J11 J15
CAN IN
OUT9 OUT1
OUT11 OUT2
OUT7 OUT17

Ⓑ SG07050684
10FT EXTENSION CABLE

BODY UP
PROX SWITCH
PNT-CN-3H

PROX
SWITCH
BRACKET
ST30A
STRAIGHT BRACKET

Ⓑ SG07050732
32FT FLYLEAD CABLE

BROWN WIRE CARRIES +12V AND MUST BE INSULATED FROM CHASSIS

TO LOW /HOT OIL SWITCH
BROWN - (+12V) N/C
WHITE - TEMP SWITCH
BLUE - SWITCH GROUND
BLACK - FLOAT SWITCH

(2X) SG07050774
18FT MAIN POWER
CABLES

OPTIONAL
SG07050316
8FT EXTENSION CABLE

OPTIONAL
SG07050683
16FT FLYLEAD CABLE

BROWN WIRE CARRIES +12V AND MUST BE INSULATED FROM CHASSIS

TO MS-100 BODY LIMIT SWITCH
BROWN - (+12V) N/C
WHITE - N/C
BLUE - SWITCH GROUND
BLACK - LIMIT SWITCH

OPTIONAL (DECK
MOUNT SPREADER)
SG07050683
16FT FLYLEAD CABLE

BROWN WIRE CARRIES +12V AND MUST BE INSULATED FROM CHASSIS

TO MS-100 BODY LIMIT SWITCH
BROWN - (+12V) N/C
WHITE - N/C
BLUE - SWITCH GROUND
BLACK - LIMIT SWITCH

OUTPUT MODULE-NODE2
SG07010512-007

SG07050774 BATTERY WIRING
ALL BLUE & BROWN WIRES TO SWITCHED, FUSED BATTERY+.
ALL WHITE & BLACK WIRES TO CHASSIS GROUND.

REV	DATE	CCN#	DWN-BY	APPD
B	03/31/17	4728	KEO	JM
A	01/17/17	4599	KEO	NK

SYMBOLS INSPECTION
△ CRITICAL
▲ SPC

UNLESS OTHERWISE SPECIFIED
ANGLES ± 0°30'
ONE PLACE (.X) ± .025
TWO PLACE (.XX) ± .015
THREE PLACE (.XXX) ± .005
THREADS: UNIFIED NATIONAL FORM R.H. CLASS 2
THIRD ANGLE PROJECTION.

Certified Power Inc.

TITLE: HARNESS OVERVIEW

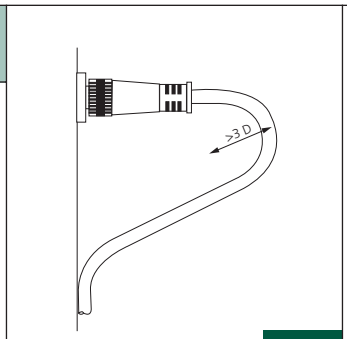
DRAWN BY: Keith E. Ockelmann
SHEET: 1OF 1
DATE: 01/03/17
CUST:
DWG SIZE: B
SCALE: NTS
DRAWING NO.: SG07080148-049
REVISION: B

Cable Mounting, Routing and Dressing -
Application Suggestions

We recommend the following application and installation guidelines for a successful, long-lived cordset installation.

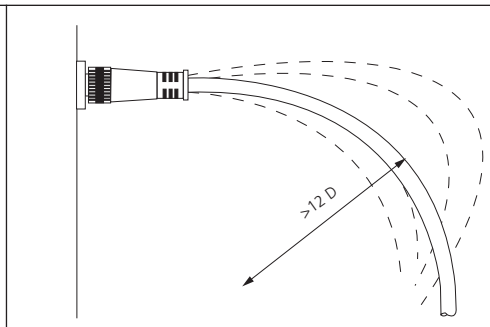
PROPER BEND RADIUS

Providing sufficient bend radius will allow the cable to absorb the energy of bending over a greater portion of its length, increasing the effective working life. Even slight increases of the bend radius can substantially increase the cable life.



D=Cable Diameter

Static

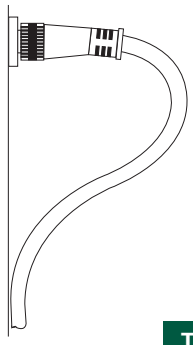


D=Cable Diameter

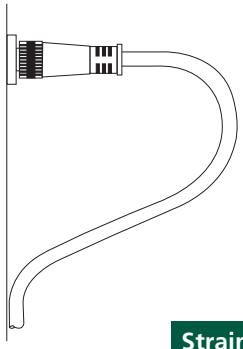
Dynamic

STRESS POINT ELIMINATION AND CABLE DRESSING

Installing cables to allow for adequate stress loops and freedom of motion increases the cable life. Brad Harrison® cordsets incorporate molded strain reliefs that will assist in cable strain relief.



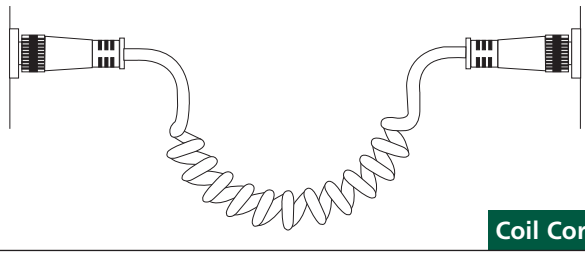
Tie Loops



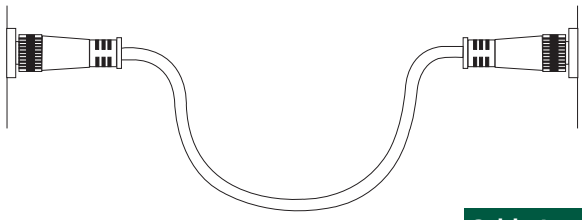
Strain Relief

MOTION APPLICATIONS

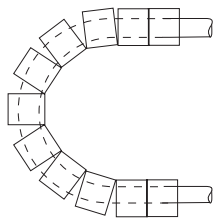
Where cabling is subjected to linear, angular, or rotational motion between two points, always allow for adequate cable length to absorb the energy imparted by the motion. Secure the cable just after the overmolded strain relief in flexing applications in order for the cable to absorb the flexing motion energy. Proper specification of the cable in high stress applications, namely high flex cable, will allow for the longest possible cable life. The use of coiled cords, proper flex-rated cabling, mechanical support mechanisms or large well supported cable loops will maximize cable life.



Coil Cord



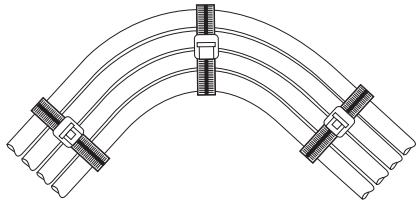
Cable Loop



"C" Track

CABLE BUNDLING TECHNIQUES

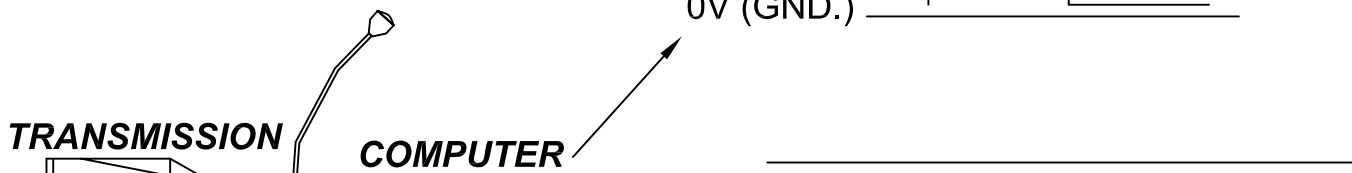
When bundling several cables together, always keep the bundle lose enough to move within itself. Tightly tied bundles create both compression and tension stresses when the bundle is moved.

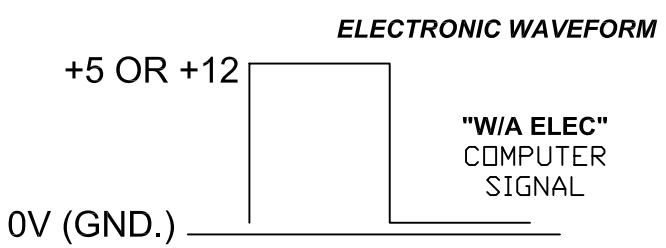


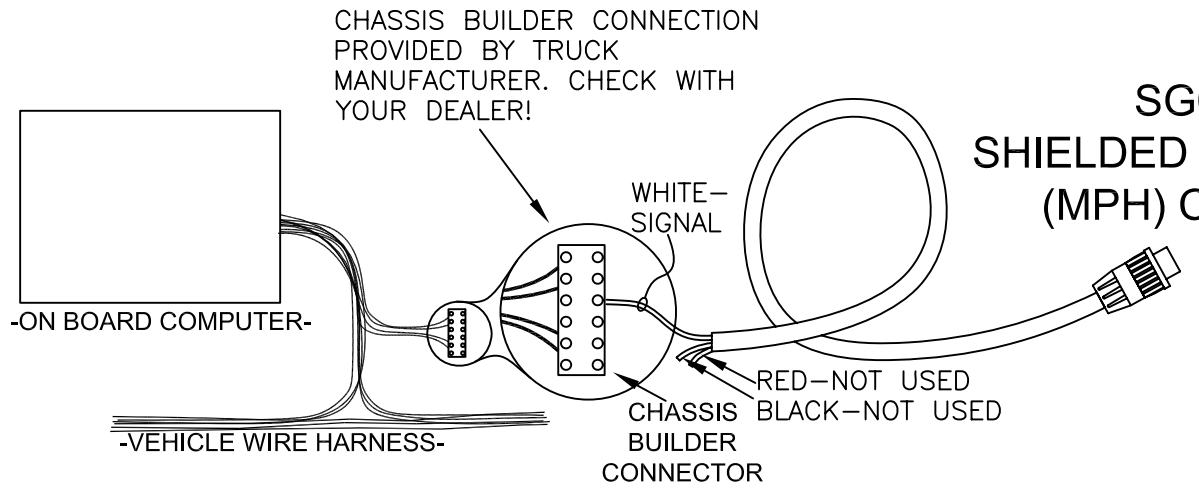
Bundling

GROUND SPEED (MPH) HOOK-UP AND OPERATION.

TYPICAL HOOK-UP (WA) TYPE.



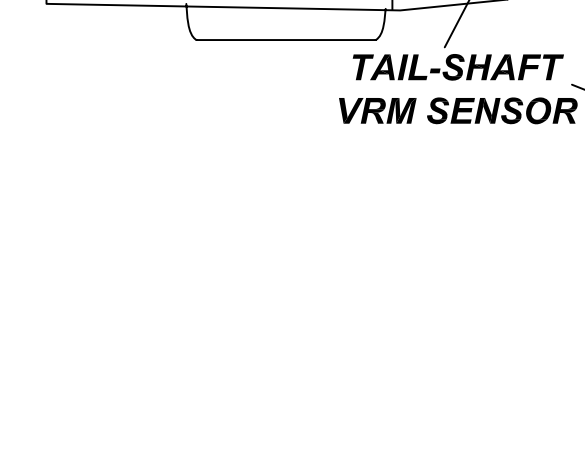


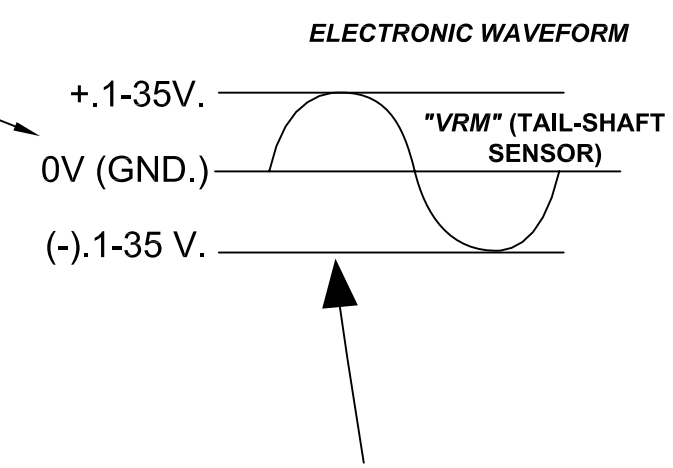


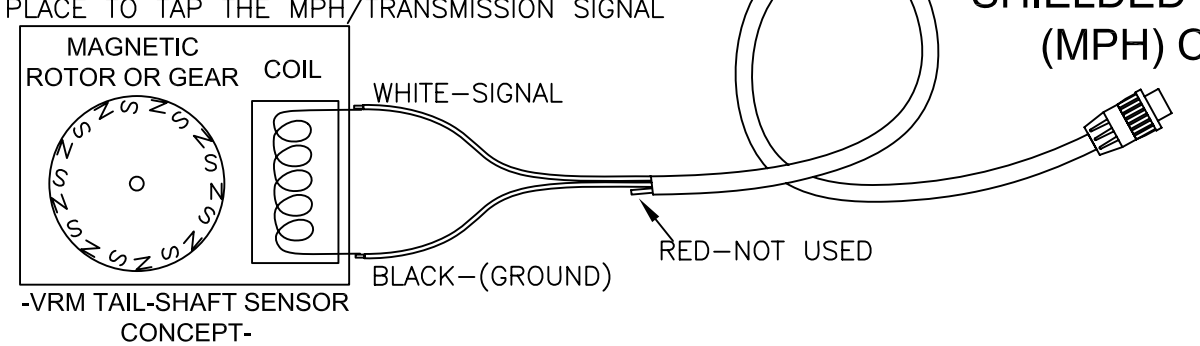
SG07050648
SHIELDED GROUND SPEED
(MPH) CABLE 2 WIRE

SENSOR HOOK-UP (VRM) TYPE

NOTE: THIS IS A CONCEPTUAL CIRCUIT OF A VRM (MAGNETO) HOOK–UP FOR UNDERSTANDING THE CIRCUIT APPLICATION. THE VEHICLE MANUFACTURER WOULD NEVER RECOMMEND SPLICING INTO THE SENSOR DIRECTLY. CHECK WITH YOUR LOCAL DEALER FOR THE PROPER PLACE TO TAP THE MPH/TRANSMISSION SIGNAL







SG07050648
SHIELDED GROUND SPEED
(MPH) CABLE 2 WIRE

REV	DATE	CCN#	DWN BY	APPD
A	3/16/07		PR	

SYMBOLS INSPECTION
△ CRITICAL
▲ SPC

Component Technology
A DIVISION OF Certified Power Inc.

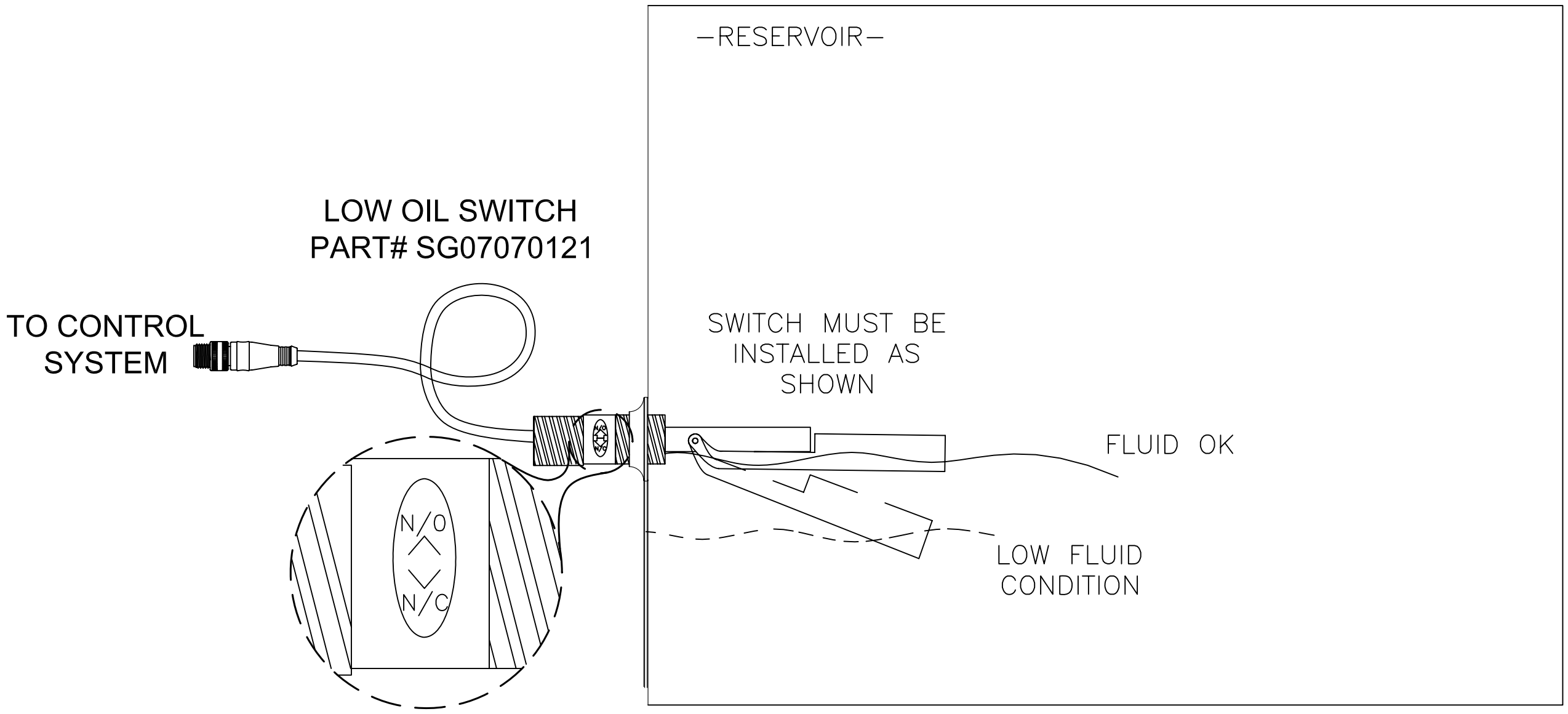
UNLESS OTHERWISE SPECIFIED
ANGLES ± 0°30′
ONE PLACE (.X) ± .02
TWO PLACE (.XX) ± .005
THREE PLACE (.XXX) ± .002
THREADS: UNIFIED NATIONAL FORM R.H. CLASS 2
THIRD ANGLE PROJECTION.

TITLE: MPH WIRING ACS CONTROL SYSTEM (2–WIRE HOOK–UP)

DRAWN BY: P RICKERT — SHEET 1 OF 1
DATE: 3/16/07 — SIZE: B — SCALE: NTS
DRAWING NO.: SG07080086–001 — REVISION: A

Storm Guard

HORIZONTAL FLOAT SWITCH INSTALLATION. NORMAL CLOSE WHEN TANK IS FULL.



REV	DATE	CCN#	DWN BY	APPD
A	3/16/07		PR	

SYMBOLS INSPECTION

△ CRITICAL

▲ SPC

Component Technology
A DIVISION OF Certified Power Inc.

UNLESS OTHERWISE SPECIFIED

ANGLES	± 0°30'
ONE PLACE (.X)	± .02
TWO PLACE (.XX)	± .005
THREE PLACE (.XXX)	± .002

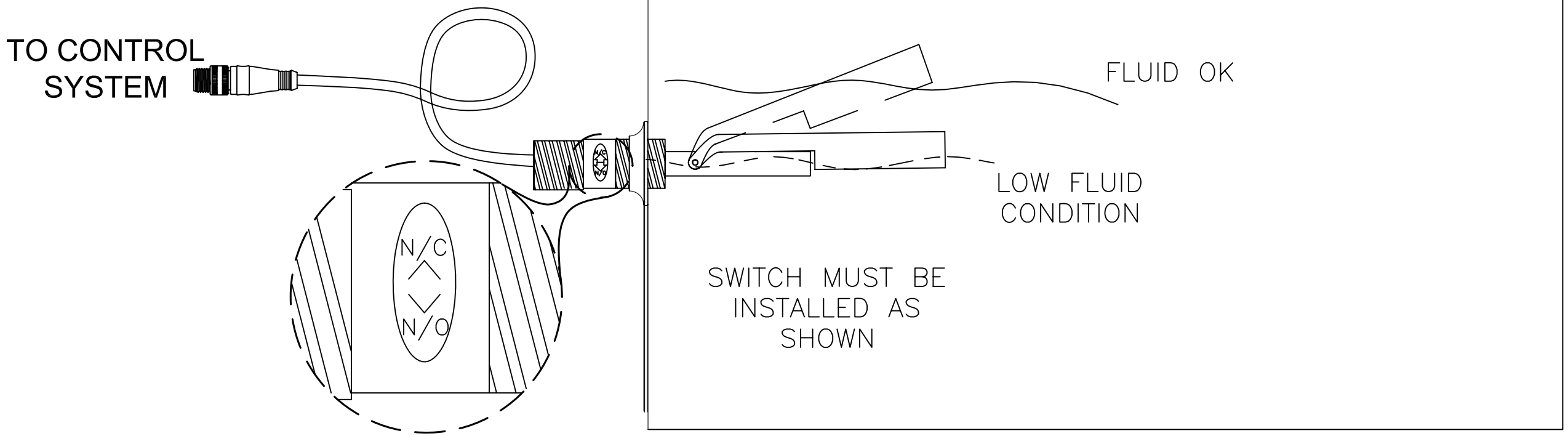
THREADS: UNIFIED NATIONAL FORM R.H. CLASS 2

THIRD ANGLE PROJECTION.

TITLE	HORIZONTAL FLOAT SWITCH INSTALLATION NORMAL CLOSE WHEN TANK FULL
DRAWN BY	P RICKERT
SHEET	1 OF 1
DATE	3/16/07
CAGE SIZE	B
SCALE	NTS
DRAWING NO.	SG07080087–001
REVISION	A

HORIZONTAL FLOAT SWITCH INSTALLATION. NORMAL CLOSE WHEN TANK IS EMPTY.

LOW OIL SWITCH
PART# SG07070121 (STAINLESS)
PART# SG07070122 (PLASTIC)



REV	DATE	CCN#	DWN BY	APPD
A	6/1/07		PR	

SYMBOLS INSPECTION
△ CRITICAL
▲ SPC

Component Technology
A DIVISION OF Certified Power Inc.

UNLESS OTHERWISE SPECIFIED
ANGLES ± 0°30′
ONE PLACE (.X) ± .02
TWO PLACE (.XX) ± .005
THREE PLACE (.XXX) ± .002
THREADS: UNIFIED NATIONAL FORM R.H. CLASS 2
THIRD ANGLE PROJECTION.

TITLE	HORIZONTAL FLOAT SWITCH INSTALLATION NORMAL CLOSE WHEN TANK EMPTY
DRAWN BY	P RICKERT
SHEET	1 OF 1
DATE	6/1/07
CAD SIZE	B
SCALE	NTS
DRAWING NO.	SG07080087-003
REVISION	A

Storm Guard

Plow Guard SG0302003/SG0302008 Setup Procedure

P/N SG07230012
Patent No. 6,467,553

REVISION E
REV DATE 10/7/15

Des Moines, IA (800) 333-7411
Burnsville, MN (800) 289-1330
Mundelein, IL (888) 905-7411
Bridgeton, MO (800) 999-7411
Perrysburg, OH (800) 374-7411

List of Included Documents

Description	Drawing Numbers
Closed Center Plow Guard Setup	SG07100227
Plow Balance Valve – CC ½ load sense	SG03020003
Plow Balance Valve – CC full load sense	SG03020008
Custom Valve Setup	SG07100196
Plow Balance Valve – custom (3 coil)	SG03020024
Closed Center Plow Guard Setup	SG07100228
Plow Balance Valve – Open Center	SG03020007

Document Revision History

REVISION	DATE	DESCRIPTION
A	-	-
B	-	-
C	-	-
D	-	-
E	10/07/15	ADDED UPDATED SG071000196 MANUAL. UPDATED MANUAL TO SPECIFY WHICH PROCEDURE SHOULD BE USED WITH WHICH PLOW GUARD VALVE.

Purpose

The purpose of this manual is to provide instructions for setting up Plow Guard valves SG03020003, SG03020008, SG03020024 and SG03020007.

Plow Guard Set Up

P/N SG07100227

REVISION A
REV DATE 11/25/15

Des Moines, IA	**(800) 333-7411**
Bridgeton, MO	**(800) 999-7411**
Burnsville, MN	**(800) 289-1330**
Perrysburg, OH	**(800) 374-7411**
Mundelein, IL (888) 905-7411	

Initial Set-Up / Adjustment Procedures

This set up procedure is for the Plow Guard valves shown on drawings SG03020003 and SG03020008.

1. Operation with Plow Balance “turned off”:

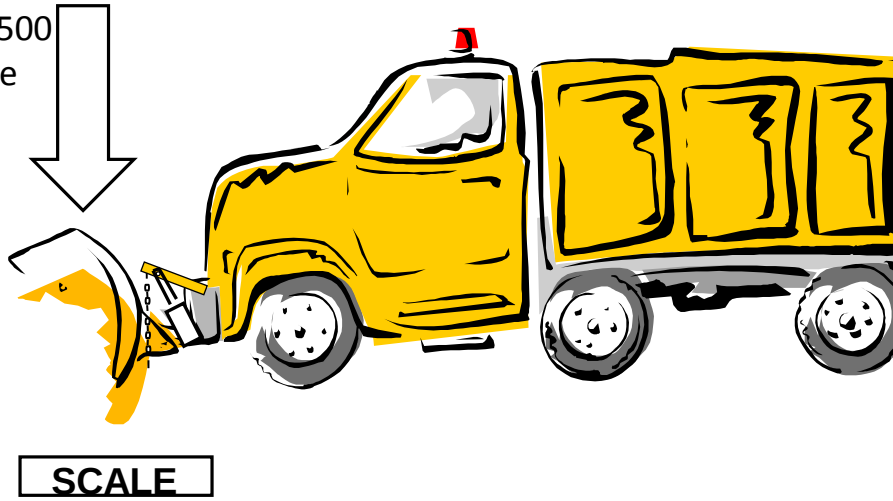
Typical Plow Weights of: 2,500 to 4,000 lbs. on the road surface (scale).

Notice the slack in the plow lift chains.

2. Operation with Plow Balance “turned on”:

Recommended Plow Weights of: 500 to 1,000 lbs. on the road surface (scale).

Notice the plow lift chains are now tight.

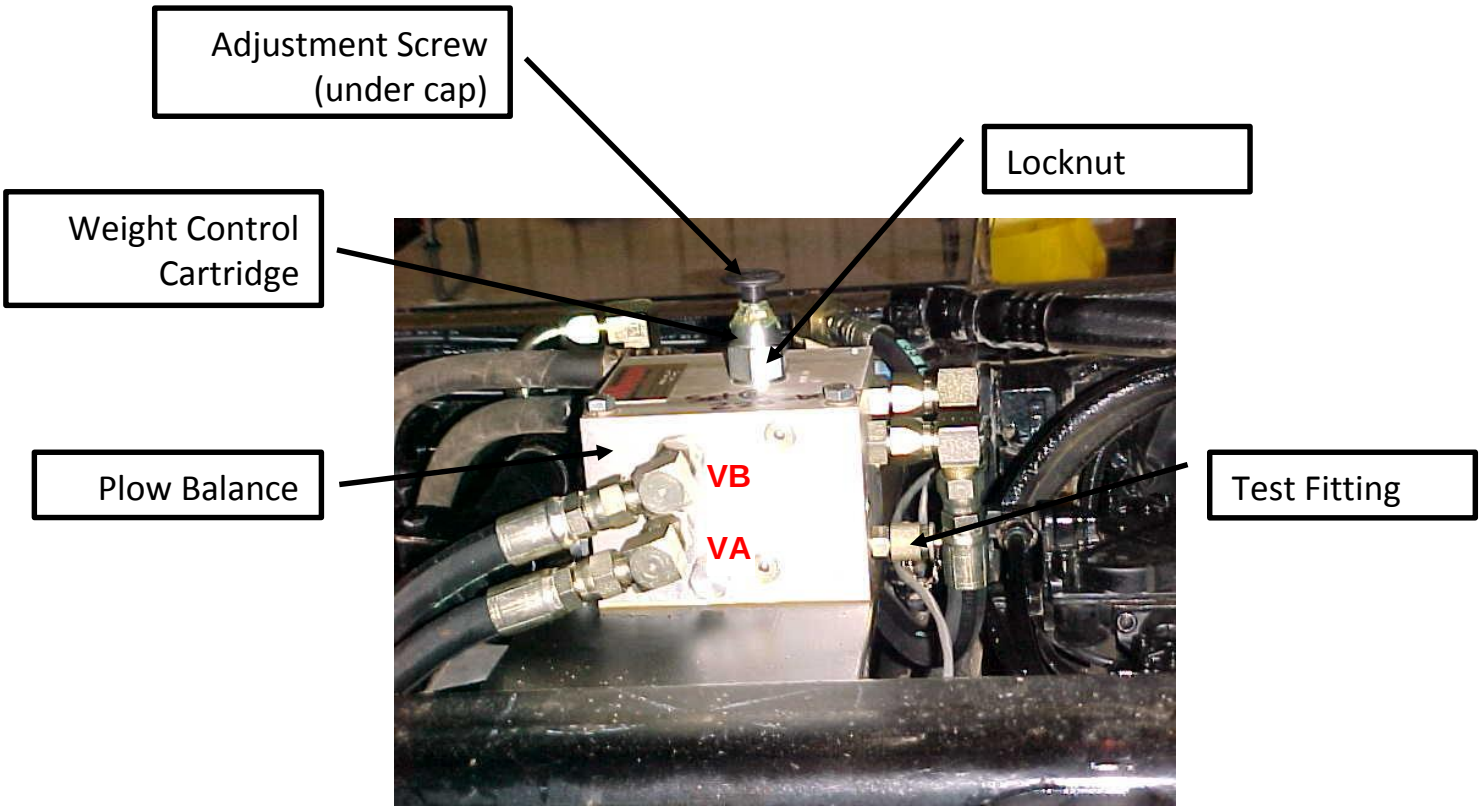


3. Adjust as follows:

a. With plow on scale and Plow Guard valve turned on (as shown in step 2) check the scale reading.

b. Loosen the Locknut on the Weight Control Cartridge, with a 9/16" wrench.

c. Remove black plastic cap from the Adjustment Screw. Using a 5/32" hex key wrench - turn Screw CW to make the plow *lighter on the road (scale)* - turn Screw CCW to make the plow *heavier on the road (scale).* Increments of 1/8 to 1/4 of a turn are recommended, until the scale shows the desired plow weight.



Notes:

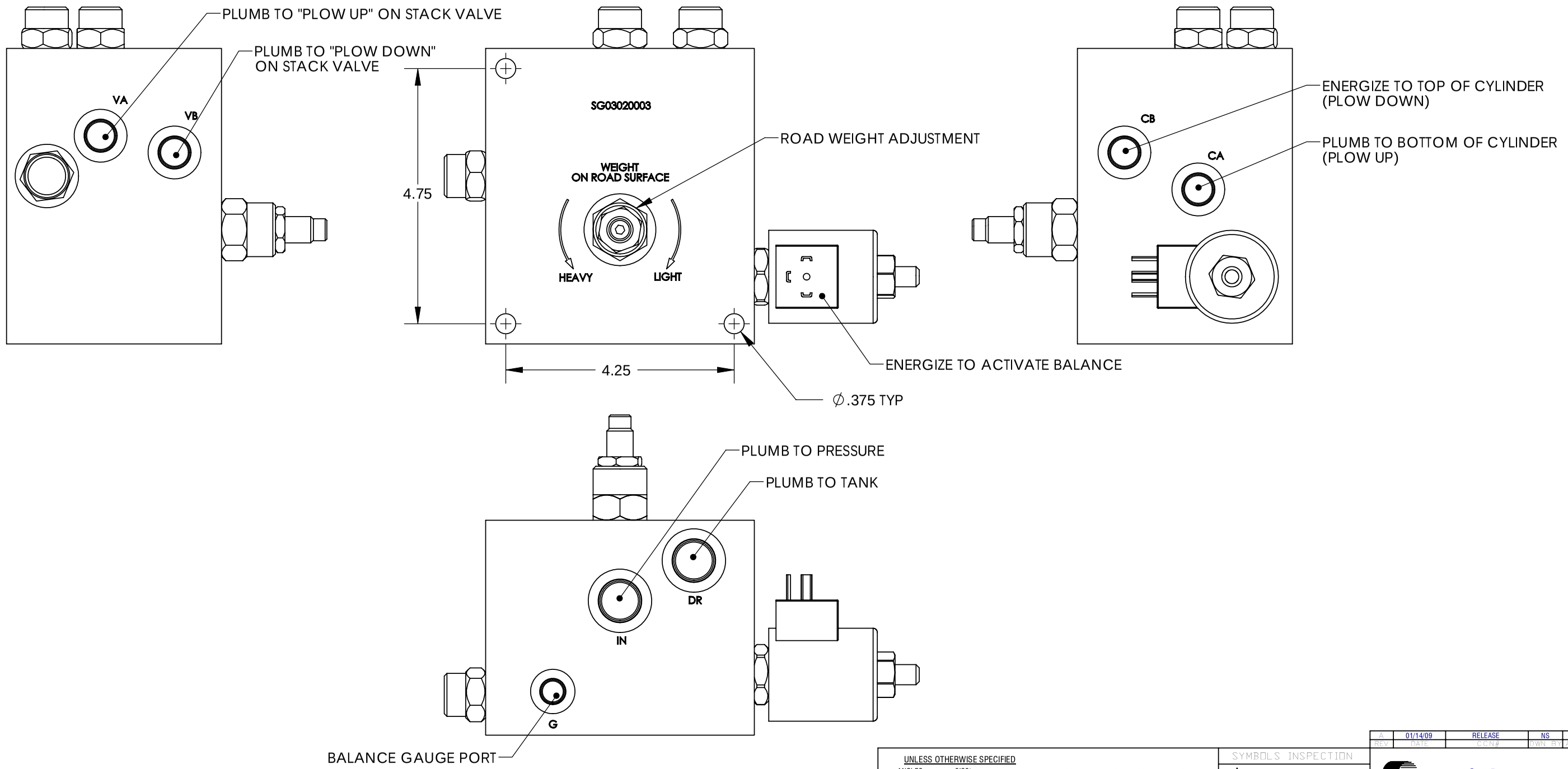
1. After the initial set-up, no further adjustment will be required, unless a lighter / heavier plow is installed on the truck.
2. Observe all safety precautions while making adjustments - *stay clear of moving parts!*

If you have any questions / comments, don't hesitate to call us: 847-573-3800

NOTES:
1. PRESSURE AND DRAIN PORT ARE #8 SAE
2. CYLINDER/VALVE PORTS ARE #6 SAE
3. GAUGE PORT IS #4 SAE
4. IF CYLINDER IS SINGLE ACTING PLUG CB PORT; HOWEVER VALVE MUST BE DOUBLE ACTING

PLOW BALANCE VALVE GENERAL INFORMATION

"1/2 LOAD SENSE"



REV	DATE	RELEASE	DWN BY	APPD
A	01/14/09	SCN#	NS	JT

UNLESS OTHERWISE SPECIFIED
ANGLES ± 0°30'
ONE PLACE (.X) ± .02
TWO PLACE (.XX) ± .010
THREE PLACE (.XXX) ± .005

THREADS: UNIFIED NATIONAL FORM R.H. CLASS 2

THIRD ANGLE PROJECTION.

SYMBOLS INSPECTION
△ CRITICAL
▲ SPC

Certified Power Inc.

TITLE: **PLOW BALANCE VALVE INFORMATION**

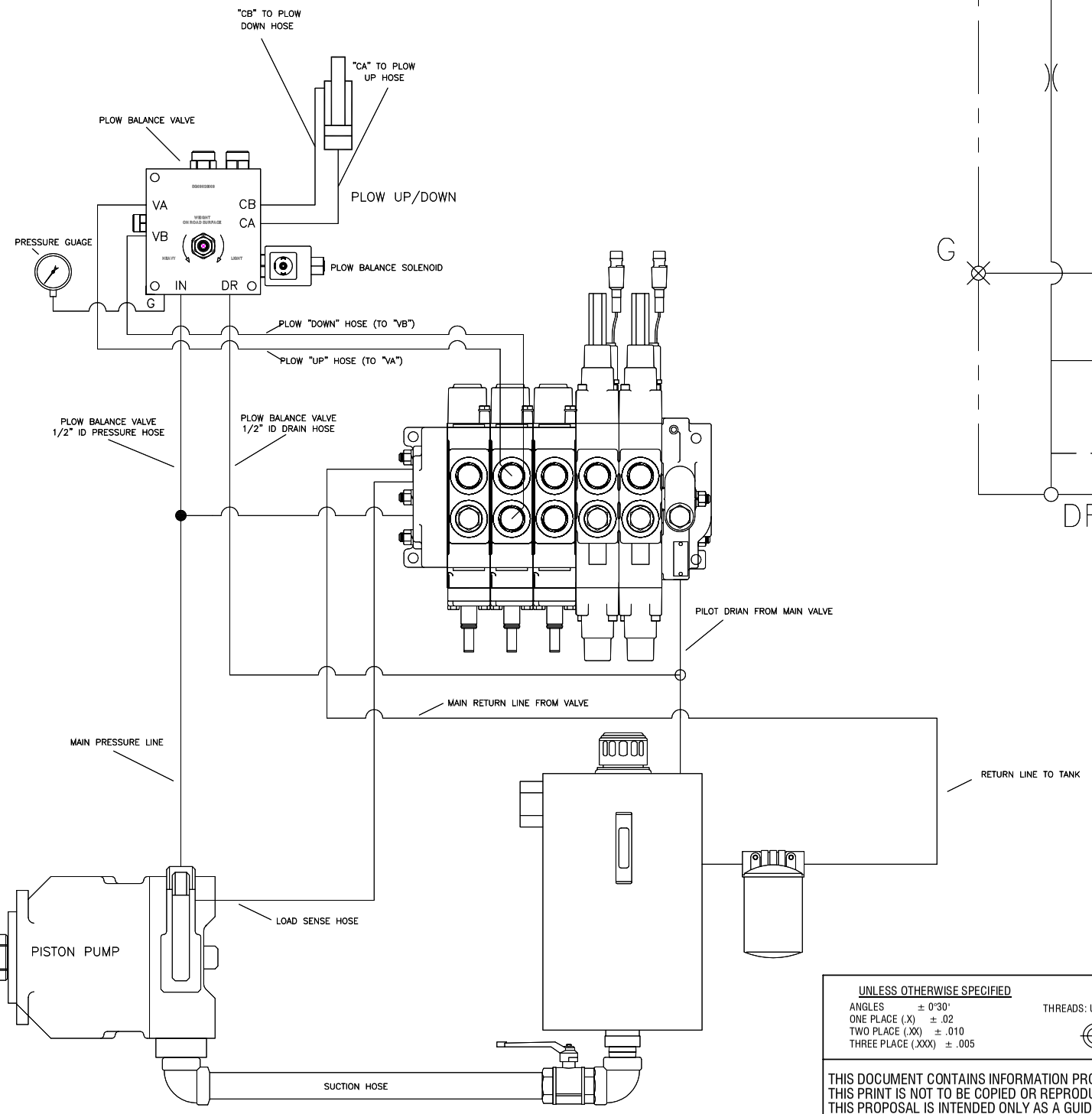
DRAWN BY	DATE	SCALE
NICK SCHULTZ	01/14/09	1-2
CHECKED BY: JIM TALBERT	01/14/09	1:2

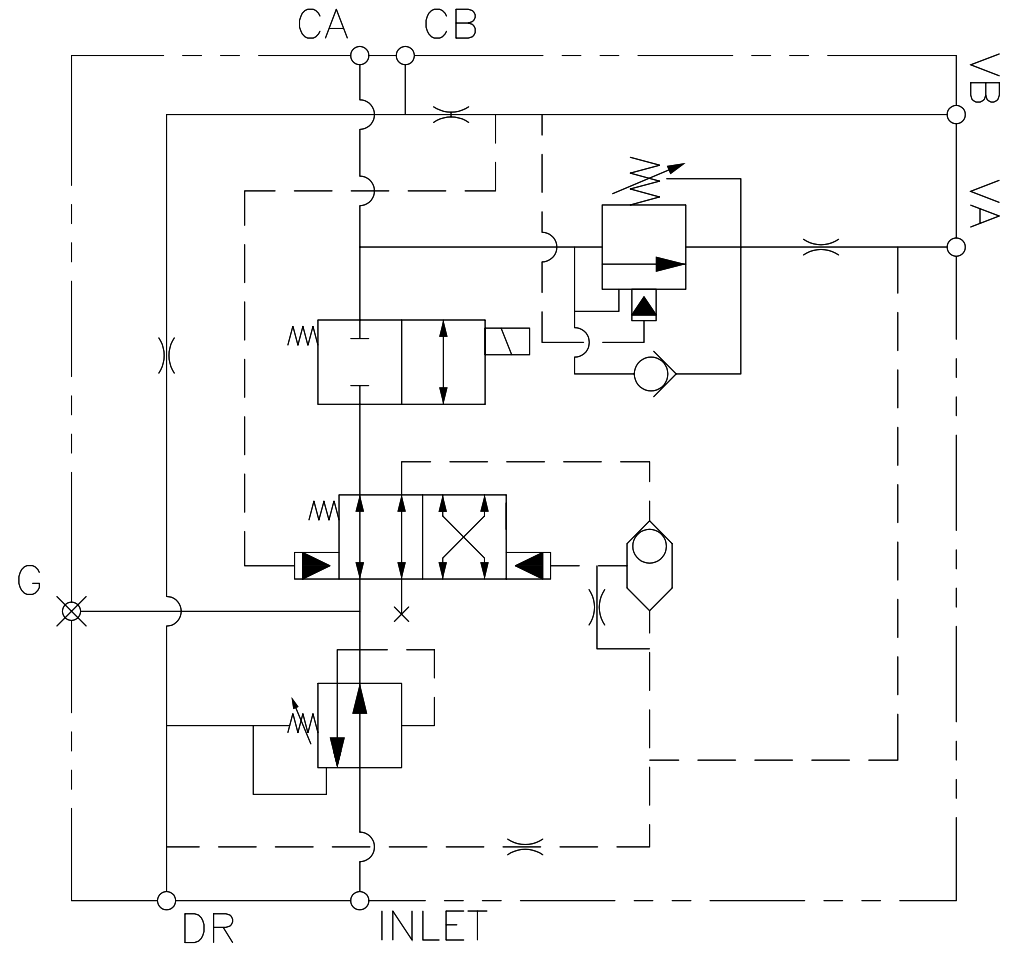
DRAWING NO. SG03020003 REVISION A

DWG. SIZE B

PLOW BALANCE VALVE SCHEMATIC AND PLUMBING OVERVIEW

"1/2 LOAD SENSE"





UNLESS OTHERWISE SPECIFIED
ANGLES ± 0°30'
ONE PLACE (.X) ± .02
TWO PLACE (.XX) ± .010
THREE PLACE (.XXX) ± .005

THREADS: UNIFIED NATIONAL FORM R.H. CLASS 2

THIRD ANGLE PROJECTION.

SYMBOLS INSPECTION
CRITICAL
SPC

Certified Power Inc.

PLOW BALANCE VALVE INFORMATION

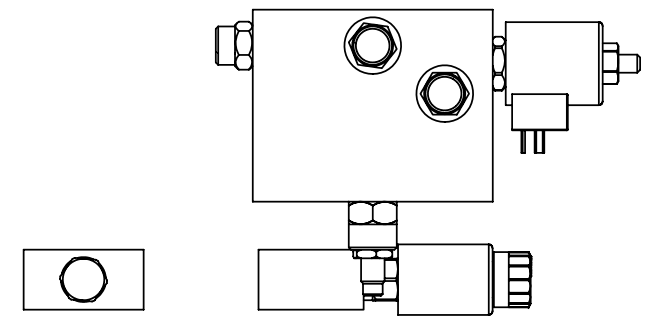
DRAWN BY	DATE	SCALE
NICK SCHULTZ	01/14/09	2-2
JIM TALBERT	01/14/09	1:2
DRAWING NO.		REVISION
SG03020003		A

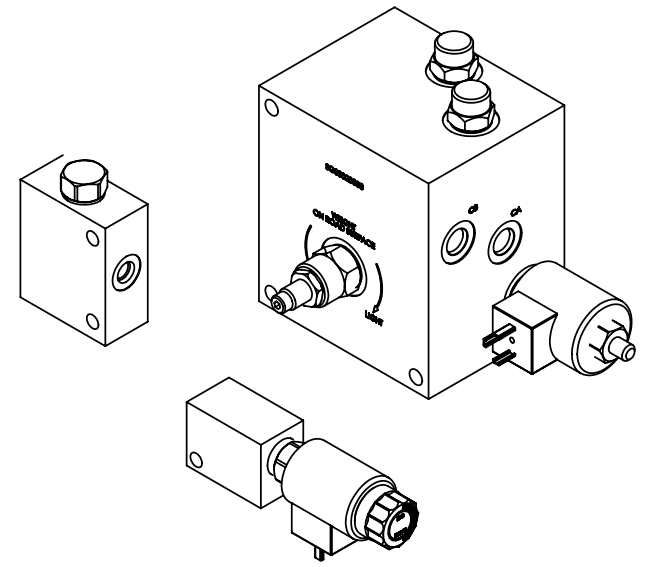
DWG. SIZE B

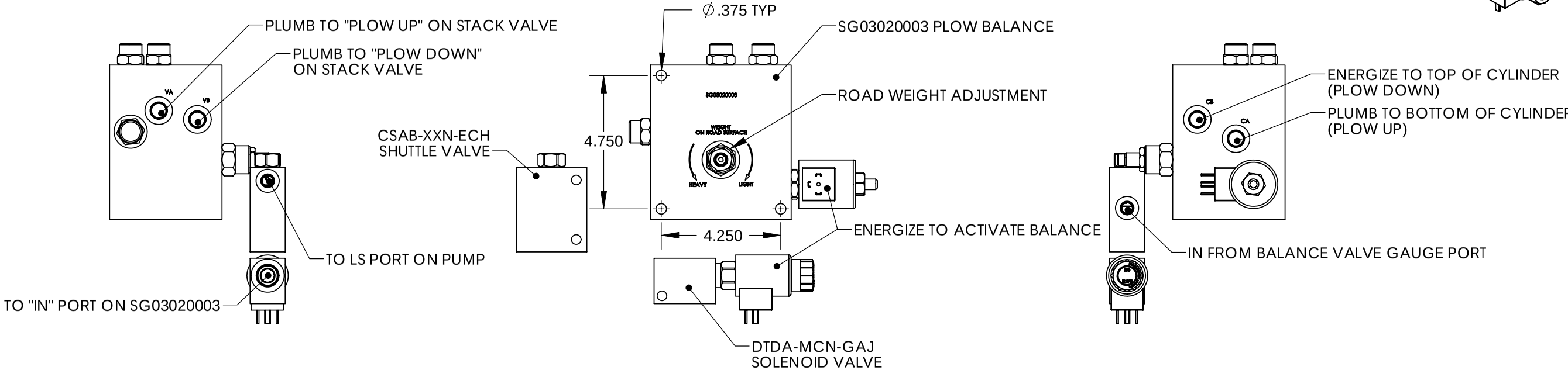
NOTES:
1. PRESSURE AND DRAIN PORT ARE #8 SAE
2. CYLINDER/VALVE PORTS ARE #6 SAE
3. GAUGE PORT IS #4 SAE
4. IF CYLINDER IS SINGLE ACTING PLUG CB PORT; HOWEVER VALVE MUST BE DOUBLE ACTING

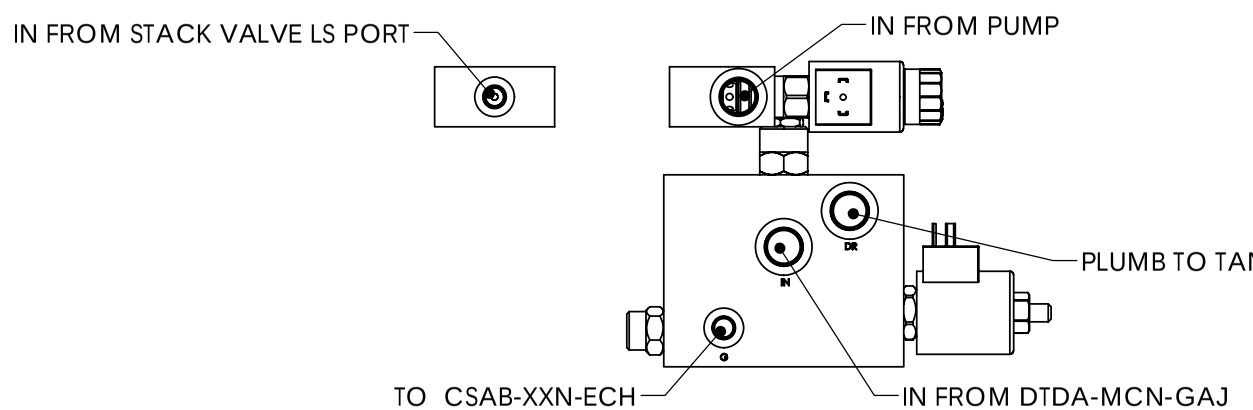
PLOW BALANCE VALVE GENERAL INFORMATION

"FULL LOAD SENSE"









REV	DATE	DESCRIPTION	DWN BY	APPD
A	01/19/09	RELEASE	NS	JT

UNLESS OTHERWISE SPECIFIED
ANGLES ± 0°30'
ONE PLACE (.X) ± .02
TWO PLACE (.XX) ± .010
THREE PLACE (.XXX) ± .005

THREADS: UNIFIED NATIONAL FORM R.H. CLASS 2

THIRD ANGLE PROJECTION.

SYMBOLS INSPECTION
CRITICAL
SPC

Certified Power Inc.

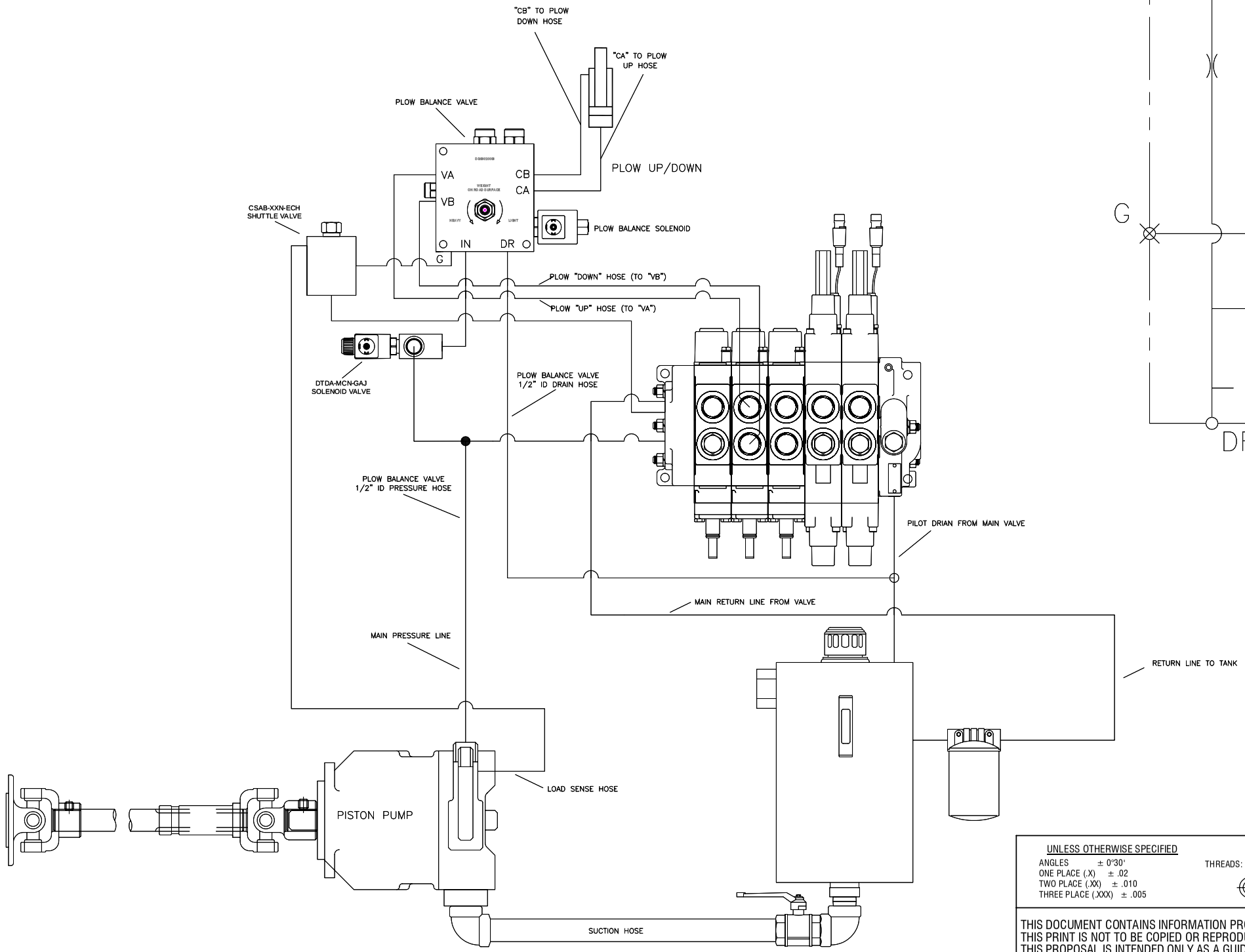
PLOW BALANCE VALVE INFORMATION

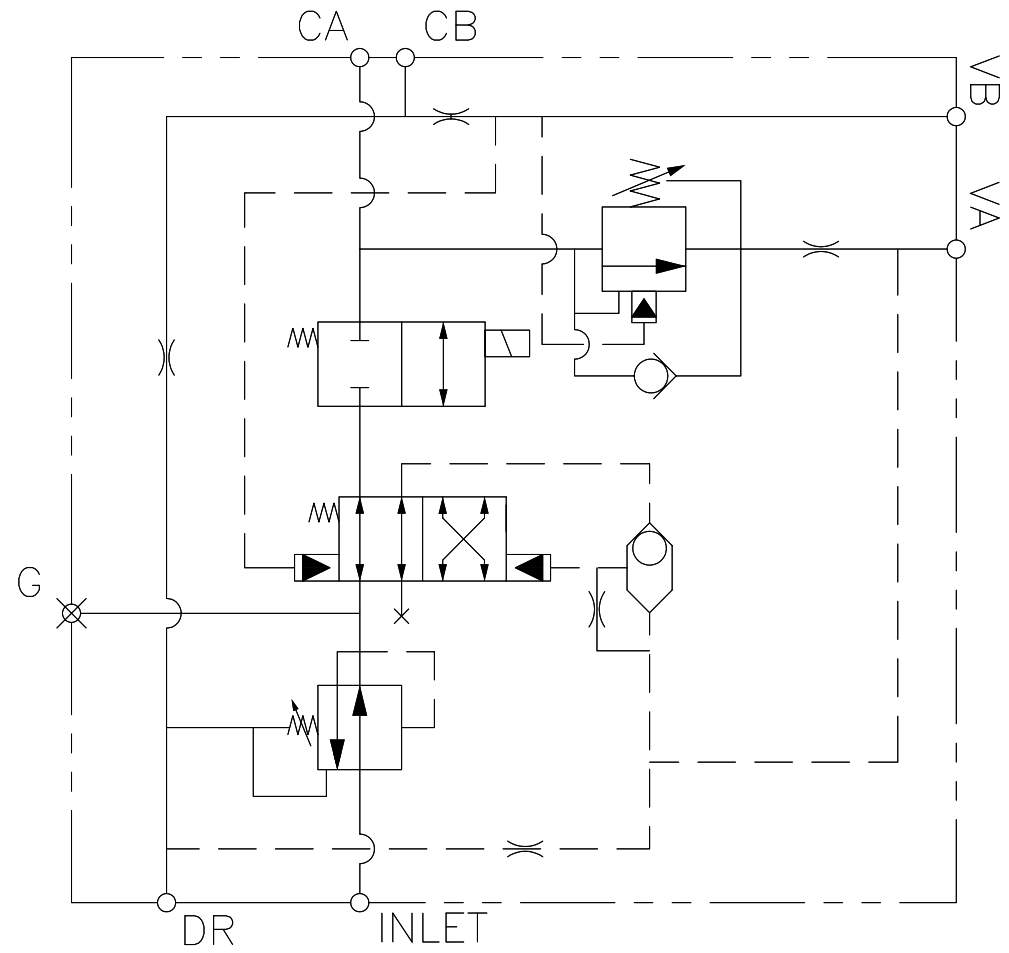
DRAWN	DATE	SCALE
NICK SCHULTZ	01/19/09	1-2
ENGINEER	DATE	SCALE
JIM TALBERT	01/19/09	1:4
DRAWING NO.		REVISION
SG03020008		A

DWG. SIZE B

PLOW BALANCE VALVE SCHEMATIC AND PLUMBING OVERVIEW

"1/2 LOAD SENSE"





UNLESS OTHERWISE SPECIFIED
ANGLES ± 0°30'
ONE PLACE (.X) ± .02
TWO PLACE (.XX) ± .010
THREE PLACE (.XXX) ± .005

THREADS: UNIFIED NATIONAL FORM R.H. CLASS 2

THIRD ANGLE PROJECTION.

SYMBOLS INSPECTION
CRITICAL
SPC

Certified Power Inc.

PLOW BALANCE VALVE INFORMATION

NICK SCHULTZ	01/19/09	2-2
JIM TALBERT	01/19/09	1:2
SG03020008		A

DWG. SIZE B

Custom Plow Guard Set Up

P/N SG07100196

REVISION B
REV DATE 10/07/15

Certified Power Solutions™

Des Moines, IA (800) 333-7411
Bridgeton, MO (800) 999-7411
Burnsville, MN (800) 289-1330
Perrysburg, OH (800) 374-7411
Mundelein, IL (888) 905-7411

Document Revision History

REVISION	DATE	DESCRIPTION
A	7/7/14	INITIAL RELEASE
B	10/7/15	UPDATED TO CURRENT MANUAL STANDARDS.

Purpose

This manual is to assist in the set-up of Plow Guard SG03030024 on a static bench, or when installed on the vehicle. Ensure you have the correct Plow Guard as shown on drawing SG03030024.

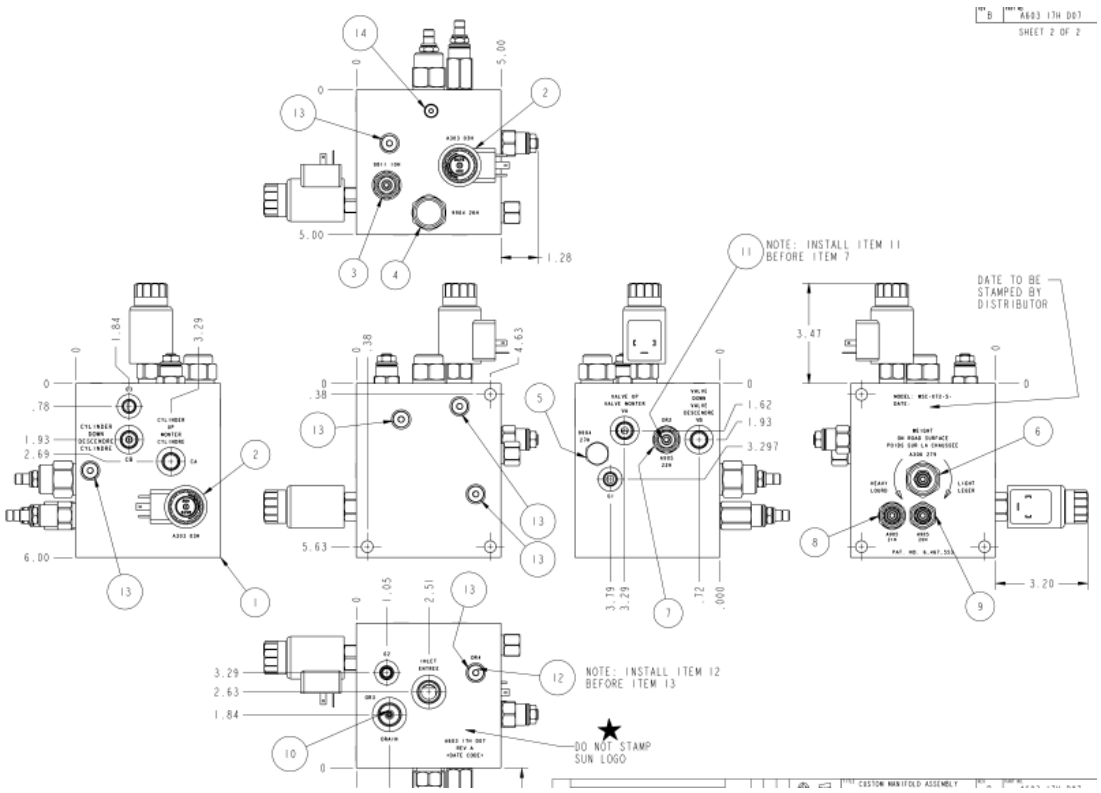
Static Preset Bench Set Up

1. Remove cartridge Item [7] A905-22H to change from .125 to .065 orifice OR2 Item [10].
2. Reinstall item [7] A905-22H to a torque of 30 to 35 ft lbs
3. Remove Item [10] OR3 from [DR or Drain] port. OR3 is now a .094 orifice and we will replace it with a .022 orifice.

Adjustments below will require a 9/16" box wrench and 4mm Allen wench.

4. Adjust Item [3]9811-10H by releasing lock nut and turning fully clockwise, gently, until it stops, then turn counterclockwise 1 turn, lock down lock nut.
5. Adjust Item [7] A905-22H by releasing lock nut and turning fully clockwise, gently, until it stops, lock in this position with lock nut.
6. Adjust Item [9] A905-20H by releasing lock nut and turning clockwise, gently, until it stops and then turn counterclockwise 1 ½ turn and lock in place while holding hex in place.
7. *Stamp "X "in the 3 o'clock position with reference to Item [9] A905-20H when Item [8] is at the 9 o'clock position in reference to item (9). Indicates Static adjustment complete.*

Reference Drawing (Below) for Adjustment Locations



Vehicle Set Up

1. After valve is mounted and plumbed correctly, the Plow Guard set up can be performed.
2. On PVG32 valves the Plow Down LS pressure should be adjusted to 1000PSI.

Refer to Setting individual function LS relief valves below if required.

a. You will need a long, ball ended, 4mm allen (hex) key to adjust the LS relief.
b. Sections equipped with LS relief valves are independently settable between A and B ports. Refer to FIGURE 1 for the location of these ports.

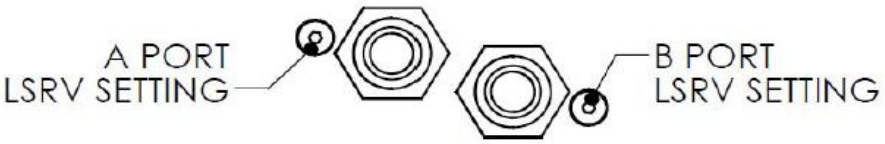
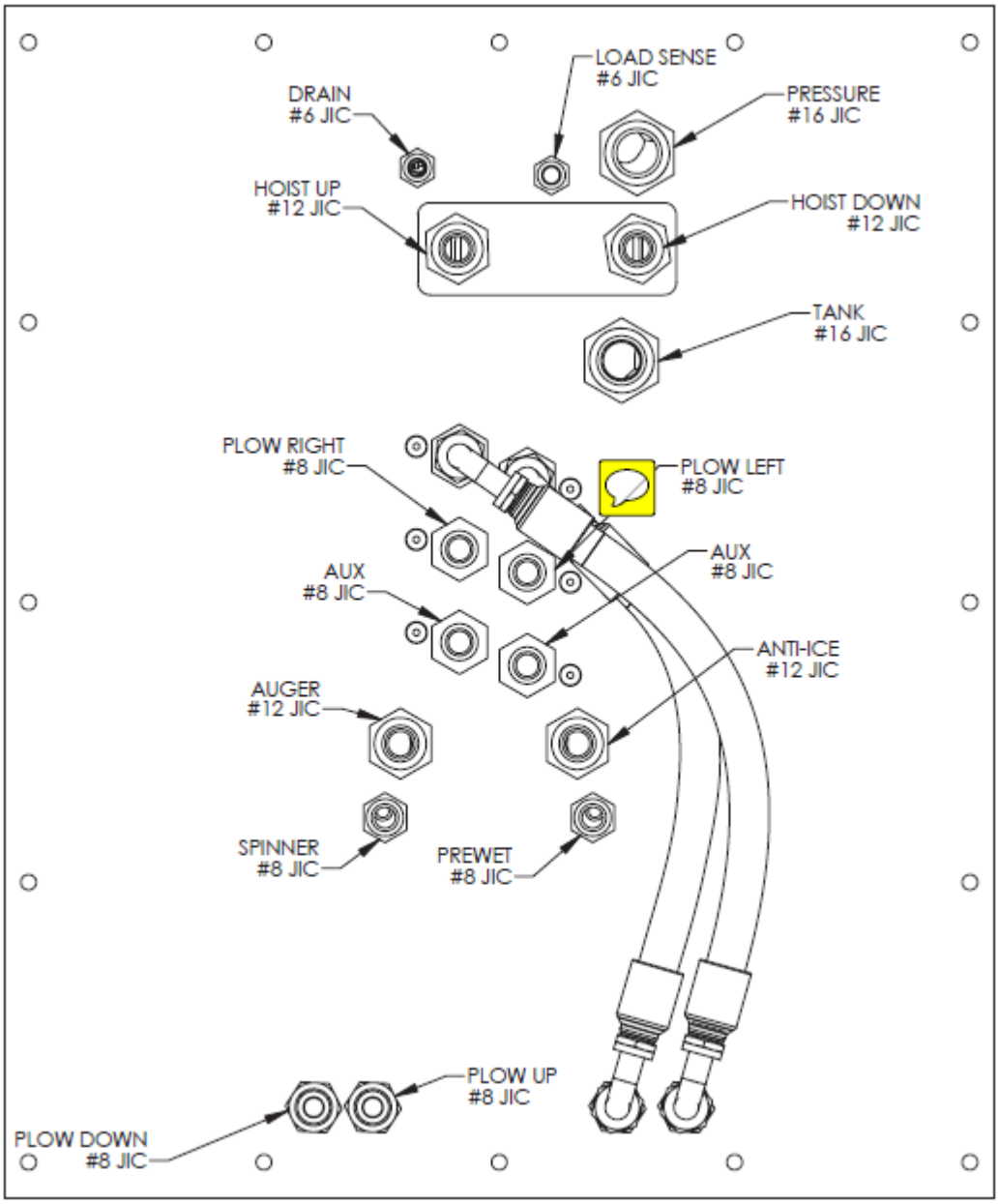


FIGURE 1

To access the LS relief, remove the cover plug for the plow down 'B' port using an 1/8" Allen key

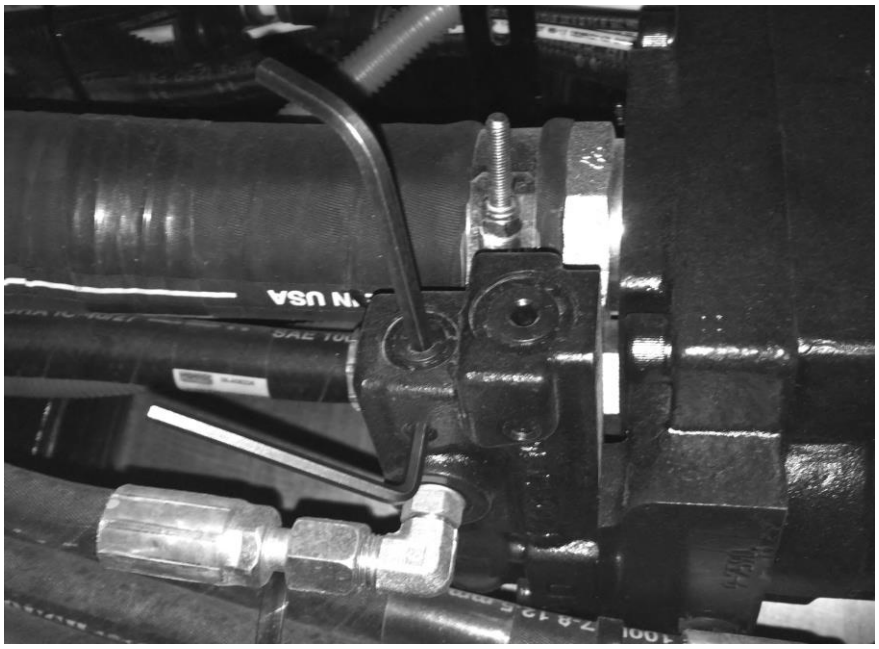


c. To increase the LS relief pressure setting turn the valve Clockwise, to decrease Counterclockwise.
d. View the plow down setting on the gauge on the valve stack or on the cab display.

Set pump Stand By pressure to a minimum setting of 550 PSI as seen on gauge.

a. Loosen retaining screw on side of compensator body
b. Adjust Stand By pressure turning spool on end of compensator.
c. Tighten retaining screw after adjustment.

d. NOTE: System pressure is adjusted on the inboard screw and spool to 2000PSI. Check system max pressure (2000-2200 PSI) by dead head a function, observe the system gauge.

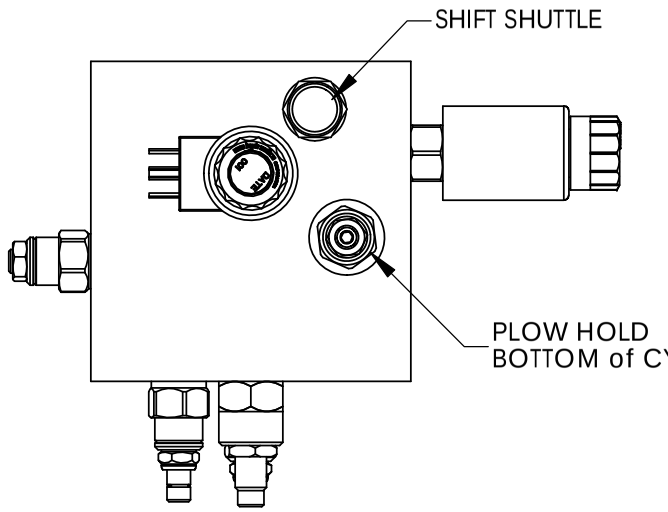


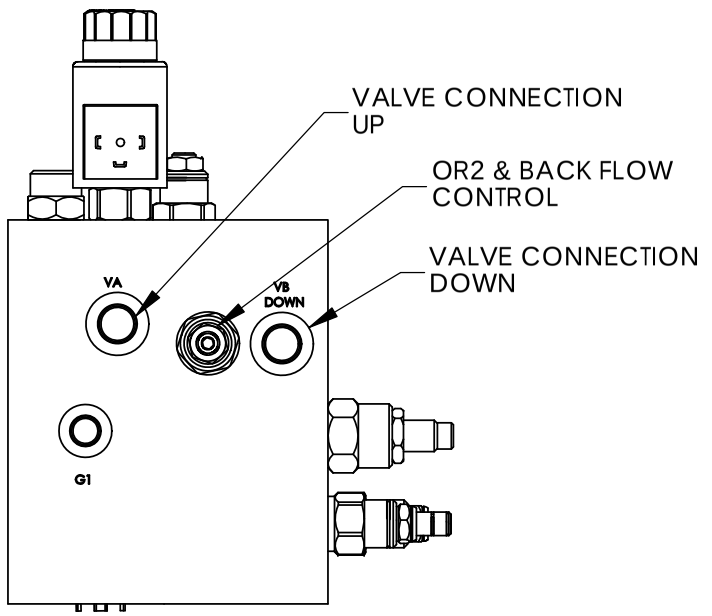
3. Set pump Stand By pressure to a minimum setting of 550 PSI as seen on gauge.
4. Attach gauges to all test ports G1, G2 and G3.
5. Confirm the Stand By pressure at 550 PSI.
6. Exercise plow up & down, without plow balance being energized the plow should act as if the plow balance is not in the circuit. Plow should hold and not drift down. If plow drifts down then check setting on Item [3] 9811-10H as set in bench setting, set valve higher by turning ¼ turn counterclockwise until drift stops.
7. Energize plow balance from cab of truck. With plow balance on inlet solenoid should be lighted and indicated as functional. If not check wiring for correct connections.
8. With plow balance on and coil powered adjust reducing relief valve Item [6] A306-279 by turning clockwise to increase pressure and counterclockwise to reduce pressure. Setting should be 465 PSI at G1 and valve setting should be locked in at this setting with lock nut.
9. With plow balance on and coil powered adjust reducing relief valve Item [8] A905-21H by turning clockwise to increase pressure and counterclockwise to reduce pressure. Setting should be 210 PSI at G3 and valve setting should be locked in at this setting with lock nut.
10. Put system into balance by pulling back on joy stick and then push forward for a short time this should cause plow to go into balance mode and float to the ground. At this time G1 and G2 should have nearly the same pressure reading. The only difference will be pressure drop thru valves.
11. Any additional adjustment of Item [6] or Item [8] may result in changes in the other. Item [6] effects Item [8] and Item [8] effects Item [6]. They are linked and at operational settings G2 should be approximately 465 PSI and G3 should be approximately 210 PSI.
12. All settings confirmed and valve is functional at this time, now a date stamp should be added to the area of the 'X' stamp and a final " personal initial " should be added as well.

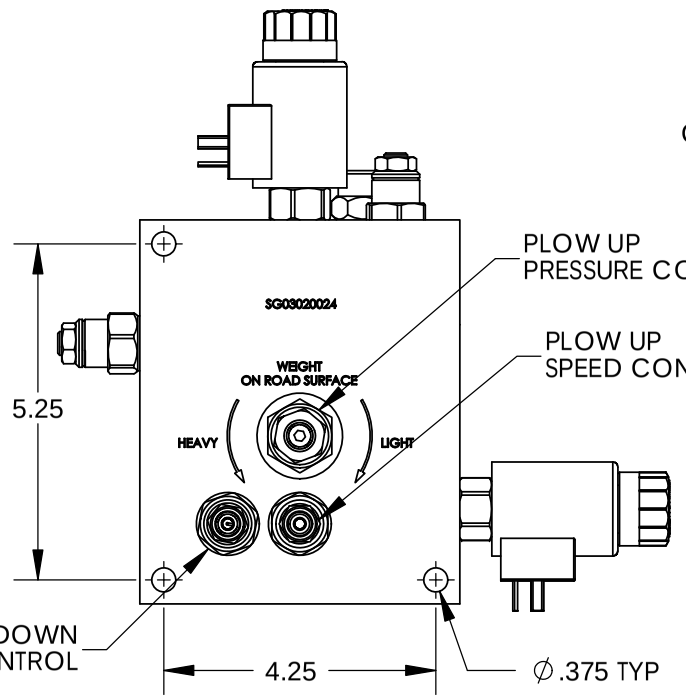
PLOW BALANCE VALVE GENERAL INFORMATION

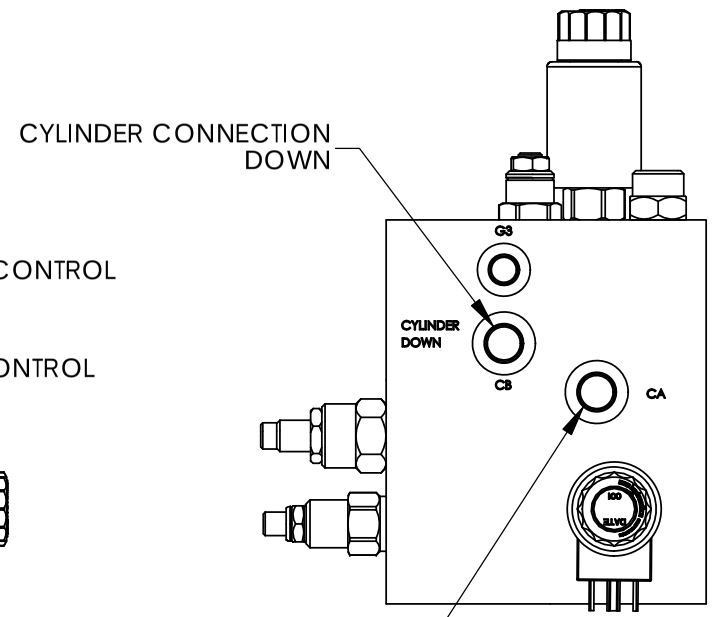
CUSTOM

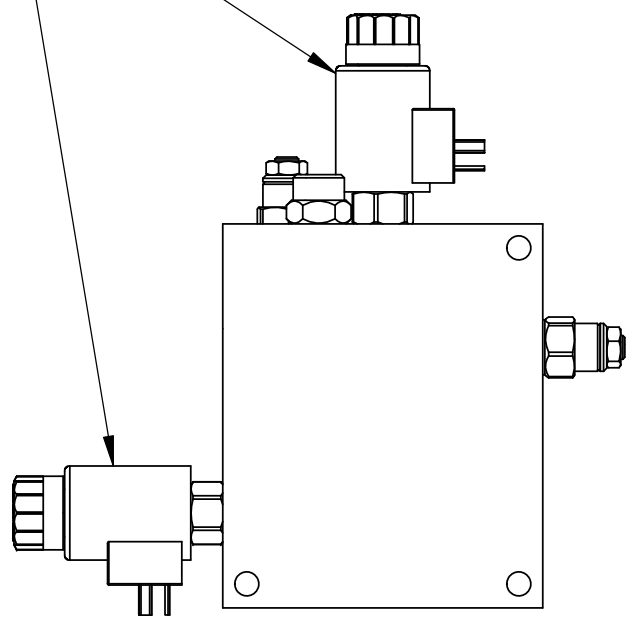
NOTES:
1. PRESSURE AND DRAIN PORT ARE #8 SAE
2. CYLINDER/VALVE PORTS ARE #6 SAE
3. GAUGE PORT IS #4 SAE
4. IF CYLINDER IS SINGLE ACTING PLUG CB PORT; HOWEVER VALVE MUST BE DOUBLE ACTING

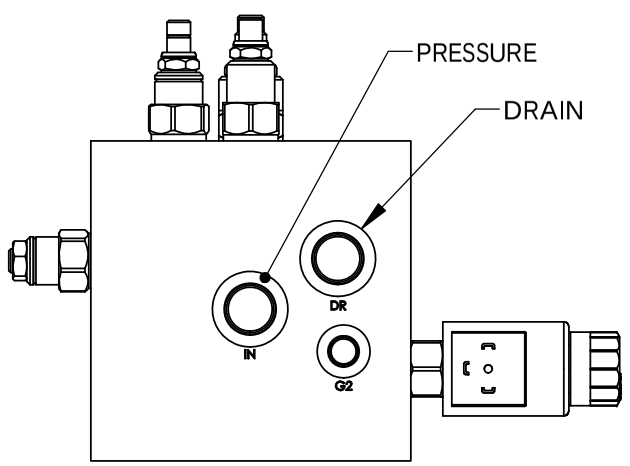












REV	DATE	CCN#	DWN BY	APPD
A	07/09/14	2247	ADMIN	JT

UNLESS OTHERWISE SPECIFIED
ANGLES ± 0°30'
ONE PLACE (.X) ± .02
TWO PLACE (.XX) ± .010
THREE PLACE (.XXX) ± .005

THREADS: UNIFIED NATIONAL FORM R.H. CLASS 2

THIRD ANGLE PROJECTION

SYMBOLS INSPECTION
CRITICAL
SPC

Certified Power Inc.

PLOW BALANCE VALVE INFORMATION

EPDM ADMIN	07/09/14	1-1
Jim Talbert	07/09/14	1:3
SG03020024		A

DWG. SIZE B

Open Center Plow Guard Set Up

P/N SG07100228

REVISION A
REV DATE 11/25/15

Des Moines, IA	**(800) 333-7411**
Bridgeton, MO	**(800) 999-7411**
Burnsville, MN	**(800) 289-1330**
Perrysburg, OH	**(800) 374-7411**
Mundelein, IL (888) 905-7411	

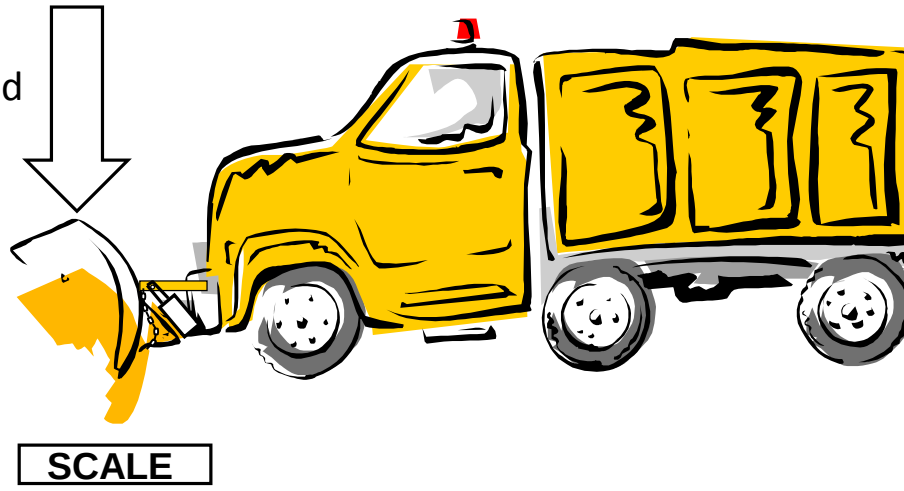
Initial Set-Up / Adjustment Procedures

This set up procedure is for the Open Center Plow Guard valve shown on drawings SG0302007. Read and understand procedure prior to starting set up.

1. Operation with Plow Balance "turned off":

Typical Plow Weights of: 2,500 to 4,000 lbs. on the road surface (scale).

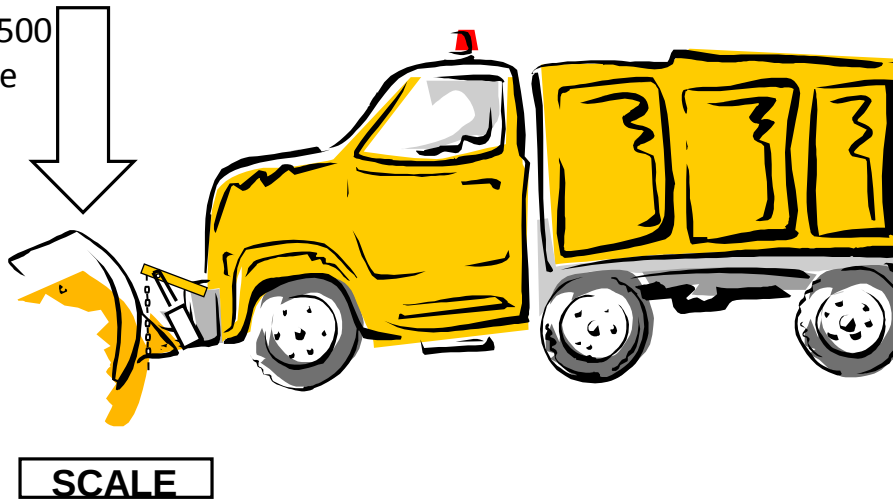
Notice the slack in the plow lift chains.



2. Operation with Plow Balance "turned on":

Recommended Plow Weights of: 500 to 1,000 lbs. on the road surface (scale).

Notice the plow lift chains are now tight.



Adjust as follows:

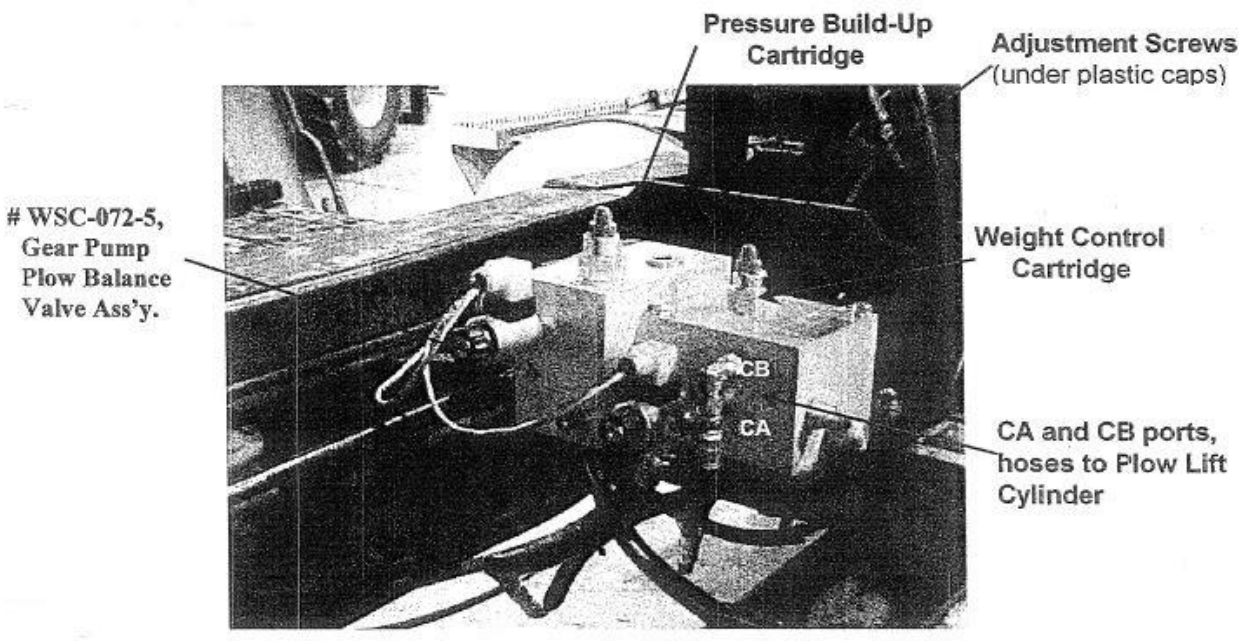
1.) Connect pressure gauge (0-1000psi) to test points G1 & G2.
    a. G1 show pressure setting of the Plow Weight Control cartridge.
    b. G2 shows pressure setting of the Pressure Build-up cartridge. Pressure Build-Up cartridge final setting should be approximately 25-50 psi higher than the Plow Weight Control cartridge.

2.) With the plow on a scale and Plow Balance valve turned on (both solenoids energized), check the scale reading (see step 2 above). **Stay clear of moving parts**!

3.) Using a 9/16" wrench, loosen the locknut on the Plow Weight Control and Pressure Build-Up cartridges.

4.) Adjust Plow Weight Control cartridge using a 5/32" hex key until desired scale reading is achieved. Increments of 1/8"-1/4" are recommended.
    a. Turn screws Clockwise to make the plow lighter on the scale.
    b. Turn screws Counterclockwise to make the plow heavier on the scale.

5.) Adjust Pressure Build-Up cartridge until the pressure gauge at port G2 reads 25-50 psi higher than the pressure gauge on port G1.
    a. Turn screws Clockwise to make the plow lighter on the scale.
    b. Turn screws Counterclockwise to make the plow heavier on the scale.



Notes:
1.) After initial set-up no further adjustment will be required, unless a significantly lighter or heavier plow is installed on the vehicle.
2.) Observe all safety precautions whil installing valve and making adjustments. **Stay clear of moving parts**!

Whelen Light & Harness Package – AKDOTSY3

AKDOTSY3 (160452) BILL OF MATERIALS

Part Number	Sub Assembly Part Numbers	Description	Qty. Per AKDOTSY3	Sub Assembly Qty.
01-0416222-000		KIT, DOT 9/C FLEX TUBING	1	
01-0417354-009		KIT, INSTALLATION SUPER-LED	1	
01-0418310-01C		KIT, STRAIN RELIEF MTG CLIP	1	
01-0464073-000		KIT, CABLE INSTALL 5/C "D"	2	
01-0686731AXVF		ASSY, DOT 400 D LINEAR LED SQUARE AMB/BTT/B-UP	1	
	01-026E462-51A	SUB ASSY, 400 LED B/T/T 12V		1
	01-026G397V11C	SUB ASSY, 400 BACK-UP VERT 12V		1
	01-0286361811J	SUB ASSY, 400 6 AMB/6 AMB DEUT		1
	07-744043-0010	PLATE, SIDE WINDOW COVER		1
	10-0320776-00A	LABEL, MADE IN USA FLAG		1
	11-483984-0000	FACEPLATE, MOUNTING 400 SERIES		3
	11-486734-1SSD	HOUSING, LTHD DOT 400/TIR3		1
	13-130130-0720	NUT, 1/4-20 ELASTIC STOP BRASS		2
	14-130186-1200	SCREW, 1/4-20 X 3/4" TORX FLAT		2
	15-061416-2400	SCREW, 6 X 1-1/2 PPHSMS		12
	21-3718388-010	PLUG, DOME, 1.125" HOLE DIA		3
	68-1964039-1S0	LENS, AMBER OPTIC VERTICAL		1
	68-3183725-3SB	LENS, CLEAR NON OPTIC W/ SEAL		1
	68-3183725-5SB	LENS, RED NON OPTIC W/ SEAL		1
01-0686731BXVF		ASSY, DOT 400 D LINEAR LED SQUARE BLUE/BTT/B-UP	1	
	01-026E462-51A	SUB ASSY, 400 LED B/T/T 12V		1
	01-026G397V11C	SUB ASSY, 400 BACK-UP VERT 12V		1
	01-0286361822J	SUB ASSY, 400 6 BLU/6 BLU DEUT		1
	07-744043-0010	PLATE, SIDE WINDOW COVER		1
	10-0320776-00A	LABEL, MADE IN USA FLAG		1
	11-483984-0000	FACEPLATE, MOUNTING 400 SERIES		3
	11-486734-1SSD	HOUSING, LTHD DOT 400/TIR3		1
	13-130130-0720	NUT, 1/4-20 ELASTIC STOP BRASS		2
	14-130186-1200	SCREW, 1/4-20 X 3/4" TORX FLAT		2
	15-061416-2400	SCREW, 6 X 1-1/2 PPHSMS		12
	21-3718388-010	PLUG, DOME, 1.125" HOLE DIA		3
	68-1964039-2S0	LENS, BLUE OPTIC VERTICAL		1
	68-3183725-3SB	LENS, CLEAR NON OPTIC W/ SEAL		1
	68-3183725-5SB	LENS, RED NON OPTIC W/ SEAL		1
01-0686920-00C		ASSY, D.O.T. JUNCTION BOX	1	
	01-0264258-01	BOARD,FLASHER,WHELEN		1
01-06869641A1D		ASSY, DOT 400 MICRO-EDGE 3-LT	1	
01-06869641B0D		ASSY, DOT 400 MICRO-EDGE 3-LT	1	
03-0110020-000		CARTON, 1200 AD DIE CUT	1	
03-0110048-000		CARTON, #M-12-S1 MASTER	2	
04-0113861-00H		INSTRUCTION SHEET	1	
39-3L12025-060		HOUSING, 2-3 PIN BUSSED, RECPT	2	
46-0764073-450		ASS'Y, CABLE 5/C 18 GA TPR 45'	2	
46-076D170-02A		ASSY, HARNESS 2:4 RED/BLK	2	
46-076D185-45A		ASSY, CABLE 2/C 14 GA 45'	2	

ENGINEERING COMPANY INC.
51 Winthrop Road
Chester, Connecticut 06412-0684
Phone: (860) 526-9504
Fax: (860) 526-4078
Internet: www.whelen.com
Sales e-mail: autosale@whelen.com
Canadian Sales e-mail: canadiansales@whelen.com
Customer Service e-mail: custserv@whelen.com

Installation Guide:
DOT-LED® All LED DOT System

Automotive: DOT

Safety First

This document provides all the necessary information to allow your Whelen product to be properly and safely installed. Before beginning the installation and/or operation of your new product, the installation technician and operator must read this manual completely. Important information is contained herein that could prevent serious injury or damage.

- **Proper installation of this product requires the installer to have a good understanding of automotive electronics, systems and procedures.**
- **Failure to use specified installation parts and/or hardware will void the product warranty!**
- **If mounting this product requires drilling holes, the installer MUST be sure that no vehicle components or other vital parts could be damaged by the drilling process. Check both sides of the mounting surface before drilling begins. Also de-burr any holes and remove any metal shards or remnants. Install grommets into all wire passage holes.**
- **If this manual states that this product may be mounted with suction cups, magnets, tape or Velcro®, clean the mounting surface with a 50/50 mix of isopropyl alcohol and water and dry thoroughly.**
- **Do not install this product or route any wires in the deployment area of your air bag. Equipment mounted or located in the air bag deployment area will damage or reduce the effectiveness of the air bag, or become a projectile that could cause serious personal injury or death. Refer to your vehicle owner's manual for the air bag deployment area. The User/Installer assumes full responsibility to determine proper mounting location, based on providing ultimate safety to all passengers inside the vehicle.**
- **For this product to operate at optimum efficiency, a good electrical connection to chassis ground must be made. The recommended procedure requires the product ground wire to be connected directly to the NEGATIVE (-) battery post.**
- **If this product uses a remote device to activate or control this product, make sure that this control is located in an area that allows both the vehicle and the control to be operated safely in any driving condition.**
- **Do not attempt to activate or control this device in a hazardous driving situation.**
- **If this product contains strobe light(s), halogen light(s) or high-intensity LEDs, do not stare directly into these lights at a close distance. Momentary blindness and/or eye damage could result.**
- **Use only soap and water to clean the outer lens. Use of other chemicals could result in premature lens cracking (crazing) and discoloration. Lens in this condition have significantly reduced effectiveness and should be replaced immediately. Inspect and operate this product regularly to confirm its proper operation and mounting condition. Do not use a pressure washer to clean this product.**
- **It is recommended that these instructions be stored in a safe place and referred to when performing maintenance and/or reinstallation of this product.**
- **FAILURE TO FOLLOW THESE SAFETY PRECAUTIONS AND INSTRUCTIONS COULD RESULT IN DAMAGE TO THE PRODUCT OR VEHICLE AND/OR SERIOUS INJURY TO YOU AND YOUR PASSENGERS!**

***For warranty information regarding this product, visit* www.whelen.com/warranty**

Form No.13861G (110812)

Mounting the Flasher: One of the most common places chosen is against the rear wall of the cab. This is a good choice for several reasons, such as good air circulation and heat dissipation.

- **The flasher is not waterproof. The mounting area must be dry and free from elements that could damage the unit (road salt, sand, snow).**
- **The flasher should not be exposed to excessive heat.**
- **The mounting area should be easily accessible for wiring and service purposes.**
- **Mounting the flasher to a metal surface is recommended for optimum heat dissipation.**
- **Be sure that the backside of the proposed mounting surface does not hide any wires, cables, fuel lines, etc., that could be damaged by drilling the mounting holes.**
- **Select a location towards the middle of the cab.**
- **Be sure that the mounting location is a minimum of 8" from the cab floor.**
- **The flasher should be mounted on as flat a surface as possible.**

DOT-LED®: Included are two, 10-12 gauge and twenty four, 14-16 gauge Faston connectors to connect your lighting options to the flasher and to connect your power wires.

IMPORTANT WARNING!

CAUTION! DO NOT LOOK DIRECTLY AT THESE LED'S WHILE THEY ARE ON. MOMENTARY BLINDNESS AND/OR EYE DAMAGE COULD RESULT!

WARNING! All customer supplied wires that connect to the positive terminal of the battery must be sized to supply at least 125% of the maximum operating current and FUSED at the battery to carry that load. DO NOT USE CIRCUIT BREAKERS WITH THIS PRODUCT!

IMPORTANT! Before returning the vehicle to active service, visually confirm the proper operation of this product, as well as all vehicle components/equipment

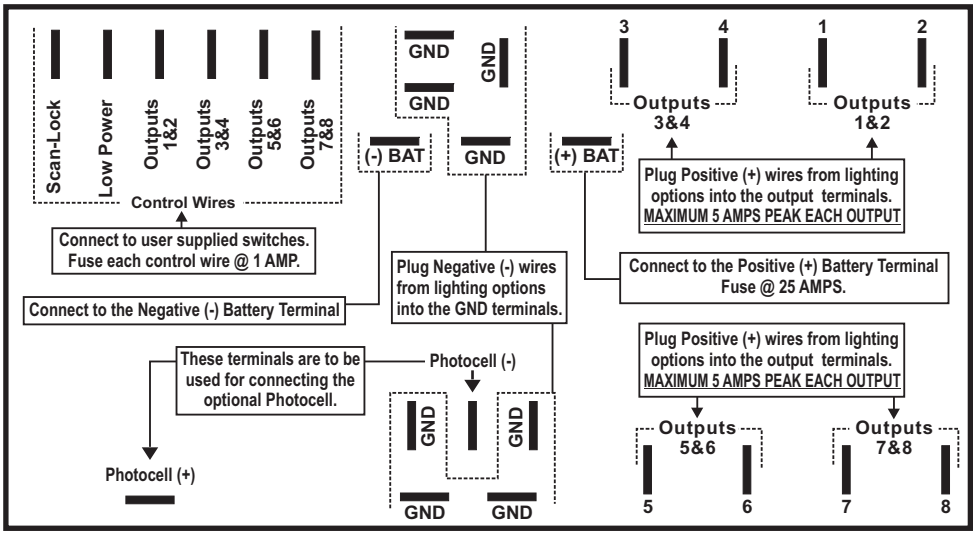
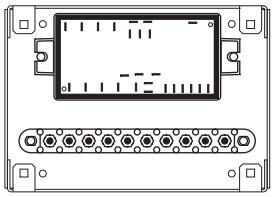


Fig. 1 Flasher

IMPORTANT: Outputs 1 thru 8 will handle a maximum of 5 AMPS Peak each.



IMPORTANT! Do NOT mount the Junction Box where it could be exposed to moisture. The recommended mounting location is within the passenger compartment.

WARNING: All Customer supplied wires that connect to the positive terminal of the battery must be sized to supply at least 125% of the maximum operating current and fused "at the battery" to carry that load. DO NOT USE CIRCUIT BREAKERS WITH THIS PRODUCT!

Flasher Connection & Operation:

Connect your lighting options (Lightheads, beacons etc...) to the flasher as shown. Connect the positive wire of the lighting option to outputs 1 thru 8 **(Each outlet will handle 5 AMPS PEAK)**. Connect the negative wires of your lighting options to any of the ground terminals. All terminals take a Faston connector (supplied). Applying +12V DC to the positive wire will activate its outlet or function (See wiring diagram).

NOTE: Keep in mind that each control wire activates two outlets each. Be sure to connect lights that need to be on the same circuit accordingly, such as 2 front lightheads or both rear options would be. Fuse the control wires at 1 AMP each.

Hi/Low Power: This feature allows the user to step the unit down to low power operation for nighttime use

Option 1 / Latching Mode: By applying +12V DC to the *"Hi/Low Power Control Wire"* for less than 1 second, the system is latched into low power operation. The unit must be turned off and then back on to restore normal high power (Momentary Switch).

Option 2 / Level Mode: Applying +12V DC to the *"Hi/Low Power Control Wire"* for more than 1 second holds the system in low power until the voltage is removed (Toggle Switch).

Photocell (optional): If you have the photocell option, plug the BLACK wire into the negative photocell terminal, the RED wire into the positive photocell terminal and the VIOLET wire into the low power terminal of the flasher (see wiring diagram). With the photocell hooked up, the system will switch to low power automatically at night. Mount the photocell where it will be exposed to daylight, away from any vehicle lighting.

Scan-Lock™:

Scan-Lock allows the user to choose from several flash patterns. The entire system will display the pattern you choose (All outputs will display the same pattern).

TO CYCLE FORWARD THROUGH FLASH PATTERNS: Activate any of the outputs by applying power. With the outputs activated apply +VBAT to the Scan-Lock wire for less than 1 second and release. Repeat to advance to next pattern.

TO CHOOSE A PATTERN: While cycling through the available flash patterns allowing a pattern to run for at least 5 seconds will configure it as the default pattern. Now when activated the entire system will display this flash pattern.

TO RESET TO THE FACTORY DEFAULT PATTERN: Turn off all functions. Apply +VBAT to the Scan-lock wire while turning any of the functions back on. The system is now restored to its factory default pattern.

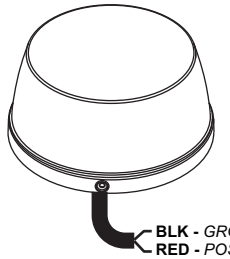
Available Flash Patterns: 1 - SignalAlert™ Outputs 1, 2, 3 & 4 alternate with 5, 6, 7 & 8 **> 2 - SignalAlert™** Outputs 1, 3, 5 & 7 alternate with 2, 4, 6 & 8 **> 3 - SignalAlert™** All outputs flash simultaneously **> 4 - CometFlash® 75** Outputs 1, 2, 3 & 4 alternate with 5, 6, 7 & 8 **> 5 - CometFlash® 75** Outputs 1, 3, 5 & 7 Alternate with 2, 4, 6 & 8 **> 6 - CometFlash® 75** All outputs flash simultaneously.
Available SSNF Flash Patterns: (Outputs 1, 2, 3 & 4 display CometFlash® and Outputs 5, 6, 7 & 8 display SingleFlash) 7 - SSNF: Outputs 1, 2, 7 & 8 alternate with 3, 4, 5 & 6 **> 8 - SSNF:** Outputs 1, 4, 5 & 8 alternate with 2, 3, 6 & 7 **> 9 - SSNF:** All outputs flash simultaneously

FRONT OPTIONS:

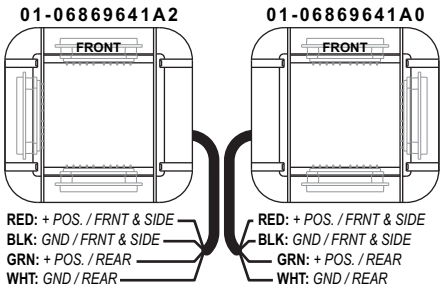
FRONT LIGHTING OPTIONS FOR THE SYSTEMS COVERED BY THIS MANUAL

ALL WIRES CONNECT DIRECTLY TO FLASHER.

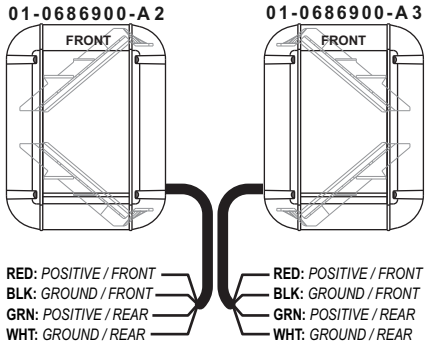
L31 Series Super-LED® Beacon
01-0684467-A6B



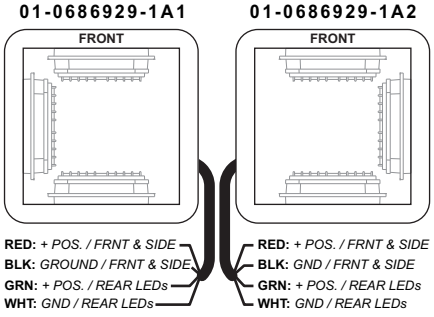
Micro Edge® 400 DOT Remote (3 Lt.)



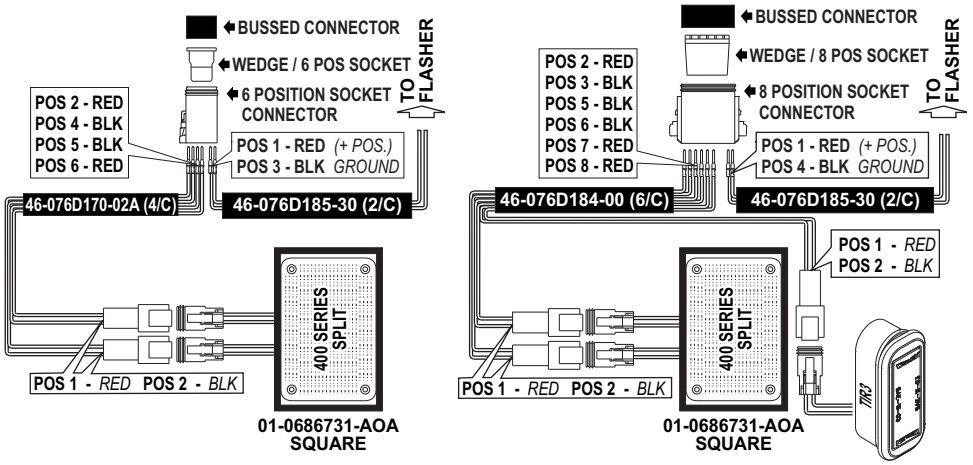
Ultra Freedom Micro Edge®

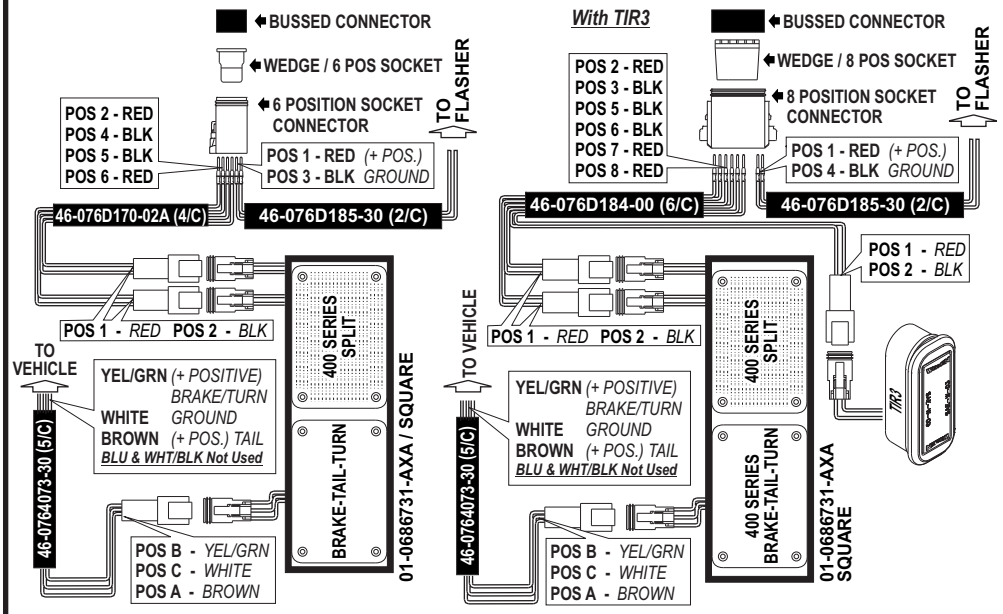


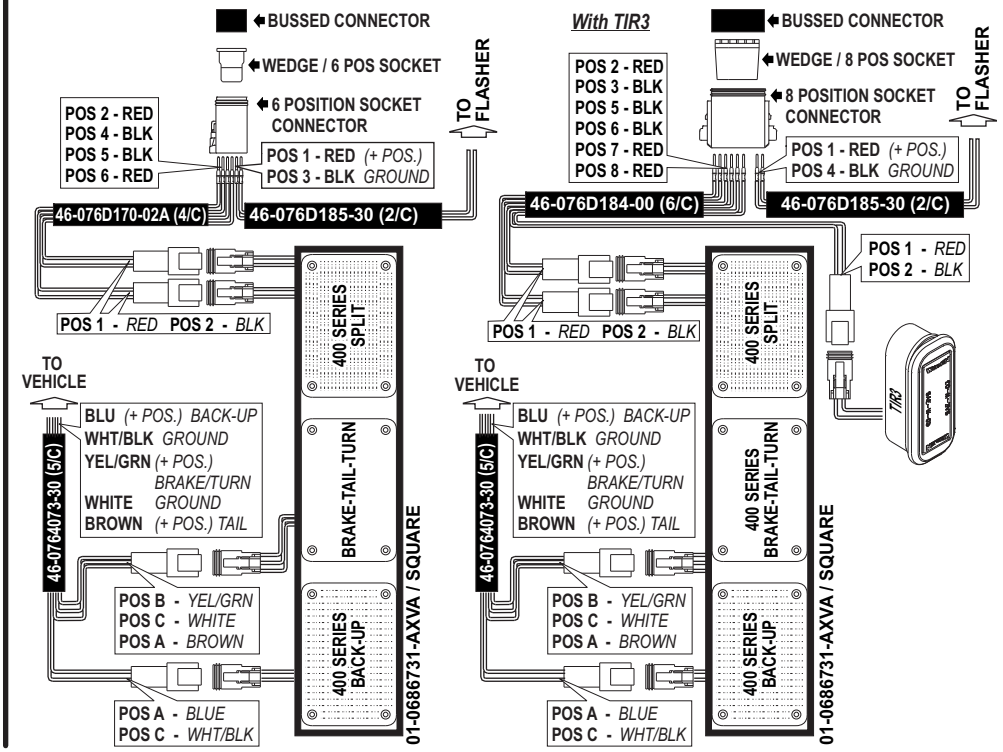
Micro 400 "3" Light DOT 01-06869291_1



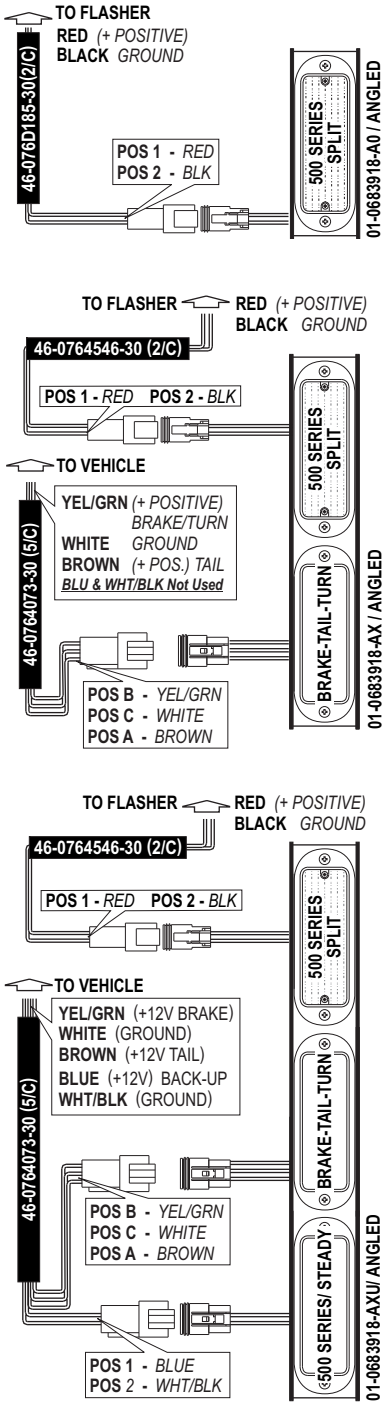
REAR / 400 Series — *With TIR3*



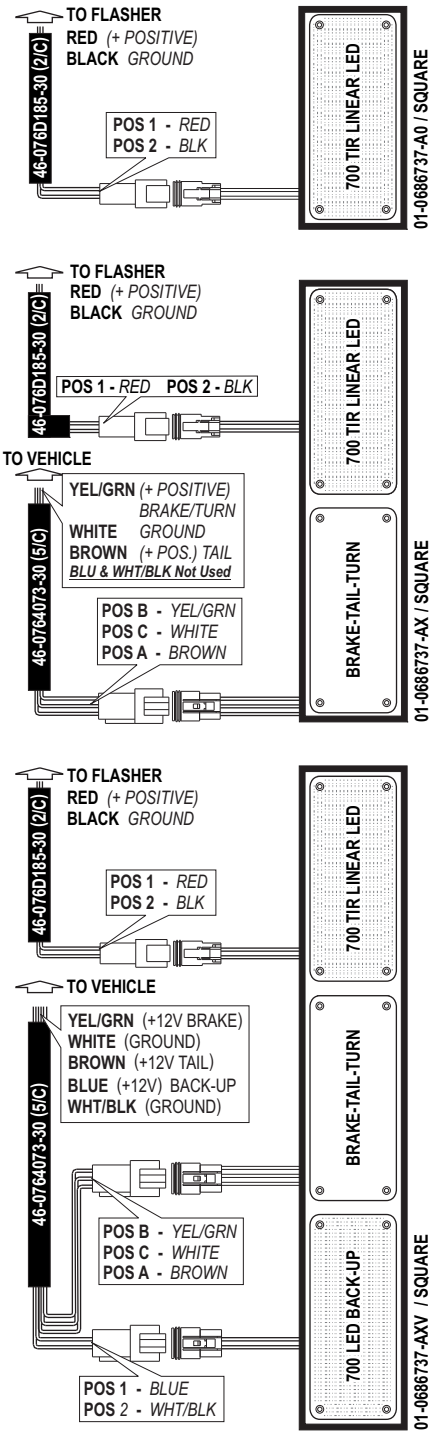




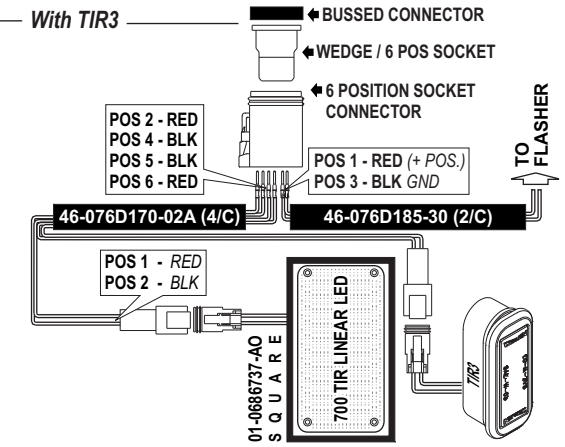
REAR / 500 Series



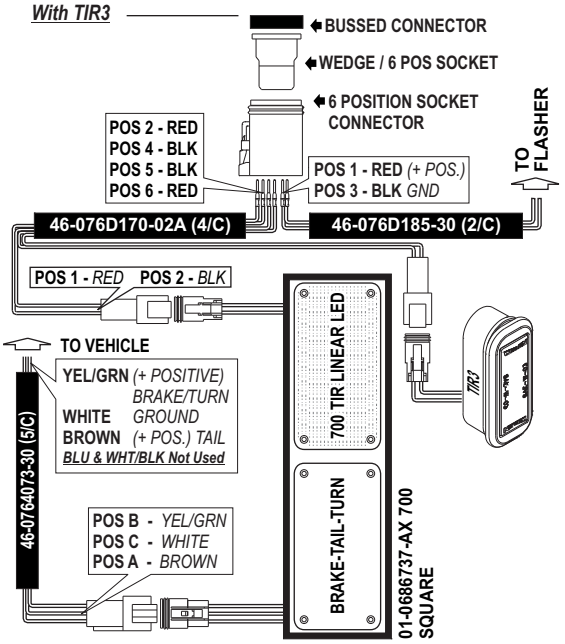
REAR / 700 Series



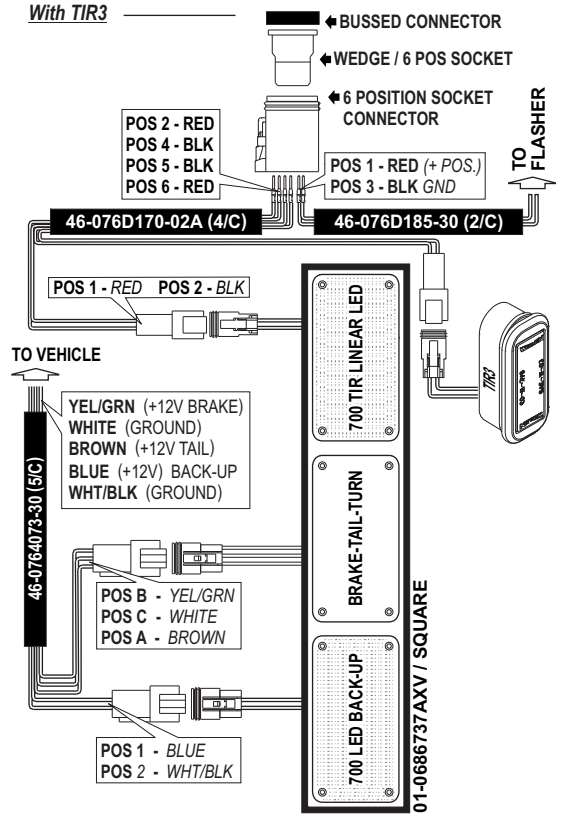
With TIR3



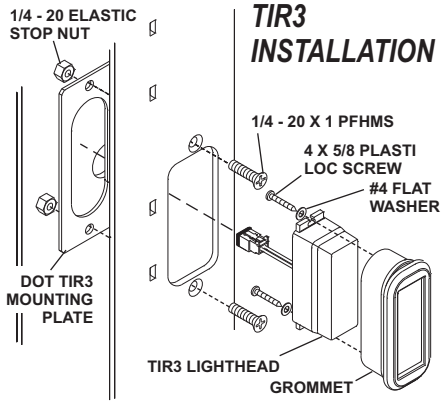
With TIR3



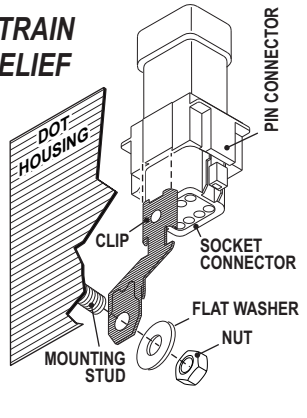
With TIR3

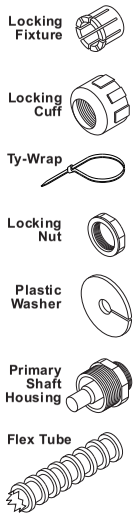


TIR3 INSTALLATION



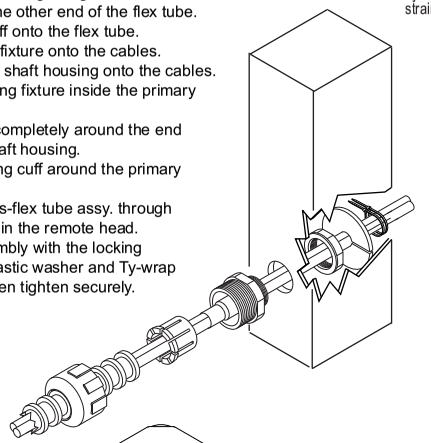
STRAIN RELIEF

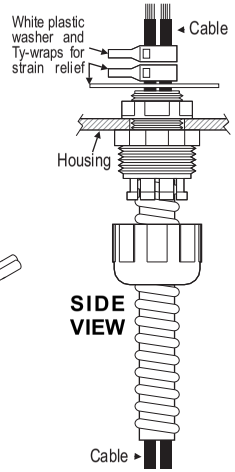


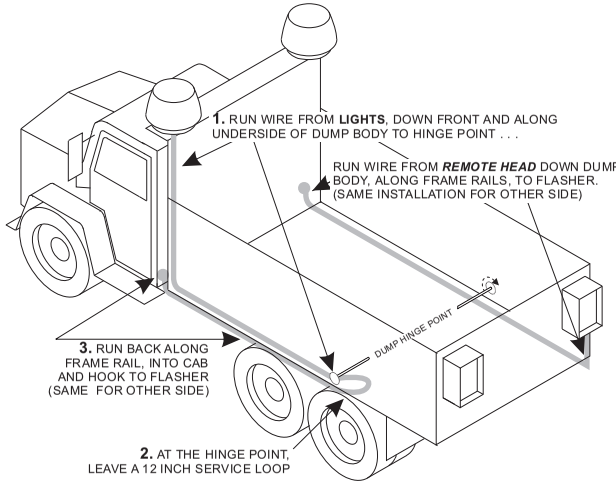


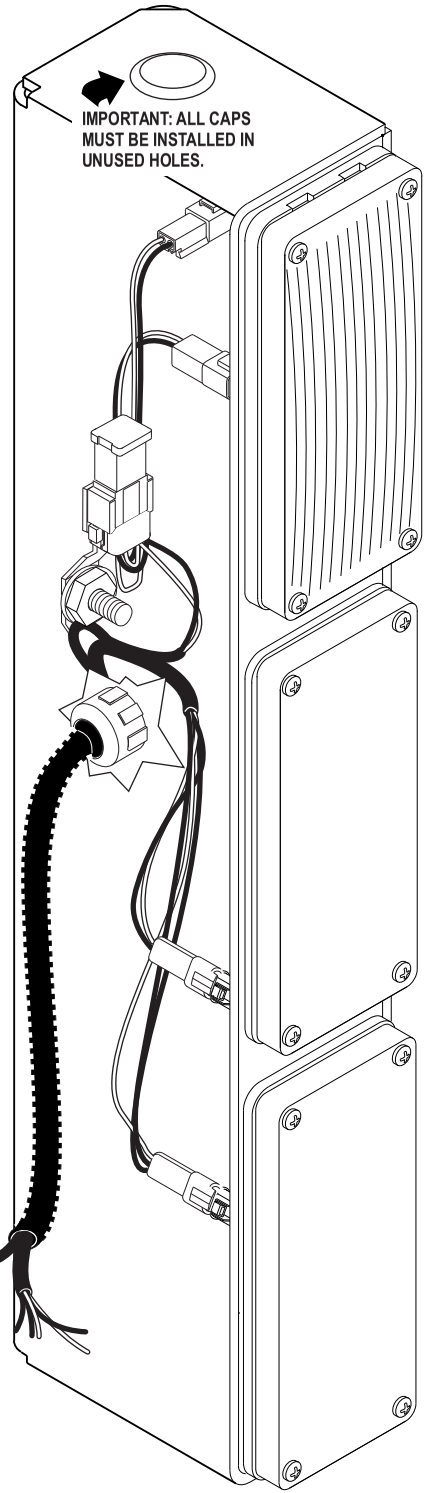
Flex Tube Assembly:

1. Insert the harness cables into the flex tube. Be sure there is enough length of cable pulled through the other end of the flex tube.
2. Fit the locking cuff onto the flex tube.
3. Slide the locking fixture onto the cables.
4. Slide the primary shaft housing onto the cables.
5. Position the locking fixture inside the primary shaft housing.
6. Fit the flex tube completely around the end of the primary shaft housing.
7. Tighten the locking cuff around the primary shaft housing.
8. Insert the harness-flex tube assy. through the wire opening in the remote head.
9. Secure the assembly with the locking nut and install plastic washer and Ty-wrap for strain relief then tighten securely.



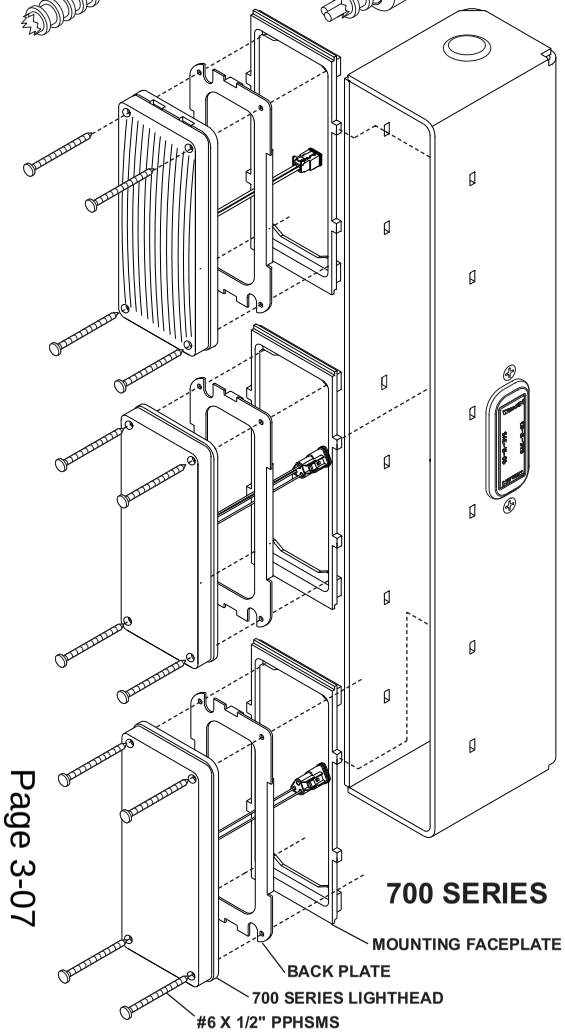


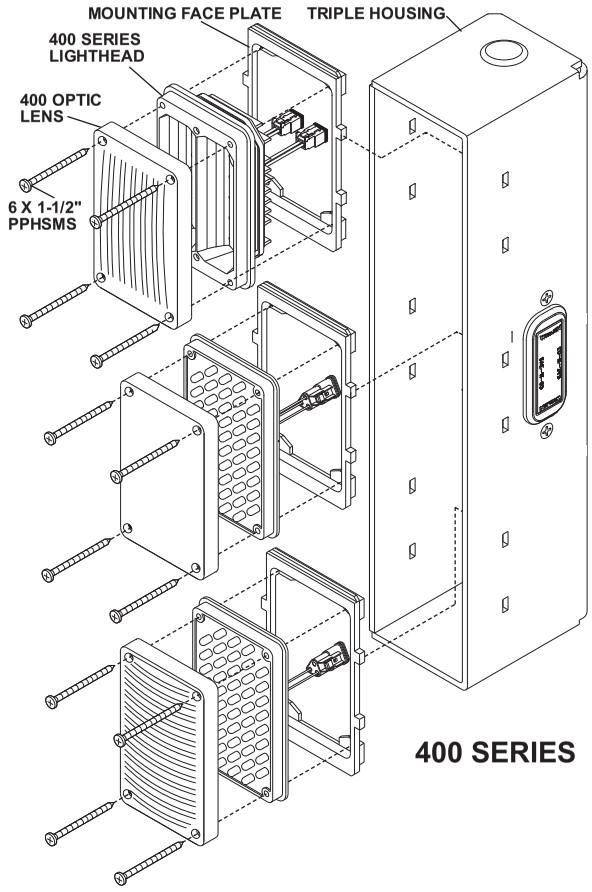


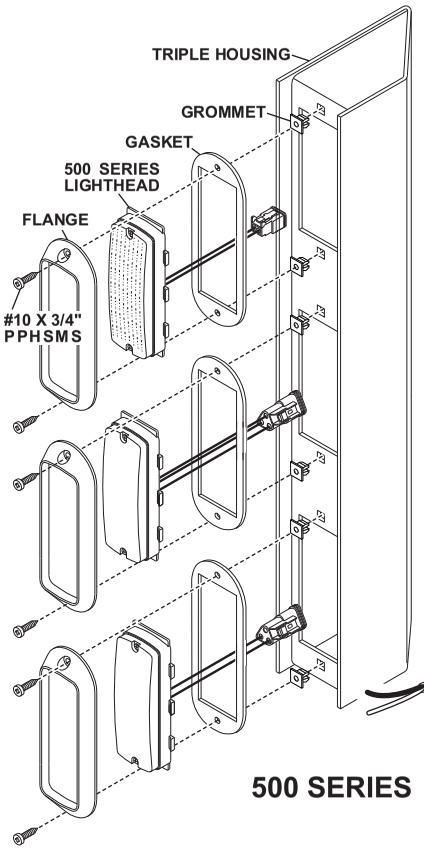


REAR HOUSING ASSEMBLY:

IMPORTANT! Rear housings should be mounted in a full upright, vertical position







WHELEN®
ENGINEERING COMPANY INC.
51 Winthrop Road
Chester, Connecticut 06412-0684
Phone: (860) 526-9504
Fax: (860) 526-4078
Internet: www.whelen.com
Sales e-mail: autosale@whelen.com
Canadian Sales e-mail: canadiansales@whelen.com
Customer Service e-mail: custserv@whelen.com

Installation Guide:
Pioneer™ LED Floodlight
(Bail Mount)

Automotive: Lightheads

Safety First

This document provides all the necessary information to allow your Whelen product to be properly and safely installed. Before beginning the installation and/or operation of your new product, the installation technician and operator must read this manual completely. Important information is contained herein that could prevent serious injury or damage.

- **Proper installation of this product requires the installer to have a good understanding of automotive electronics, systems and procedures.**
- **Failure to use specified installation parts and/or hardware will void the product warranty!**
- **If mounting this product requires drilling holes, the installer MUST be sure that no vehicle components or other vital parts could be damaged by the drilling process. Check both sides of the mounting surface before drilling begins. Also de-burr any holes and remove any metal shards or remnants. Install grommets into all wire passage holes.**
- **If this manual states that this product may be mounted with suction cups, magnets, tape or Velcro®, clean the mounting surface with a 50/50 mix of isopropyl alcohol and water and dry thoroughly.**
- **Do not install this product or route any wires in the deployment area of your air bag. Equipment mounted or located in the air bag deployment area will damage or reduce the effectiveness of the air bag, or become a projectile that could cause serious personal injury or death. Refer to your vehicle owner's manual for the air bag deployment area. The User/Installer assumes full responsibility to determine proper mounting location, based on providing ultimate safety to all passengers inside the vehicle.**
- **For this product to operate at optimum efficiency, a good electrical connection to chassis ground must be made. The recommended procedure requires the product ground wire to be connected directly to the NEGATIVE (-) battery post.**
- **If this product uses a remote device to activate or control this product, make sure that this control is located in an area that allows both the vehicle and the control to be operated safely in any driving condition.**
- **Do not attempt to activate or control this device in a hazardous driving situation.**
- **This product contains either strobe light(s), halogen light(s), high-intensity LEDs or a combination of these lights. Do not stare directly into these lights. Momentary blindness and/or eye damage could result.**
- **Use only soap and water to clean the outer lens. Use of other chemicals could result in premature lens cracking (crazing) and discoloration. Lenses in this condition have significantly reduced effectiveness and should be replaced immediately. Inspect and operate this product regularly to confirm its proper operation and mounting condition. Do not use a pressure washer to clean this product.**
- **It is recommended that these instructions be stored in a safe place and referred to when performing maintenance and/or reinstallation of this product.**
- **FAILURE TO FOLLOW THESE SAFETY PRECAUTIONS AND INSTRUCTIONS COULD RESULT IN DAMAGE TO THE PRODUCT OR VEHICLE AND/OR SERIOUS INJURY TO YOU AND YOUR PASSENGERS!**

For warranty information regarding this product, visit **www.whelen.com/warranty**

Form No.14538D (062113)

This manual will outline bail bracket installation procedures for the Pioneer-series light. With the exception of the Micro Pioneer, all of the bail bracket mounting kits use identical hardware to secure the bracket to its mounting surface. Refer to Page 3 for information on mounting the Micro Pioneer.

Mounting...

CAUTION: Mounting this product will require drilling. It is absolutely necessary to make sure that no other vehicle components could be damaged by this process. Check both sides of the mounting surface before starting. If damage is likely, select a different mounting location.

1. Position the appropriate bail bracket (Item #5) onto the proposed mounting surface. Mark the areas where the mounting holes are to be drilled.
2. Drill the mounting holes required using an appropriately sized drill bit (refer to the Mounting Hole Specifications shown below).

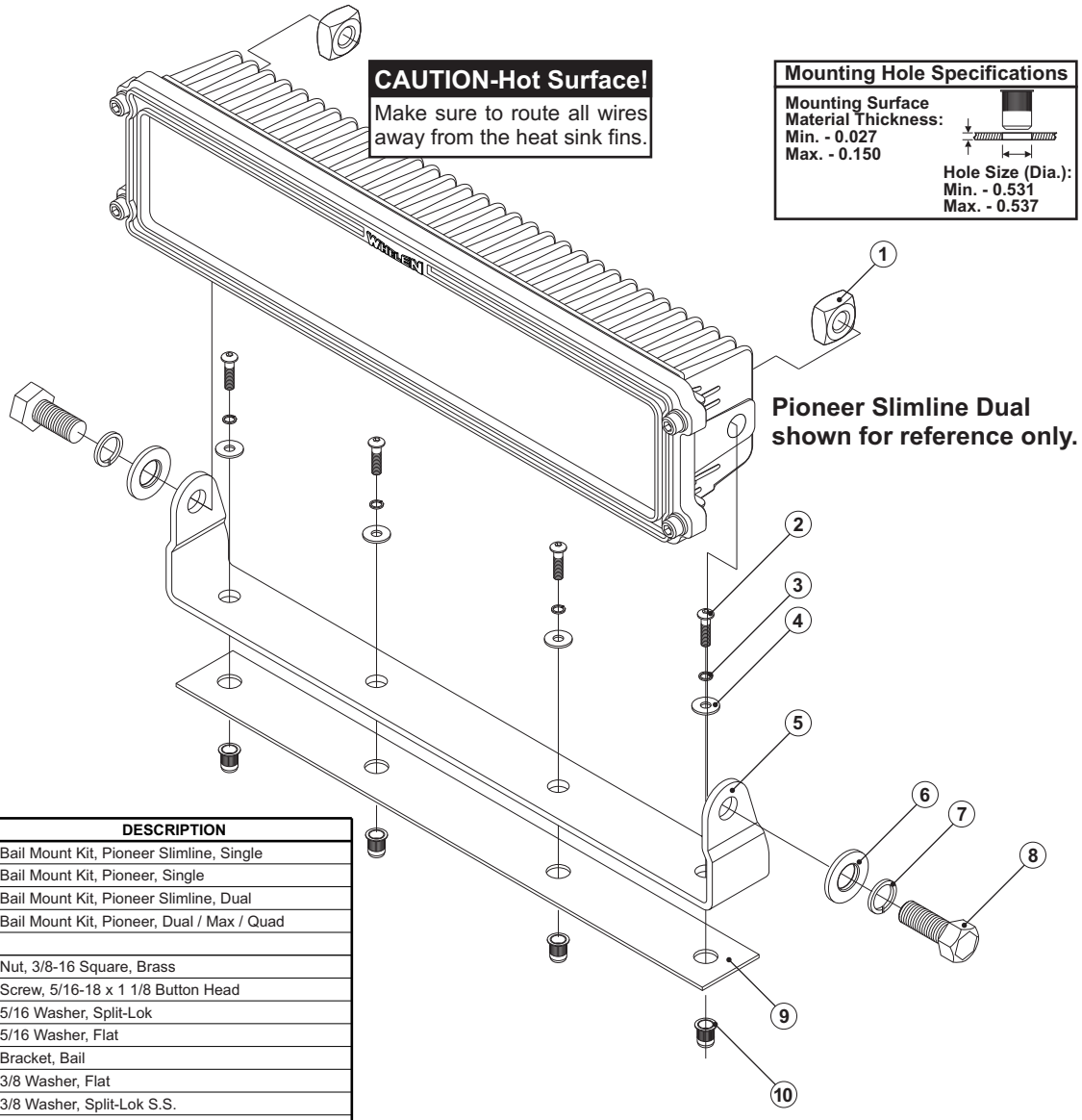
IMPORTANT NOTE! This installation uses Rivnuts to secure the brackets to the vehicle. This type of hardware requires the use of a specialized installation tool. Refer to the owners manual included with this tool for proper installation techniques. Be sure to follow the mounting hole specifications precisely!

3. With the Rivnuts properly installed, position the appropriate seal (#9) over the mounting holes and position the mounting bracket onto the seal. The bracket can now be mounted onto the vehicle using the appropriate hardware (Items #2, #3 & #4). Insert the bolts into their holes with the hardware shown.
4. Apply a drop of LocTite 242 to each of the mounting bolts and insert them into their Rivnut. Tighten each bolt to 50 in/lbs.
5. Insert the two brass hex nuts (Item(s) #1) into the cavity provided in the rear of the Pioneer housing. Now position the Pioneer housing into its mounted position on the bail bracket. Using the hardware provided (Items #6, #7 & #8) secure the housing assembly onto the bail bracket.
6. Adjust the floodlight to the desired angle and tighten the hardware firmly to maintain that angle (minimum 20 foot-pounds)
7. Extend the Pioneer wires towards it's designated power source. Make the necessary connections using the information found in the following section.

Wiring...

Refer to the wiring guide included with your Pioneer for wire functions, fuse values and optional switch connections.

IMPORTANT! Before returning the vehicle to active service, visually confirm the proper operation of this product, as well as all vehicle components/equipment.



QTY	QTY	QTY	QTY	ITEM	DESCRIPTION
			*		Bail Mount Kit, Pioneer Slimline, Single
		*			Bail Mount Kit, Pioneer, Single
	*				Bail Mount Kit, Pioneer Slimline, Dual
*					Bail Mount Kit, Pioneer, Dual / Max / Quad
2	2	2	2	**1**	Nut, 3/8-16 Square, Brass
4	4	3	3	**2**	Screw, 5/16-18 x 1 1/8 Button Head
4	4	3	3	**3**	5/16 Washer, Split-Lok
4	4	3	3	**4**	5/16 Washer, Flat
1	1	1	1	**5**	Bracket, Bail
2	2	2	2	**6**	3/8 Washer, Flat
2	2	2	2	**7**	3/8 Washer, Split-Lok S.S.
2	2	2	2	**8**	Screw, 3/8 X 1 1/4 Hex S.S.
1	1	1	1	**9**	Seal
4	4	3	3	**10**	5/16 - 18 Riv Nut

CAUTION: Mounting this product will require drilling. It is absolutely necessary to make sure that no other vehicle components could be damaged by this process. Check both sides of the mounting surface before starting. If damage is likely, select a different mounting location.

Mounting (Micro & Nano Pioneer)...

1. Position the bail bracket (Item #11) onto the proposed mounting surface. Mark the areas where the mounting hole is to be drilled.
2. Drill the required mounting hole using an appropriately sized drill bit.
3. Secure the bail bracket to the mounting surface as shown using the mounting hardware provided (Items #7, #10 & #11).
4. Insert the two brass hex nuts (Item(s) #6) into the cavity provided in the rear of the Micro Pioneer housing. Now position the Micro Pioneer housing into its mounted position on the bail bracket. Using the hardware provided (Items #7, #8 & #9) secure the housing assembly onto the bail bracket.
5. Adjust the floodlight to the desired angle and tighten the hardware firmly to maintain that angle.
6. Extend Pioneer cable towards it's designated power source. Make the necessary connections using the information found in the wiring guide.

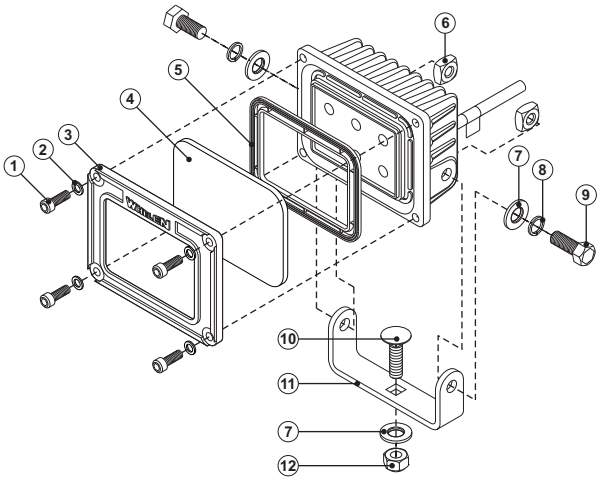
Wiring...

Refer to the wiring guide included with your Pioneer for wire functions, fuse values and optional switch connections.

IMPORTANT! Before returning the vehicle to active service, visually confirm the proper operation of this product, as well as all vehicle components/equipment.

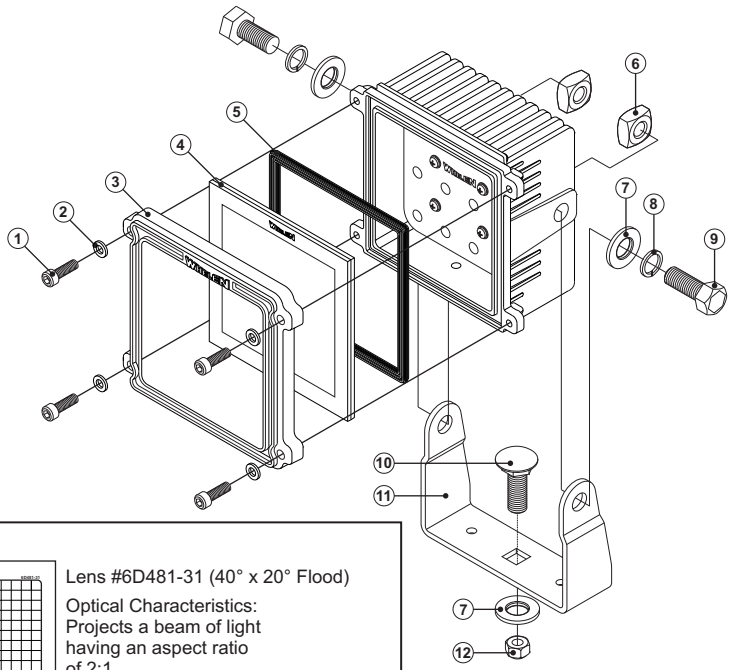
Lens Replacement (Micro, Slimline & Nano Series)...

1. Remove the screw and washers (items 1 and 2) that secure the retainer to the Pioneer housing.
2. Remove the retainer and the lens (items 3 and 4) from the housing.
3. Before installing the new lens, make sure the gasket (item 5) is fully seated in the housing and is not distorted, twisted or deformed in any way.
4. Place the new lens onto the housing. Note: Be sure any text or the Whelen logo on the lens is properly orientated. Return the retainer to its original position and secure using the hardware removed in step 1.



QTY	ITEM	DESCRIPTION
		Nano Pioneer™ Bail Mount Kit
4	**1**	Screw, 8-32 X 1/2" Socket Head Cap
4	**2**	Washer, Flat, Nylon, .175 ID x .281 OD x .031
1	**3**	Retainer
1	**4**	Lens
1	**5**	Gasket, Lens
2	**6**	Nut, 1/4-20 Square, Brass
3	**7**	Washer, Flat 1/4"
2	**8**	Washer, Split-Lok 1/4"
2	**9**	Screw, 1/4-20 X 3/4" S.S.
1	**10**	Bolt, 1/4-20 x 3/4" Carriage
1	**11**	Bracket, Bail Mount
1	**12**	Nut, 1/4-20 Elastic Stop

QTY	ITEM	DESCRIPTION
		Micro Pioneer™ Bail Mount Kit
4	**1**	Screw, 10-24 X .625, Socket Head Cap
4	**2**	Washer, Flat, Nylon, .188 ID x .3438 OD x .050
1	**3**	Retainer
1	**4**	Lens
1	**5**	Gasket, Lens
2	**6**	Nut, 3/8-16 Square, Brass
3	**7**	Washer, 3/8 Flat S.S.
2	**8**	Washer, 3/8 Split-Lok S.S.
2	**9**	Screw, 3/8 X 1 1/4 Hex S.S.
1	**10**	Bolt, 3/8 - 16 x 1 3/4, Carriage
1	**11**	Bracket, Bail Mount
1	**12**	Nut, 3/8-16 Elastic Stop

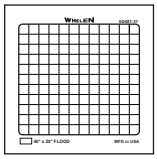


Accessory Lenses

Lens #6D481-30 (8° Spot)

Optical Characteristics:
Projects a beam of light having an aspect ratio of 1:1 (Square)

Example: ☐



Lens #6D481-31 (40° x 20° Flood)

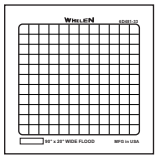
Optical Characteristics:
Projects a beam of light having an aspect ratio of 2:1

Example: ▭

Lens #6D481-32 (40°x 8° Wide Flood)

Optical Characteristics:
Projects a beam of light having an aspect ratio of 5:1

Example: ▭



Lens #6D481-33 (90°x 20° Wide Flood)

Optical Characteristics:
Projects a beam of light having an aspect ratio of 9:2

Example: ▭

Misc. Installation Parts

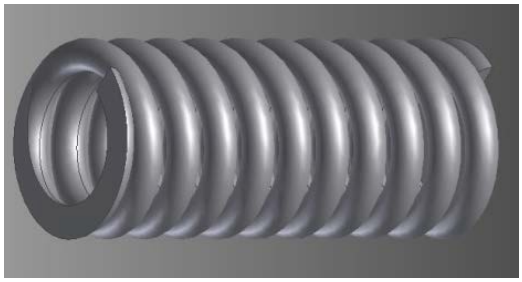
2017 ALASKA D.O.T. INSTALLATION PARTS LIST		
Part Number	**Part Description**	**See Page**
03072	SPRING,.25 X 1.25 OD X 3.5 COMPRESSION	4-04
74467G	GROMMET,LIGHT,2.5"	4-04
77260G	GROMMET,LIGHT,6" OVAL	4-04
77517	FITTING,COMPRESSION,1/2 ID	4-04
77518	NUT,JAM,COMP,PLASTIC	4-05
77627	FITTING,COMPRESSION,3/4 ID	4-05
78923	CUP,WLDT,BODYPROP,UB,M2	4-05
78974	CAP,BREATHER/FILLER	4-06
80249	FITTING,COMP,3/8 ID	4-06
80344	JUNCTION BOX,ASSY,SURFACE MTG	4-06
86225	VALVE,AIR,TG CONTROL,12VDC 4 WAY,2 POSITION	4-07
112237	MUDFLAP,RUBBER,24 X 36,NO LOGO	4-07
134560	MNT,CONTROL,IN-CAB,WLDT,MACK	4-07
135094	PLATE,PINTLE,AK	4-08
135120	KIT,CHIPPER BAR,AK	4-08
135262	STRAINER,SUCTION,100 MESH,48MP	4-08
137120.201	BRACKET,STROBE,WING,ALASKA	4-09
137126.201	BRACKET,LIGHT,REAR,WING,AKDOT	4-09
137147	GUARD,TUBE,DRIVESHAFT,ALASKA	4-09
137158	GUARD,DRIVESHAFT,ALASKA,MACK	4-10
137354	KIT,BRACKET,LIGHT,REARWING,AK	4-10
137484.304	ANGLE,SIDE,RESERVOIR,FILLER	4-10
137486.304	PLATE,TOP,RESERVOIR,FILLER	4-11
137701.201	BRACKET,STRAP,Z,INDOT	4-11
137702.201	BRACKET,STRAP,C,INDOT	4-11
137703.201	BRACKET,STRAP,L,INDOT	4-12
137704.201	BRACKET,STRAP,V,INDOT	4-12
137943.201	BRKT,MOUNT,DISCONNECT,AKDOT	4-12
137944.201	BRKT,MOUNT,DISCONNECT,ELEC,AKDOT	4-13
138174.201	BRKT,PLUG,TRAILER,PINTLE,AK MACK	4-13
138178.201	BASE,WLDT,POWER DISTRIBUTION	4-13
138179.201	COVER,BOX,POWER DISTRIBUTION	4-14
138764.304	RESERVOIR,ASSY,40 GAL,CRDL MT	4-14
138900.201	PLATE,BULKHEAD,2 HOLE,MODOT	4-14
139254.201	KIT,LIGHT,BRACKET,LH,MACK,AK RAISED & EXTENDED	4-15
139259.201	KIT,LIGHT,BRACKET,RH,MACK,AK RAISED & EXTENDED	4-15
139452.201	BRACKET,BULKHEAD,ELEC/HYD AKDOT	4-15
139725.201	BRKT,MTG,RACK,MAGAZINE,MACK GOES W/ 138178	4-16
139854	PEDESTAL,WLDT,CONSOLE,FRT	4-16
140251.304	BRACKET,BRACE,CONSOLE	4-16
140567	ANGLE,MNT,TANK,FUEL,AKDOT	4-16
140637	LIFT HOOK,D-RING,1" DIA,WELD	4-16
140640	MNT,WLDT,BASE,CONSOLE,AK DOT	4-17
140780.201	KIT,LIGHT,BRACKET,RH,FRT,AKDOT	4-17
140781.201	KIT,LIGHT,BRACKET,LH,FRT,AKDOT	4-17
140863	GUARD,TUBE,DRIVESHAFT,ALASKA	4-18
140864	ANGLE,GUARD,DRIVESHAFT,ALASKA	4-18
140876	PLATE,PINTLE,FREIGHTLI NER,AK	4-18
140918	PLATE,BRACKET,PUMP,FRT	4-19
140919	ANGLE,MTG,PUMP,FREIGHTLINER	4-19
141126	BRKT,MNT,CAB,BOX,BATT,AKDOT	4-19
141127.304	BRACKET,MOUNT,JUNCTION BOX,AKDOT	4-20
141128.304	BRACKET,MOUNT,FLOOD LIGHT,AKDOT	4-20
141234.201	BRACKET,SOLENOID,TAILGATE,AKDOT	4-20
141270	BRKT,MTG,DRYER,AIR,AKDOT	4-21
141271.201	BRACKET,MOUNT,REV VALVE,AKDOT	4-21
141334.201	BRACKET,BULKHEAD,SPREADER AKDOT	4-21

141335.201	BRACKET,GUARD,FRONT PUMP	4-22
141395.304	BRACKET,FILTER,FUEL	4-22
141568.201	BRACKET,MOUNT,STEP,AKDOT	4-22
141569.201	BRACE,CONSOLE,BENT	4-23
141570.201	BRACE,CONSOLE,STRAIGHT	4-23
142475	STAND,CONSOLE,INT,AKDOT	4-23
142487	BRACKET,MODULE,AKDOT	4-24
143301	PLUG,7 PIN,PLASTIC,FLAT BLADES	4-24
143610.201	ASSY,BOX,UNDERSEAT,MACK	4-24
143611.201	ASSY,BOX,UNDERSEAT,WSR,INT	4-24
143632.201	ASSY,BOX,UNDERSEAT,FRT	4-25
143937.201	BRKT,RISER,STROBE,CBSHLD,AKDOT	4-25
144386	LIGHT,SST,OVAL,LED,6.5	4-25
145448.201	CIRCUIT BREAKER,WLDT,BATT,MACK	4-25
148072	FRAME,WLDT,COMBO,TANK,AKDOT	4-26
148355	PLATE,PINTLE,MACK,AKDOT	4-26
148590	STEP,WLDT,MACK,AK,DS	4-26
148605	MUDFLAP,RUBBER,24 X 36,NO LOGO	4-27
148715	BAR,STIFFNER,PINTLE,AKDOT,CHIPPER,CUTOUT	4-27
148744.201	COVER,DRIVE,SHAFT,MACK,AK	4-27
148764	WLDT,HANDLE,PIPE,MACK,AK	4-27
148767.201	BRKT,LIGHT,LED,AKDOT	4-28
149197	STEP,WLDT,AKDOT,COMBO,TANK	4-28
151219.201	BRACKET,LIGHT,REAR,DS,AKDOT	4-28
152028.201	BRACKET,STROBE,WING,AK	4-29
152788	TUBE,RND,3.00 OD X 0.25 W X 27	4-29
160002	REFLECTOR,ADHESIVE,3",RED	4-29
160003	REFLECTOR,ADHESIVE,3",YELLOW	4-30
160004	HARNESS,REAR,2-WAY PLUG	4-30
160015	LIGHT,WORK,LED,5",OPTILUX	4-30
160041	SOLENOID,12V,MOTOR RELAY	4-31
160094	VALVE,BALL,1/2"	4-31
160098	VALVE,GATE,3/4"	4-31
160108	PLATE,BOLT,MUDFLAP	4-32
160115	PINTLE HOOK,50 TON INCLUDES AIR CHAMBER BRKT	4-32
160122	TUBE,RECEIVER,2 ID X 18,.63 PIN	4-32
160123	SOCKET,CONNECTOR,7 PIN,RD	4-33
160124	BOOT,RUBBER,FOR 7-PIN	4-33
160129	KIT,PLOW LIGHT INSTALL	4-33
160164	PAD,RUBBER,2",10' SUBFRAME	4-34
160165	CHANNEL,STEEL,10',FOR RUBBER	4-34
160183	MANIFOLD,RETURN,3 PORT,BLACK	4-34
160190	HARNESS,WIRE,JUMP,16' MARKER LIGHT	4-35
160191	HARNESS,PIGTAIL,2-WIRE,STR PLG,8' MARKER LIGHT	4-35
160195	HARNESS,WIRE,MAIN,7 COND,300"	4-35
160198	HARNESS,WIRE,ID,63"	4-36
160201	LIGHT,MARKER,DOT LED,RED MCRO	4-36
160202	LIGHT,MARKER,AMBER,3/4",LED	4-36
160210	SOCKET,CONNECTOR,7 PIN,TRAILER,RV	4-36
160211	HARNESS,SOCKET,4',FOR 82-1060	4-37
160224	COVER,LIGHT,CLEAR240MM,BLITZ	4-37
160225	LIGHT,DRIVING MOOSE,12V	4-37
160228	SOCKET,CONNECTOR,13 PIN	4-38
160253	VALVE,SHUTTLE SAE #6 PORTS	4-38
160300	SENSOR,TEMP/LEVELS2-TSM15-L217-ACDNSS	4-38
160305	CLAMP,TUBE,1 1/8"	4-39
160320	FILTER,RETURN,ASSY,TS1200	4-39
160324	GAUGE,SIGHT/TEMP,5",KDOT	4-39
160343	VALVE,PRESSURE PROTECTION	4-40
160349	SOCKET,FEMALE,2 PIN	4-40

160350	PLUG,MALE,2 PIN	4-40
160355	HOSE,ASSY, AIR,3/8" X 6",W/SPRING	4-41
160361	SENSOR,FUEL LEVEL,29" TUBE	4-41
160368	PLUG,DASH,INTERNATIONAL	4-41
160371	SWITCH,088850	4-42
160373	VALVE,PROTECTION,3/8 AIR,INTL	4-42
160396	HARNESS,WIRE,6 POS,MALE,DEUTSCH	4-42
160398	HARNESS,WIRE,LIGHT,LIGHT,INT HELLA	4-43
160399	HARNESS,WIRE,LIGHT,PLOW,MACK HELLA	4-43
160401	HARNESS,WIRE,BODY,FRT,AK	4-43
160439	D-RING,1" W/ A-STYLE BRACKET	4-44
160452	LIGHT SYSTEM,ALASKA,WHELEN	4-44
160454	PHOTO EYE,SYSTEM,WHELEN	4-44
160458	WORK LIGHT,FLOOD LENS,LED	4-45
160461	FLANGE,CAST ALUM FLANGE FOR Tl	4-45
160462	LIGHT,WARNING,AMBER,LED	4-45
160464	LIGHT,WARNING,BLUE,LED,AK DOT	4-45
160484	LIGHT,KIT,7" ROUND,LED	4-46
160494	TANK,FUEL/HYD,120G AL,AKDOT	4-46
160533	FENDER,POLY,QUARTER,PAIR	4-46
160534	BRACKET,MOUNT,FENDER,PAIR FOR 160533	4-47
160890	BREAKER,CIRCUIT,120 AMP,RESET	4-47
160891	BREAKER.CIRCUIT,150 AMP,AUTO RESET	4-47
161002	HARNESS,WIRE,MAIN,360",7 COND	4-48
161003	HARNESS,WIRE,MAIN,240",7 COND	4-48
161173	LIGHT,WORK,12V,BLACK RUBBER	4-48
161935	LIGHT,11',LED,PRIME XTREME,BLACK,(18) 5 WATT LEDS	4-48
161936	LIGHT,KIT,PLOW,LIGHT,AKDOT,12" PAIR.BLACK	4-49
162391	HOSE,ASSY,FUEL,84",AKDOT 2017	4-49
162392	HOSE,ASSY,FUEL,128",AKDOT 2017	4-49
163780	HARNESS,WIRING,MACK,143"	4-49
163791	LED FLASHER,FINAL DOT	4-50
164550	JUNCTION BOX,ASSY,AK DOT	4-50
164551	CABLE ASSY,30',14GA,AK DOT	4-50
164741	LIGHT,BLUE,LED,OVAL,FRONT MNT	4-50
164742	LIGHT,AMBER,LED,OVAL,FLUSH MNT	4-51
259015	HARNESS,PIGTAIL,6"	4-51
259104	LIGHT,MARKER,RED,2.5",LED	4-51
HTE205	BRACKET,STRAP,UNIVERSAL	4-51
HTE343.201	BRACKET,STRAP,HT	4-52
HTE344.201	BRACKET,STRAP,HT	4-52
HTE369.201	PLATE,MOUNT,ELEC,HORZ	4-52
HTE370.201	PLATE,MOUNT,ELEC,VERT	4-53
HTE419.304	BRACKET,SENSOR,AIR & ROAD TEMP	4-53
HTE448.201	BAR,HOSE,WIRING,14'	4-53
HTENDOR3.201	BRACKET,SWITCH,MERCURY,NDOR	4-54
HX03407	PLUG,FILLER,JUNCTIONBOX,NYS FOR BOX50800	4-54
HX23733A	HARNESS,PIGTAIL,STROBE	4-54

Part Number	Part Description

03072 **SPRING,.25 X 1.25 OD X 3.5 COMPRESSION**



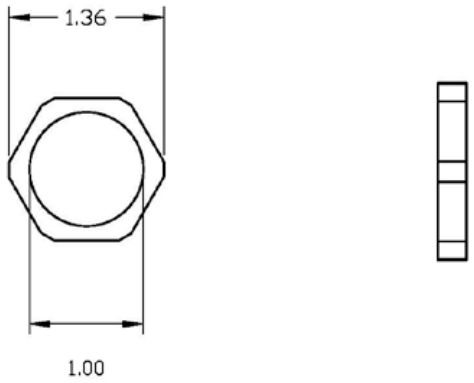
74467G **GROMMET,LIGHT,2.5”**

77260G **GROMMET,LIGHT,6" OVAL**

77517 **FITTING,COMPRESSION,1/2 ID**

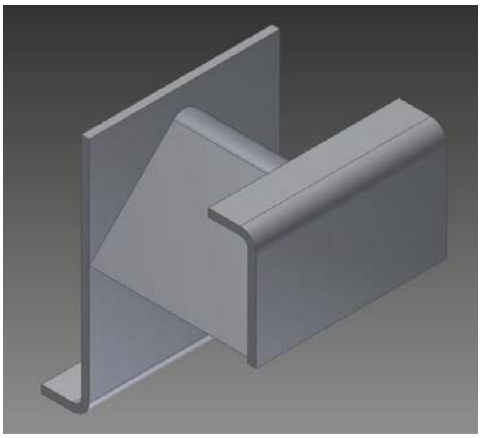
Part Number	Part Description

77518 **NUT,JAM,COMP,PLASTIC**



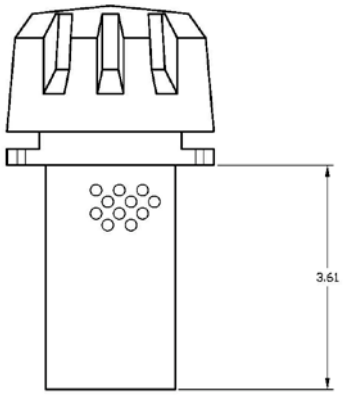
77627 **FITTING,COMPRESSION,3/4 ID**

78923 **CUP,WLDT,BODYPROP,UB,M2**



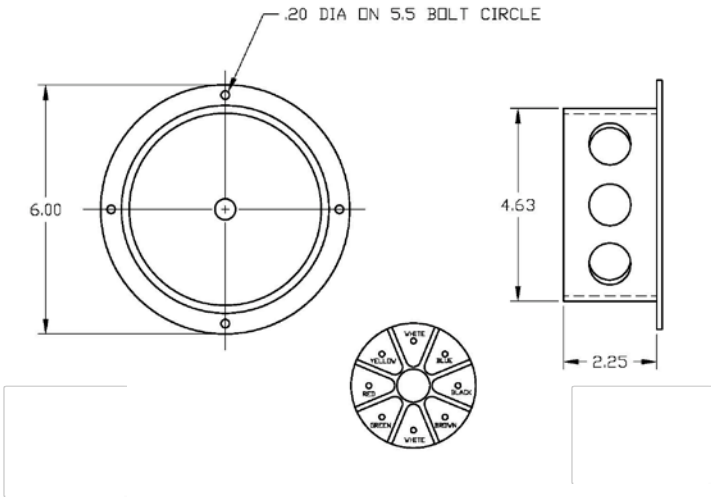
Part Number	Part Description

78974 **CAP,BREATHER/FILLER**

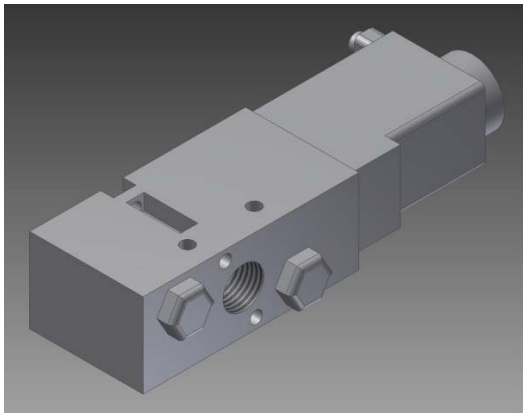


80249 **FITTING,COMP,3/8 ID**

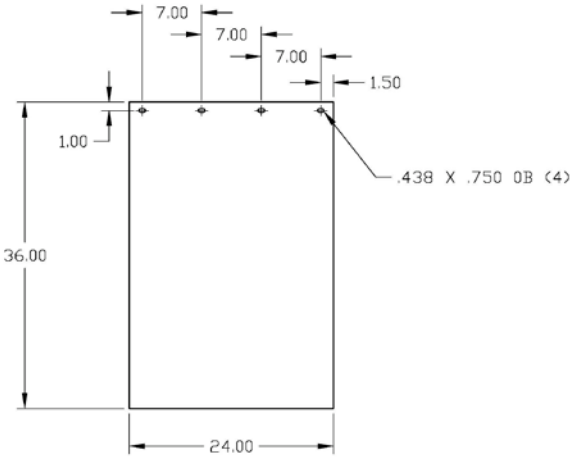
80344 **JUNCTION BOX,ASSY,SURFACE,MTG**



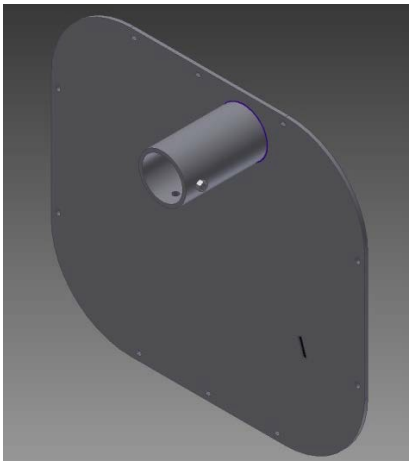
Part Number	Part Description
86225	VALVE,AIR,TG CONTROL,12VDC 4 WAY,2 POSITION



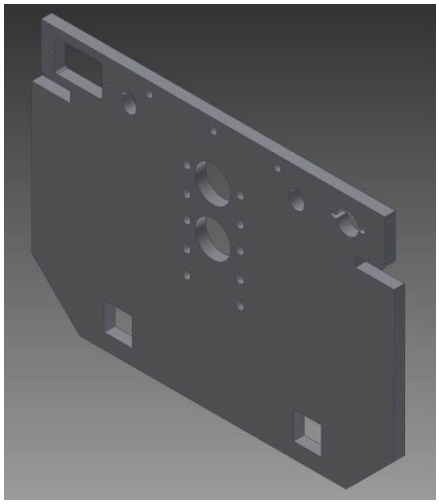
112237	MUDFLAP,RUBBER,24 X 36,NO LOGO



134560	MNT,CONTROL,IN-CAB,WLDT,MACK

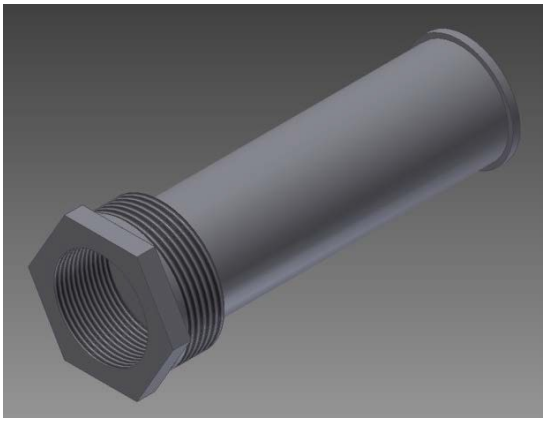


Part Number	Part Description
135094	PLATE,PINTLE,AK

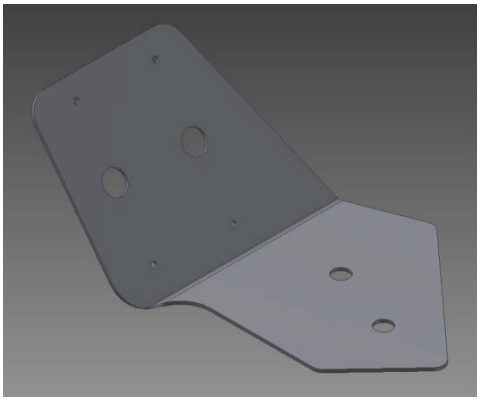


135120	KIT,CHIPPER BAR,AK

135262	STRAINER,SUCTION,100 MESH,48MP

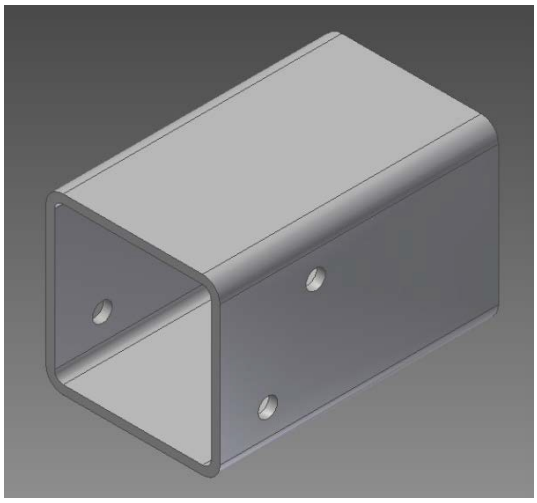


Part Number	Part Description
137120.201	BRACKET,STROBE,WING,ALASKA

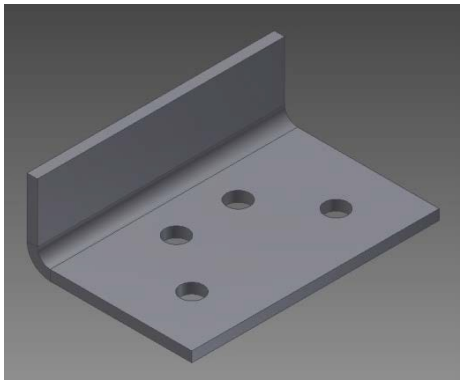


137126.201	BRACKET,LIGHT,REAR,WING,AKDOT

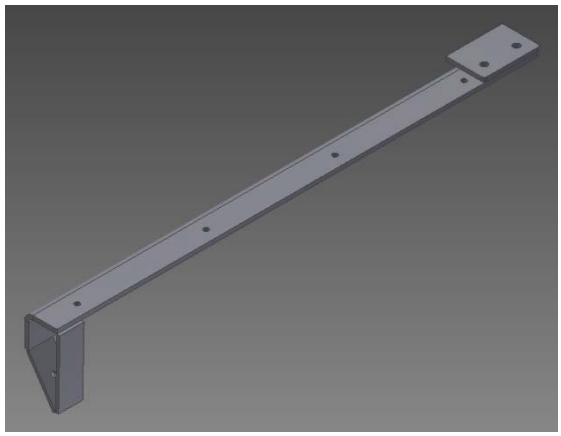
137147	GUARD,TUBE,DRIVESHAFT,ALASKA



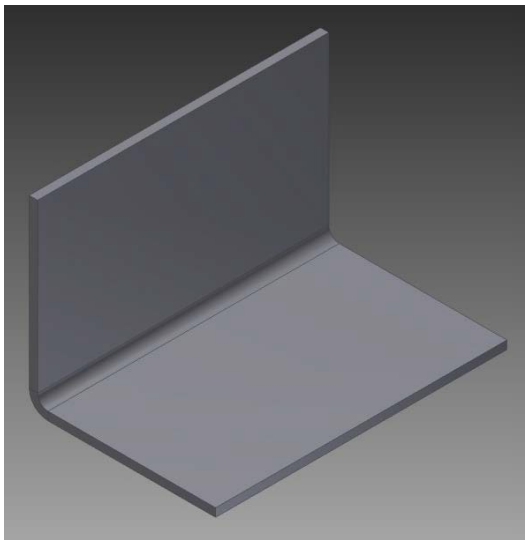
Part Number	Part Description
137158	GUARD,DRIVESHAFT,ALASKA,MACK



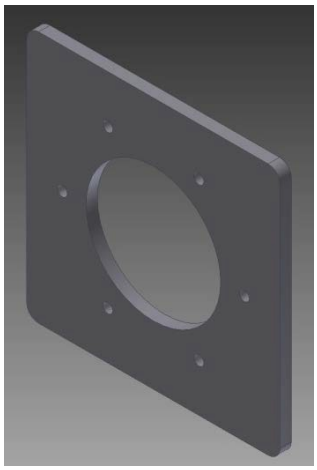
137354	KIT,BRACKET,LIGHT,REARWING,AK



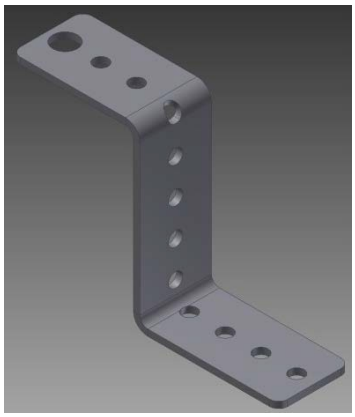
137484.304	ANGLE,SIDE,RESERVOIR,FILLER



Part Number	Part Description
137486.304	PLATE,TOP,RESERVOIR,FILLER



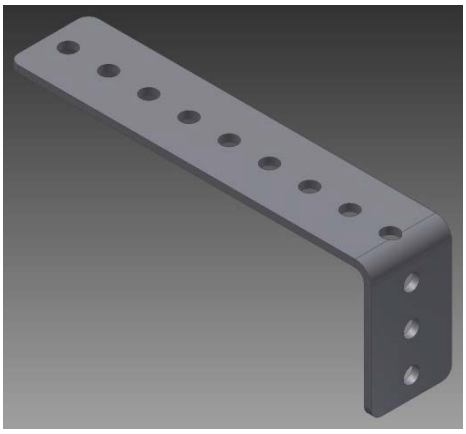
137701.201	BRACKET,STRAP,Z,INDOT



137702.201	BRACKET,STRAP,C,INDOT

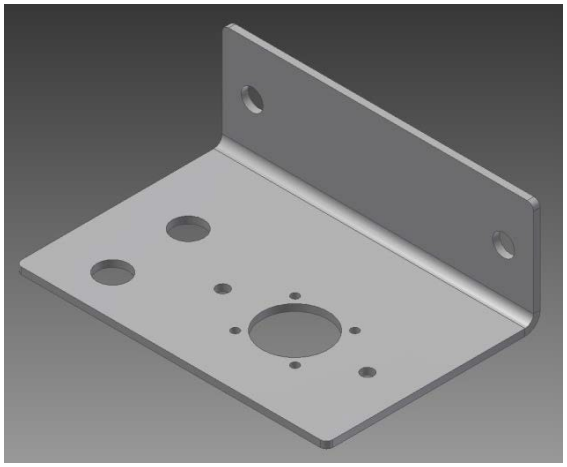
Part Number	Part Description

137703.201 **BRACKET,STRAP,L,INDOT**

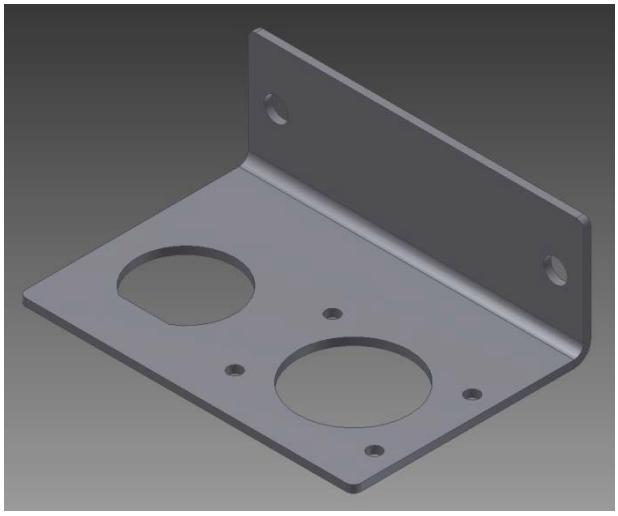


137704.201 **BRACKET,STRAP,V,INDOT**

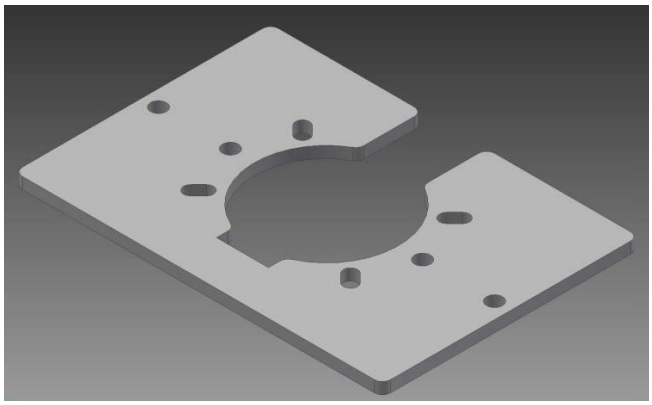
137943.201 **BRKT,MOUNT,DISCONNECT,AKDOT**



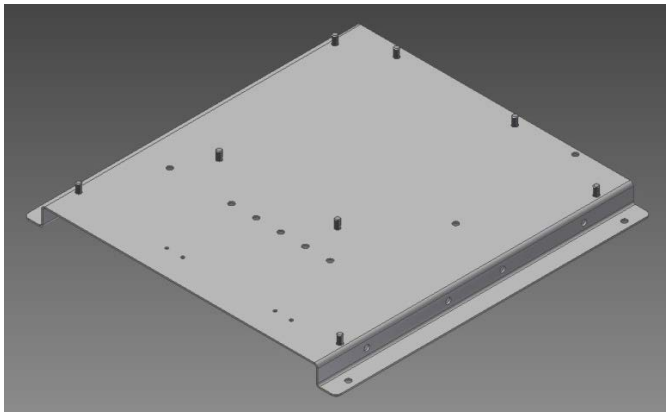
Part Number	Part Description
137944.201	BRKT,MOUNT,DISCONNECT,ELEC,AKDOT



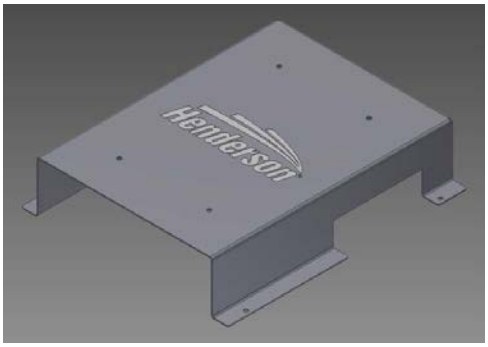
138174.201	BRKT,PLUG,TRAILER,PINTLE,,AK MACK



138178.201	BASE,WLDT,POWER DISTRIBUTION



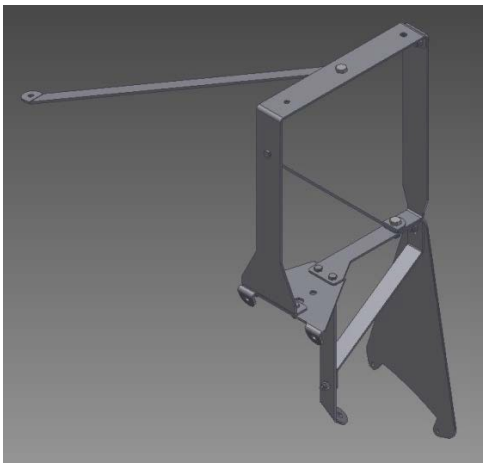
Part Number	Part Description
138179.201	COVER,BOX,POWER DISTRIBUTION



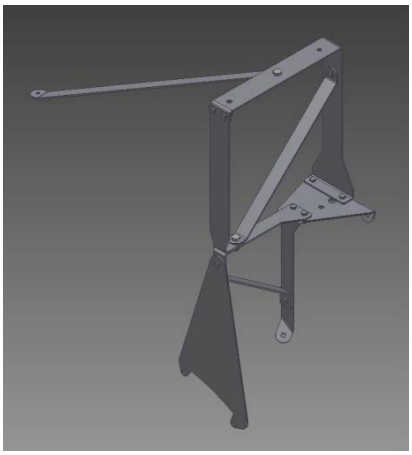
138764.304	RESERVOIR,ASSY,40 GAL,CRDL MT

138900.201	PLATE,BULKHEAD,2 HOLE,MODOT

139254.201 KIT,LIGHT,BRACKET,LH,MACK,AK RAISED & EXTENDED



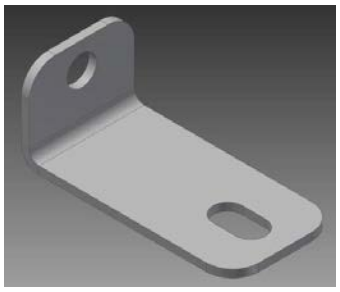
139259.201 KIT,LIGHT,BRACKET,RH,MACK,AK RAISED & EXTENDED



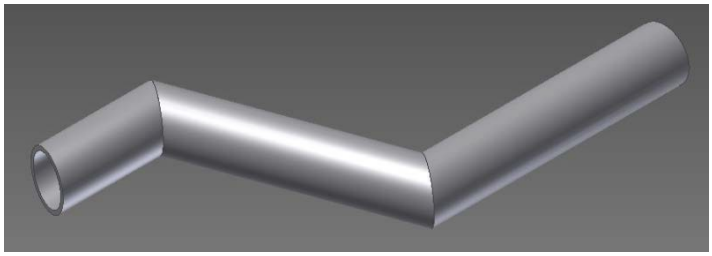
139452.201 BRACKET,BULKHEAD,ELEC/HYD AKDOT

Part Number	Part Description

139725.201 BRKT,MTG,RACK,MAGAZINE,MACK GOES W/ 138178

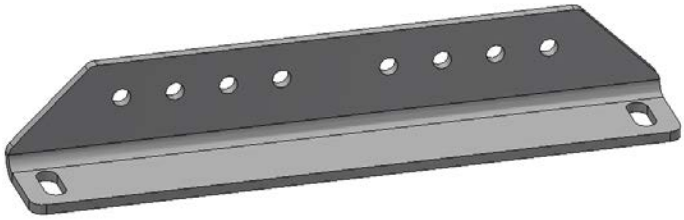


139854 PEDESTAL,WLDT,CONSOLE,FRT



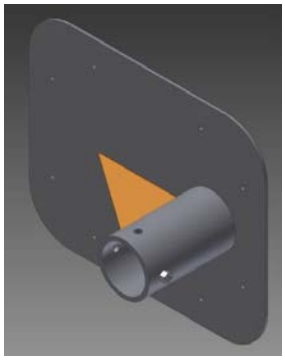
140251.304 BRACKET,BRACE,CONSOLE

140567 ANGLE,MNT,TANK,FUEL,AKDOT

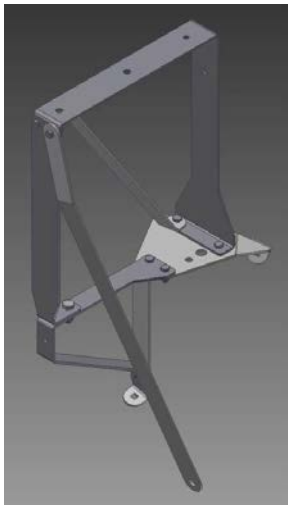


140637 LIFT HOOK,D-RING,1" DIA,WELD

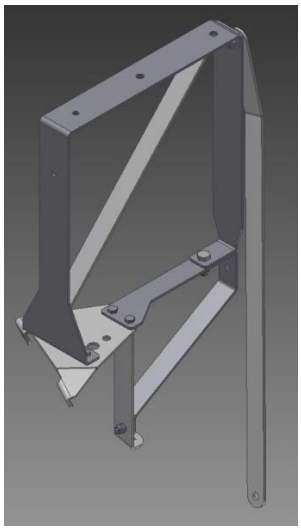
Part Number	Part Description
140640	MNT,WLDT,BASE,CONSOLE,AKDOT



140780.201	KIT,LIGHT,BRACKET,RH,FRT,AKDOT

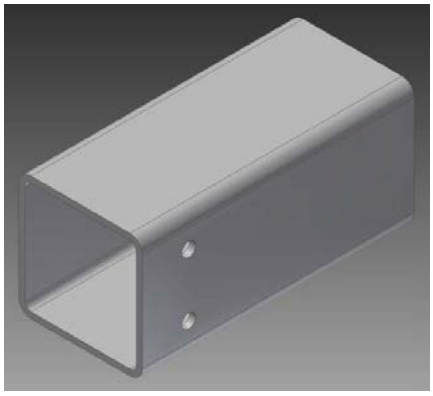


140781.201	KIT,LIGHT,BRACKET,LH,FRT,AKDOT

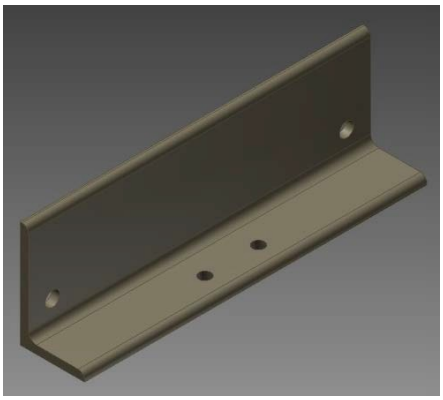


Part Number	Part Description

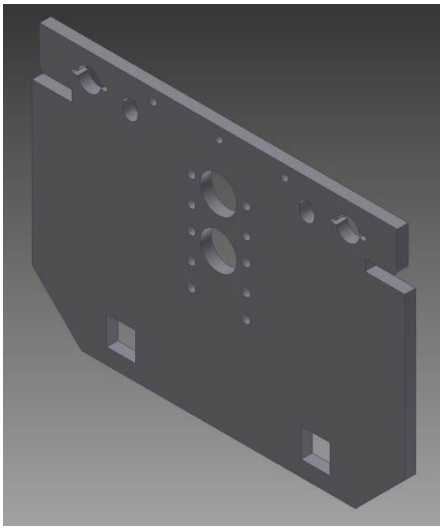
140863 **GUARD,TUBE,DRIVESHAFT,ALASKA**



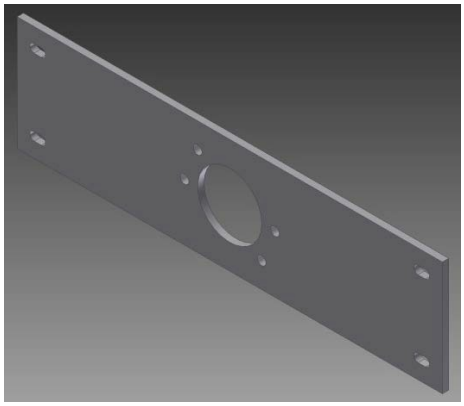
140864 **ANGLE,GUARD,DRIVESHAFT,ALASKA**



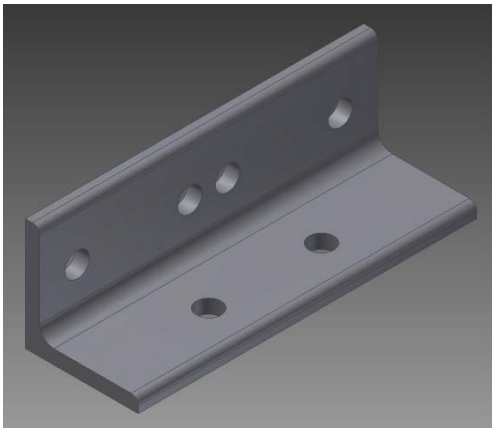
140876 **PLATE,PINTLE,FREIGHTLINER,AK**



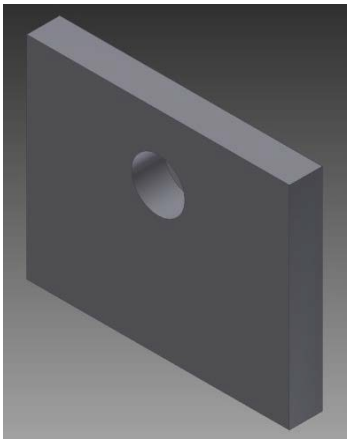
140918 **PLATE,BRACKET,PUMP,FRT**



140919 **ANGLE,MTG,PUMP,FREIGHTLINER**

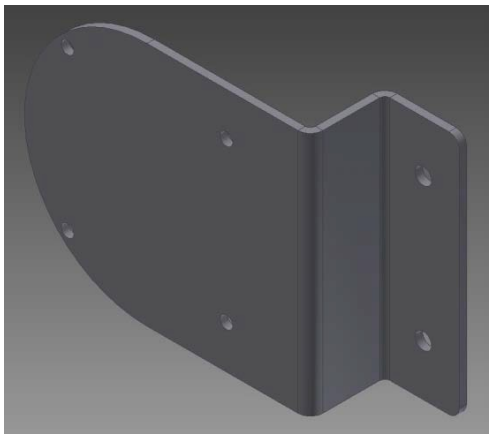


141126 **BRKT,MNT,CAB,BOX,BATT,AKDOT**



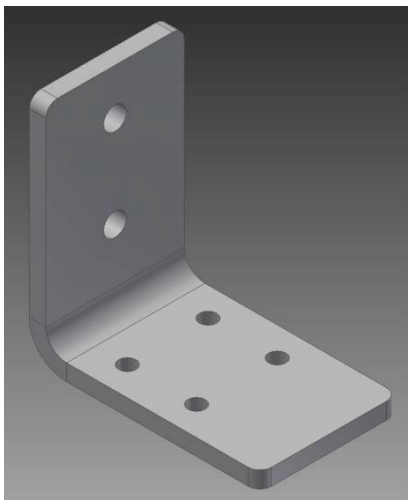
Part Number	Part Description

141127.304 **BRACKET,MOUNT,JUNCTION BOX,AKDOT**



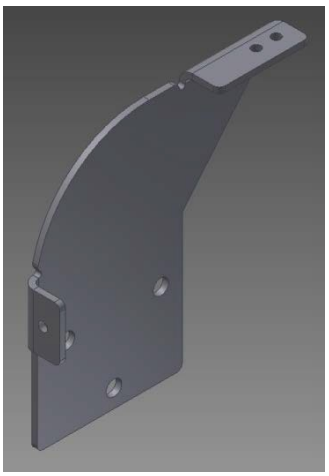
141128.304 **BRACKET,MOUNT,FLOOD LIGHT,AKDOT**

141234.201 **BRACKET,SOLENOID,TAILGATE,AKDOT**

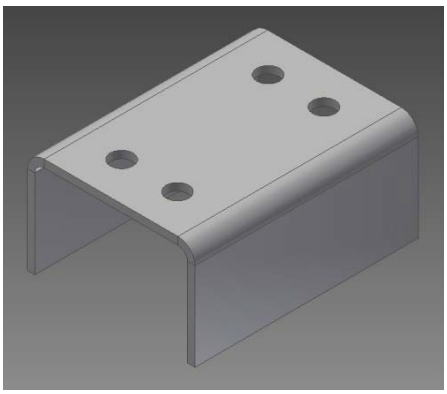


Part Number	Part Description

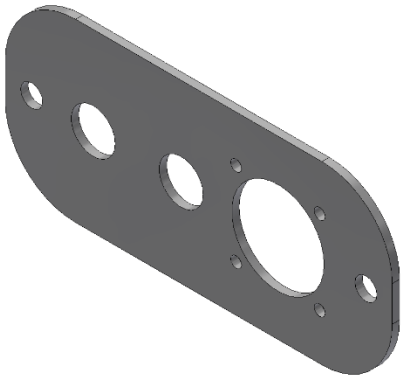
141270 **BRKT,MTG,DRYER,AIR,AKDOT**



141271.201 **BRACKET,MOUNT,REV VALVE,AKDOT**

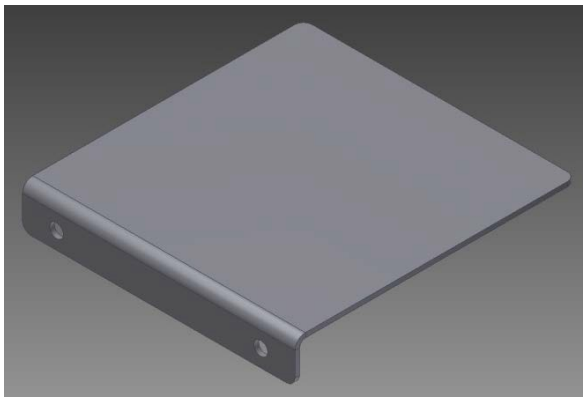


141334.201 **BRACKET,BULKHEAD,SPREADER AKDOT**



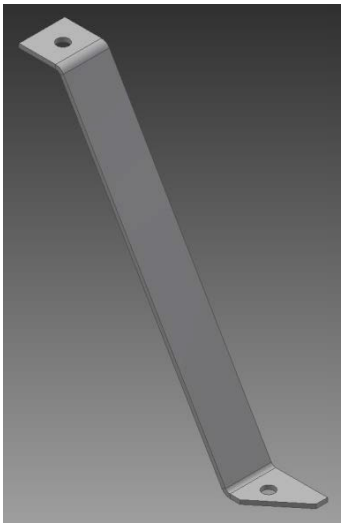
Part Number	Part Description

141335.201 **BRACKET,GUARD,FRONT PUMP**



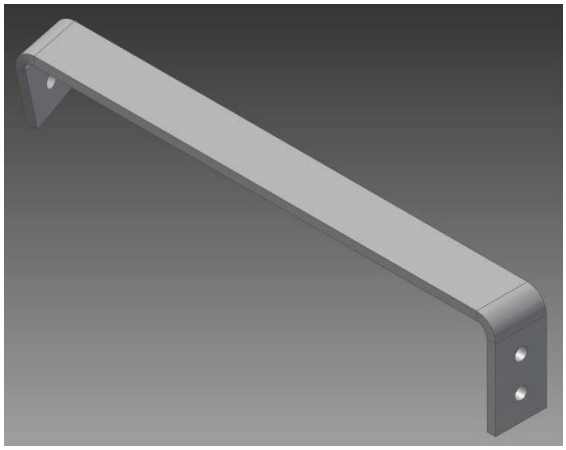
141395.304 **BRACKET,FILTER,FUEL**

141568.201 **BRACKET,MOUNT,STEP,AKDOT**

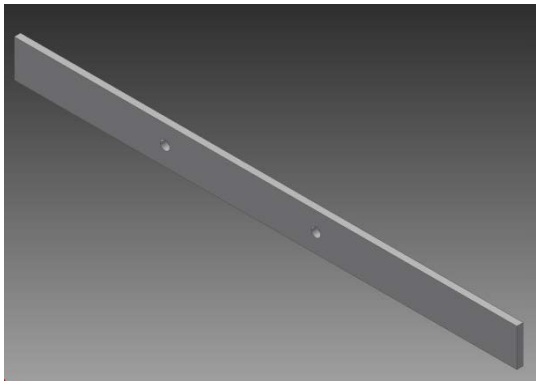


Part Number	Part Description

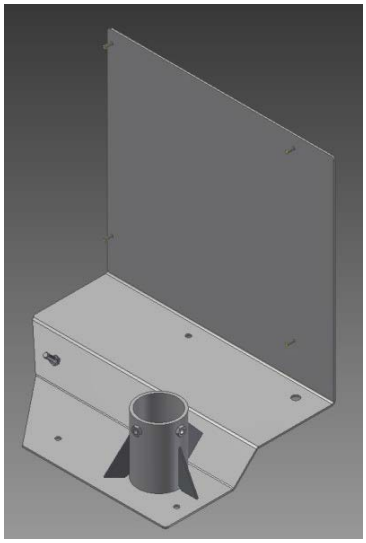
141569.201 **BRACE,CONSOLE,BENT**



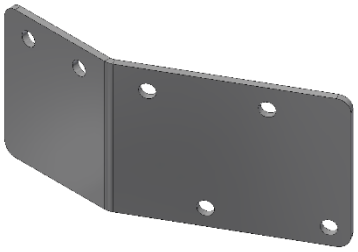
141570.201 **BRACE,CONSOLE,STRAIGHT**



142475 **STAND,CONSOLE,INT,AKDOT**



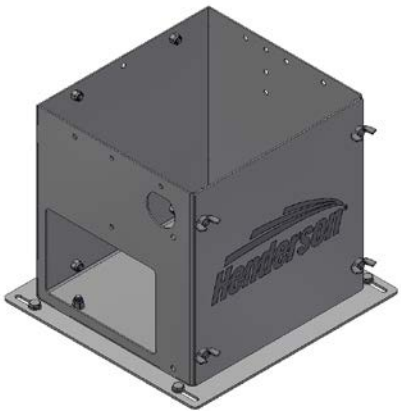
Part Number	Part Description
142487	BRACKET,MODULE,AKDOT



143301	PLUG,7 PIN,PLASTIC,FLAT BLADES

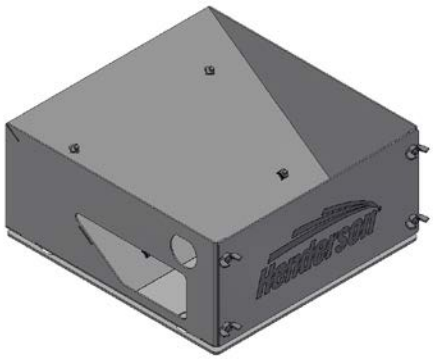
143610.201	ASSY,BOX,UNDERSEAT,MACK

143611.201	ASSY,BOX,UNDERSEAT,WSR,INT

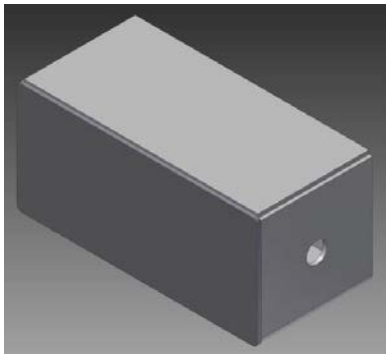


Part Number	Part Description

143632.201 ASSY,BOX,UNDERSEAT,FRT

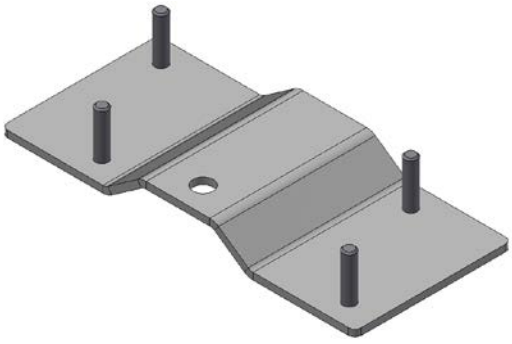


143937.201 BRKT,RISER,STROBE,CBSHLD,AKDOT



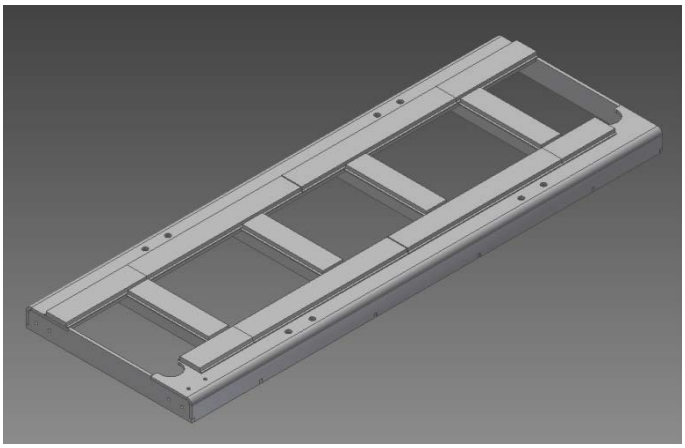
144386 LIGHT,SST,OVAL,LED,6.5

145448.201 CIRCUIT BREAKER,WLDT,BATT,MACK

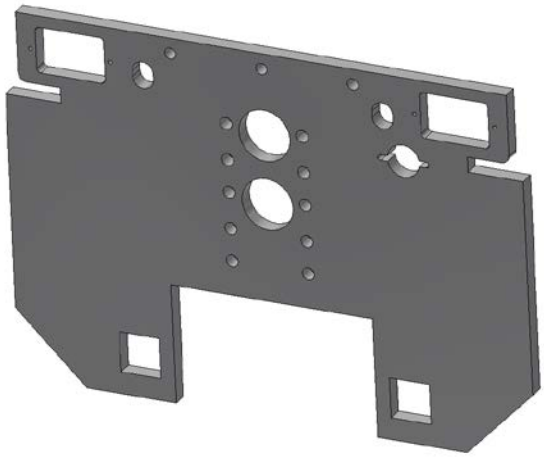


Part Number	Part Description

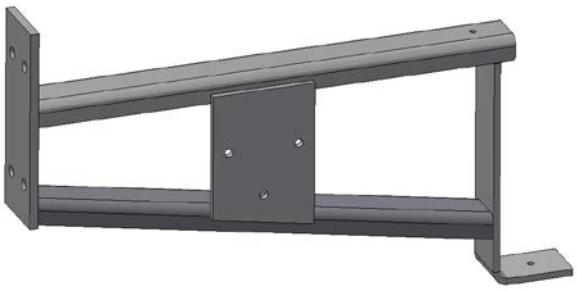
148072 **FRAME,WLDT,COMBO,TANK,AKDOT**



148355 **PLATE,PINTLE,MACK,AKDOT**

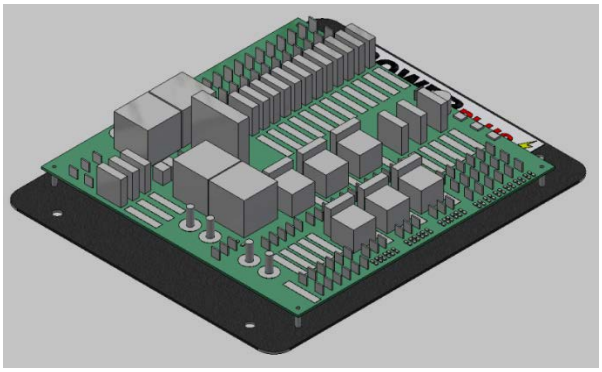


148590 **STEP,WLDT,MACK,AK,DS**

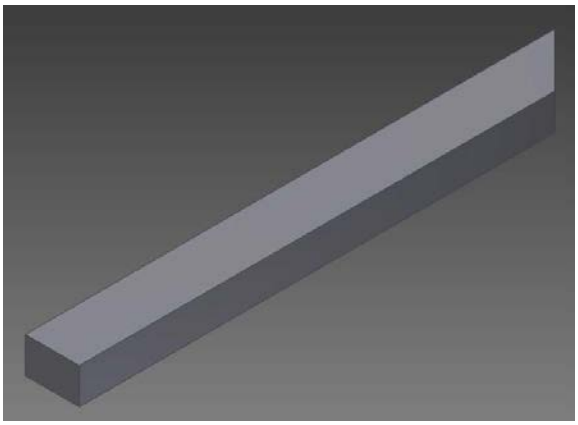


Part Number	Part Description

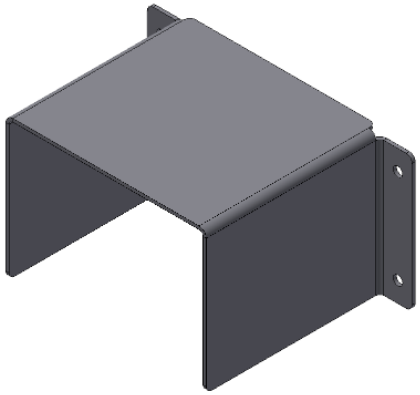
148605 PANEL,DISTRIBUTION,POWER,HPI,POWERPLUS



148715 BAR,STIFFNER,PINTLE,AKDOT,CHIPPER,CUTOUT



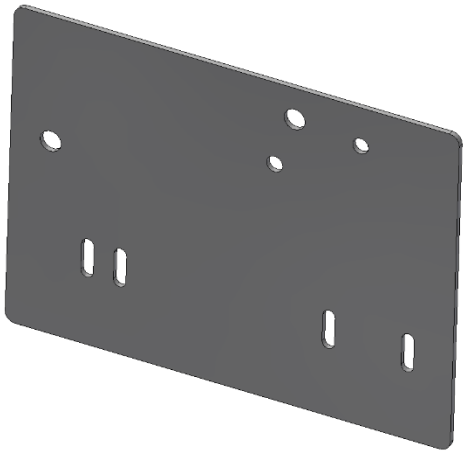
148744.201 COVER,DRIVE,SHAFT,MACK,AK



148764 WLDT,HANDLE,PIPE,MACK,AK

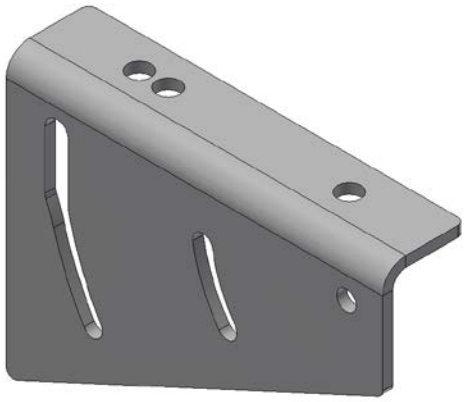
Part Number	Part Description

148767.201 **BRKT,LIGHT,LED,AKDOT**



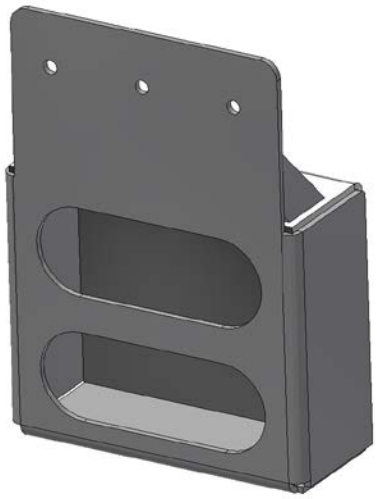
149197 **STEP,WLDT,AKDOT,COMBO,TANK**

151219.201 **BRACKET,LIGHT,REAR,DS,AKDOT**

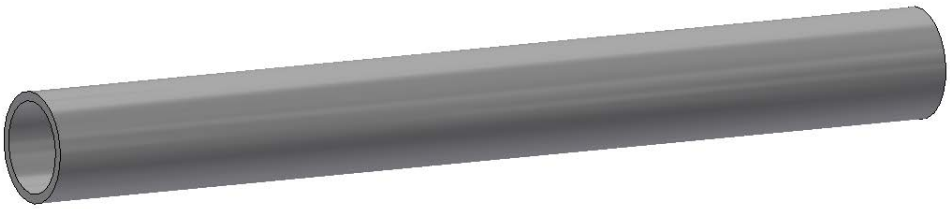


Part Number	Part Description

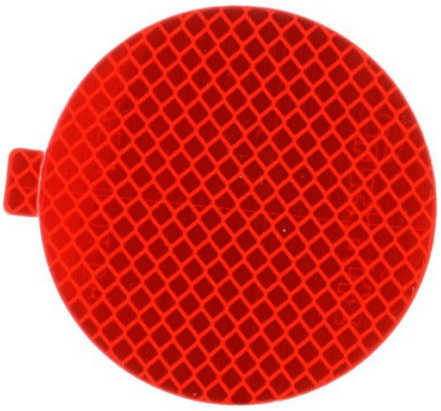
152028.201 **BRACKET,STROBE,WING,AK**



152788 **TUBE,RND,3.00 OD X 0.25 W X 27**

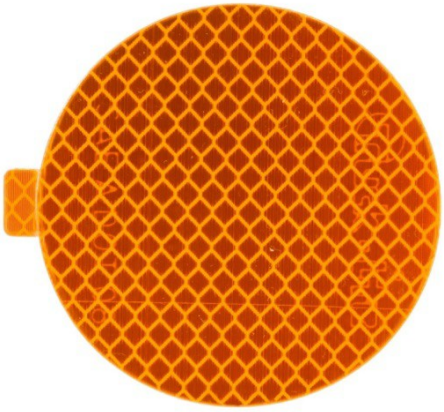


160002 **REFLECTOR,ADHESIVE,3”,RED**

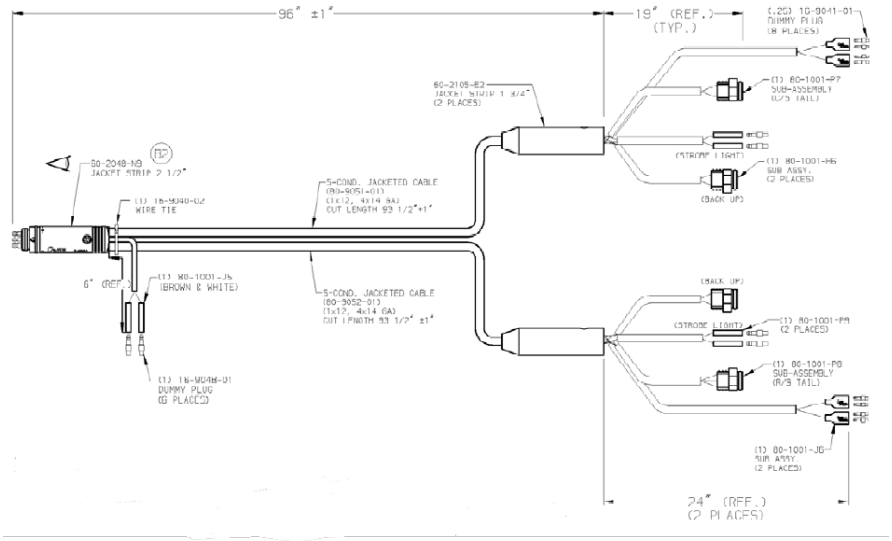


Part Number	Part Description

160003 **REFLECTOR,ADHESIVE,3”,YELLOW**



160004 **HARNESS,REAR,2-WAY PLUG**



160015 **LIGHT,WORK,LED,5",OPTILUX**

Part Number	Part Description

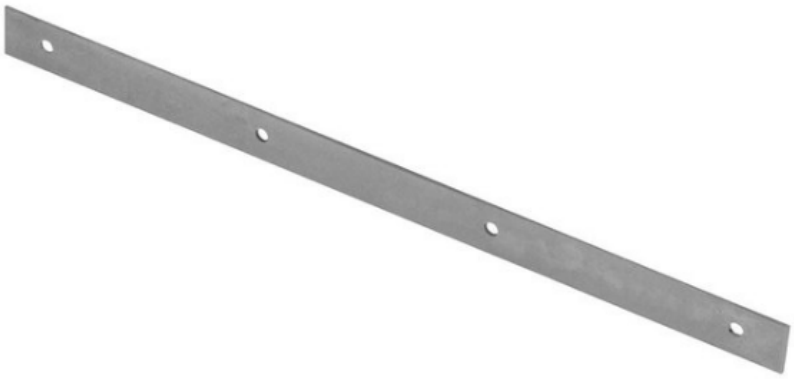
160041 **SOLENOID,12V,MOTOR RELAY**

160094 **VALVE,BALL,1/2”**

160098 **VALVE,GATE,3/4”**

Part Number	Part Description

160108 **PLATE,BOLT,MUDFLAP**



160115 **PINTLE HOOK,50 TON INCLUDES AIR CHAMBER BRKT**

160122 **TUBE,RECEIVER,2 ID X 18,.63 PIN**

Part Number	Part Description

160123 **SOCKET,CONNECTOR,7 PIN,RD**

160124 **BOOT,RUBBER,FOR 7-PIN**

160129 **KIT,PLOW LIGHT INSTALL PLOW LIGHT BOLT KIT**

Part Number	Part Description
160164	PAD,RUBBER,2",10' SUBFRAME

NO IMAGE AVAILABLE

160165	CHANNEL,STEEL,10',FOR RUBBER

NO IMAGE AVAILABLE

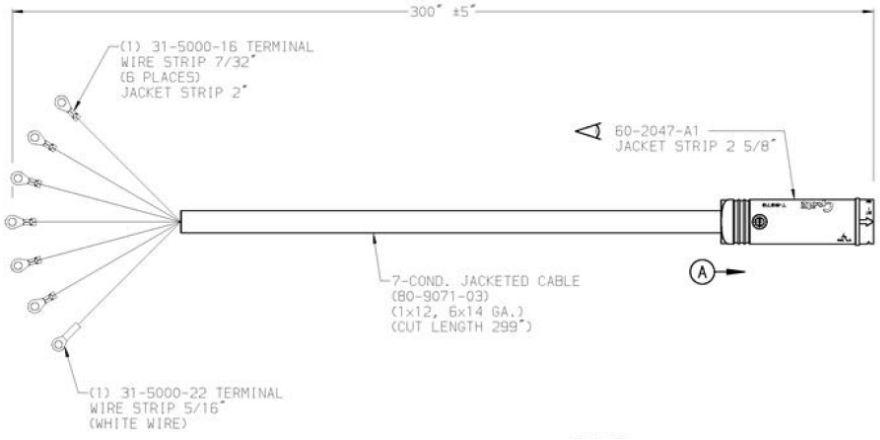
160183	MANIFOLD,RETURN,3 PORT,BLACK

Part Number	Part Description

160190 **HARNESS,WIRE,JUMP,16’ MARKER LIGHT**

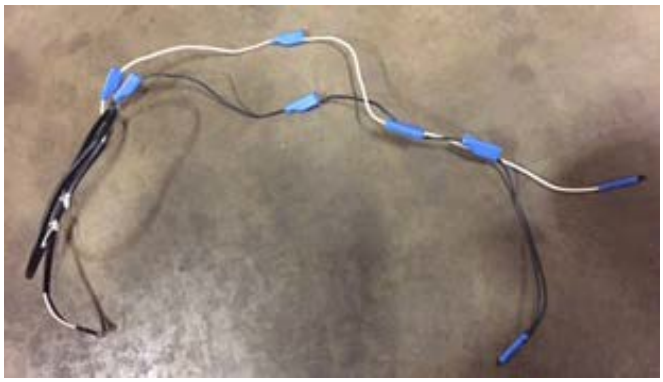
160191 **HARNESS,PIGTAIL,2-WIRE,STR,PLG,8’ MARKER LIGHT**

160195 **HARNESS,WIRE,MAIN,7 COND,300"**



Part Number	Part Description

160198 **HARNESS,WIRE,ID,63”**



160201 **LIGHT,MARKER,DOT LED,RED MCRO**

160202 **LIGHT,MARKER,AMBER,3/4",LED**

160210 **SOCKET,CONNECTOR,7 PIN,TRAILER,RV**

Part Number	Part Description

160211 **HARNESS,SOCKET,4',FOR 82-1060**

160224 **COVER,LIGHT,CLEAR240MM,BLITZ**

160225 **LIGHT,DRIVING MOOSE,12V**

Part Number	Part Description

160228 **SOCKET,CONNECTOR,13 PIN**

160253 **VALVE,SHUTTLE SAE #6 PORTS**

160300 **SENSOR,TEMP/LEVEL S2-TSM15-L217-ACDNSS**

Part Number	Part Description

160305 **CLAMP,TUBE,1 1/8"**

160320 **FILTER,RETURN,ASSY,TS1200**

160324 **GAUGE,SIGHT/TEMP,5",KDOT**

Part Number	Part Description

160343 **VALVE,PRESSURE PROTECTION**

160349 **SOCKET,FEMALE,2 PIN**

160350 **PLUG,MALE,2 PIN**

Part Number	Part Description

160355 HOSE,ASSY,AIR,3/8” X 6”,W/SPRING

160361 SENSOR,FUEL LEVEL,29” TUBE

160368 PLUG,DASH,INTERNATIONAL

Part Number	Part Description

160371 **SWITCH,088850**

160373 **VALVE,PROTECTION,3/8 AIR,INTL**

NO IMAGE AVAILABLE

160396 **HARNESS,WIRE,6 POS,MALE,DEUTSCH**

Part Number	Part Description

160398 **HARNESS,WIRE,LIGHT,INT,HELLA**

160399 **HARNESS,WIRE,LIGHT,PLOW,MACK HELLA**

160401 **HARNESS,WIRE,BODY,FRT,AK**

Part Number	Part Description

160439 **D-RING,1” W/ A-STYLE BRACKET**

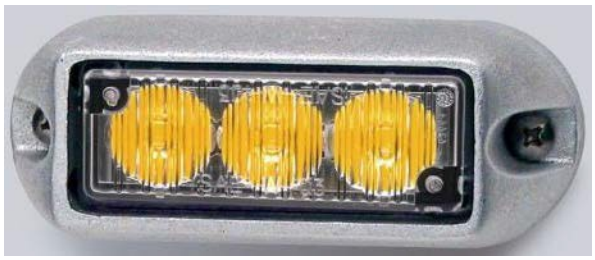
160452 **LIGHT SYSTEM,ALASKA WHELEN**

160454 **PHOTO EYE,SYSTEM,WHELEN**

Part Number	Part Description

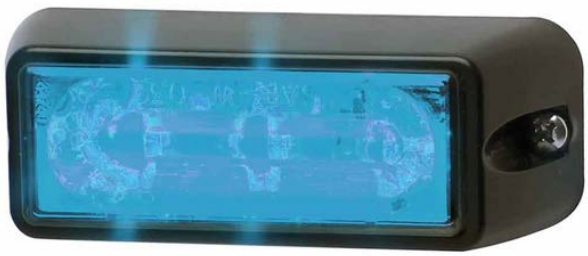
160458 **WORK LIGHT,FLOOD LENS,LED**

160461 **FLANGE,CAST,ALUM,FLANGE FOR TI**



160462 **LIGHT,WARNING,AMBER,LED**

160464 **LIGHT,WARNING,BLUE,LED,AKDOT**



Part Number	Part Description

160484 **LIGHT,KIT,7” ROUND,LED**

160494 **TANK,FUEL/HYD,120GAL,AKDOT**

160533 **FENDER,POLY,QUARTER,PAIR**

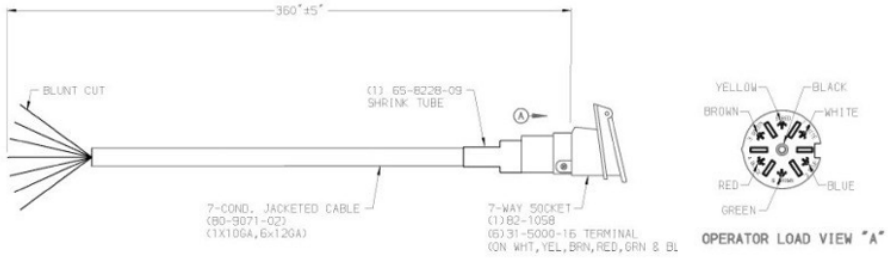
Part Number	Part Description
160534	BRACKET,MOUNT,FENDER,PAIR FOR 160533

160890	BREAKER,CIRCUIT,120 AMP,RESET

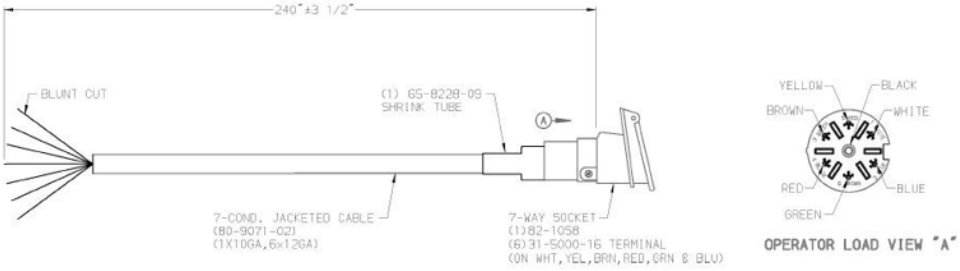
160891	BREAKER,CIRCUIT,150 AMP,AUTO RESET

Part Number	Part Description

161002 **HARNESS,WIRE,MAIN,360”,7 COND**



161003 **HARNESS,WIRE,MAIN,240”,7 COND**



161173 **LIGHT,WORK,12V,BLACK RUBBER**

161935 **LIGHT,11’,LED,PRIME XTREME,BLACK,(18) 5 WATT LEDS**

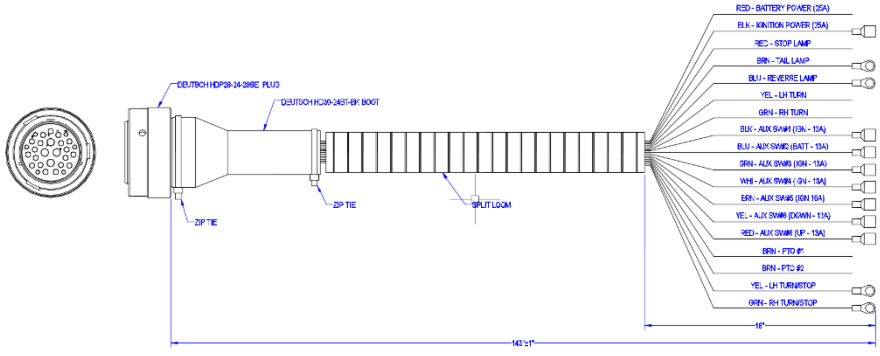
Part Number	Part Description

161936 **LIGHT,KIT,PLOW,LIGHT,AKDOT,12” PAIR,BLACK**

162391 **HOSE,ASSY,FUEL,84",AKDOT 2017**

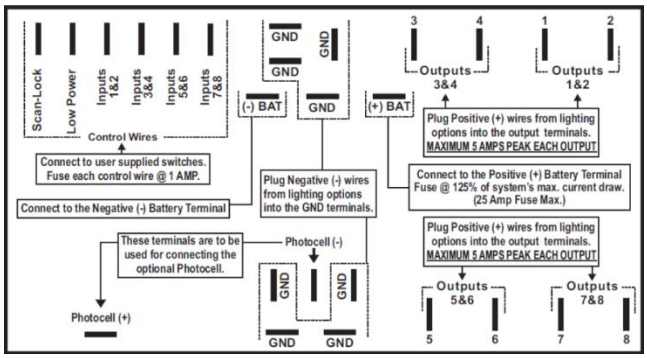
162392 **HOSE,ASSY,FUEL,128",AKDOT 2017**

163780 **HARNESS,WIRING,MACK,143"**



Part Number **Part Description**

163791 **LED FLASHER,FINAL DOT**



164550 **JUNCTION BOX,ASSY,AK DOT**

164551 **CABLE ASSY,30',14GA,AK DOT**

NO IMAGE AVAILABLE

164741 **LIGHT,BLUE,LED,OVAL,FRONT MNT**

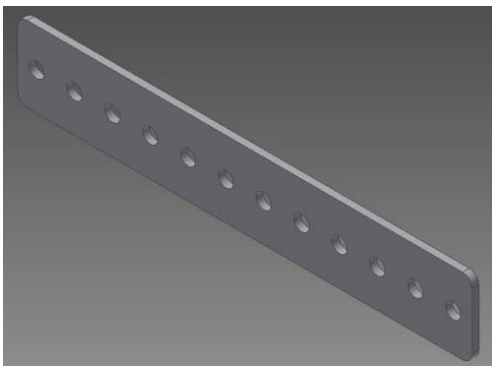
Part Number	Part Description

164742 **LIGHT,AMBER,LED,OVAL,FLUSH MNT**

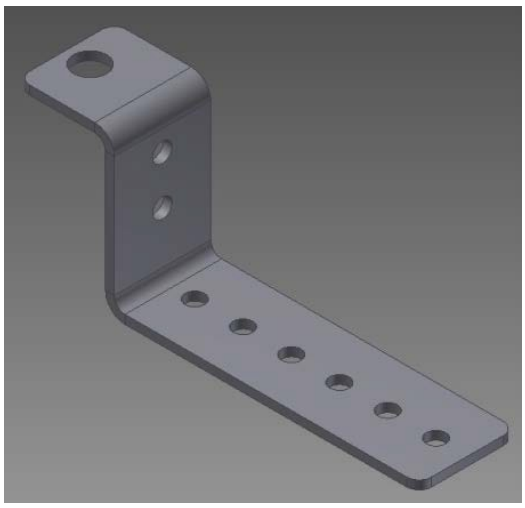
259015 **HARNESS,PIGTAIL,6”**

259104 **LIGHT,MARKER,RED,2.5”,LEDn**

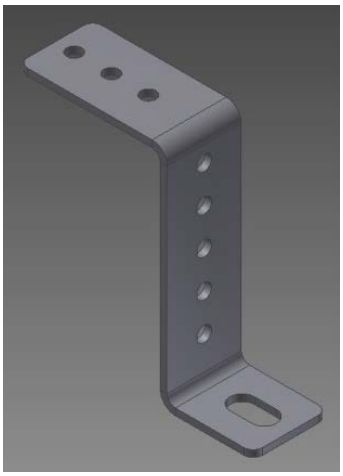
HTE205 **BRACKET,STRAP,UNIVERSAL**



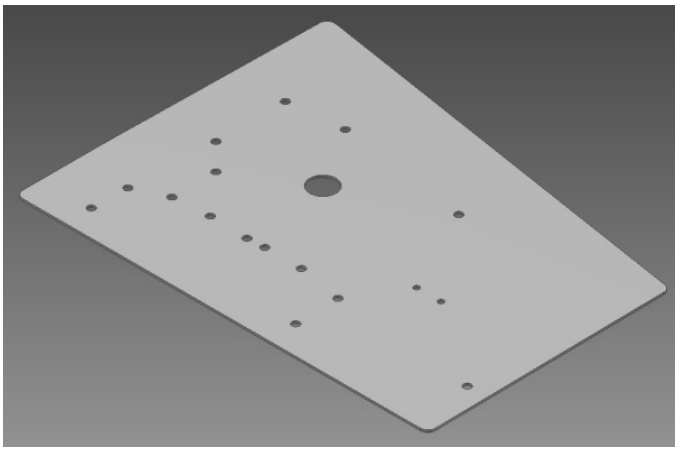
HTE343.201 **BRACKET,STRAP,HT**



HTE344.201 **BRACKET,STRAP,HT**

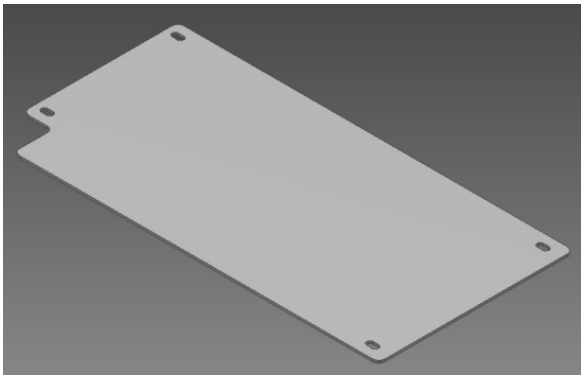


HTE369.201 **PLATE,MOUNT,ELEC,HORZ**



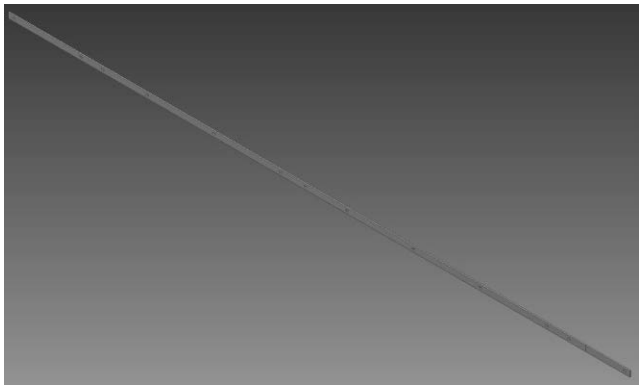
Part Number	Part Description

HTE370.201 **PLATE,MOUNT,ELEC,VERT**

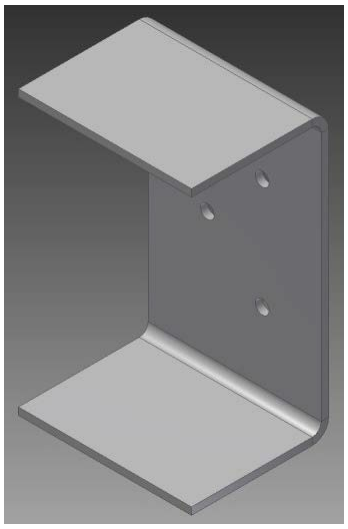


HTE419.304 **BRACKET,SENSOR,AIR & ROAD TEMP**

HTE448.201 **BAR,HOSE,WIRING,14’**



Part Number	Part Description
HTENDOR3.201	BRACKET,SWITCH,MERCURY,NDOR



HX03407	PLUG,FILLER,JUNCTION BOX,NYS FOR BOX 50800

HX23733A	HARNESS,PIGTAIL,STROBE