Proof Copy Only (02-10-03)

Rota-Max Scalper

(Including Scalper/Screener)

Installation and Operation Manual

PNEG-1279

PNEG-1279

Table of Contents

Use of the Equipment Information page will help you identify your equipment in the case that you need to call your dealer or installer. This information should be filled out and kept on record.

Equipment Information

Model Number:_____

Serial Number:_____

Date Purchased:_____

Dealer/Distributor Name and Phone Number:

_____

_____

_____

_____

Material Handling
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Assumption, Illinois 62510 USA
Phone: (217) 226-4421
FAX: (888) 741-3004
e-mail: gsi@grainsystems.com

SAFETY GUIDELINES

This manual contains information that is important for you, the owner/operator, to know and understand. This information relates to protecting ***personal safety*** and ***preventing equipment problems***. It is the responsibility of the owner/operator to inform anyone operating or working in the area of this equipment of these safety guidelines. To help you recognize this information, we use the symbols that are defined below.
Please read the manual and pay attention to these sections. Failure to read this manual and it's safety instructions is a misuse of the equipment and may lead to serious injury or death.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER **DANGER** indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING **WARNING** indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION **CAUTION** indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION **CAUTION** used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

NOTE **NOTE** indicates information about the equipment that you should pay special attention to.

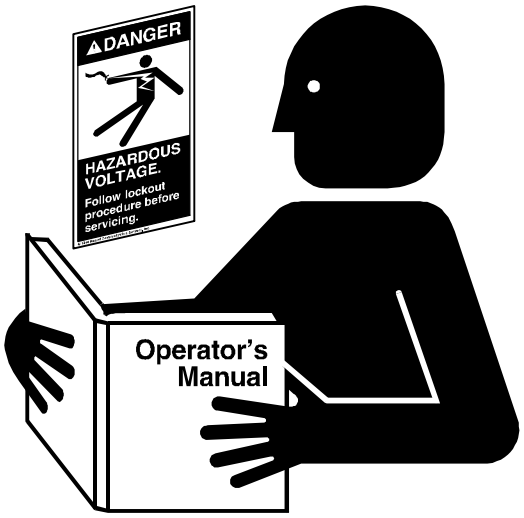
FOLLOW SAFETY INSTRUCTIONS

Carefully read all safety messages in this manual and on your machine safety signs. Keep signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from the manufacturer.

Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction.

Keep your machinery in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.

If you do not understand any part of this manual and need assistance, contact your dealer.



STAY CLEAR OF ROTATING PARTS

Entanglement in rotating impeller arms will cause serious injury or death.

Keep all shields and covers in place at all times.

Wear close fitting clothing. Stop and lock out power source before making adjustments, cleaning, or maintaining equipment.

STAY CLEAR OF HOISTED EQUIPMENT

Always use proper lifting/hoisting equipment when assembling or disassembling equipment.

Do not walk or stand under hoisted equipment.

Always use sturdy and stable supports when needed for installation.

PRACTICE SAFE MAINTENANCE

Understand service procedures before doing work. Keep area clean and dry.

Never lubricate, service, or adjust machine while it is in operation. Keep hands, feet, and clothing from rotating parts.

Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any build up grease, oil, or debris.

REMOVE PAINT BEFORE WELDING OR HEATING

Avoid potentially toxic fumes and dust.

Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

Do all work outside or in a well ventilated area. Dispose of paint and solvent properly. Remove paint before welding or heating:

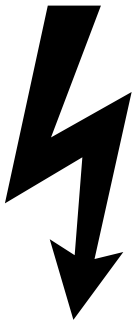
- If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.
- If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

OPERATE MOTOR PROPERLY

Do not operate electric motor equipped units until motors are properly grounded.

Disconnect power on electrical driven units before resetting motor overloads.

Do not repetitively stop and start the drive in order to free a plugged condition. Jogging the drive in this type of condition can damage the scalper and/or drive components.

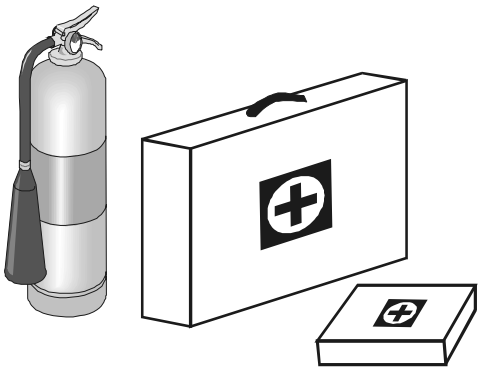


PREPARE FOR EMERGENCIES

Be prepared if fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



WEAR PROTECTIVE CLOTHING

Wear close fitting clothing and safety equipment appropriate to the job.

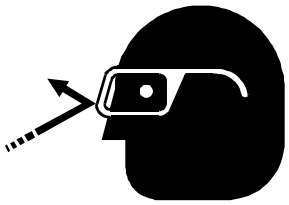
Safety glasses should be worn at all times to protect eyes from debris.

Wear gloves to protect your hands from sharp edges on plastic or steel parts.

A respirator may be needed to help prevent breathing potentially toxic fumes and dust.

Wear hard hat and steel toe boots to help protect your head and toes from falling debris.

Eye Protection



Gloves

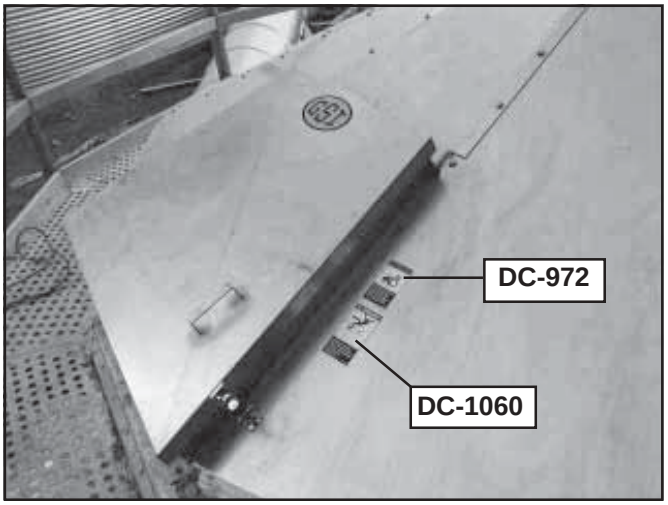
Steel Toe Boots

Respirator

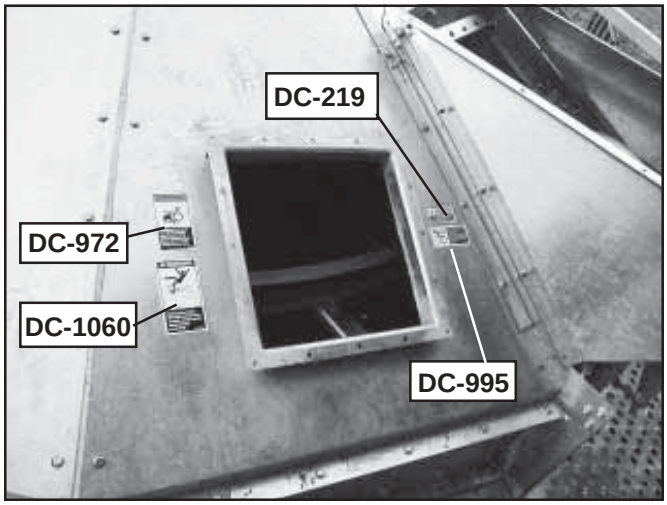
Hard Hat

SAFETY DECAL LOCATIONS

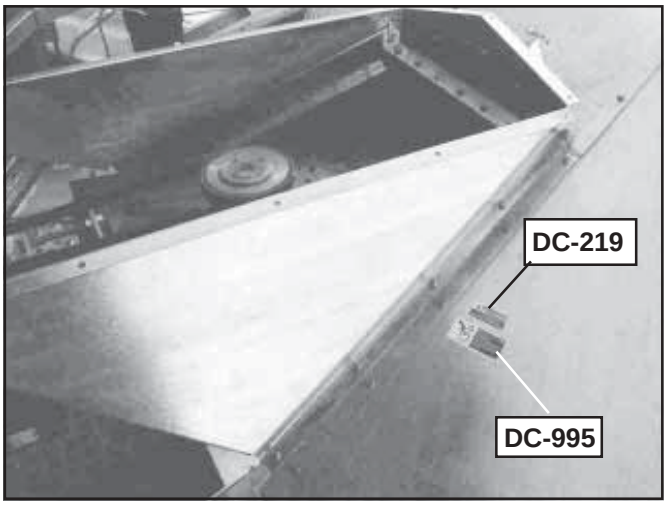
Install safety decals on components as shown. Always insure that safety decals are in place and in good condition. If a decal cannot be easily read for any reason or has been painted over, replace it immediately. Contact your dealer or the manufacturer to order a replacement decal free of charge.



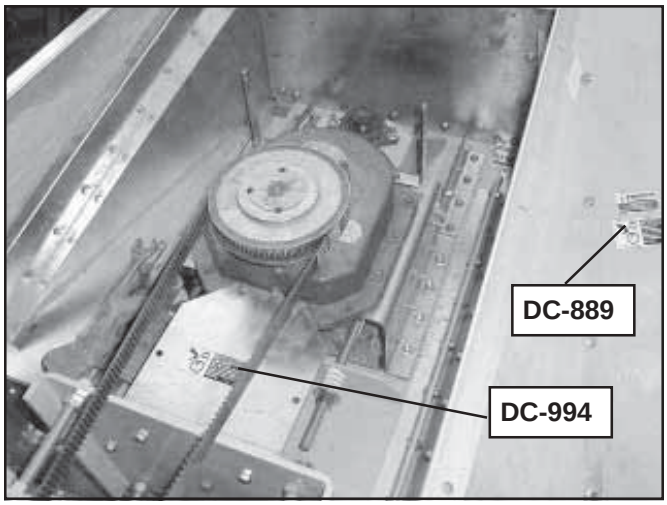
There should be a DC-1060 and a DC-972 located next to the Main Entry Door as shown above.



There should be a DC-1060, DC-972, DC-995, and a DC-219 located next to the Drive Inspection Door area as shown above.



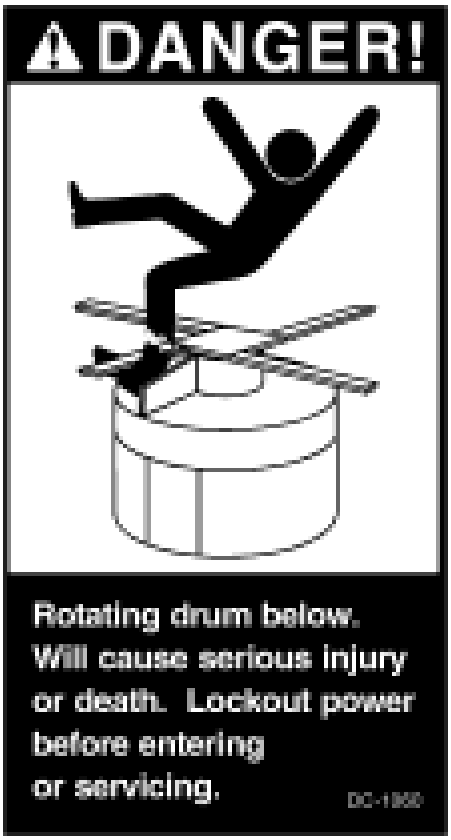
There should be a DC-995 and DC-219 located next to the drive area as shown above.



There should be a DC-994 & DC-889 located on the Drive when cover is removed as shown above.

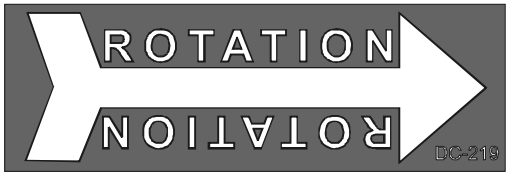
SAFETY DECALS

Please remember, safety decals provide important safety information for people working near equipment that is in operation. If a safety sign cannot be easily read for any reason or has been painted over, replace it immediately. Additional Safety signs may be obtained from your dealer, distributor, or ordered from the factory free of charge.



DC-1060

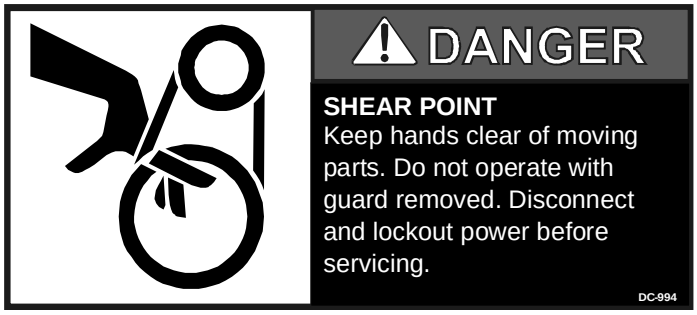
DC-972



DC-219

SAFETY DECALS

Please remember, safety decals provide important safety information for people working near equipment that is in operation. If a safety sign cannot be easily read for any reason or has been painted over, replace it immediately. Additional Safety signs may be obtained from your dealer, distributor, or ordered from the factory free of charge.



DC-994

DC-995

DC-889

Introduction

READ THIS MANUAL carefully to learn how to properly use and install this equipment. Failure to do so could result in personal injury or equipment damage. This manual and safety signs on your equipment may be available in other languages. (Consult with your dealer to see what is available)

INSPECT the shipment immediately upon arrival. The Customer is responsible for ensuring that all quantities are correct. Report any damage or shortages by recording a detailed description on the Bill of Lading to justify the Customer's claim from the Transport Firm. Our responsibility for damage to the equipment ends with acceptance by the delivering carrier. Save all paperwork and documentation furnished with any of the Scalper equipment.

THIS MANUAL SHOULD BE CONSIDERED a permanent part of your equipment and should be easily accessible when needed.

WARRANTY is provided as part of the company's support program for customers who use and maintain their equipment as described in the manual. The warranty is explained on the warranty page located on the inside back cover of this manual.

This warranty provides you the assurance that the company will back its products where defects appear within the warranty period. In some circumstances, the company also provides field improvements, often without charge to the customer, even if the product is out of warranty. Should the equipment be abused, or modified to change its performance beyond the factory specifications, the warranty will become void and field improvements may be denied.

NOTE

All information, illustrations, photos, and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

ROTA-MAX SCALPER/SCREENER GUIDELINES

The information contained in the manual is general in nature and covers many of the options available with the Rota-Max Scalper or Scalper/Screener. It is important to identify what equipment has been installed to properly apply this information. This manual is intended to be used in conjunction with approved industry safety standards including, but not limited to, a properly implemented Lock Out/ Tag Out Program.

While the nature of a Scalper is to remove oversized Foreign Material (FM) from the product stream, the Rota-Max design principles assumes all material has passed through an OSHA grate (OSHA 1910.272 (k)). Large foreign objects such as concrete and tools may cause damage to the equipment, and care should be taken to prevent the introduction of such objects into the unit. Use of a magnet may further protect the equipment.

The specified capacity is conservatively based on an average product FM component, particle geometry, moisture content and properties. Specific considerations may enhance or hamper the performance and the operational practices suggested here may need to be modified to satisfy those conditions.

When incorporated into a system, it is important to understand the operation of this equipment and the effect that the operation of other equipment may have on the performance of the Rota-Max Scalper. These may include, but are not limited to, the situations listed:

1. Material should be introduced vertically into the center of the unit. Excessive entry speed or offset loading may require additional flow directors or baffles for proper unit operation.

2. Adequately sized equipment or spouting must be provided for the removal of product from the unit, including the removed FM. If conditions exist where the product discharge may become blocked, level indication in the lower cone should be considered, and steps should be taken to isolate the feed to the unit before a plugged condition can occur.

3. Where mechanical conveyance is used for the removal of oversized FM from the unit be certain to consider the properties of the material removed, and select a conveyor which is appropriate for the transport of such material. The process of scalping will generally not separate items that convey well with augers. Consider other conveyor options.

4. Be certain that support structures are adequately sized for the operational and maximum loading conditions as well as meteorological, seismic and site related conditions. Modification of the support legs is not allowed without factory authorization. Equipment assembly extension legs are not intended to support the operational loads. Where extreme weather conditions may be encountered additional sheltering of the unit may need to be considered.

5. Adequate access is required as shown on the general arrangement drawing on page 10 and includes but is not limited to the drive area, upper access door, gate drive assembly, and lower cone access. If the unit is to be assembled in place, be certain safe and adequate access is provided during all phases of construction.

6. Preassembled units contain several points where lifting equipment may be attached. The use of these points and the actual rigging and hoisting of the equipment is at the sole risk of the customer and his assigns. No allowance is made for the suitability of the methods or materials used in the lifting process.

7. Be certain to read all and understand all operating procedures prior to starting this equipment.

SECTION 1

Getting Started

A well organized plan for the Assembly and Installation of this equipment is essential for a safe and efficient project. Familiarize yourself with the information in this section prior to starting the assembly. As multiple models are represented in this manual, determine the location of drawings and procedures pertinent to the equipment you are assembling. This manual is provided for the convenience of the Assembler and is intended to be used at the site. It can be very helpful during the process to make notations in the manual. Additional manuals are available if replacements are required.

That assembly of this equipment can be accomplished safely and efficiently as detailed in this manual does not imply this is the only way to assemble this equipment, nor is it necessarily appropriate for all assembly situations. Use of good judgement and acceptable building practices is imperative for safe assembly.

If a component does not fit the installation, verify that the correct part has been identified. If an insurmountable problem is discovered with a component, contact the factory for advise or approval for modification.

There are some crucial assembly points identified by **underlined bold print** in this manual. Verify that the identified condition is satisfied prior to continuing the assembly.

Safety Precautions

Read and understand all safety and assembly instructions prior to assembling this unit.
Material edges can be sharp, wear gloves when handling components.
Use proper safety equipment, protect employees at all times.
A clean and safe work area is essential.
Supplemental bracing is required during assembly.
Use appropriate and OSHA approved ladders and scaffolding where required.
Site conditions may require adaptation of these directions.
This is one possible method, and should not be construed as the only possible method, use reasonable judgement in the application of these directions.

Site Considerations

A clean, level adequately sized concrete pad free of obstruction is ideal for assembly. If such conditions are unavailable, be sure to select an area with a firm surface which is relatively level, allowing safe access for construction equipment and future movement of the assembled unit. The site should provide access to the power requirements of the assembly tools. Electrical power should have integral Ground Fault protection.
If the unit is to be assembled inside an existing structure, be certain to comply with the Safety Regulations which exist for the facility. Additional support bracing, scaffolding and temporary bracing may be required to support loads induced through transport and handling the equipment and the cleaner components. Verify that existing floors and platforms can support the temporary loads placed upon them.

The Assembly and Installation plan should include consideration of the Hoisting Equipment which will be utilized. Verify the capacity and condition of all hoisting equipment. The selection of lift points should be made by a qualified rigger.

RECEIVING THE EQUIPMENT

*When the equipment arrives on site, find and retain the Bill of Materials (***BOM***), as it contains valuable part number information. In the Assembly Information,* ***BOLD ITALICIZED PART DESCRIPTIONS*** *will match the descriptions on the Bill of Materials.*

Inspect the shipment prior to unloading for damage which may have occurred during shipment. Inventory the material as it is unloaded and make notations in the unlikely event of a shortage or problem with the shipment. Preassembled Equipment must be inspected for damage or loose fasteners caused by or during shipment.

Protect your investment in the un-assembled components from damage or theft. If the components are to be stored for an extended period, inside storage is recommended. Galvanized coatings on stacked components can be damaged through prolonged exposure to wet environments, voiding the warranty on the coating. Replace the covers on shipping crates for added security.

PREASSEMBLY OF EQUIPMENT

These directions are intended to be all encompassing. Some assemblies may arrive completed from the factory, conditional upon shipping and other arrangements. It is ultimately the field assembler's responsibility to verify the completeness of the subassemblies at the time the unit is built.

TOOLS REQUIRED

Having the following tools available can greatly simplify the assembly procedure. Items marked in **Bold Print** are essential from an efficiency standpoint.

REQUIRED	Strongly Recommended	Nice To Have
• 1/2" Drive Impact Wrench **• 1/2" Impact Sockets - 7/16", 9/16", 5/8", 11/16", 3/4", 15/16", 1-1/8"** **• Box/Open end wrenches to match** **• Impact sockets** **• Hammer** **• Alignment punches** **• Ladders, Scaffold** **• Drill with 1/4", 3/8", 7/16" bits, phillips head driver, 3/8" nut driver** **• Levelling device** **• Gloves** **• Allen Wrenches from 1/8" to 3/8"**	• 1/2" Impact Swivel Adapter • 1/2" X 6" Impact Extension • Bolt and tool pouches • Safety Glasses, Personal Protection Equipment • Cable or Chain Hoist • Pry Bar to open crates • Knee pads • Screw gun with phillips head, and 3/8" nut driver • Adjustable Wrench • “C” Clamps • Locking Pliers • Needle Nose Pliers • Caulk Gun	• Storage containers for open bolt boxes • Emery cloth • Screwdrivers • Utility knife • Sawzall and blades • Oil can and funnel • Towels and Cleaning Solvents

INSTALLATION RULES

The designed nature of the equipment allows the assembler to choose the location of various components as the assembly progresses. Take a moment at this time, review the drawing below and consider the following stipulations, then map out the locations of the following items:

• **Drive(s) and Motor(s)** should not be adjacent a main access door, but should be adjacent the 16" inspection door. In the case of dual drives, locate the drive on opposite sides (180° apart). If a walkway is included, the wider portion of the walkway is installed at the drive location(s).

• **Overs Discharge Transition** should not be located over a support leg. For convenience, avoid placing the discharge below a drive unit.

• **Upper Access (Scalper Deck) Doors** should generally be located 180° apart. Doors should be a minimum of one full panel away from the Drive Assembly.

• **16" Inspection Door Panel** is installed adjacent the Drive Location(s) on either side per the installers discretion.

• **Bypass Gate Control** may not be located in the same panel as a lower access door. When an Electric Gate Actuator is included, avoid putting the drive in the same panel as a Support Leg. Manual gate controls will fit behind the support leg, if desired. It is generally a good idea to avoid installing the gate controls beneath the Overs Discharge Transition to allow good access.

• **Lower Access Doors** are generally installed 180° apart, and can be in any panel. Consider the access to the lower doors (by others) and allow sufficient area in front of the door for entry.

• **Universal Parts** are made to be installed in various locations. This will create situations where not all holes line up with something. Don't Panic, at the appropriate time, seal the blank hole with a washered bolt.

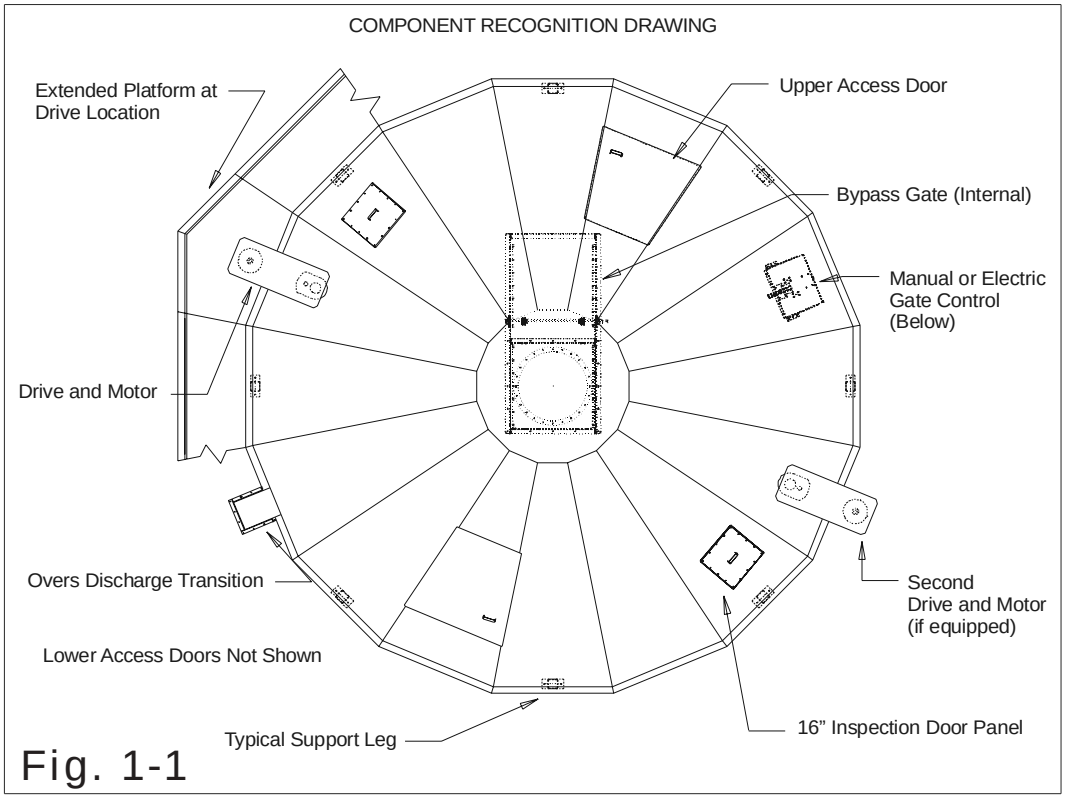


Fig. 1-1

SECTION 2

Scalper Lower Cone Assembly

(for scalper/screeners, skip to next section)

1. **Place *DISCH WELD***ment at the center of assembly area, add temporary bracing as required to keep the part stable.

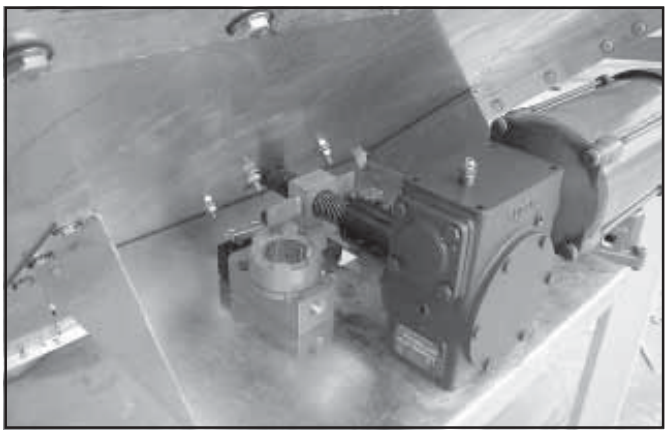
2. **Consider the location and orientation** of the Support Legs, Access Doors, Overs Discharge and the Gate Drive, then install one ***SHELL BTM UP*** panel and one ***RING BM WELD***ment section using 3/8" x 1" Gr. 5 bolts with flanged nuts. If the unit has a Factory Supplied Integral Platform, leave out the top two bolts on each side seam. Use mastic sealant between seams. Note that the Ring Beam installs to the **outside** of the Bottom Shell Upper panel. (See Fig. 2-1)

3. Install a ***SUPPORT LEG WELD***ment and ***CONSTRUCT LEG WELD***ment to support the Ring Beam. Be certain to provide adequate temporary support of the panel. (See Fig. 2-4)

4. The Support Legs and Construction Legs are useful for temporary support of the Ring Beams Panels as assembly progresses. Seal between all sheets with mastic sealant. Scalpers which use the GSI Integral Platform require only the top two holes be used in the Ring Beam Panels at this time, otherwise connect the Ring Beam panels together using three 1/2" x 1-1/2" Grade 8 bolts and flanged nuts as shown. **Do not tighten** the bolts at this time. (See Fig. 2-1A & 3-2)

2-A. Assembled RM-15.

2-B. Platform connection. RMS15 Shown.



2-C. Drive Mounted on Gate Drive Mount Bracket.

Lower Cone Assembly

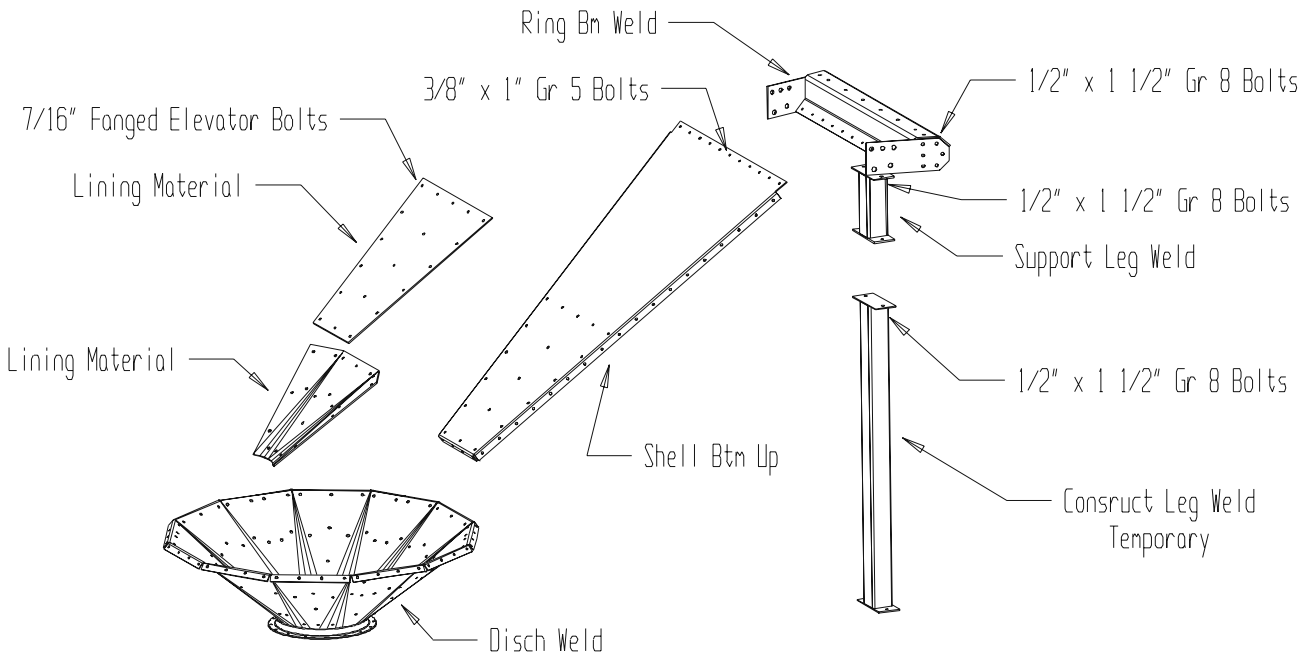


Fig. 2-1

(Scalper Only Lower Cone)

Lower Access Door Assembly

*(Use **3/8" x 1" Gr 5 Bolts** with **Flanged Nuts** unless otherwise noted.)*

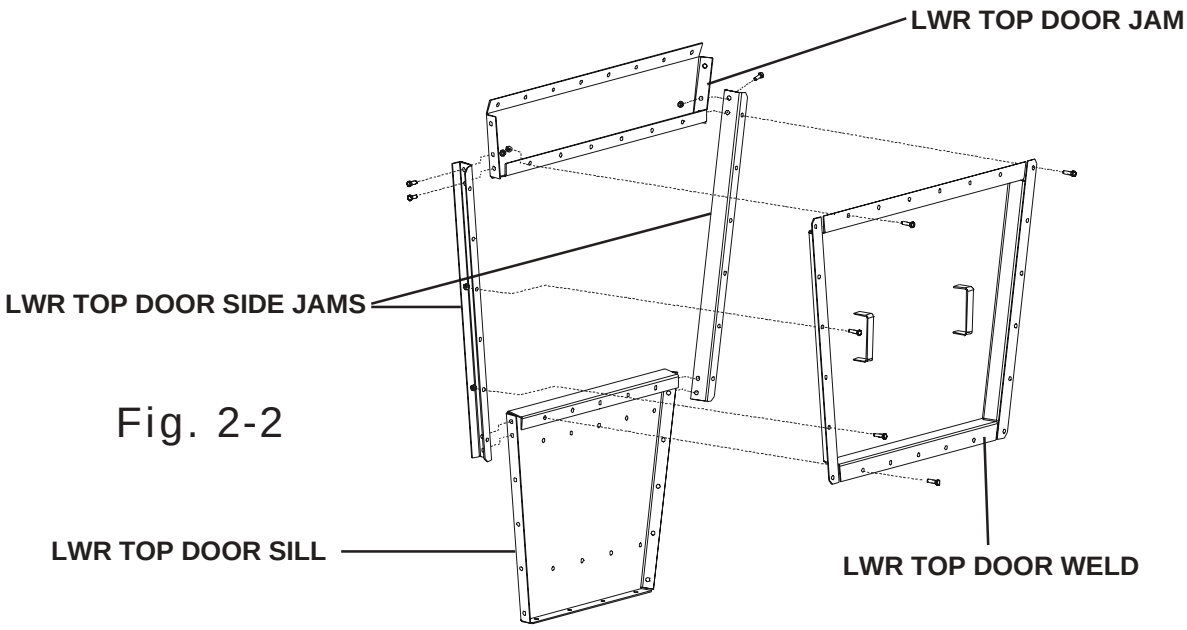


Fig. 2-2

5. **Two Lower Access Doors** are standard. General Installation is 180° apart, although almost any position could be considered. Install the ***LWR TOP DOOR SILL***, ***LWR TOP DOOR JAM*** and two ***LWR TOP SIDE JAM***s using 3/8" x 1" bolts with sealant to complete the door bolting frame. After door frame is complete attach it do the ***LWR TOP UPPER*** panel, where you want your door located. Do not install the ***LWR TOP DOOR WELD***ment at this time. (See Fig. 2-2)

6. **At the Gate Drive** Location, install the ***SHELL BTM UP MGD*** or ***EGT*** to ***LWR TOP UPPER GT DRV***. Then install the ***GATE SHFT CVR WELD***ment through the ***BTM UP MGD/EGT*** sheet using 3/8" x 1" assembly bolts and flanged nuts. If the unit has the optional Electric Gate Drive, the ***EGT*** sheet is used and the ***GATE DRV MT BRKT*** installs to the outside at this time. (See Fig. 2-3)

NOTE

Watch for the locations of the Overs Discharge, Access Doors and Gate Drive.

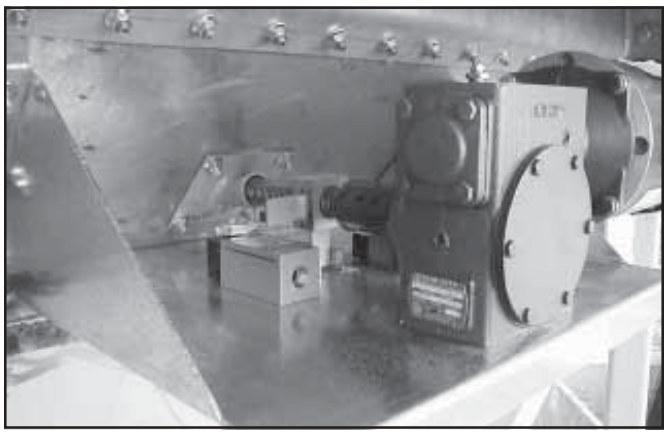
7. **At the Overs Discharge** location, install the ***RING BM OVERS WELD***ment. Install the ***OVERS DISCH WELD***ment with sealant at this time. Note that the lip on the edge of the Overs Disch Weld assembly installs **below** the Ring Beam. (See Fig. 2-4.)

8. After the lower cone is assembled but before it is tighted, install the urethane lining in the lower cone using 1/4" flanged bucket elevator bolts.

9. Upon completion of the lower cone assembly, **verify that the assembly is level and tighten all the bolts**. Verify the alignment of the components during tightening. **If the equipment is being assembled on an uneven or sloped site, remember that level is relative to the equipment plane of construction.**

2-D. Lower Access Door.

2-E. Lower Cone Access Door on 15K Roto-Max Scalper.



2-F. Assembled Gate Drive.

Lower Gate Drive Assembly

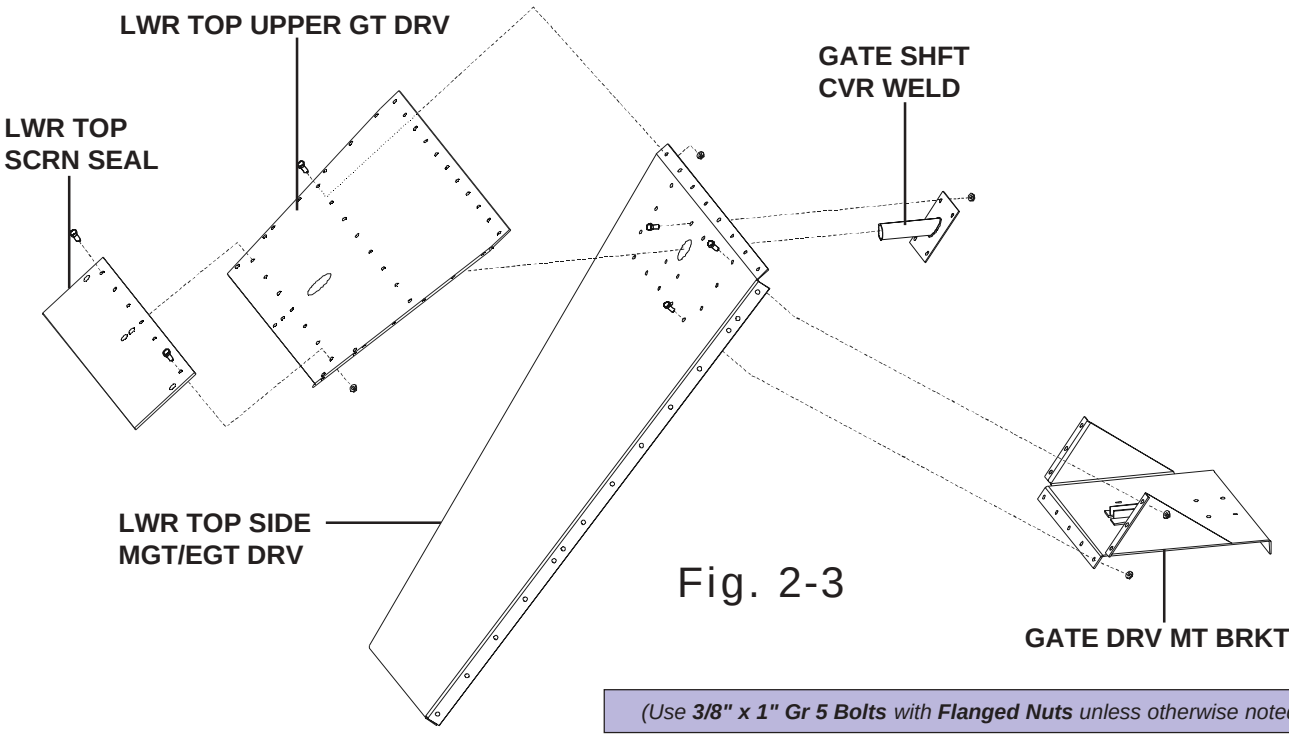


Fig. 2-3

*(Use **3/8" x 1" Gr 5 Bolts** with **Flanged Nuts** unless otherwise noted.)*

Lower Cone at Overs Discharge

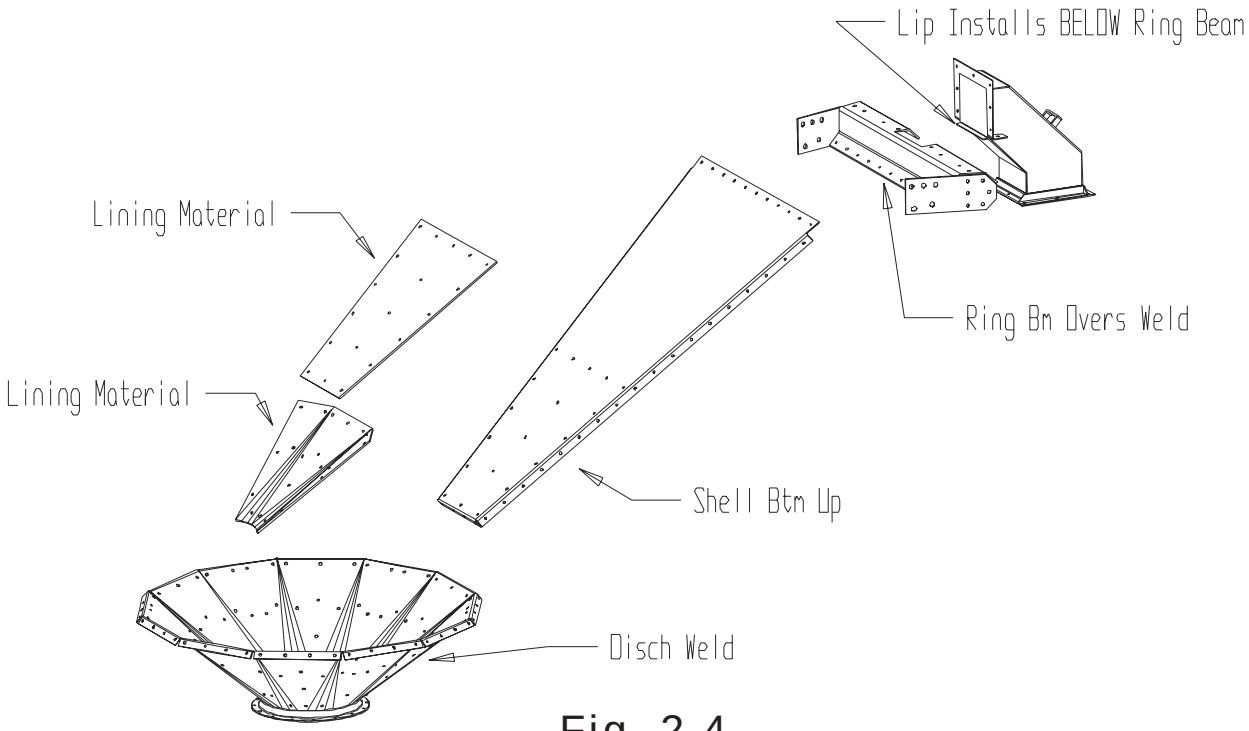


Fig. 2-4

*(Use **3/8" x 1" Gr 5 Bolts** with **Flanged Nuts** unless otherwise noted.)*

SECTION 3

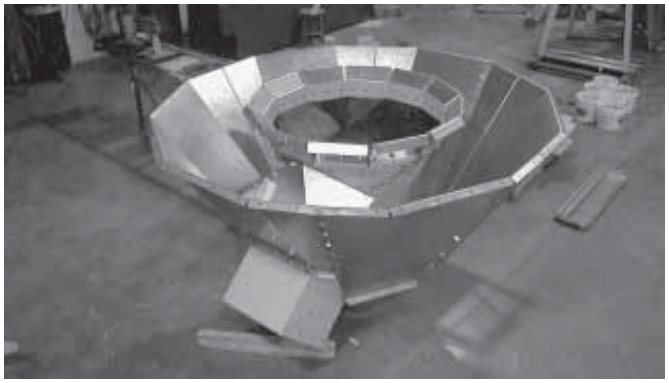
Scalper/Screener Lower Cone Assembly

(for Scalper Only skip to section 5)

1. **Place *FINES DISCH WELD***ment at the center of the assembly area, add temporary bracing as required to keep the part stable.
(See Fig. 3-1 & 3-5)

2. **Layout the location and orientation** of the Clean Grain Discharge, Support Legs, Access Doors, Overs Discharge and the Gate Drive by following the installation rules on page 17. Then assemble two ***LWR MID SIDE*** panels to ***FINES DISCH WELD*** using 3/8" x 1" Gr 5 bolts with flanged nuts. Use mastic sealant between seams. Be certain to provide adequate temporary support of the panels. (See Fig. 3-6.)

3. Connect one *LWR TOP SIDE* panel, one ***LWR TOP UPPER*** and one ***RING BM WELD*** to make a section. Note that the Ring Beam installs to the **outside** of the Lower Top Upper sheet. (See Fig. 3-1) Use 3/8" x 1" Gr 5 bolts with flanged nuts and mastic sealant between the sheets. Assemble a ***SUPPORT LEG WELD*** and ***CONSTRUCT LEG WELD*** to support the Ring Beam. (See Fig. 3-1) Install the preassembled panel with the leg assembly for support.



3-A. Lower Shell Bottom Assembly.

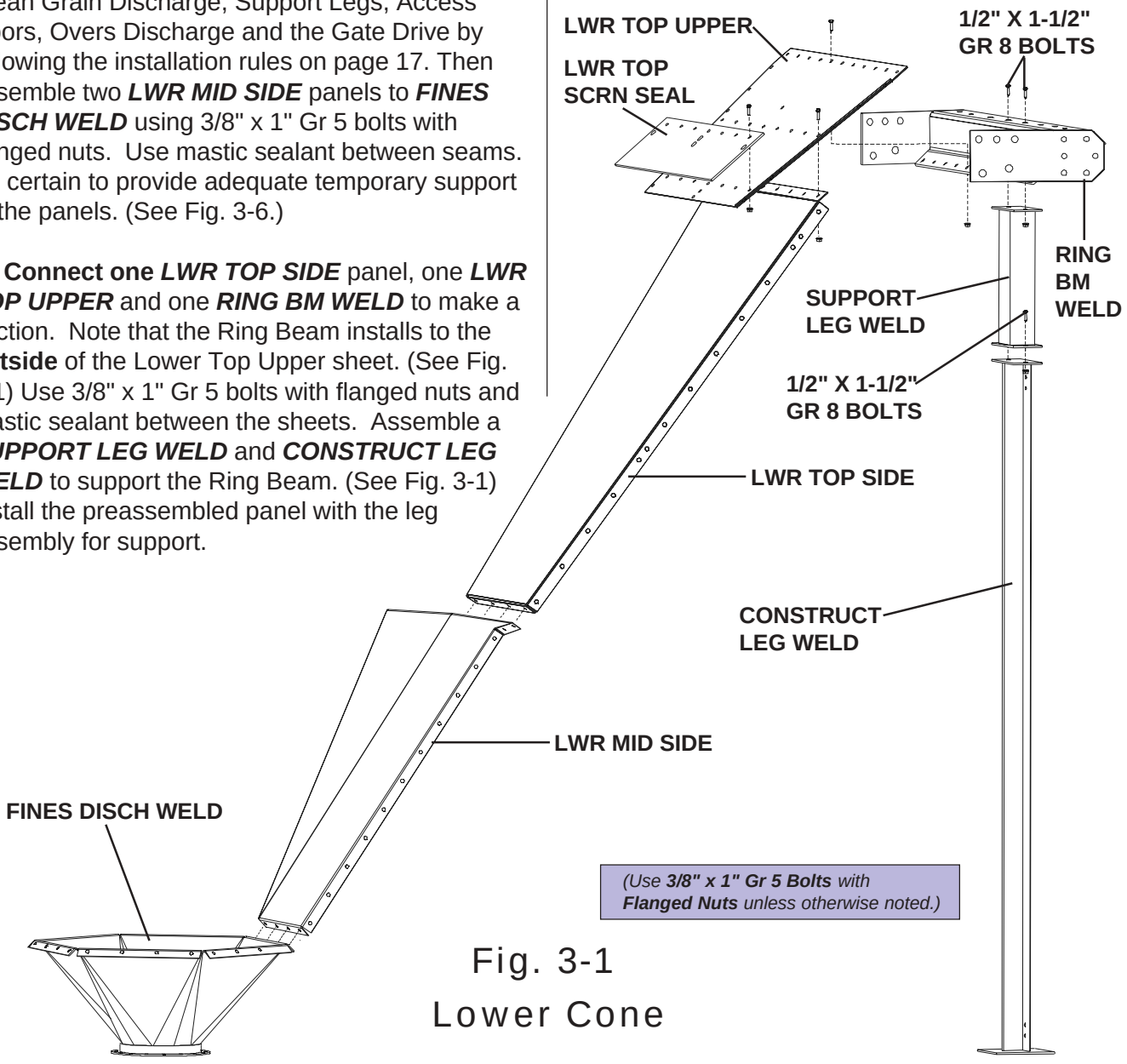


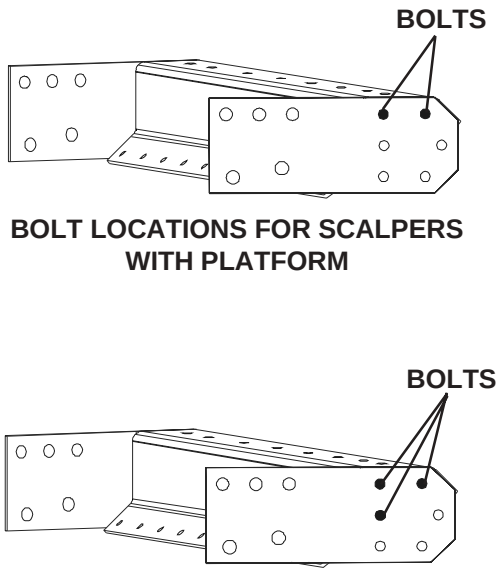
Fig. 3-1
Lower Cone

4. **For units with integral platforms,** locate the ***PLAT SPRT CHNL CLIP*** and install it through the common seam bolts on the Lower Top Upper cone sheet. The Clip installs to be coplanar with the welded flanges on the Ring Beams. (See Fig. 3-3)

5. **Assemble additional LWR TOP SIDE, LWR TOP UPPER, & RING BM WELDs** sections in this same fashion at their predetermined locations. Identify the ***LOWER MID SIDE ADPTR*** (they have extra holes see Fig. 3-5) and install them on each side of the Clean Grain Discharge location. The Support Legs and Construction Legs are useful for temporary support of the Ring Beams Panels as assembly progresses. Scalper/Screeners which use the GSI Integral Platform require only the top two holes be used at this time, otherwise connect the Ring Beam panels together using three 1/2" x 1-1/2" Grade 8 bolts and flanged nuts as shown. (See Fig. 3-2) **Do not tighten** the bolts at this time.

NOTE **Predetermined the installation location of the lower doors and gate drive among the LWR TOP SIDE Sections.**

Ring Beam Holes



BOLT LOCATIONS FOR SCALPERS WITH PLATFORM

BOLT LOCATION FOR SCALPERS WITH OUT PLATFORM

Fig. 3-2

NOTE **Watch for Overs Disch Location**

Platform Clip

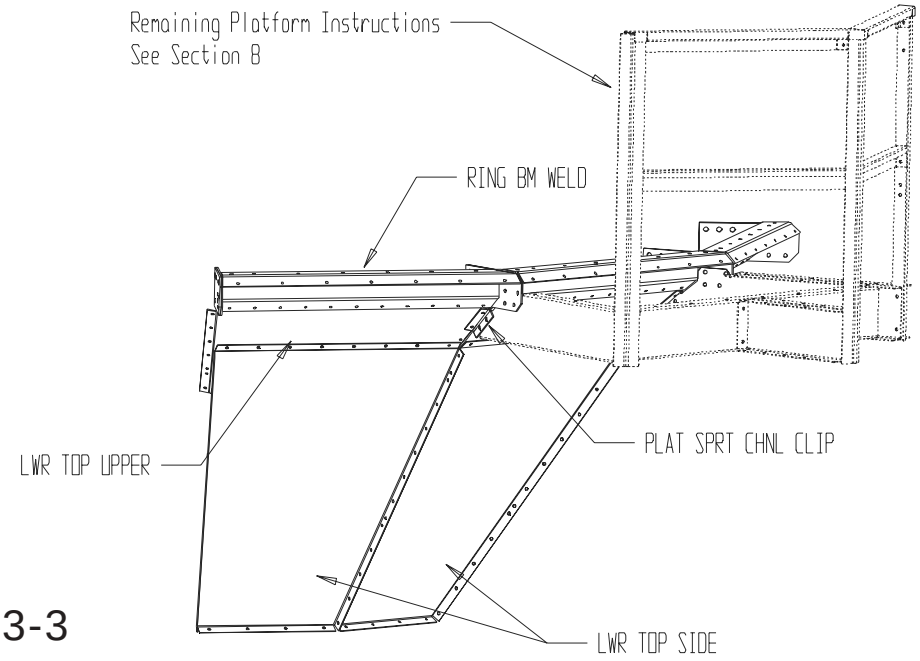


Fig. 3-3

NOTE

Watch for the location of the Whole Grain Discharge, Overs Discharge, Access Doors and Gate Drive. Otherwise you'll have disassemble and reassemble it again to get them in the proper location.

6. **When the Clean Grain Discharge** location is reached, assemble the ***CLN DISCH WELD*** and ***CLN SPOUT WELD*** using 3/8" X 1" grade 5 bolts. Install the ***CLN DISCH ____ LNR*** Urethane Lining as shown in Fig. 3-4, using 1/4" cup bolts and flanged locking nuts. Install the ***LWR MID ADPTR LH*** and ***RH*** using 3/8" X 1" bolts. Tighten all lining bolts and connection bolts on this assembly. Install the ***SCRN FRM LAND FLG***s to the ***CLN DISCH WELD*** using 3/8" X 1" Gr. 5 Bolts and Flanged Nuts. Do not tighten the Landing Flange bolts at this time. (See Fig. 3-6)

7. **Using proper lifting equipment, lift the Clean Grain** discharge into place, and connect the assembly to the ***LOWER MID SIDE ADPTR*** panels. Use 3/8" X 1" grade 5 bolts and seal between seams with mastic. (See Fig. 3-5) Note that this assembly **does not bolt** to the ***FINES DISCHARGE WELD***ment. Install the ***LWR MID SHED LH*** and ***RH*** and the ***LWR MID WEDGE*** panel to stabilize the Whole Grain Discharge. (See Fig. 3-4 & 3-5)

8. **When the Over Discharge** location is identified, install the ***RING BM OVRS WELD***. (See Fig. 2-4) Install the ***OVERS DISCH WELD*** with sealant at this time. Note that the lip on the edge of the Overs Disch Weld assembly installs **below** the Ring Beam. Install all bolts as work progresses, but do not tighten them.

Clean Discharge Weldment

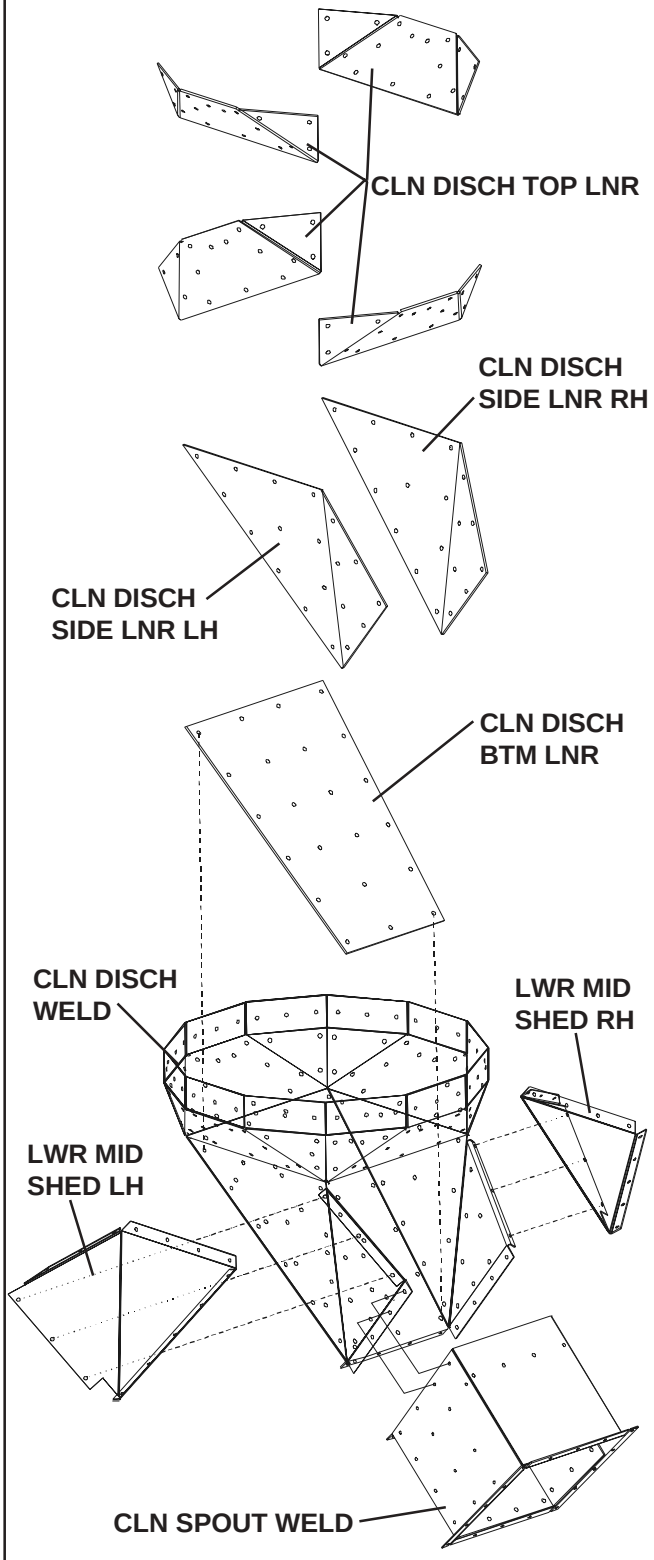


Fig. 3-4

Lower Shell Bottom Assembly

*(Use **3/8" x 1" Gr 5 Bolts** with **Flanged Nuts** unless otherwise noted.)*

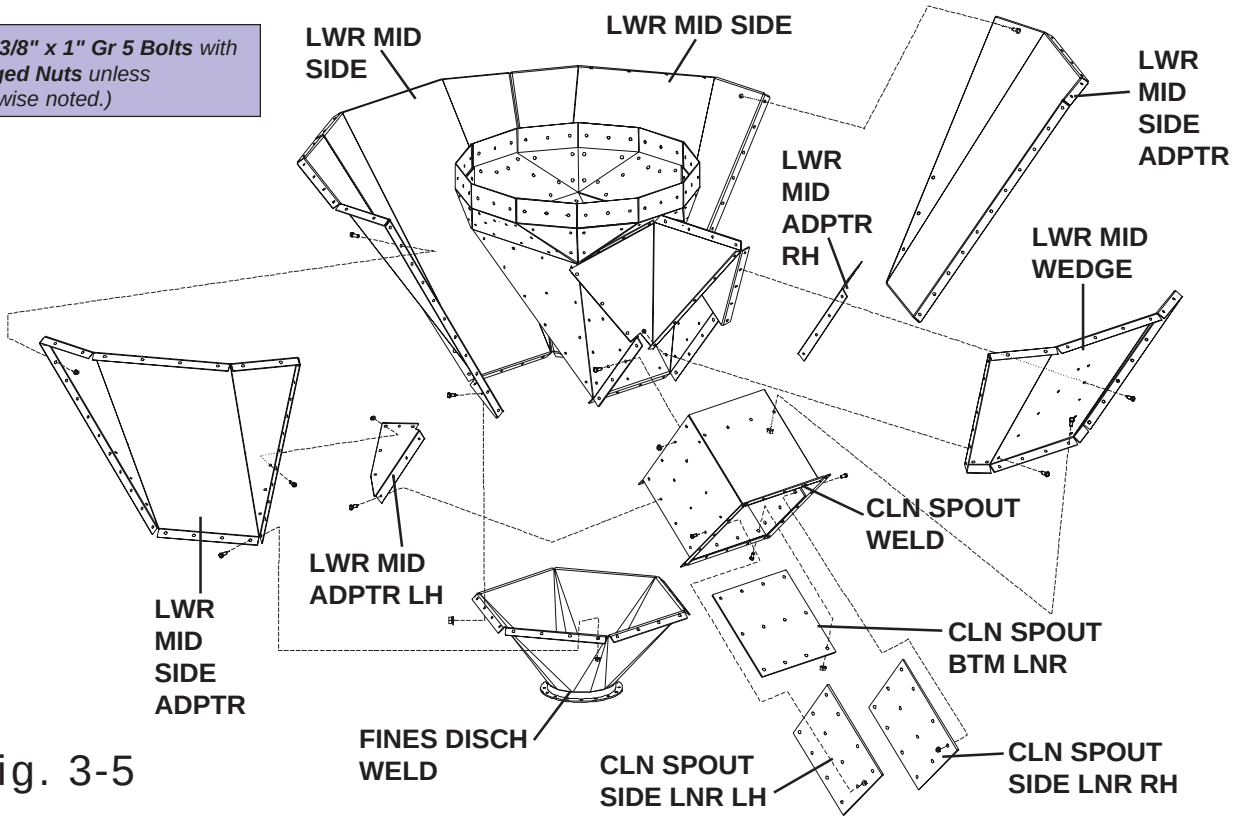


Fig. 3-5

Lower Screen Frame to Lower Bottom Shell

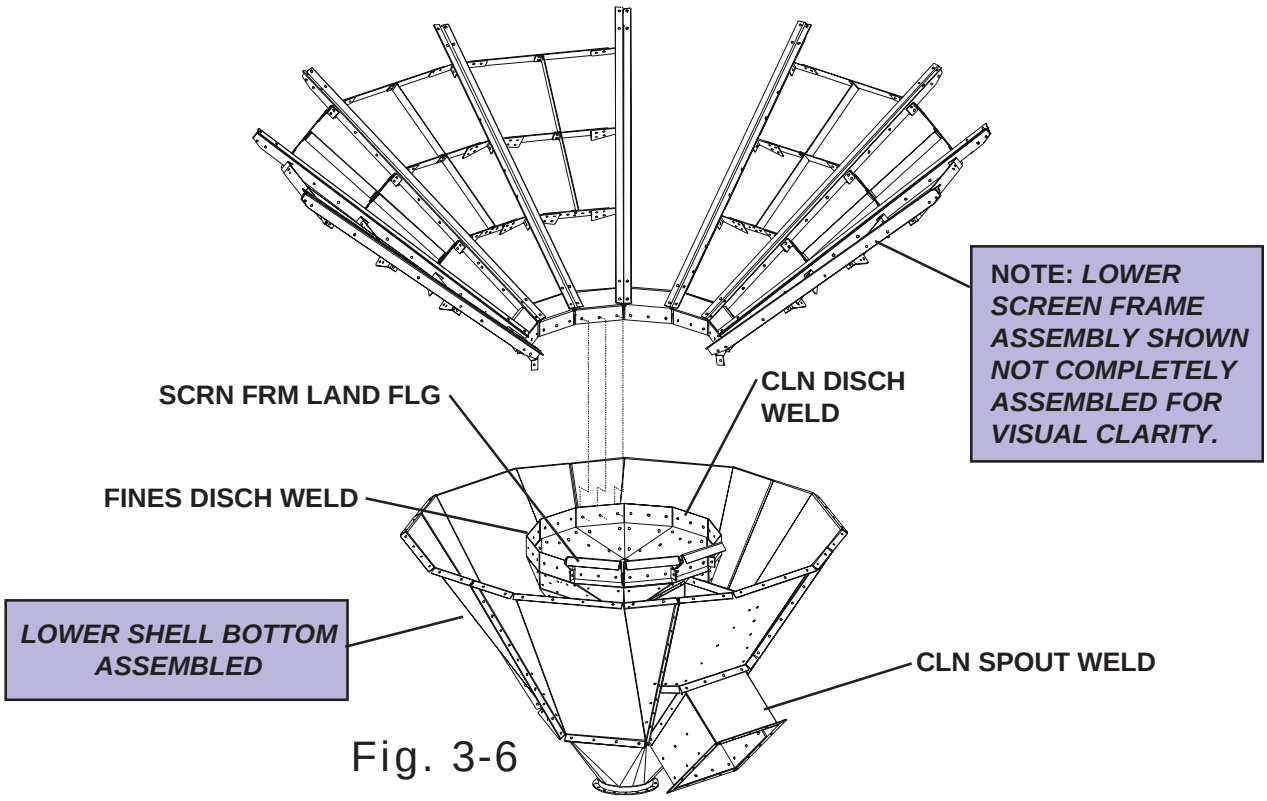
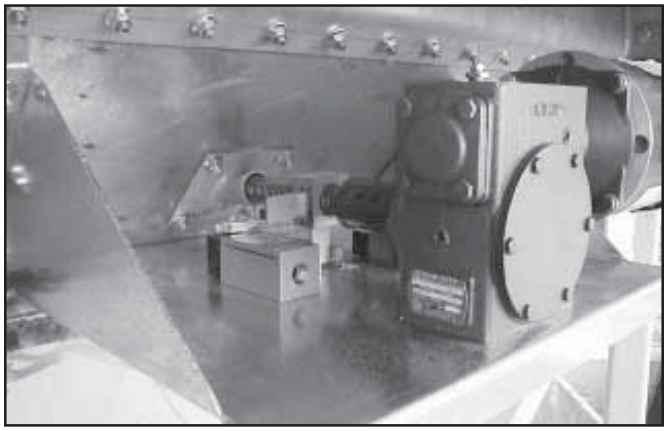


Fig. 3-6

9. **Watch for the location** of the Gate Drive and assemble the ***LWR TOP SIDE MGT DRV*** (***EGT*** for optional electric drive) and the ***LWR TOP UPPER MGT DRV*** or ***EGT*** to the ***RING BM WELD*** at the predetermined location. Install the ***GATE SHFT CVR WELD*** through the sheet. Where the Electric Gate Drive is utilized, mount the ***GATE DRV MT BRKT*** to the outside of the Lower Top Side sheet. (See Fig. 3-8)

10. **Two Lower Access Doors** are standard. General Installation is 180° apart, although almost any position could be considered. Assemble both door frames using the ***LWR TOP DOOR SILL***, ***LWR TOP DOOR JAM*** and two ***LWR TOP SIDE JAM***s with sealant to complete a door bolting frame. Connect together using 3/8" x 1" Gr 5 Bolts with flanged nuts. hardware. Attach the ***LWR TOP DOOR JAM*** to ***LWR TOP UPPER***, which should be installed to a ***RING BM WELD***. Do not install the ***LWR TOP DOOR WELD*** at this time. (See Fig. 3-7)

11. This should complete the assembly of the **Lower Outer Shell**. All exterior bolted seams should be filled but not tightened.



3-B. Gate Drive Installed.

3-C. Lower Access Door Installed.

Lower Access Door Assembly

*(Use **3/8" x 1" Gr 5 Bolts** with **Flanged Nuts** unless otherwise noted.)*

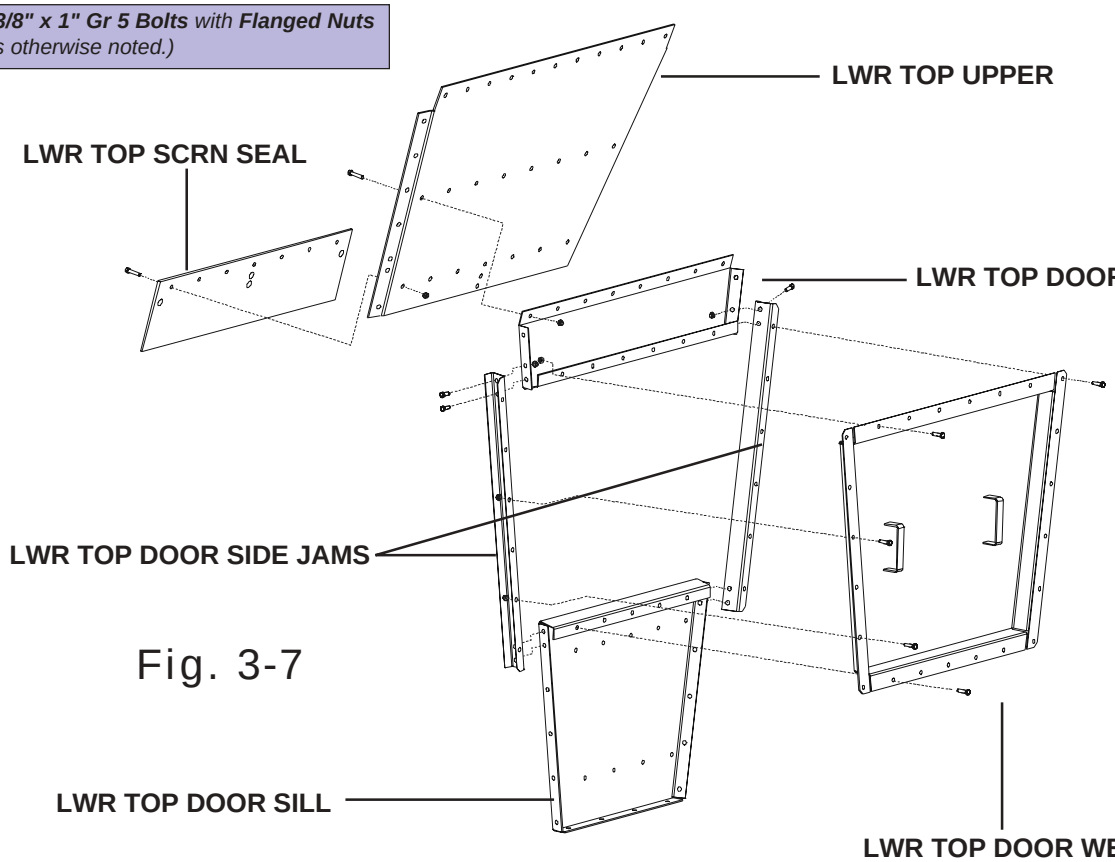


Fig. 3-7

Lower Gate Drive Assembly

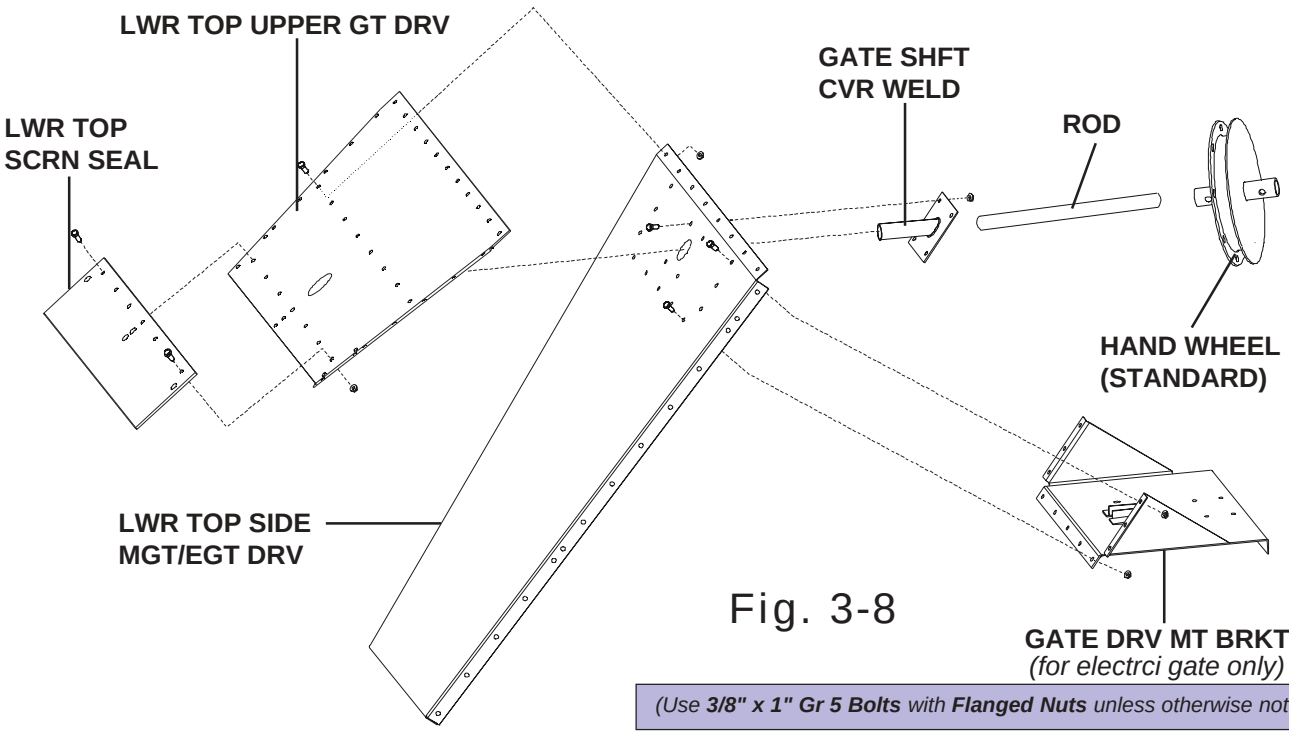


Fig. 3-8

*(Use **3/8" x 1" Gr 5 Bolts** with **Flanged Nuts** unless otherwise noted.)*

SECTION 4

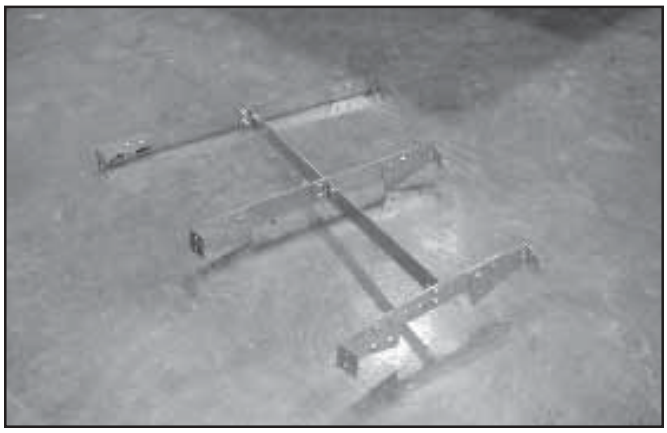
Scalper/Screener Lower Screen Frame Assembly

1. Using the chart 4-1 provided on page (29) check the location of the associated components, and preassemble the required number of components as follows.

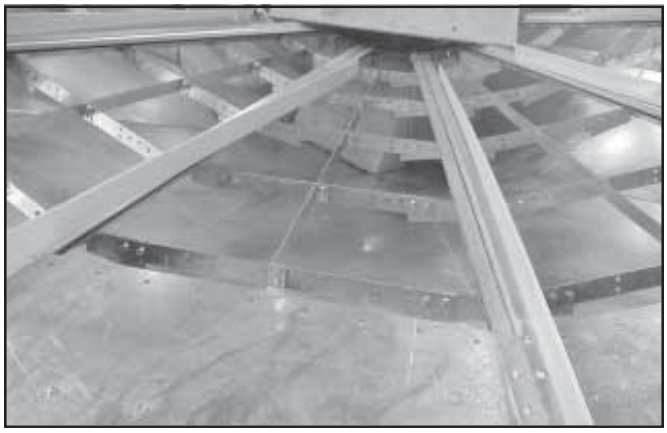
2. Bolt together two *SCRN FRM UNIV SPRT* angles with a ***SCRN FRM SCRN HOLD*** on either side using 3/8" x 1-3/4" Grade 5 bolts and flanged lock nuts for each required assembly. **Verify that the proper holes are selected** for future component installation and tighten these bolts. (See Fig. 4-1 and Chart 4-1 for Bolt Spacing.)

3. Assemble the door left and right support frames, using the same chart as a guide. Each assembly requires two ***SCRN FRM UNIV SPRT*** angles but only one ***SCRN FRM SCRN HOLD.*** Add the ***HATCH SUPPORT CLIP***s as required. The left and right door frames are mirror images of each other, and are assembled **using the special 3/8" x 1" self clinching bolts** with flanged nuts. Install the nuts on the opposite side of the door opening. Tighten the bolts.

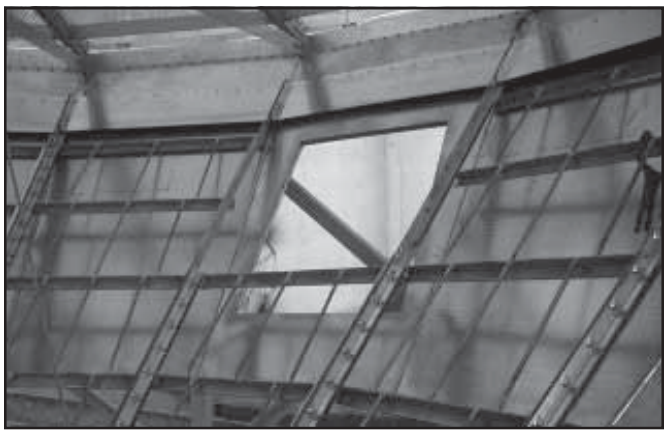
4. Assemble the Screen Cross Support Frames as required for the installation using 3/8" X 1-1/4" Gr. 5 Assembly Bolts and Flanged Lock Nuts. This is best accomplished on a flat surface. Using the chart as a guide, ***SCRN FRM CROSS*** components are combined with the ***SCRN FRM MID SPRT***s. Add the ***SCRN FRM UNIV SCRN SPRT***s and, if required, the ***SCRN FRM UP SPRT LH*** and ***RH***. Tighten all bolts. (See Fig. 4-3 and Photos.)



4-A. Assembled Screen Frame.



4-B. Installed Screen Frames.



4-C. Installed Screen Frames on 50 K Scalper/Screener.

Lower Screen Components - Item A

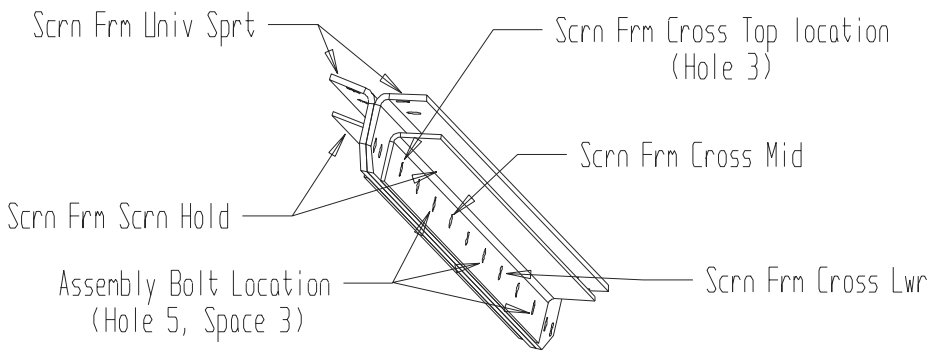


Fig. 4-1

(15K SHOWN)

Lower Screen Components - Item B

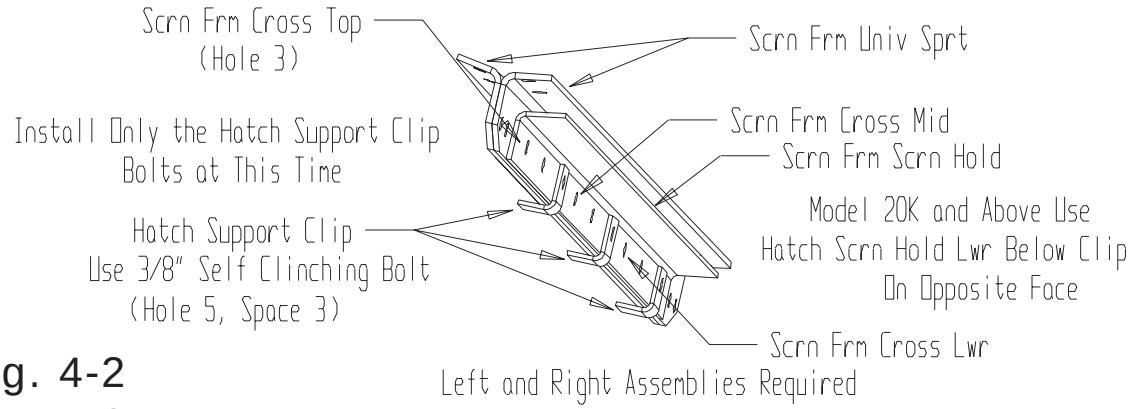


Fig. 4-2

15K SHOWN)

CHART 4-1

RotaMax Scalper/Screener Lower Screen Component Quantity and Assembly Chart							
Model Size	**10K**	**15K**	**20k**	**30k**	**40k**	**50K**	**60K**
Screen Frame Universal Support Assemblies							
Item A	8	8	12	12	12	12	12
Item B Left	**2**	**2**	**2**	**2**	**2**	**2**	**2**
Item B Right	2	2	2	2	2	2	2
Total Assemblies	**12**	**12**	**16**	**16**	**16**	**16**	**16**
Component Placement Hole Numbered From The Top							
Top Screen Cross Support	3	3	3	3	4	4	4
Assembly Bolt Location	**5**	**5**	**5**	**5**	**3**	**3**	**3**
Repeat Spacing Each	3	3	3	3	3	3	3
Top Hatch Support Clips	**5**	**5**	**5**	**5**	**3**	**3**	**3**
Screen Cross Supports Quantity Per Panel							
Scrn Frm Cross Top	**1**	**1**	**1**	**1**	**1**	**1**	**2**
Scrn Frm Cross Mid	1	1	2	2	2	2	2
Scrn Frm Cross Lwr	**1**	**1**	**1**	**1**	**2**	**2**	**2**
Cross Members Below Hatch	0	0	1	1	2	2	3
Universal Screen Supports	**4**	**4**	**6**	**6**	**10**	**10**	**12**
Top Supports (L + R)	2	2	2	2	0	0	0

Screen Frame to Lower Top Upper Assembly

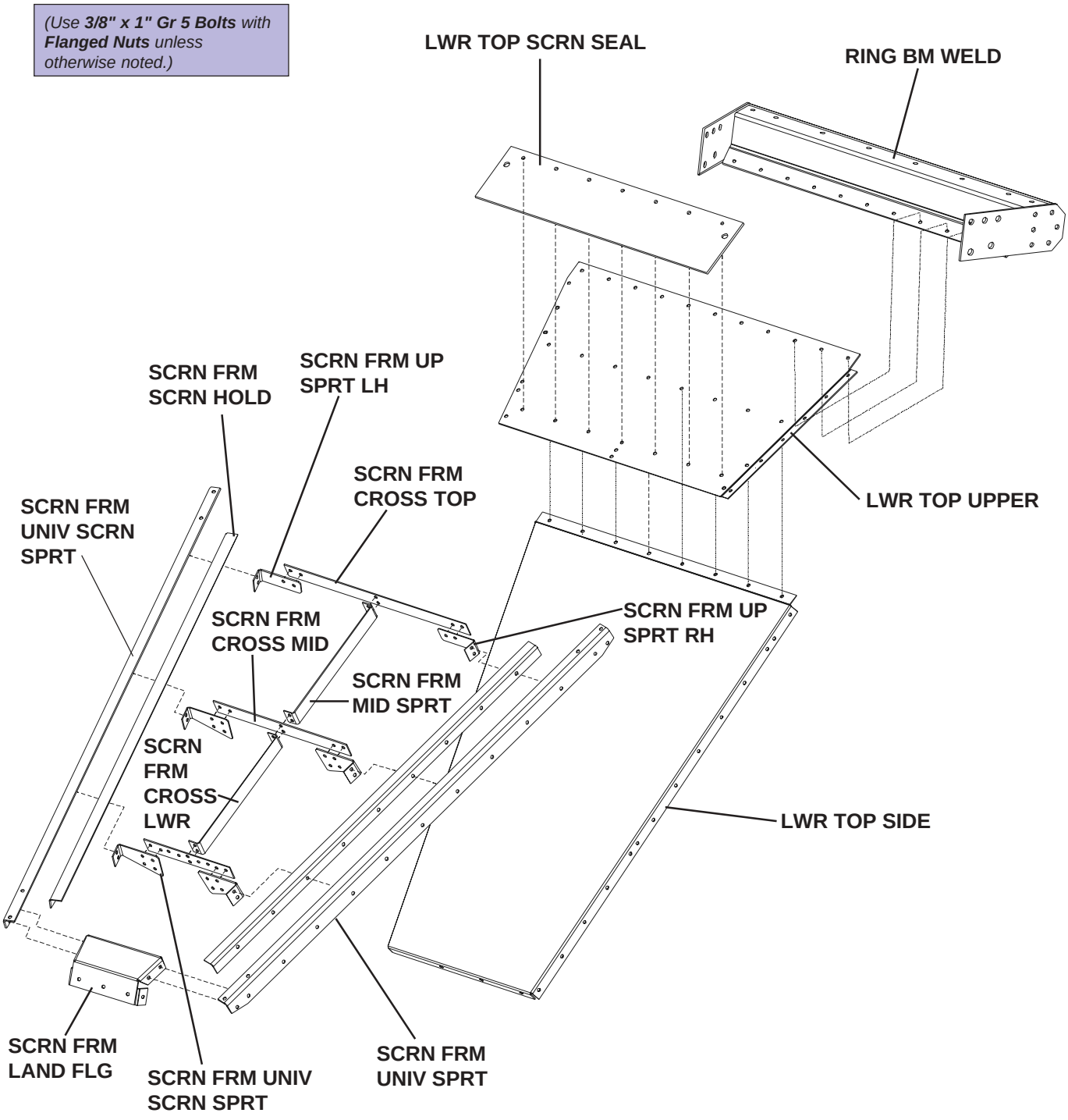


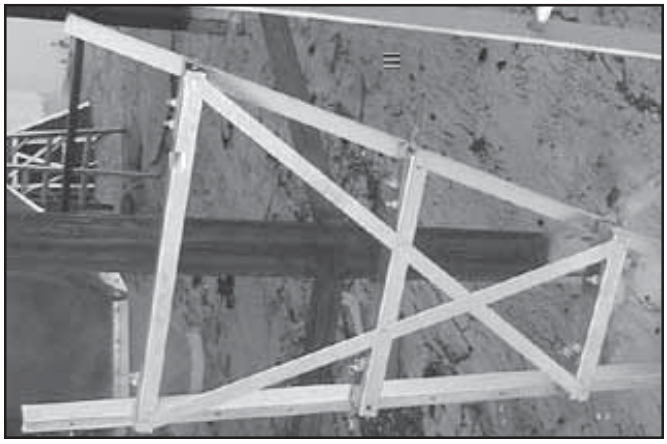
Fig. 4-3

STANDARD SCREEN FRAME PANEL (RMS 15 SHOWN)

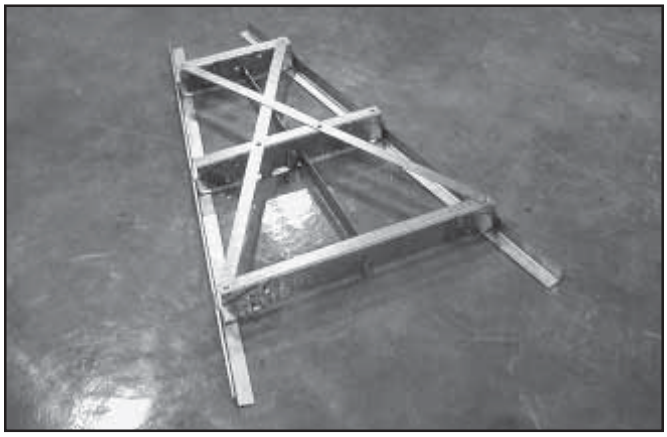
5. Starting at a Lower Access Door, install the preassembed door frame components between the ***LWR TOP UPPER*** sheet and the ***SCRN FRM LAND FLG*** using 3/8" x 1-1/4" GR. 5 Assembly Bolts for the top, and 3/8" x 1-3/4" bolts for the lower connection at the Landing Flanges. Switch to the opposite door and repeat the procedure. Using the same process, install the remaining Screen Support Angle assemblies.
(See Fig. 4-3.)

6. Install the preassembled Screen Cross Support Frames using 3/8" x 1-3/4" bolts and flanged locking nuts. The bolts are common through adjacent frames. Screener models with split lower screens will have a partial Cross Support Frame in the lower section of the door panel, all others will be unrestricted.

7. Upon completion of the installation of the Screen Cross Support Frames, **verify that the assembly is level and tighten all the bolts** in the completed Screener Cone Assembly. **If the unit is being assembled on an uneven or sloping site, remember that "level" is relative to the assembly plane of the equipment.** Verify the alignment of the components during tightening.



4-D. Assembled Hatch Frame.



4-E. Assembled Hatch Frame.

8. The last Lower Cone Items to assemble are the Hatches. Single Screen units use ***SCRN FRM SCRN HOLD*** for the sides and Split Screen models use ***SCRN FRM HATCH HOLD.*** Using the ***SCRN FRM UNIV SCRN SPRT***s bolt one ***HATCH CROSS LWR, HATCH CROSS MID*** and ***HATCH CROSS TOP*** between the Screen Holders. Use the 3/8" x 1" Self Clinching Bolts along the sides of the assembly, with the Flanged Nuts installed toward the inside. Use 3/8" x 1-1/4" Gr. 5 Bolts with Flanged Nuts on the remaining connections. Add the ***HATCH CROSS BRACE***s to square the assembly and tighten the assembly bolts. (See Fig. 4-4.)

9. To prevent damage to the lower screens do not install them at this time. At any time after the installation of the Scalper Deck and Screens, the Screener Screens can be installed. Whether the equipment uses a single Lower Screen or Split Screens, the installation is similar. Place the Screen over the intended location and slide it upward until fits between the Slots. Slide the Screen down in the Slot until it seats against the sides.

10**.** To close up the unit, slide the last Screen into place from the Lower Access Door. Install the Hatch Assembly by holding it in place against the Screen and sliding it down until it seats on the Retainer Clips. The Lower Access Doors are then installed over Weather Stripping to seal the installation.

Lower Access Door Frame Assembly

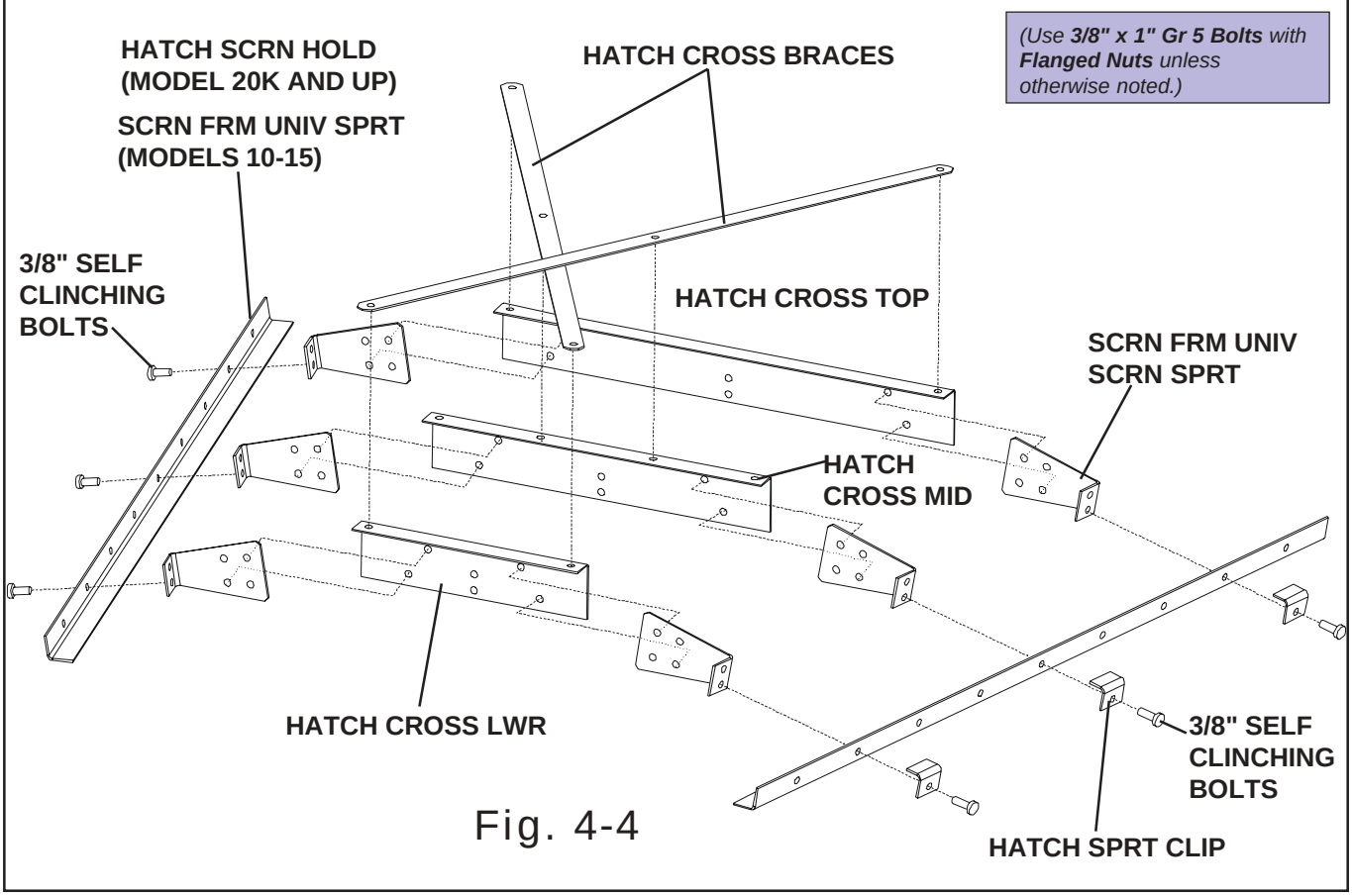


Fig. 4-4

SECTION 5

Bypass and Safety Gate Assembly

Bypass and Safety Gate Assembly:

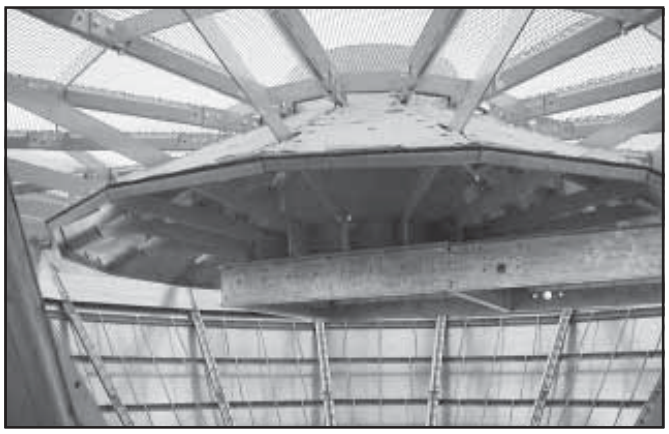
1. Most units ship with the gates assembled. These instructions will verify that the assembly is complete, and has not been damaged in shipment. Bypass gates and Safety Gate frames are similar in design. **Safety gate slides have relief holes** in them in the event the gate is left closed and product is run through the unit.

2. Locate the GATE PKG components onto a flat surface. Set the ***GATE SIDE FRAME LH*** and ***RH*** on edge and install the ***GATE FRONT FRAME*** using 3/8" x 1" Gr 5 bolts and flanged nuts. The ***GATE BTM FRAME***s install next. Locate the flat faces in opposing directions. Bolt the UHMW ***GATE SLIDE PL GUIDE***s to the Gate Sides using 3/8" x 2" Gr 5 bolts and flanged nuts **with the nuts to the outside** of the gate. (See Fig. 5-1)

3. Place the *GATE SLIDE PL WELD*ment on the Guides in the open position. Install the ***GATE PL HOLD DOWN***s using 3/8" x 1" Gr 5 bolts and flanged nuts. The ***GATE MID-TOP FRAME*** completes the basic frame. Tighten the assembly and **check for free travel** on the gate slide. If required, adjust the pressure of the Gate Hold Downs.

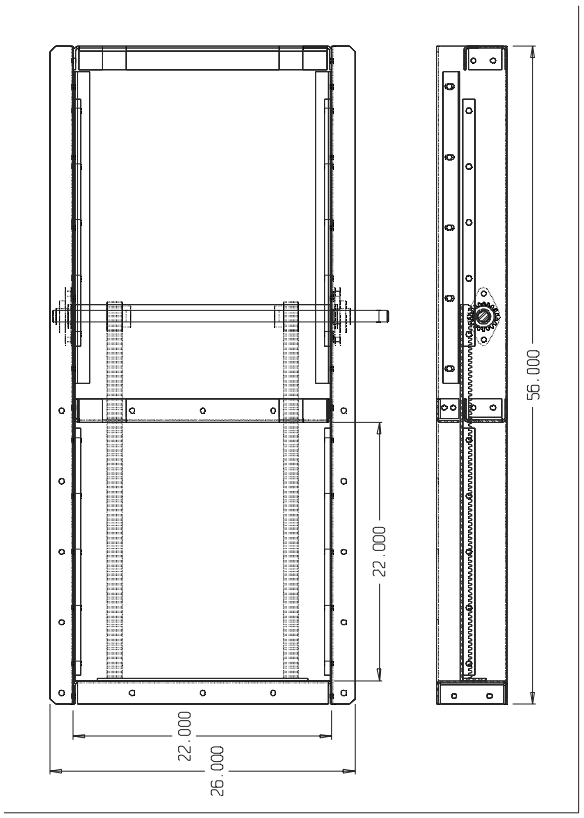
4. Slide the *GATE PINION MACH* gears over the ***GATE SHAFT ASSY*** with the tooth portion of the gears toward the end of the shaft. Locate the gears over the predrilled holes and insert the 1/4" x 2" Roll Pin. Consider which side of the gate aligns with the Gate Control, and insert the assembly through the holes on the Gate Frame. Slide the ***BEARING 2-BOLT FLG***s into place on the outside of the frame and install the 7/16" x 1-1/2" Gr 5 bolts and nuts. Align the gears with the tracks on the Gate, and tighten the set screws on the Bearings. The design tolerance allows movement of the Gate Shaft for good engagement of the Gear Teeth, **verify good alignment of the assembly** before tightening the Bearing retainer bolts.

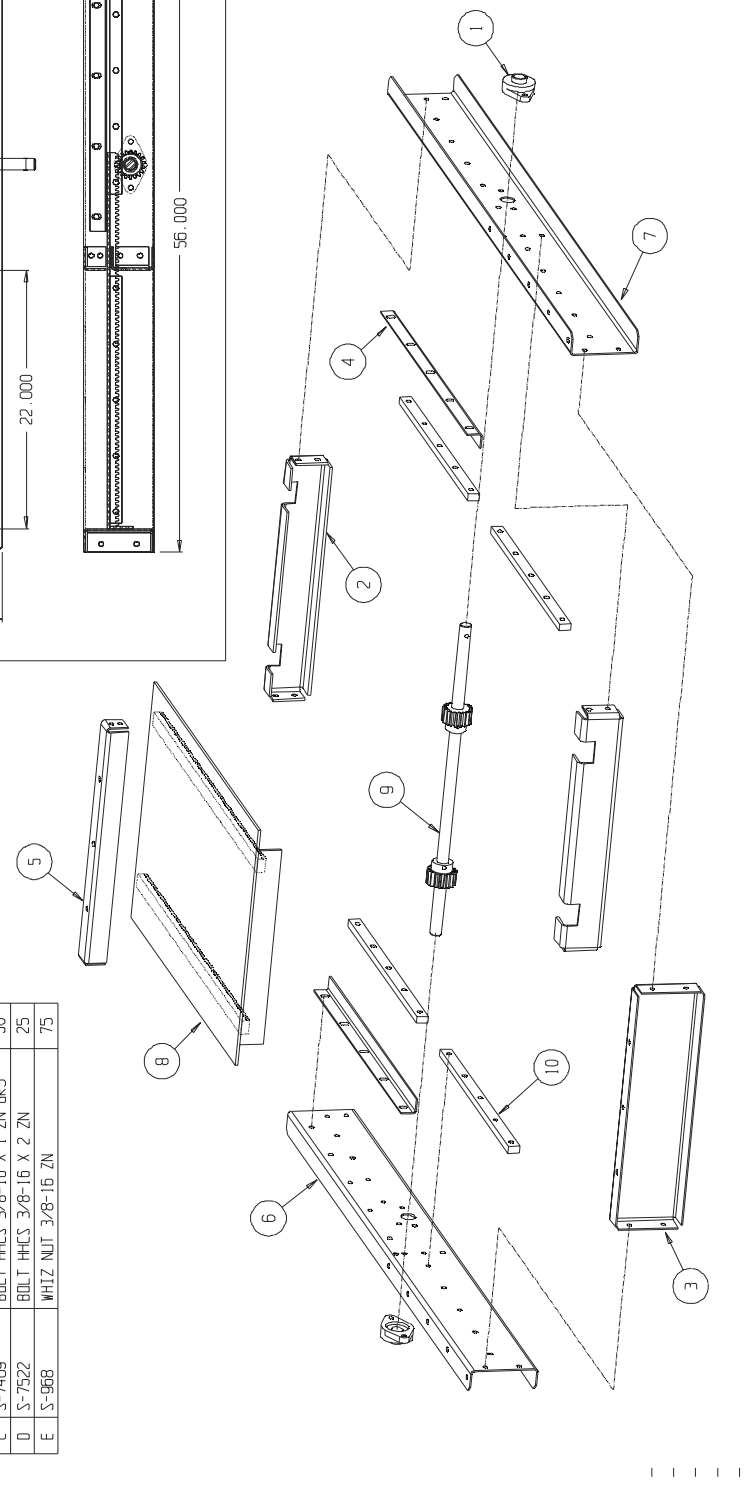
5-A. Bypass Gate During Assembly.



5-B. Bypass Gate and Shed Assembly.

5-C. Bypass Gate and Shed after it has been in operation.





Item No.	PART No.	Description	Qty
1	NRO-00006	BEARING 2-BOLT FLG SC 100	2
2	RM15-GFF	GATE BTM FRAME RM15	2
3	RM15-GFF	GATE FRONT FRAME RM15	1
4	RM15-GHD	GATE PL HOLD DOWN RM15	2
5	RM15-GMTF	GATE MID TOP FRAME RM15	1
6	RM15-GSFL	GATE SIDE FRAME LH RM15	1
7	RM15-GSFR	GATE SIDE FRAME RH RM15	1
8	RM15-GSPG	GATE SLIDE PL GUIDE RM15	4
9	RM15-GSA	GATE SHAFT ASSY RM15	1
10	RM15-GSPW	GATE SLIDE PL WELD RM15	1
		HARDWARE	
A	S-7013	BOLT HHCS 7/16-14x1-1/2 ZN GR5	4
B	S-7332	NUT HEX 7/16-14 GV GR5	4
C	S-7469	BOLT HHCS 3/8-16 X 1 ZN GR5	50
D	S-7522	BOLT HHCS 3/8-16 X 2 ZN	25
E	S-968	WHIZ NUT 3/8-16 ZN	75

FIG. 5-1
BYPASS GATE

SECTION 6

Scalper Deck Assembly

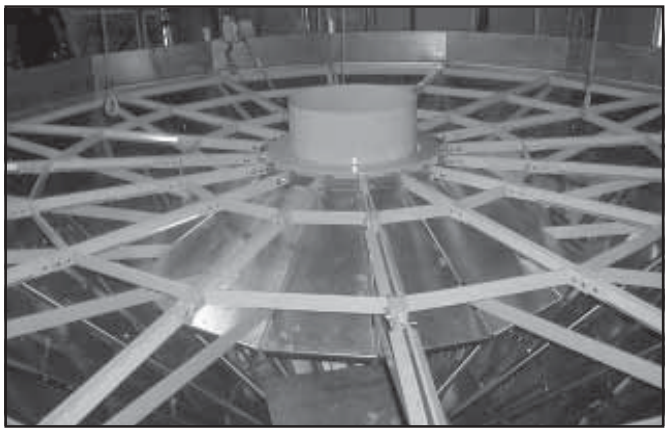
1. Place the *LWR BY-P TUBE WELD*ment on the assembled Bypass Gate. Connect these two parts using 3/8" x 1" assembly bolts and flanged nuts. Set the ***UPR BY-P TUBE WELD*** on top of this and connect using the same bolts. Sealant is not required between the flanges. (See Bypass Gate Photo 6-B.)

2. Using appropriate lifting equipment, suspend the Bypass Tube Assembly over the center of the Lower Cone. The elevation of the Screen Deck Ring should be even with the Ring Beam. **Consider the location of the Bypass Gate Shaft.** Connect the ***SCRN SPRT KICKER***s using the 3/4" x 2" Gr 8 bolts, lock washers, flat washers and nuts provided. The flat washer, lock washer and nut should be on the Kicker side of the installation. Do not tighten the bolts at this time.

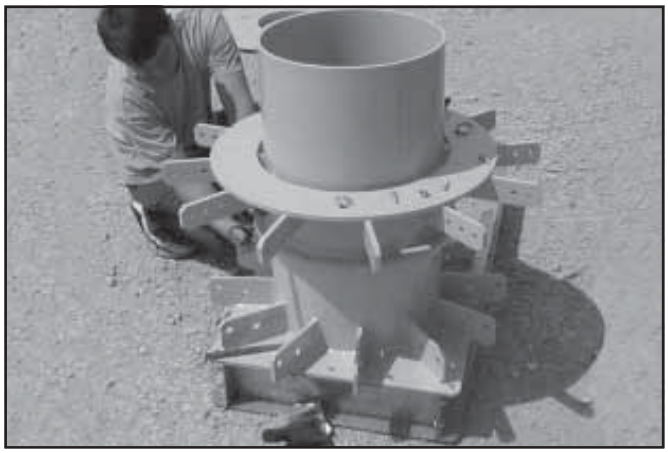
3. Install the *SCRN DK ARM WELD*ments between the Ring Beam Brackets and the Bypass Tube Brackets using the 1/2" x 1-1/2" Gr 8 bolts and flanged nuts. Note that these parts are universal but not reversible, and that all holes will not have bolts, some are for alignment purposes only.

If the unit is a Scalper/Screener, line up hole on ***SHED BRKT*** with holes on ***SCRN DK ARM WELD*** & ***UPR BY-P TUBE WELD***. Attach together using a 1/2" x 1-1/2" bolts. Leave fasteners loose at this time. (See Fig 6-1 & 6-3)

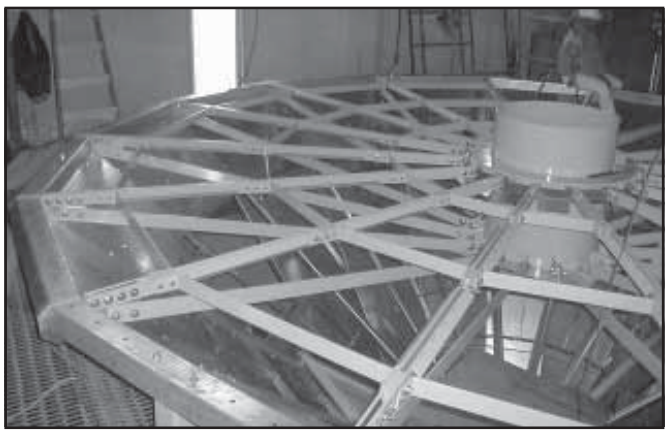
4. The *SCREEN DK CROSS* bars slide between the Screen Deck Arms and fasten using the 1/2" x 2-1/2" Gr 5 bolts and flanged nuts. Cross bars install at each of the welded spacer locations on the Screen Deck Arms. (See Fig. 6-1 & 6-3.)



6-A. Assembled Scalper Deck with Sheds installed.



6-B. Bypass Gate



6-C. Screen Deck Arm Weldments during installation.

Screen Deck Assembly

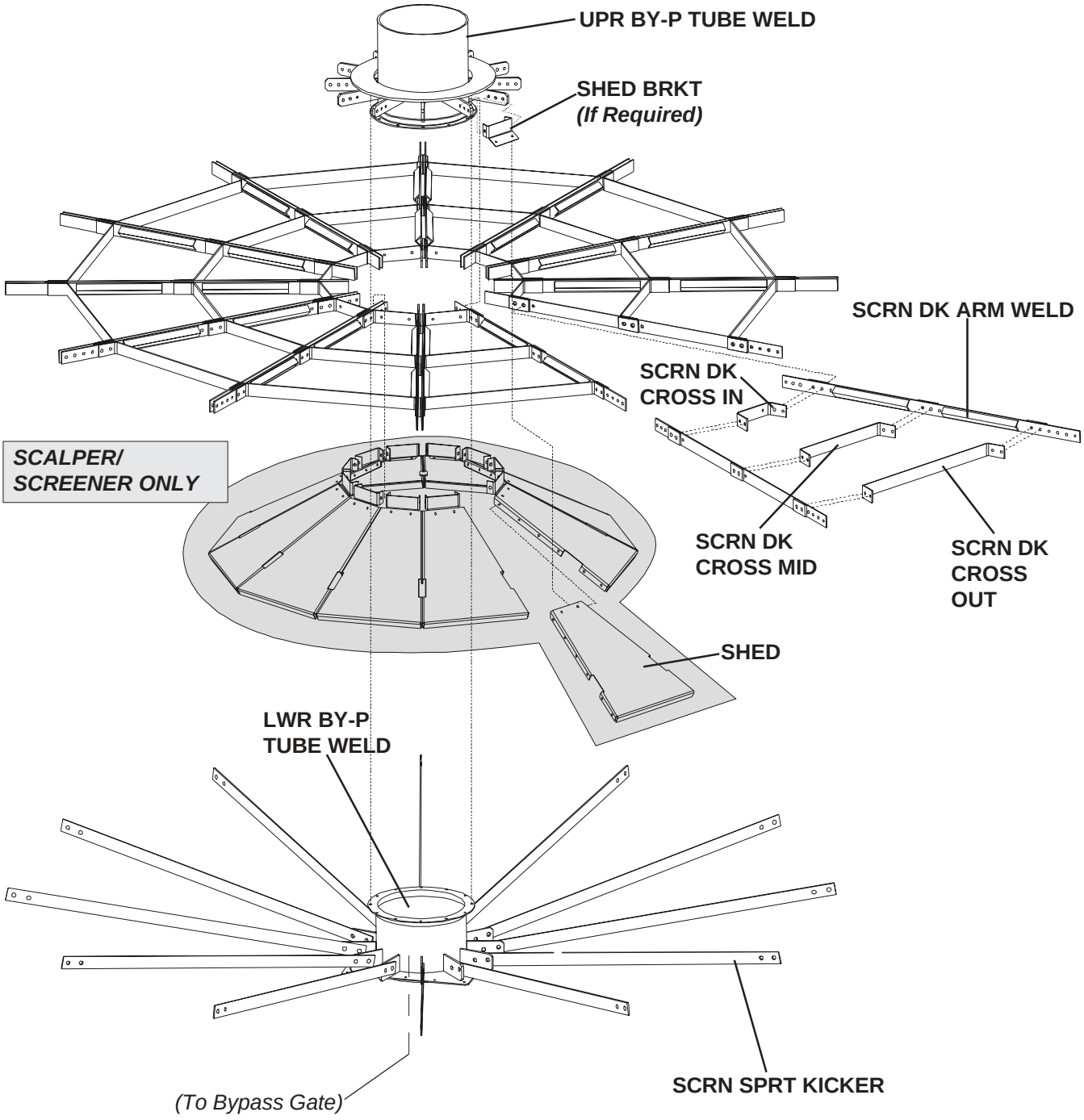


Fig. 6-1

5. It is essential to verify that the Screen Deck Ring on the Bypass Tube is coplanar with respect to the Ring Beam at this time. As the unit may not be sitting level on the ground, a good method of determining whether the assembly is level is to rest a long straight edge on the Screen Deck Ring, and check that the gap is consistent from side to side. Repeat the procedure at sixty degree intervals. Make any required adjustments prior to tightening the Screen Deck.

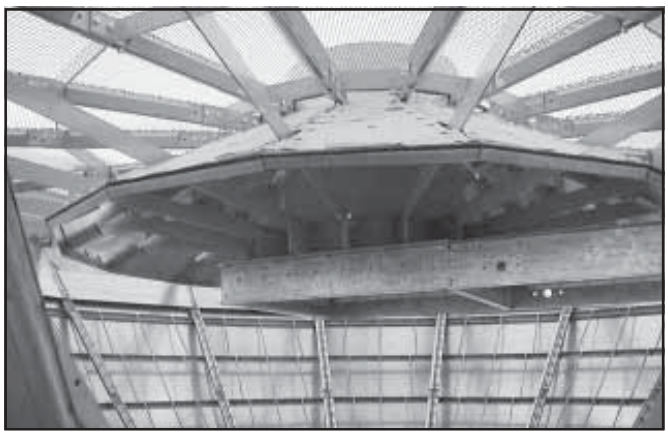
6. When the Screen Deck Ring is level, tighten all the associated bolts.

7. If the unit being assembled is a Scalper/ Screener, fasten the ***SHED***s to the previously installed ***SHED BRKT***s using 3/8" x 1" Gr 5 bolts and flanged nuts. **Some units use a special sheet at the location of the Gate Drive Shaft**. Connect each shed panel at the seams using the same bolts. Tighten the assembly bolts after all of the Sheds are installed. (See Fig. 6-1 and Photo)

8. The Bypass Gate Drive Shaft installs at this time. Locate the two ***U-JOINT 1.00 BORE***s and the ***GATE DRIVE SHAFT EXT***ention then slide a U-Joint on each end of the shaft. Remove the set screws, line up the clearance hole in the shaft and thread in 3/8" x 1-3/4" Gr 8 bolts. Tighten the bolts. (See Fig. 6-2)

9. For the Manual Gate, install the ***GATE DRV MAN SHAFT*** through the Gate Shaft Cover hole in the Outer Shell using the same bolts, then install the ***GATE CBLE WHL WELD***ment on the outside of the unit. For the Optional Electric Gate Drive refer to the Electric Gate Drive Assembly instructions. Test the gate for proper operation by fully opening and closing the gate from outside the unit. **Leave the gate in the Open** or Bypass position. (See Fig. 6-2)

6-D. Scalper Screen Deck. (Aspirated Shown)



6-E. Sheds installed.

Gate Control

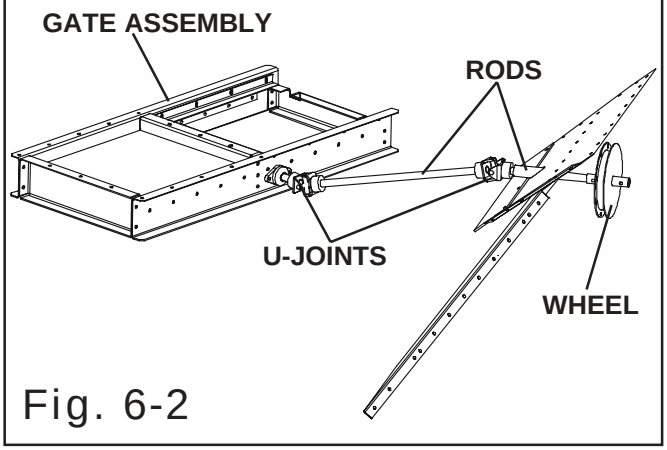


Fig. 6-2

Level Screen Deck Ring with Cutaway

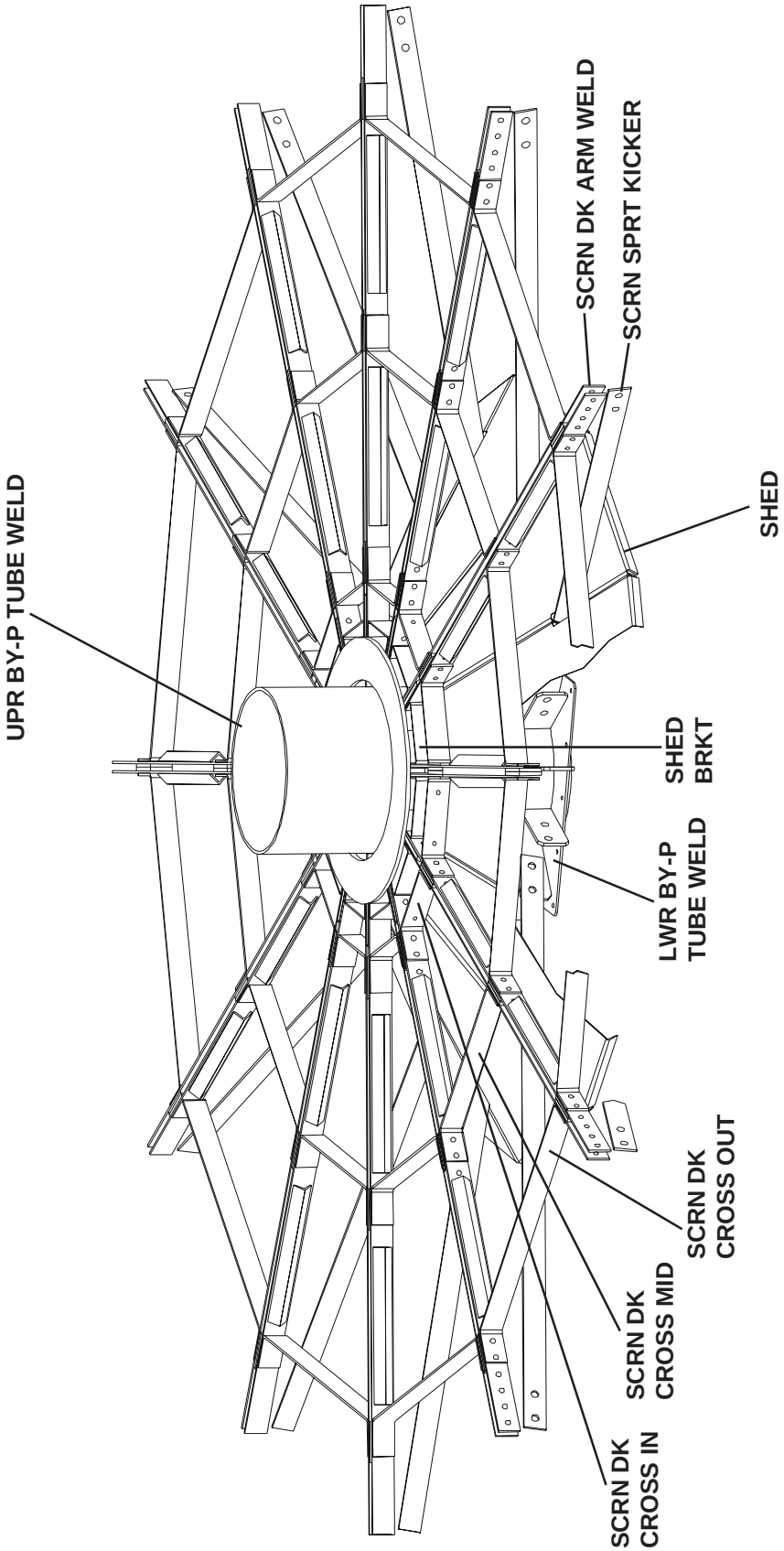


Fig. 6-3

SECTION 7

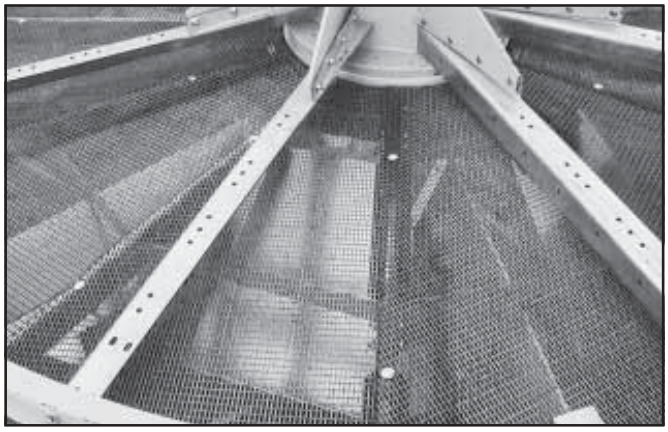
Scalper Screen Installation

1. Use caution when handling the Screens. Review the Safety Precautions and wear gloves.

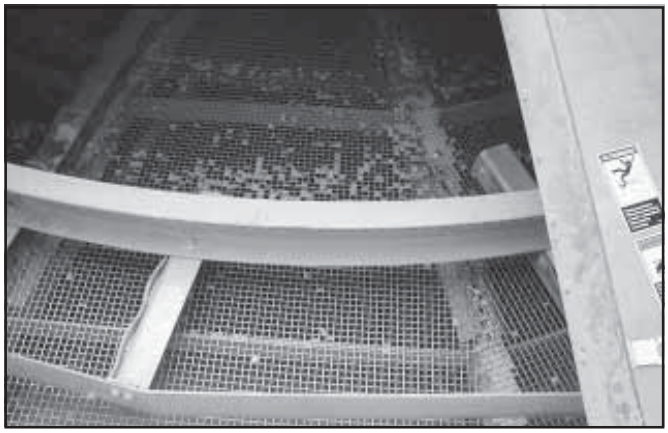
2. The Screen Media will generally have somewhat of a curve to it. Select a convenient starting location. Lay the first ***SCREEN*** Panel on the screen deck with the curve "down", that is each end of the curve should touch the Screen Deck, but not the middle. Center the Screen with respect to the Screen Deck Arms. The narrow portion of the screen should just touch the Screen Deck Ring to eliminate a gap at that point**. Verify that the wide end of the screen does not extend to within 3/4"** of the visible bolt centerline on the Ring Beam Weldment. Temporarily secure the screen in this position. (See Fig. 7-1)

3. Move in a counter clockwise direction as viewed looking down from above and lap the next Screen over the edge of the first one. Check the alignment as above for overlap and general placement. Pass a 1/2" x 4" Carriage Bolt down through both screens, and between the bars of the Screen Deck Arms. It may be necessary to use a tapered punch to align and/or widen the screen mesh. Install a flanged nut below the Screen Deck Arm to secure the screen, and tighten the bolt. There is not a specific convention on the spacing of these bolts, but the general centerline distance should not exceed three feet and the screen should be held flat. (See Fig. 7-2)

4. Install the remaining Screens in this same manner. **When the last screen is placed, it must be inserted below** the trailing edge of the first screen and then secured with Carriage Bolts.



7-A. Scalper Screen installed.



7-B. Scalper Screen after operation.

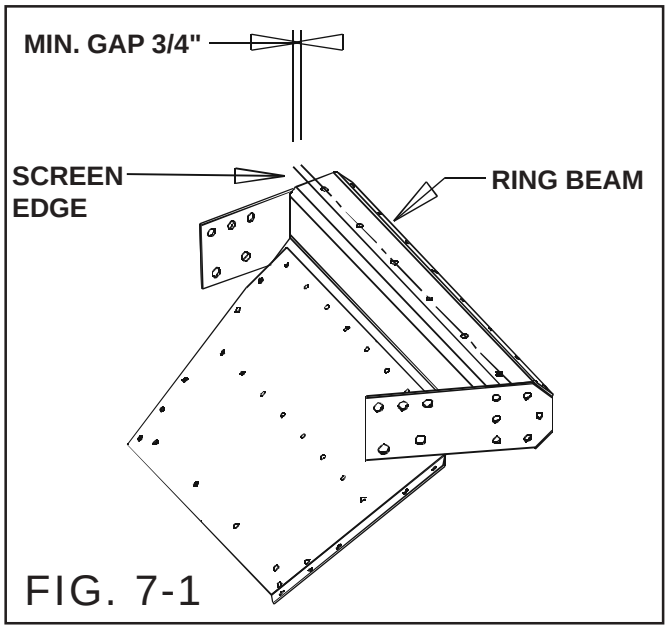


FIG. 7-1

Screen Assembly

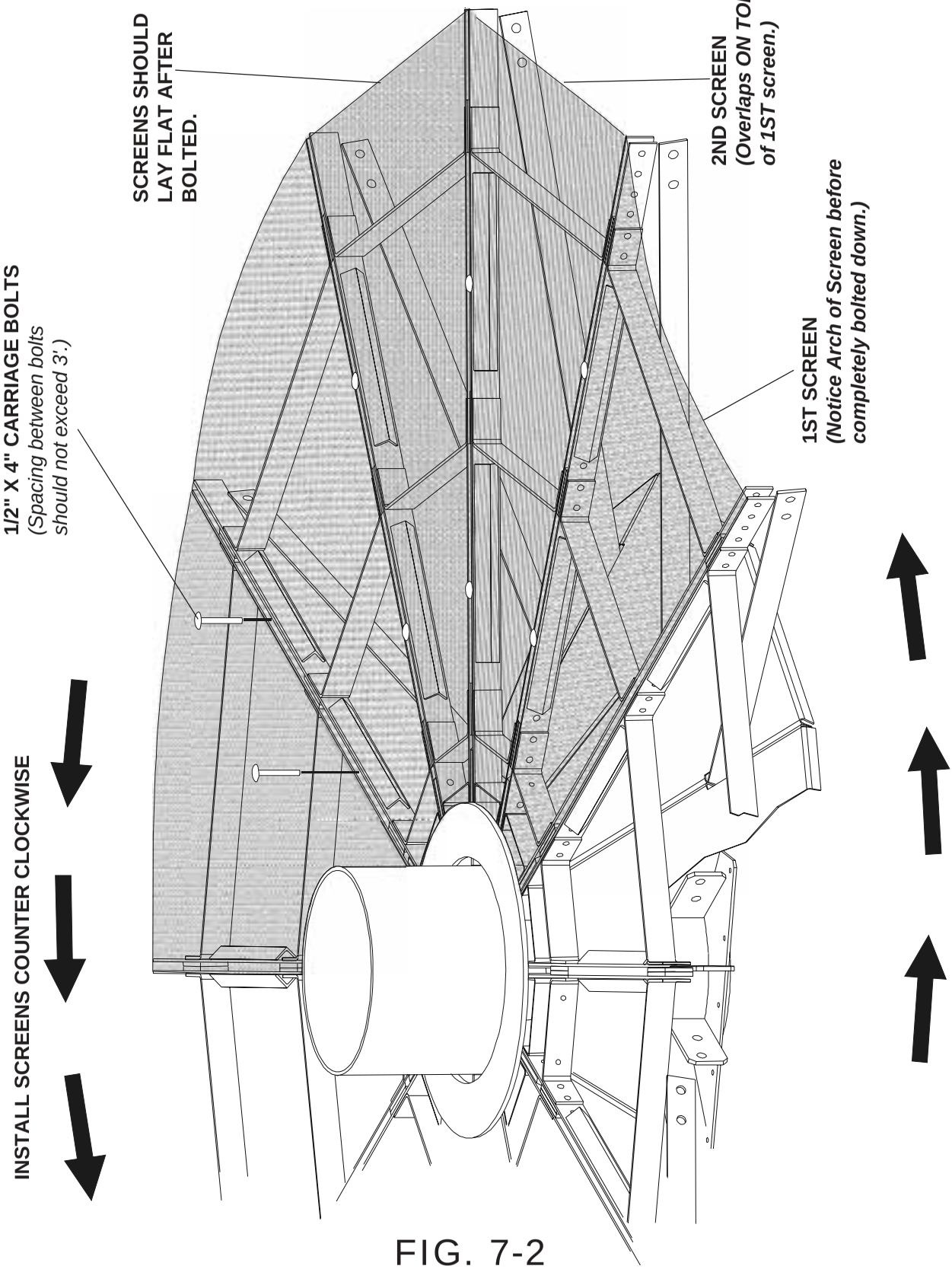


FIG. 7-2

SECTION 8

Platform Assembly

1. Main Access Platform Assembly: (If no platform is included, skip this section)

2. Review the layout of the platform with respect to the Drive(s), Gate Drive and Overs Discharge and identify the differences in the related supports, deck panels and handrail components. (See Fig. 8-1)

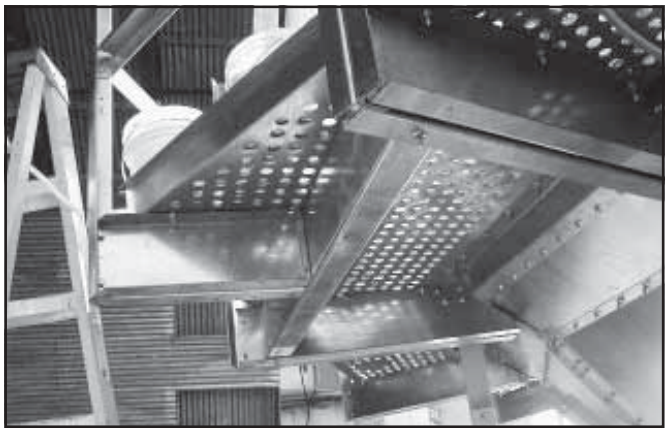
3. Locate the Support Channel Parts marked ***PLAT-LH SPRT CHNL WELD*** and ***PLAT-RH SPRT CHNL WELD***. Install these left and right parts on each side of the Ring Beam flanges using 1/2" x 1-1/2" Gr. 8 bolts and flanged nuts. The Channels also bolt through the Lower Cone sheet seam on Scalpers, or the previously installed **Platform Support Channel Clips** on Scalper/Screeners.

4. In the area of the Drive(s), additional support for the extended platform is provided by the ***PLAT-DRV CROSS CHNL*** and ***PLAT-DRV SUPRT CHNL****s.* Using 3/8" x 1-1/4" Gr. 5 Bolts and Flanged Nuts, bolt the Cross Channel to the Support Channels through the existing lower holes with the flat face out. Fasten the two Drive Support Channels to the face of the Cross Channel with the same bolts. Set a ***PLAT-DRV DECK SECT*** in place and bolt it using the 3/8" x 1-1/4" Bolts and Flanged Nuts. Install the bolts from the top to avoid a trip hazard. Bolt through the punch holes to connect the sheet to the Support Channels using the same Assembly Bolts with a Washer added.

5. At the Overs Discharge Location use a ***PLAT-OVERS DECK SECT***. Additional support is included with this Deck Sheet. Locate and install a ***PLAT-OVERS SUPRT ANGLE*** on either side of the opening, then install a ***PLAT-OVERS CROSS ANGLE*** between them.

8-A. Platform during assembly. 50 KSS Shown.

8-B. Platform Support Channels. RMS 15K Shown.



8-C. Platform Detail at Drive. RMS 15K Shown.

6. Where an Electric Gate Drive is used, install an additional ***PLAT-OVERS DECK SECT*** in the area of the drive as detailed above. Add to the installation a ***PLAT-OVERS GD HATCH*** and ***PLAT-OVERS GD HINGE***.

7. Complete the remaining Deck installation using the ***PLAT-24" DECK SECT***s installed using the 3/8" x 1-1/4" Gr. 5 assembly bolts, flanged nuts and washers where required.

8. Locate the *PLAT-RAIL END POST*s and *PLAT-RAIL MT CLIP*s. These parts are universal for the regular deck sections. Using the 3/8" x 1-1/4" Assembly Bolts and Flanged Nuts, install a pair of End Posts between the Support Channels with and End Clip on each side of the top two holes. **Tighten the Mount Clips now.** (See Fig. 8-1)

9. To transition to the Drive Area(s), find ***PLAT-DRV LH RAIL END POST***s and the ***PLAT-DRV LH RAIL MT CLIP***s. These install with a standard End Post and Clip as used above. At the point of the drive area, install a pair of ***PLAT-DRV RH RAIL END POST***s and ***PLAT-DRV RH RAIL MT CLIP***s. Remember to tighten the mount clips at this time.

10. Install the *PLAT-TOP RAIL, PLAT-DRV LH TOP RAIL,* and *PLAT-DRV RH TOP RAIL* using the 3/8" x 1" Carriage Bolts and Flanged Nuts. Insert the carriage bolts from the platform side of the Rail. At the same time install the ***PLAT-MID RAIL***s, ***PLAT-DRV LH MID RAIL***s and the ***PLAT-DRV RH MID RAIL***s.

8-D. Platform Support Channels. RMS 15K Shown.

11. Complete the installation by leveling and tightening the Platform Assembly. As some of the fasteners are not visible from above the platform, inspect the installation carefully to insure that all of the bolts have been tightened.

Platform Assembly

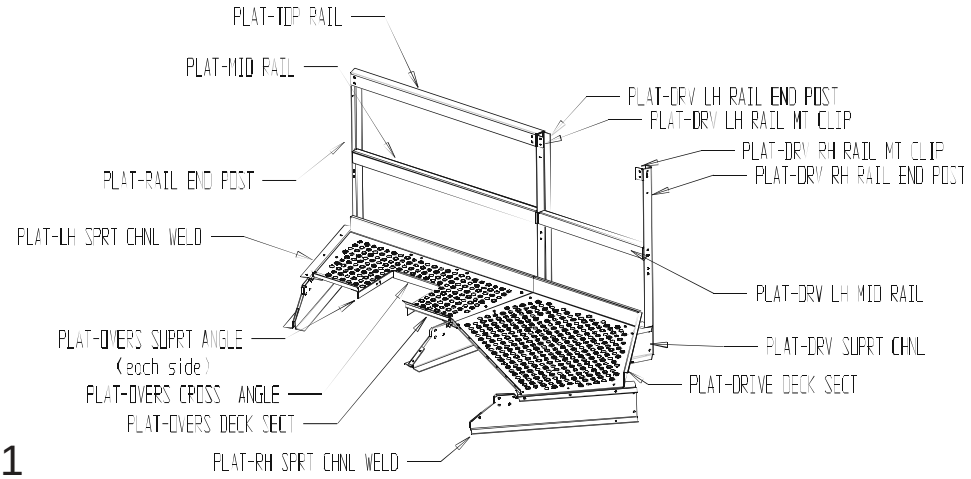


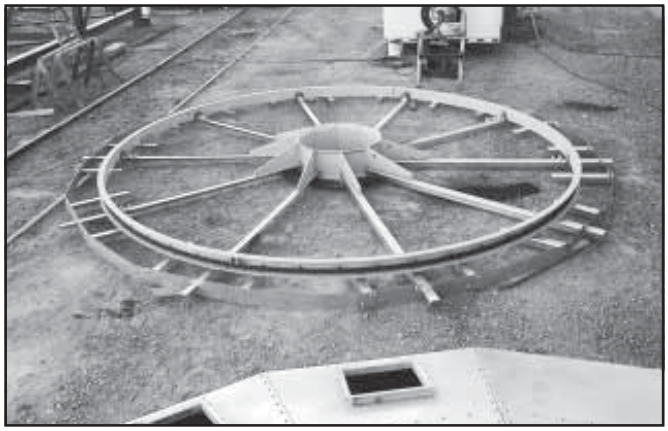
Fig. 8-1

SECTION 9

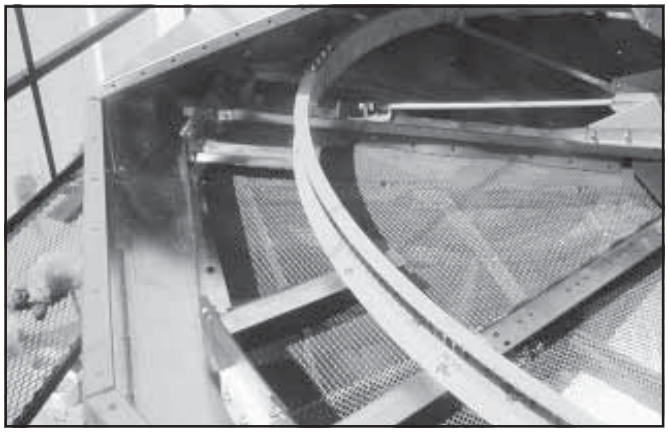
Impeller Assembly

1. Locate the Main *IMPELLER ARM WELD*ments and the blue cloth backed urethane ***WIPER IMP ARM***s. Install the wipers on the impeller arms using 3/8" x 1-1/4" Gr. 5 assembly bolts. Install a washer on the bolt and insert it from the wiper side. Secure it with a Flanged Nut. Install the ***DRV CHNL RTNR*** with 3/8" x 1-1/4" Gr. 5 Bolts and Flanged Nuts. Center the Drive Channel Retainer over the holes in the top of the Impeller Arm when tightening the bolts. Locate the ***TENSION NUT BRKT WELD***ments and install them on half of the arms. Tighten all the fasteners and set impeller arm assemblies to the side. (See Fig. 9-1)

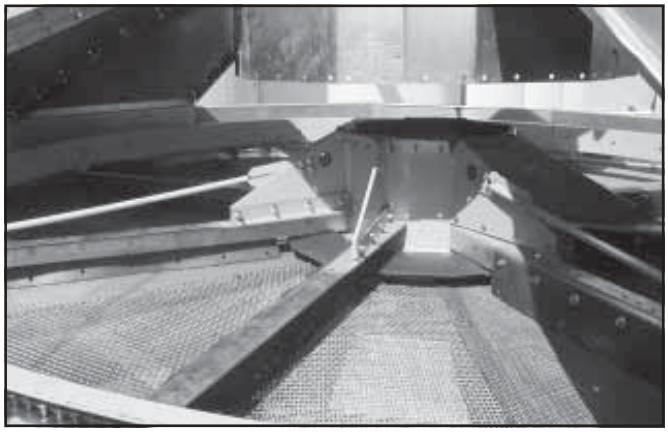
2. Gather the *MID ARM LONG* and *MID ARM SHORT* secondary wiper arms and the ***WIPER LONG MID ARM***s and ***WIPER SHORT MID ARM***s. Install the wipers on the impeller arms using 3/8" x 1-1/4" Gr. 5 assembly bolts. Install a washer on the bolt and insert it from the wiper side. Secure it with a Flanged Nut and set arm assembly to the side for now. (See Fig. 9-1)



9-A. Impeller Arms with Drive Channel during assembly.



9-B. Impeller Arm with Drive Channel and Tension Rod Installed.



9-C. Impeller Assembly Showing Center Pivot Detail.

Impeller Arm Assembly

*(Use **3/8" x 1" Gr 5 Bolts** with **Flanged Nuts** unless otherwise noted.)*

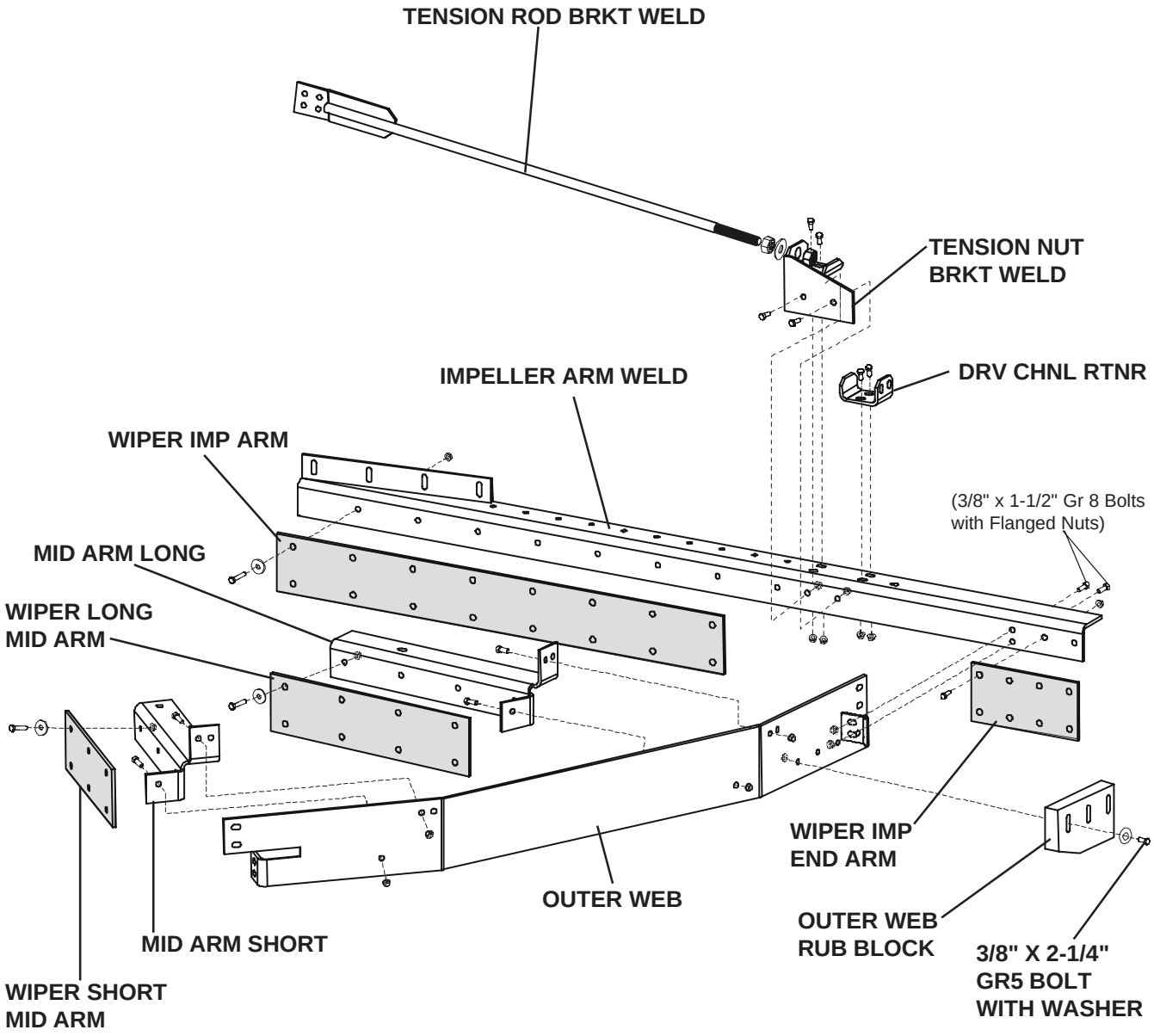
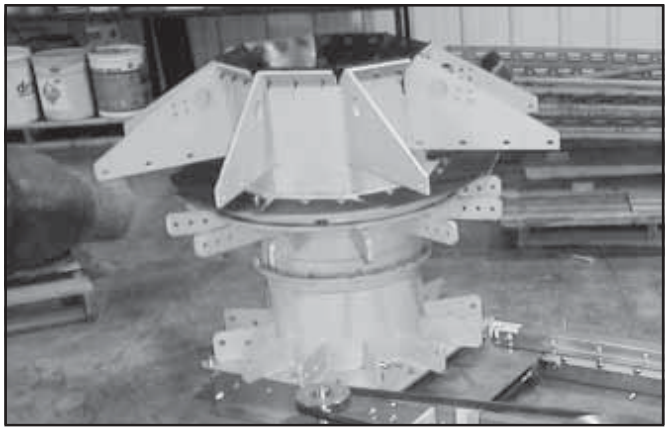


Fig. 9-1

3. Find the four sections which make up the white *UHMW CLAMP PAD*s and place them on the Screen Deck Ring. Hoist the ***CENTER PIVOT WELD***ment and place it over the Upper Bypass Tube and on top of the UHMW Clamp Pads. Using washered wood grip screws with a 3/8" washer, fasten the ***WIPER CENTER PIVOT*** in place around the Center Pivot, driving them into the Clamp Pads. **Be careful not to strip out the screws by over tightening them. (See Fig. 9-2)**

4. The white UHMW *CENTER PIVOT SLEEVE* is now inserted between the Pivot Weldment and the Upper Bypass Tube. Slide the Pivot Sleeve down until the top is flush with the Bypass Tube. Install the blue urethane ***CLMP SD PL LNR***s on the inner Center Pivot face to contain the Pivot Sleeve. Installing the Liners in a clockwise progression will provide the proper lap with respect to rotation direction. Use Fanged Elevator Bolts, 1/4" x 1" long and Flanged Nuts, adding a washer on the nut side where the urethane overlaps. (See Fig. 9-2)

5. The preassembled *IMPELLER ARM WELD*ments now fasten to the Center Pivot using the 3/8" x 1-1/2" Gr. 8 Bolts and Flanged Nuts. Provide temporary support for the outer edge of each arm so it remains level during installation. The support should be placed above the Screen Deck Structure, and not on the Screen alone. **The arms with the Tension Nut Brackets should be spaced evenly around the Impeller**. Do not tighten any of the Impeller Assembly until all parts are in place. (See Fig. 9-4 on page 51.)



9-D. Preassembled Center Pivot and Bypass Tube Assembly.

Center Pivot Assembly

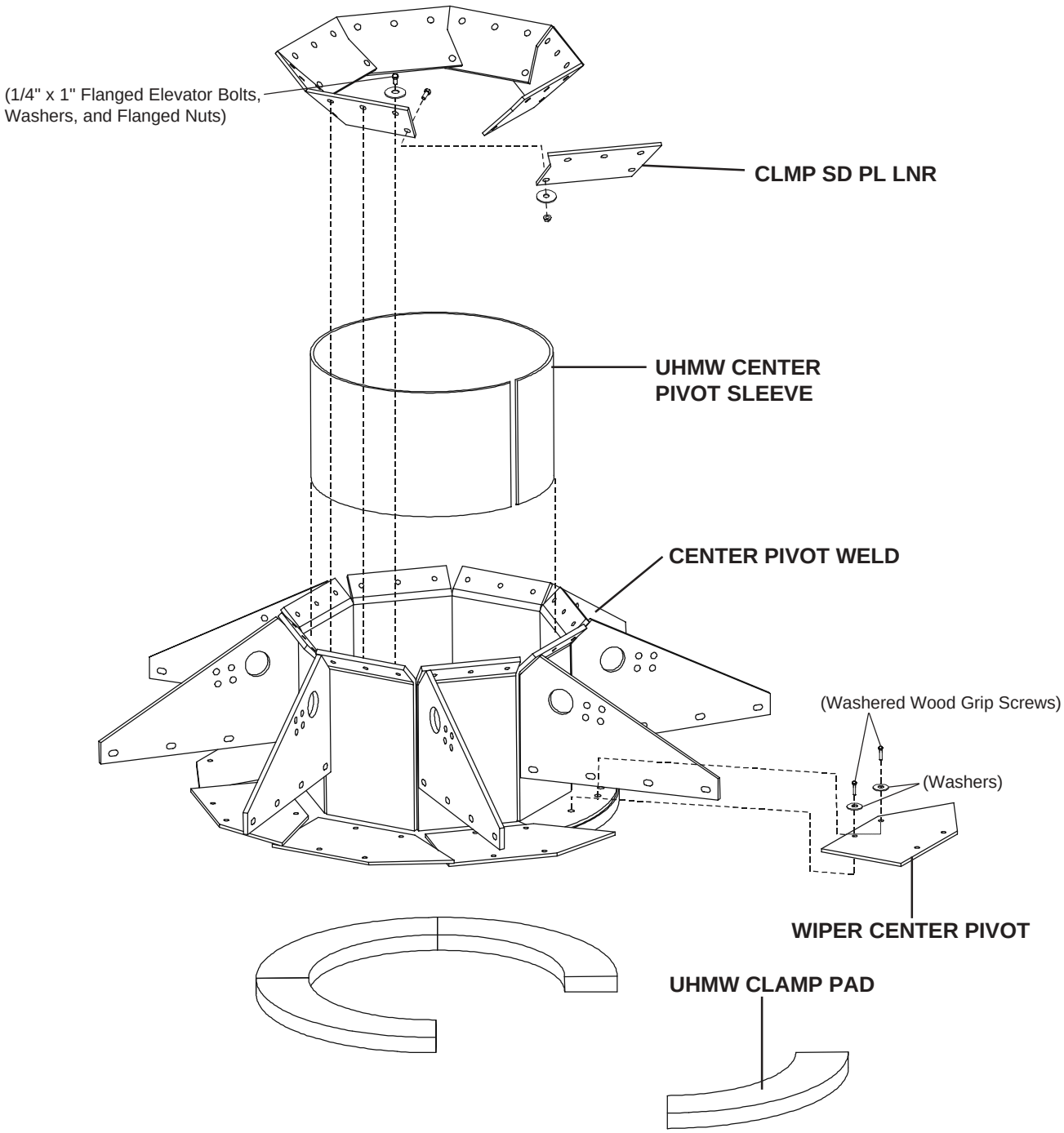


Fig. 9-2

6. With the Arm supports still in place, set the two ***DRV CHNL PART***s in place. The Drive Channel bolts to the Drive Channel Retainers with two 3/8" x 1-1/4" Gr. 5 Bolts and Flanged Nuts, as well as down through the Impeller Arm with a 3/8" x 1-1/2" Gr. 8 Bolt and Flanged Nut. (See Fig. 9-4)

7. Locate the *DRIVE CHAIN WELD*ment and wrap it around the Drive Channel. The weld tabs are located below the chain. The chains are installed using 3/8" x 1" Gr. 5 Button Head Bolts and Nylock Nuts with the bolt heads toward the center of the Impeller. Do not tighten the bolts at this time. (See Fig. 9-3)

8. The chain must be kept tight against the channel as it is installed. Pull the ends of the Drive Chain together, and connect the end of the chain using the provided ***CONNECT LINK***s or ***HALF LINK***s as is required for the installation. A certain amount of tensioning is allowed within the ***DRV CHNL CEE-SPLICE***s, which are installed at this time using 3/8" x 1-1/4" Gr. 5 Bolts and Flanged Nuts. Install the nuts on the inside of the channel. If additional adjustment is required, please review the next paragraph. Align the ends of the Drive Channels, and verify the tension of the chain, then tighten the Channel Splice bolts. **Slack in the Drive Chain after installation can result in damage to the drive components.** (See Fig. 9-3)

9. The position of the entire Drive Channel can be adjusted for splicing the Drive Chain. This is not normally required. Loosening the Drive Channel Retainers will allow movement of the Drive Channel. The Drive assembly can accommodate these changes. If adjustments are made verify that the center of the Drive Channel is at the Center of the unit.

9-E. Drive Channel Halves During Installation.

Drive Channel

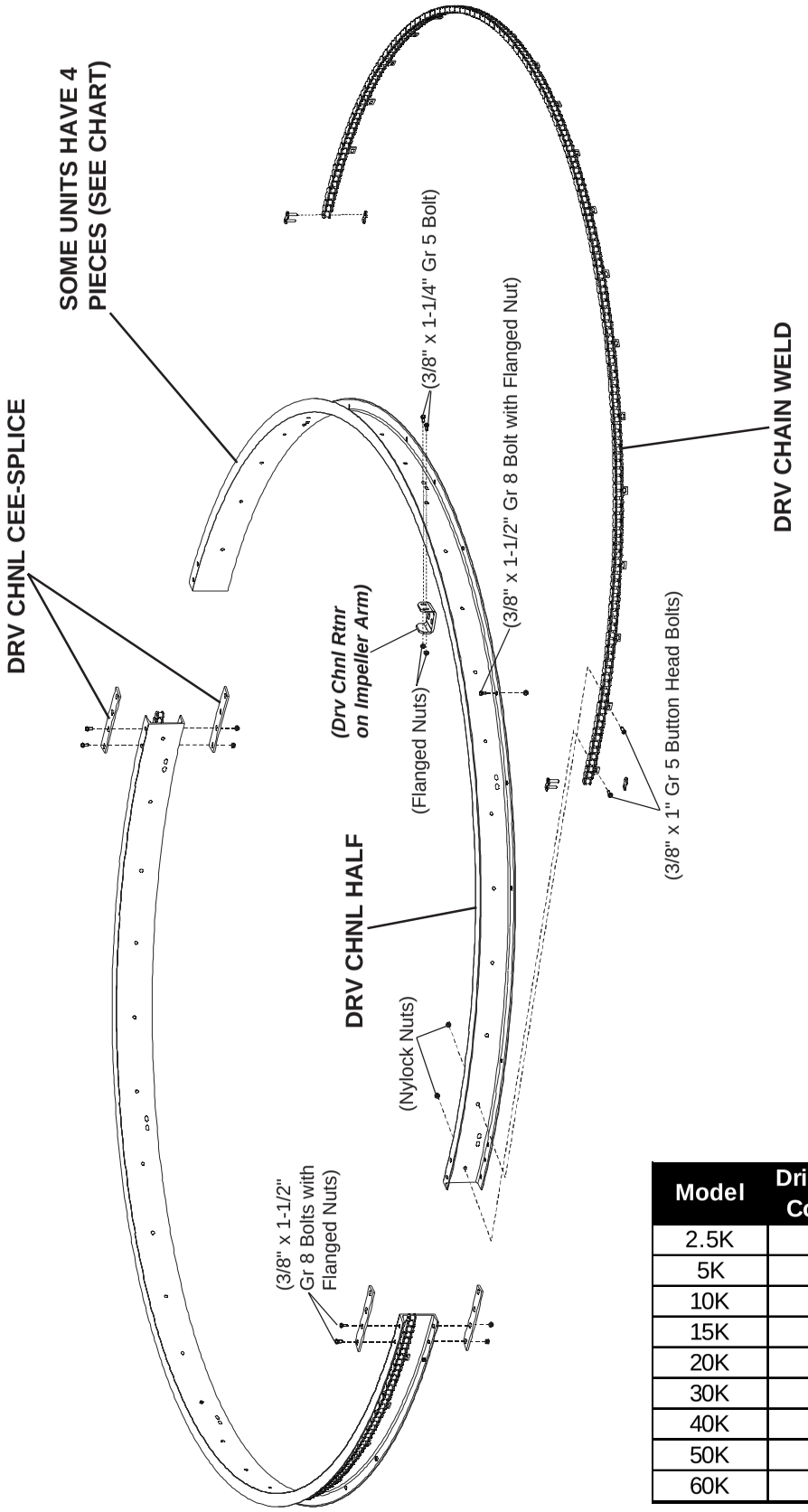


Fig. 9-3

Model	Drive Channel Components
2.5K	1
5K	1
10K	2
15K	2
20K	2
30K	2
40K	4
50K	4
60K	4

10. Locate and install the *OUTER WEB*s between the main Impeller Arms using 3/8" x 1-1/2" Gr. 8 Bolts and Flanged Nuts. The end of the Outer Web which passes over the Impeller Arm bolts to the outside of the next part. Secure this connection with 3/8" x 1-1/4" Gr. 5 Bolts and Flanged Nuts. (See Fig 9-3 & 9-1)

11. Next install the *MID ARM LONG* and *MID ARM SHORT* between the Outer Webs and the Drive Channel. Connections are made using the 3/8" x 1-1/4" Gr. 5 Bolts and Flanged Nuts. (See Fig 9-1)

12. Brace the Main Impeller Arms using the ***TENSION ROD BRKT WELD***ments. Spin a 3/4" nut on the threaded end of the arm, with a lock washer. Insert the Rod through the Tension Nut Bracket on the arm. Fasten the top end to the center pivot using 3/8" x 1-1/2" Gr. 8 Bolts and Flanged Nuts. Finally install a Lock Washer and 3/4" Nut on the end of the rod. (See Fig. 9-1)

13. Before tightening the assembly, verify that the spacers are still in position under the Main Arms. **Locate and tighten the two 3/8" x 1-1/2" Gr. 8 Bolts where the Outer Webs connect on each side of the Main Arms first. Failure to do this first may distort the shape of the impeller assembly.**

14. Tighten all the remaining bolts in the Impeller Assembly. When all the bolts are tight, tighten the Tension Rods by evenly advancing the nuts on each side of the bracket. The Rods should remain in neutral tension.

15. When the Tension Rod nuts are tight, remove the spacers from under the Main Impeller Arms. There should be no significant change in arm height after the spacers are pulled out. If required, the Tension Rods can be used to adjust the arm height. While 2" to 2-1/4" is nominal, the primary goal is to maintain consistent height around the impeller rather than a specific target height, as long as adequate clearance exists between the arms and the screens.

16. While not a mandatory step, verification of the rotational trueness of the arm can be verified easily at this time, and small adjustments made. To accomplish this, rotate the impeller assembly by hand and inspect the arm clearance as it passes a specific point. Depending on the unit size there can be moderate resistance to rotation. The verification operation can be combined with the next step.

Complete Impeller Assembly

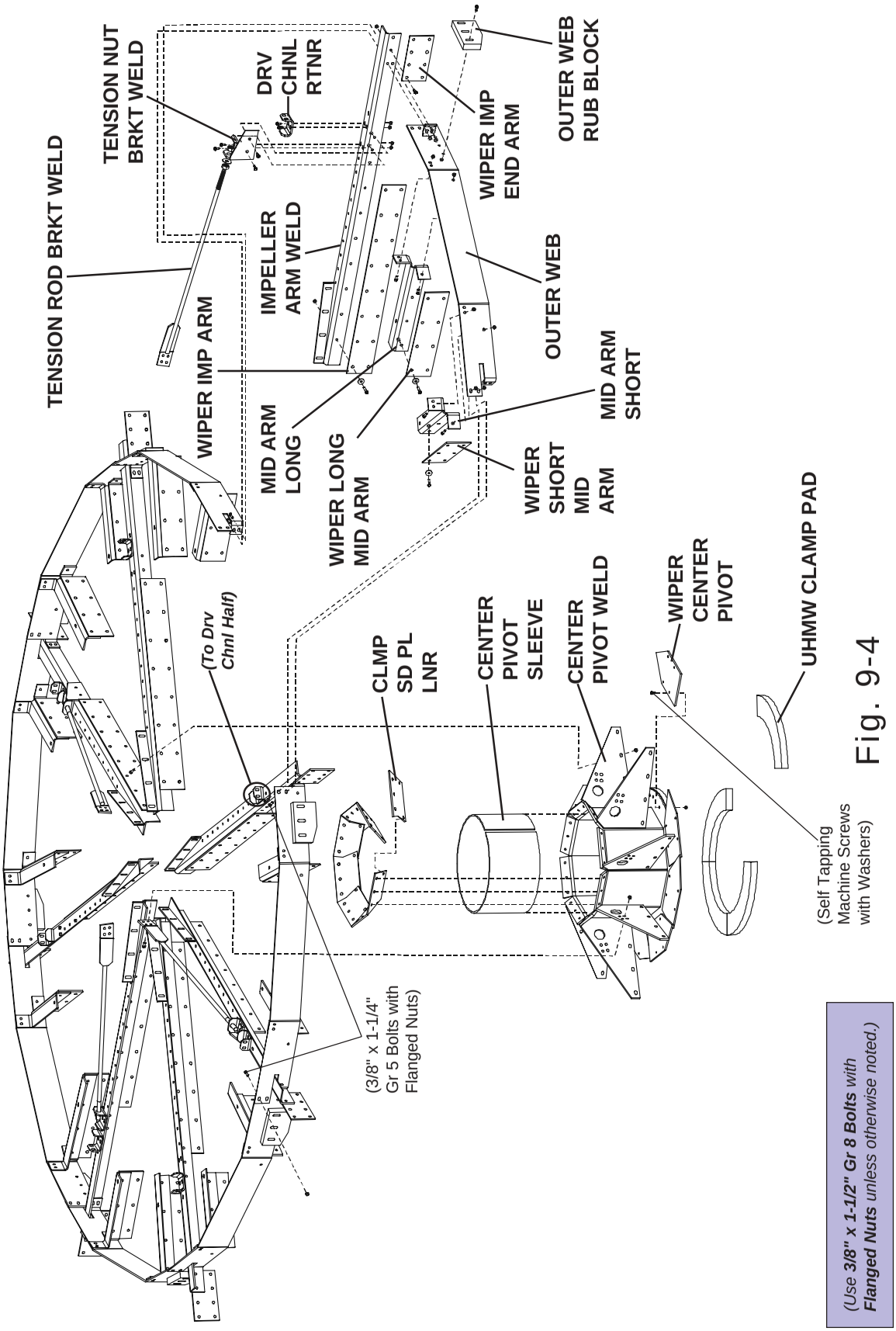


Fig. 9-4

17. Install the white UHMW *OUTER WEB RUB BLOCK*s on the outside of the Outer Webs using 3/8" x 2-1/4" Carriage Bolts with Flanged Nuts. The bolts should be inserted through the Rub Block first. Adjust the height of the Rub Blocks to clear the screen by approximately 3/4" and tighten the bolts.

18. Cleaning Rollers are assembled and installed next. The white ***CLEAN RLR UHMW SCRAPER*** bolts to the ***CLEAN RLR SCRAPER MT*** using 3/8" x 1-1/4" Gr. 5 Bolts and Flanged Nuts with the nuts on the plastic side. Bolt this sub assembly to the ***CLEAN RLR COVER*** using the same bolts. Adjustment to the Scraper angle is available in this connection. Set the Scraper for maximum angle and tighten the bolts.

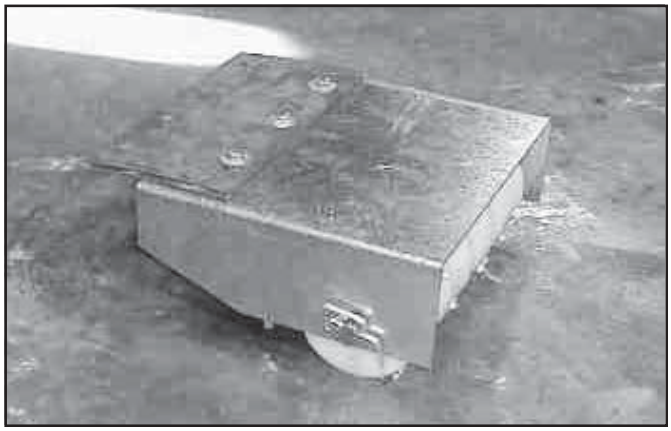
19. Slide eight (8) UHMW *CLEAN ROLLER*s over a ***CLEAN RLR SHAFT.*** This shaft then slides into the round and slotted holes at the middle of the Roller Cover. Secure the shaft with 3/8" bolts and flanged nuts. Install the (hinge/seal connector) to the top of the ***CLEAN RLR COVER*** using 3/8" x 1-1/4" GR5 bolts with flat washers. (Older versions used a combination of a bracket and hinge pin instead of a flexible connector.)

20. In the standard configuration the Cleaning Rollers cover the primary separation area only. The Brackets allow a wide range of mounting positions for the Rollers. Start with the roller closest to the center and bolt it in place on the underside of a Main Impeller Arm using a minimum of 3/8" x 1-1/2" Gr. 8 Bolts and Flanged Nuts. Subsequent Rollers are installed in this same fashion, each outside of the projected arc of the previous Roller. **Additional information about cleaning rollers can be found in the Trouble Shooting section of this manual.**

This completes the Impeller Assembly.

9-E. Cleaning Roller attached to impeller arm.

9-F. Cleaning Roller removing material from screen.



9-G. Close-up of Cleaning Roller.

Fig. 9-5

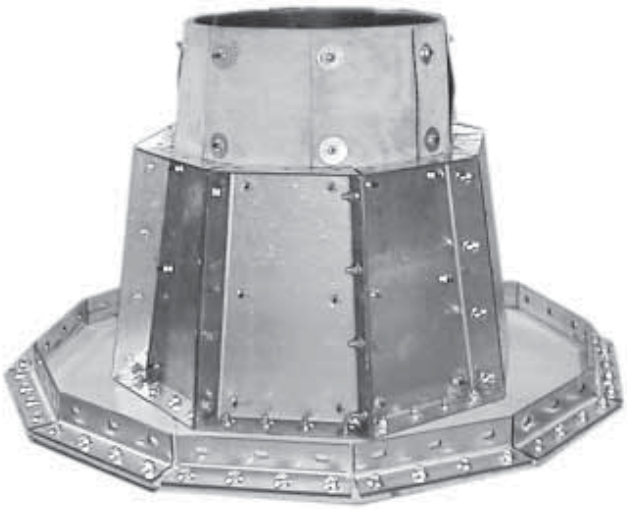
SECTION 10

Top Shell Assembly

1. Before Starting the Top Shell Assembly, take a moment to map out the location of the Drive(s), Access Doors and Inspection Doors. If a square inlet flange is used, consider the relationship of the flange with respect to the inlet spouting.

2. Preassemble the Top Cap/Inlet by placing the ***TOP WELD***ment inverted on a support which allows access to both sides. Install the ***INLET CHUTE SIDE***s using 3/8" x 1" Gr. 8 Bin Bolts (with seal washers) and Flanged Nuts inserted from the Top Weld side. Connect the internal flange using 3/8" x 1-1/4" Gr. 5 Bolts and Flanged Nuts. The expanded metal backed ***INLET CHUTE LINER***s install to the inside of the Inlet Chute Sides using 1/4" x 1" Fanged Elevator Bolts and Flanged Nuts. Where the Liner Material overlaps, use a Washer behind the 1/4" Flanged Nuts. Install the ***TOP ANGLES*** around the perimeter of the Top Weldment on the same side as the Inlet Chute. Fasten with the 3/8" x 1-1/4" Gr. 5 Bolts and Flanged Nuts. Tighten all the bolts in this assembly. (See Fig 10-1)

10-A. Top Shell during assembly.



10-B. Inverted Top Cap/Inlet assembled. (15K Shown)

Top Cap/Inlet Assembly

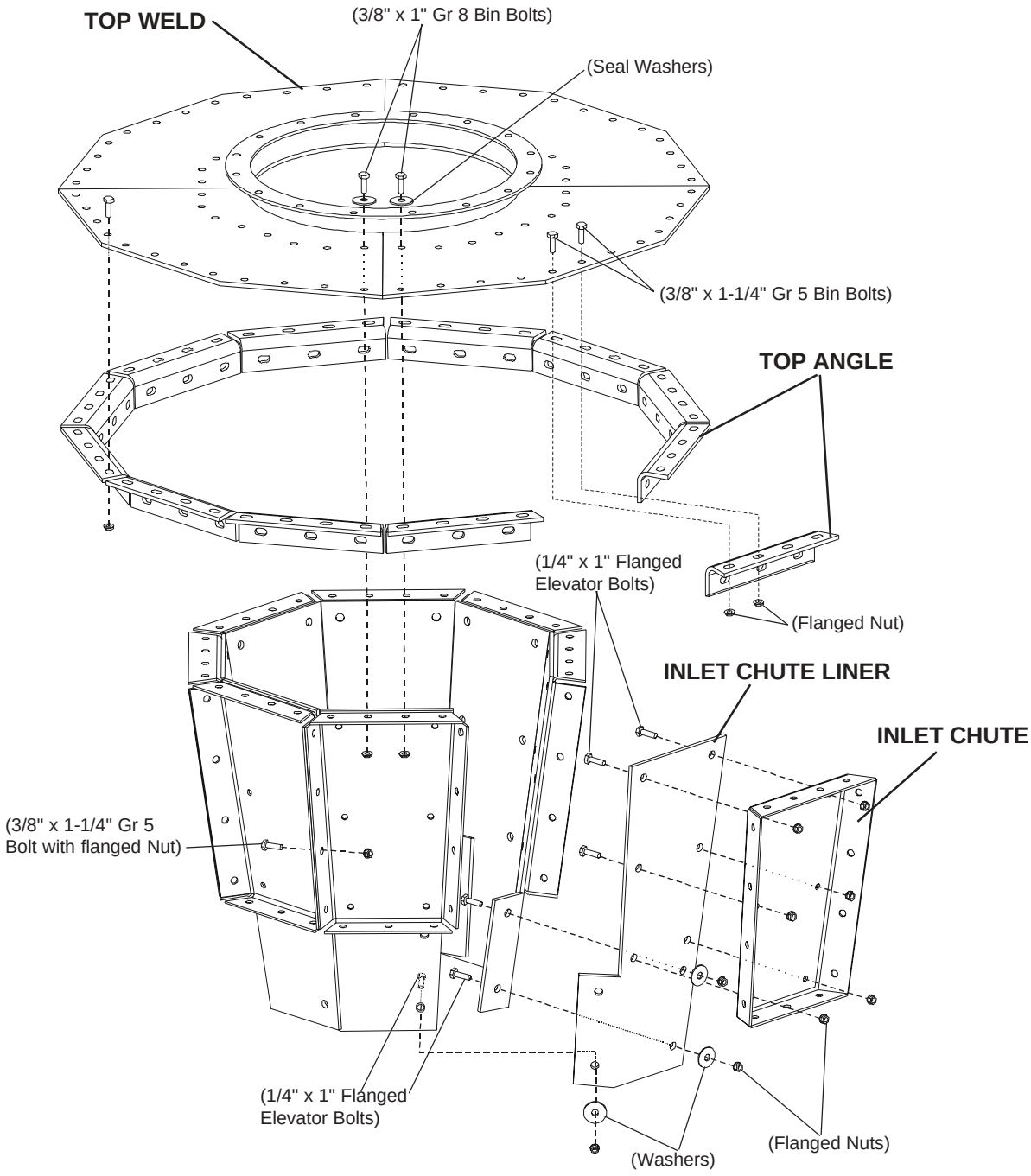


Fig. 10-1

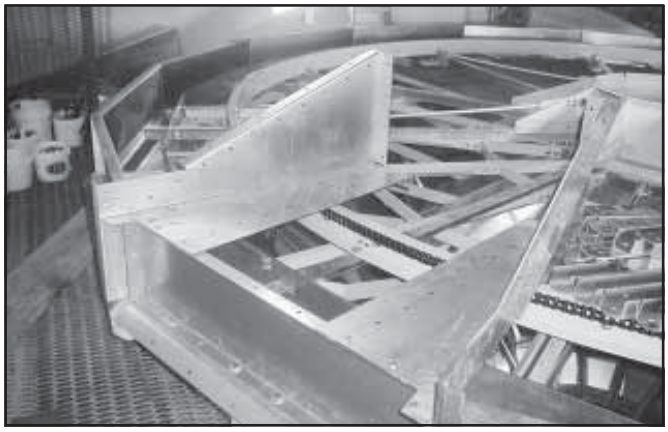
3. Installing the *MID CHNL*s on the Ring Beam is the next step. Seal below and between each panel with Mastic Sealant and install the Mid Channels using 1/2" x 1-1/2" Gr. 8 Bolts with Flanged Nuts through the Ring Beam. The vertical seams are connected using 3/8" x 1-1/4" Gr. 5 Bolts and Flanged Nuts. In the area of the Drive(s) install a ***CANTILEVER BRACKET LH*** and ***RH*** on the outside of the vertical seam to catch each side of the Drive Side Plates (See Fig 10-3). The orientation of left and right parts are as viewed looking toward the center of the unit. Note that the ***MID CHNL OVERS*** panel installs at the Overs Discharge and uses 3/8" x 1" Self Clinching Bolts with Flanged Nuts with the bolts projected to the outside. (See Fig 10-2)

4. SCRN HOLD DOWN*s are installed** to the inside of the Mid Channels using 3/8" x 1-1/4" Gr. 5 Bolts and Flanged Nuts. These bolts also project to the outside. The Screen Hold Downs have slotted holes for adjustment, and should have the height set where they are in contact with the Scalper Screens. The shorter ***SCRN HOLD DN OVERS install on the Mid Channel Overs Panel. Tighten the Mid Channels and Screen Hold Downs.

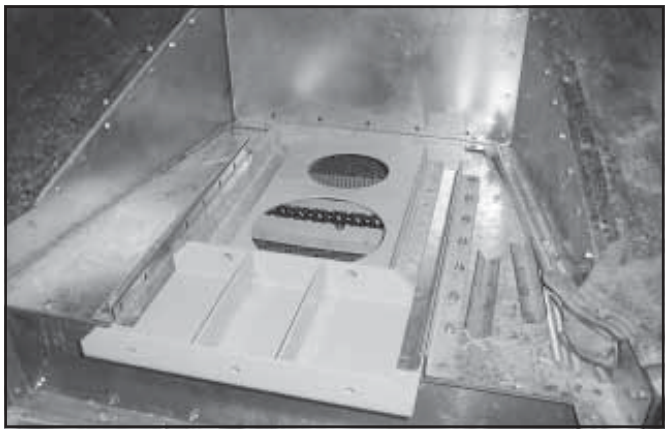
5. The *DRV SIDE PL LH* and ***RH*** install over mastic sealant on the Mid Channels and bolt through the Cantilever Brackets using 3/8" x 1-1/4" Gr. 5 bolts and Flanged Nuts. Install the ***DRV CVR PL*** with sealant using the same Bolts and Nuts. Install the two ***GUIDE BTM SP*** angles as well. Complete the assembly of this area by adding the ***DRV MT BACK PL*** across the turned down edge of the Drive Side Plates and the ***DRV CVR ANGLE*** with the ***DRV CVR SEAL*** beneath it. Use 3/8" x 1-1/4" Gr 5 Bolt to attach these parts.

6. Using temporary support to hold the parts level, tighten the bolts to hold the position of this assembly. **Should the assembly location not allow the use of a level**, note that the underside of the Drive Side Plates should be coplanar with the top of the Mid Channels.

10-C. Completely assembled 15K Scalper/Screener.



10-D. Drive Mount during assembly. (40K Shown)



10-E. Drive Mount Slide Plate in guides. (40K Shown)

Mid Section Assembly

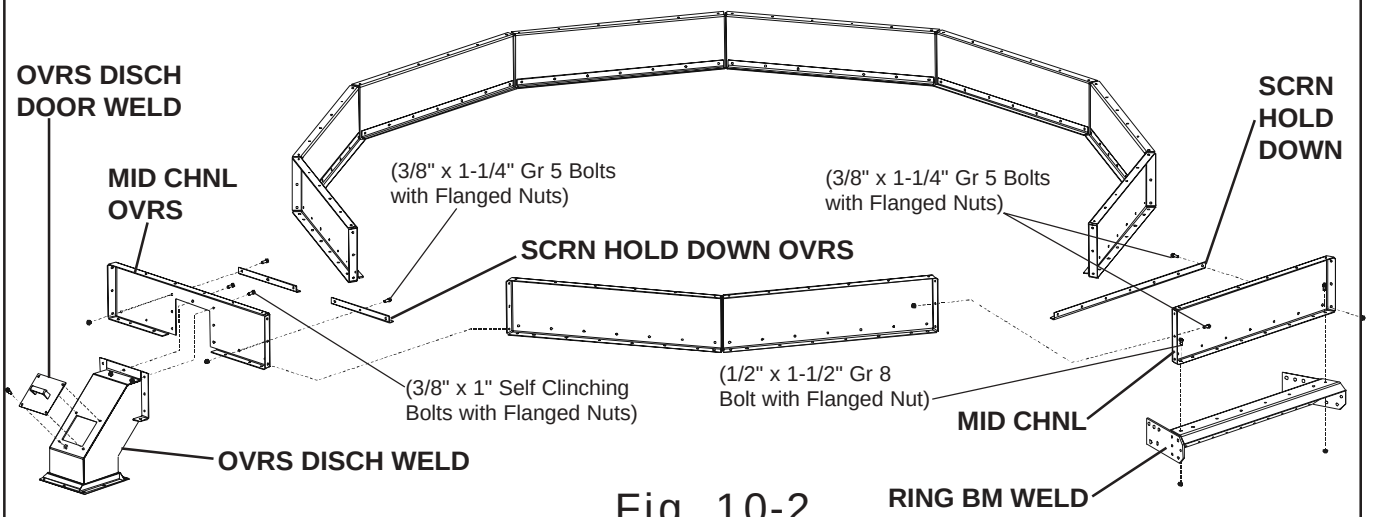


Fig. 10-2

Drive Mount Assembly

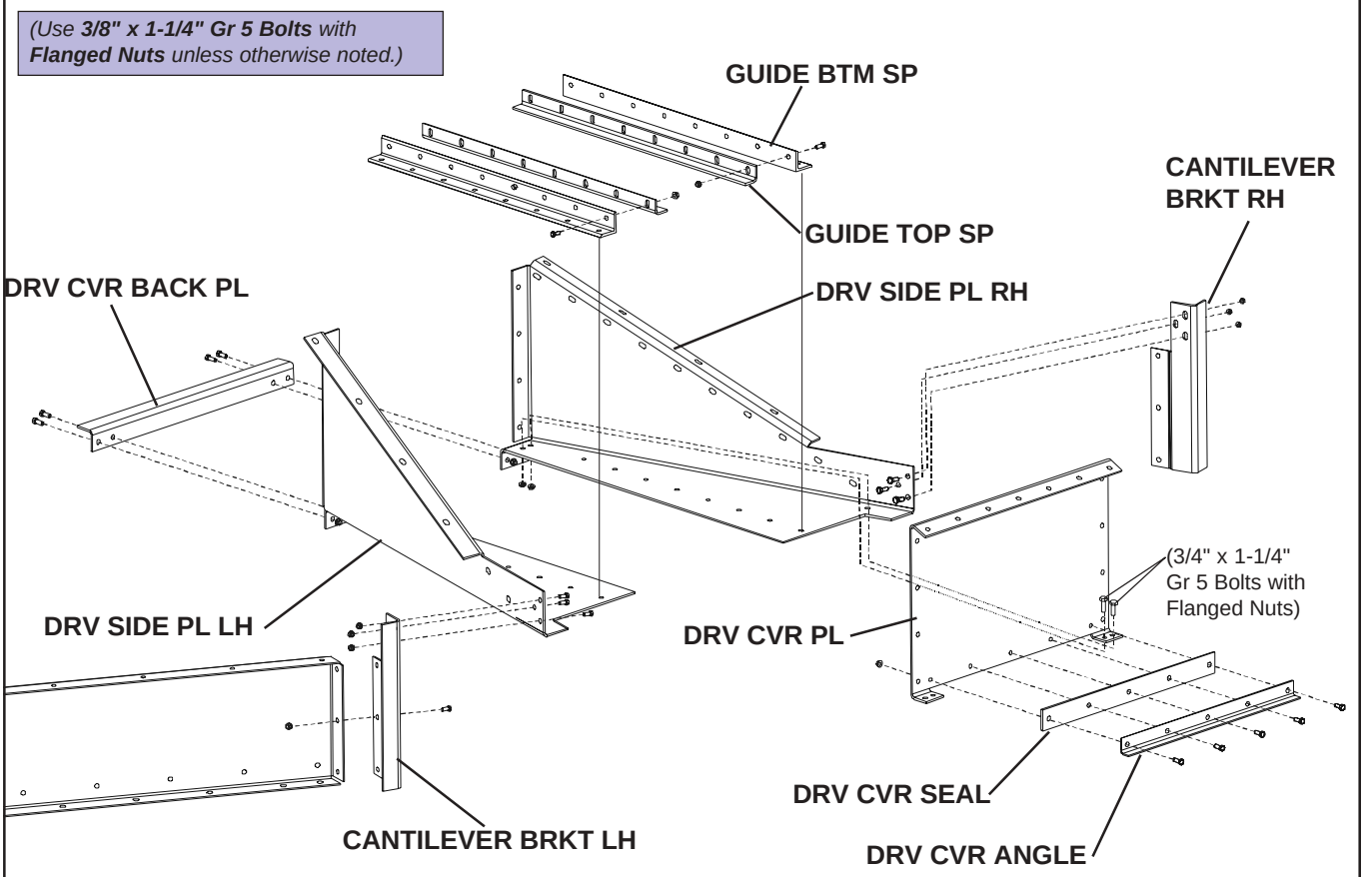


Fig. 10-3

7. Two types of fasteners are used in the roof assembly. Common seams within the unit are fastened with 3/8" x 1-1/4" Gr. 5 Assembly Bolts. Connections with fasteners exposed to the outside use a 3/8" x 1-1/4" Gr. 8 Bin Bolt installed with the Sealing Washer on the outside of the sheet.

8. Suspend the Pre-Assembled Top Cap over the center of the unit, allowing for height adjustment to keep it level as the assembly proceeds. Using the Mastic Sealant, seal along the top of the Mid Channels, along the Drive Mount and around the inside of the Top Cap Angles. Locate the ***COVER LH OPNG WELD***ment and install it on the desired side of the Drive Mount location. The secret to easy installation is to bolt the top holes first, then bolt the outer edge to the ***MID CHNL***s. Install a ***CVR SPRT CHNL*** along the underside of the Roof Sheet. At this time, do not install the Bin Bolts above the Drive Side Plates. If a Weather Guard is included (outside installations) install only the top bolts on the Side Plates. (See Step 16.)

9. Select a standard *COVER* sheet and install it on the opposite side of the Drive Mount in the same fashion. Note that the Roof Sheets are universal, as are the Cover Support Channels. This will leave holes which are not used in the installation. Remember, DO NOT install the Bin Bolts above the Drive Side Plates. On the largest units, roof cover sheets are made up in two parts. (See Fig 10-4)

10. Install the remaining Roof Cover Sheets with Support Channels. In addition to sealing the top and bottom of the sheet, add Mastic to the sides of the sheet as well. Do not install a Cover Sheet or Support Channels at the Access Door Locations.

11. The Access Doors are assembled by bolting the ***DOOR FRAME BTM*** on the Mid Channel flange over sealant. The ***DR FRM SIDE HINGE*** bolts to the left side of the opening over sealant using the 3/8" x 1-1/4" Gr. 5 Bolts extending through the Roof sheet flange and an added Stiffener Channel. The connection between the Door Frame Bottom and Side requires the Flanged Nuts to be on the inside for proper door installation. The ***DOOR FRAME SIDE*** installs in the same fashion on the right side of the opening. (See Fig 10-4)

12. The *DOOR FRAME TOP* completes the frame. Be certain to install the Bolts with the Flanged Nuts toward the inside of the frame. Run Mastic Sealant around the area above the door frame and install the ***COVER UPPER*** using 3/8" x 1" Gr. 8 Bin Bolts and Flanged Nuts.

13. The *COVER UPPER* sheet(s) in the area of the drive(s) completes the roof panel installation. Seal along the sheet seams, and hook the top of the sheet behind the Top Cap Angle. If a Weather Guard is to be installed, see the directions below in Step 16, otherwise fill the bolt holes with bin bolts.

14. The *DOOR HINGE* attaches to the *UP ACCESS DR WELD*ment using 3/8" x 1-1/4" Gr. 5 Bolts and Flanged Nuts. The hinge is oriented with the hinge pin adjacent the edge of the Door Weldment and the nuts to the outside of the door. This assembly is then bolted in place on the Door Frame Side. (See Fig 10-4)

15. The Door installation is completed by attaching the ***LOCK*** and ***HASP***. Close the Door and hold the Lock on the edge of the door in the area of the Door Handle. Using two (2) of the Pancake Head Self Drilling Screws provided, fasten the lock to the side of the Door. Break off the excess screw on the inside of the door. Place the Hasp over the Lock and drive two (2) more fasteners in the outer holes of the Hasp. Check the Lock for proper operation. (See Photos on page 59.)

Top Shell Assembly

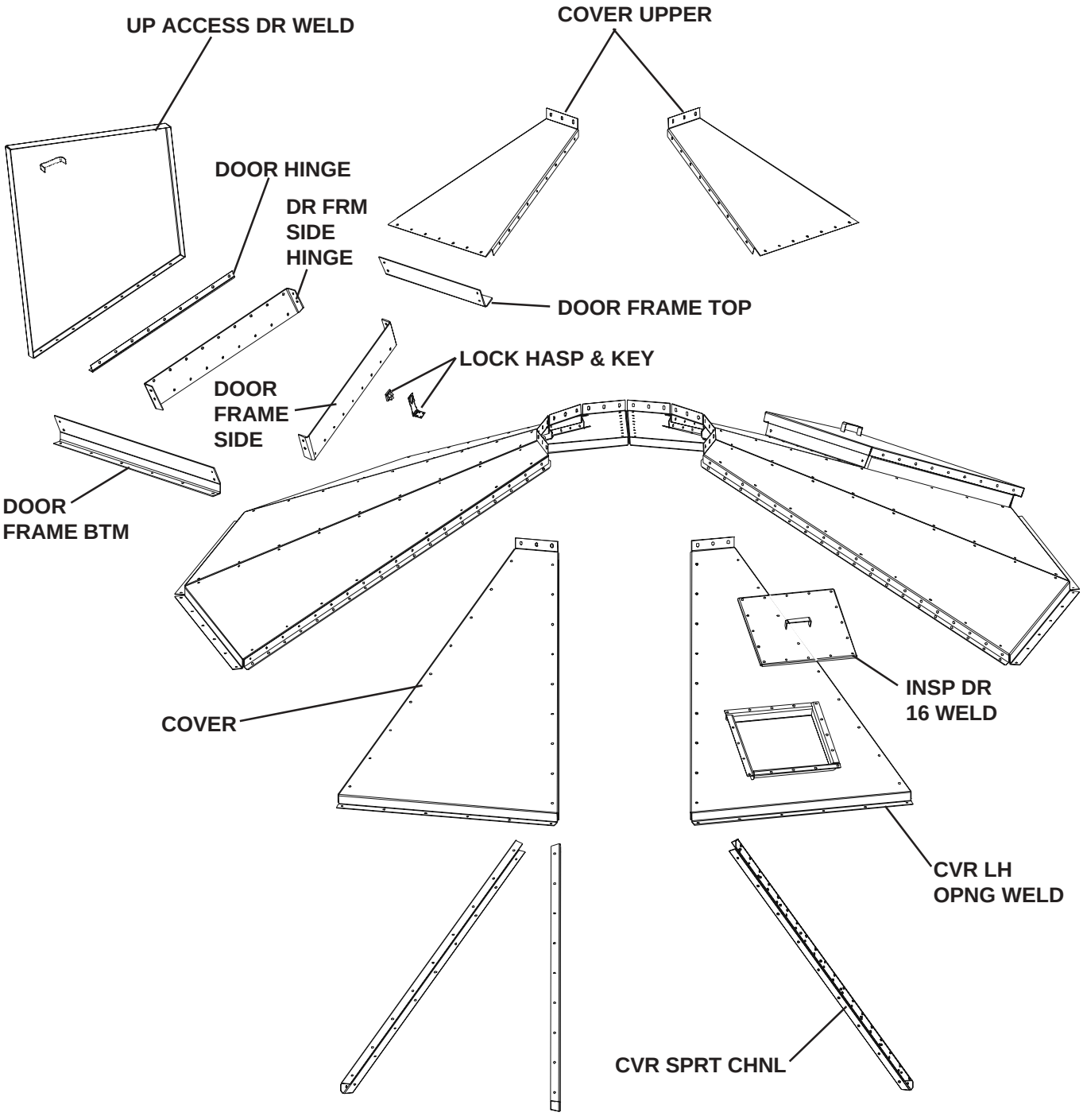
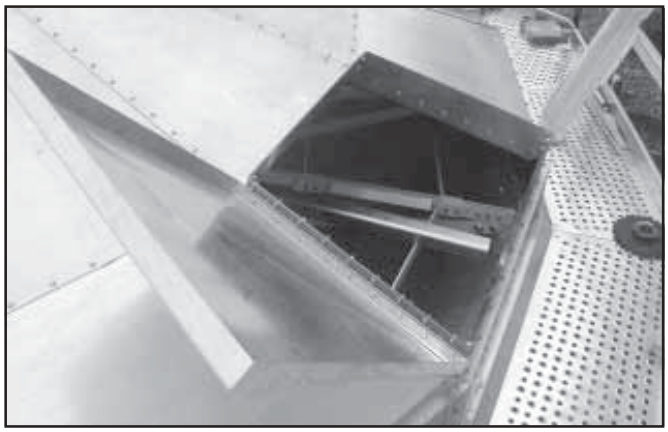


Fig. 10-4

16. Weather Guards are provided for units with exposure to the elements, replacing the belt guard shipped with the drive. The ***WEATHER GRD BACK*** installs over Mastic at the lower seam of the Cover Upper roof sheet. Install a Left and Right ***WEATHER GRD TEE-PEE*** with Mastic above the Guard Back. Some installations require drilling through the Roof Sheet to install the Tee-Pee parts. Continue to use the 3/8" x 1" Gr. 8 Bin Bolts with Flanged Nuts. (See Fig. 10-5)

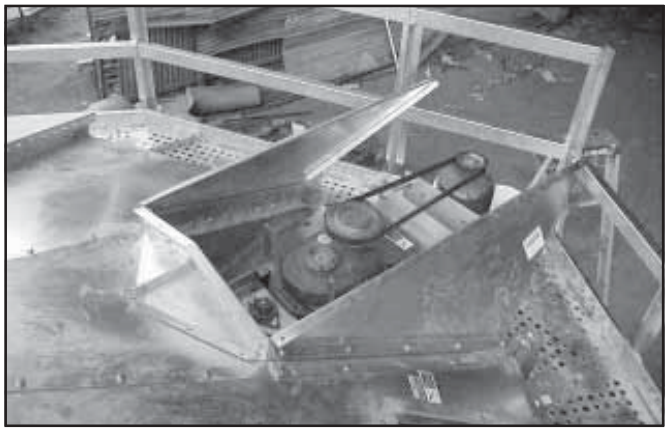
17. With Mastic applied, install the Left and Right *WEATHER GRD LWR SIDE*s, which bolt through the Drive Mount Sides. The completion of the Weather Guard involves placing the ***WEATHER GRD COVER*** over the Guard Lower Side flanges with weather-stripping applied to the seam and the ***WEATHER GRD CVR FRONT*** at the end of the Cover for rigidity. **Delay the final installation of the Weather Cover until the Drive has been assembled.** (See Fig. 10-5)

18. When all the Bolts are installed, verify that the Top Cap is level and tighten the Roof. Avoid damaging the sealing washers when tightening the Bin Bolts. When the roof is tight, some additional sealing may be required. Grey Silicone is provided. Seal any location where water may enter the unit. Do not apply sealant in the area of the Drive Slide Plate (details in next section).



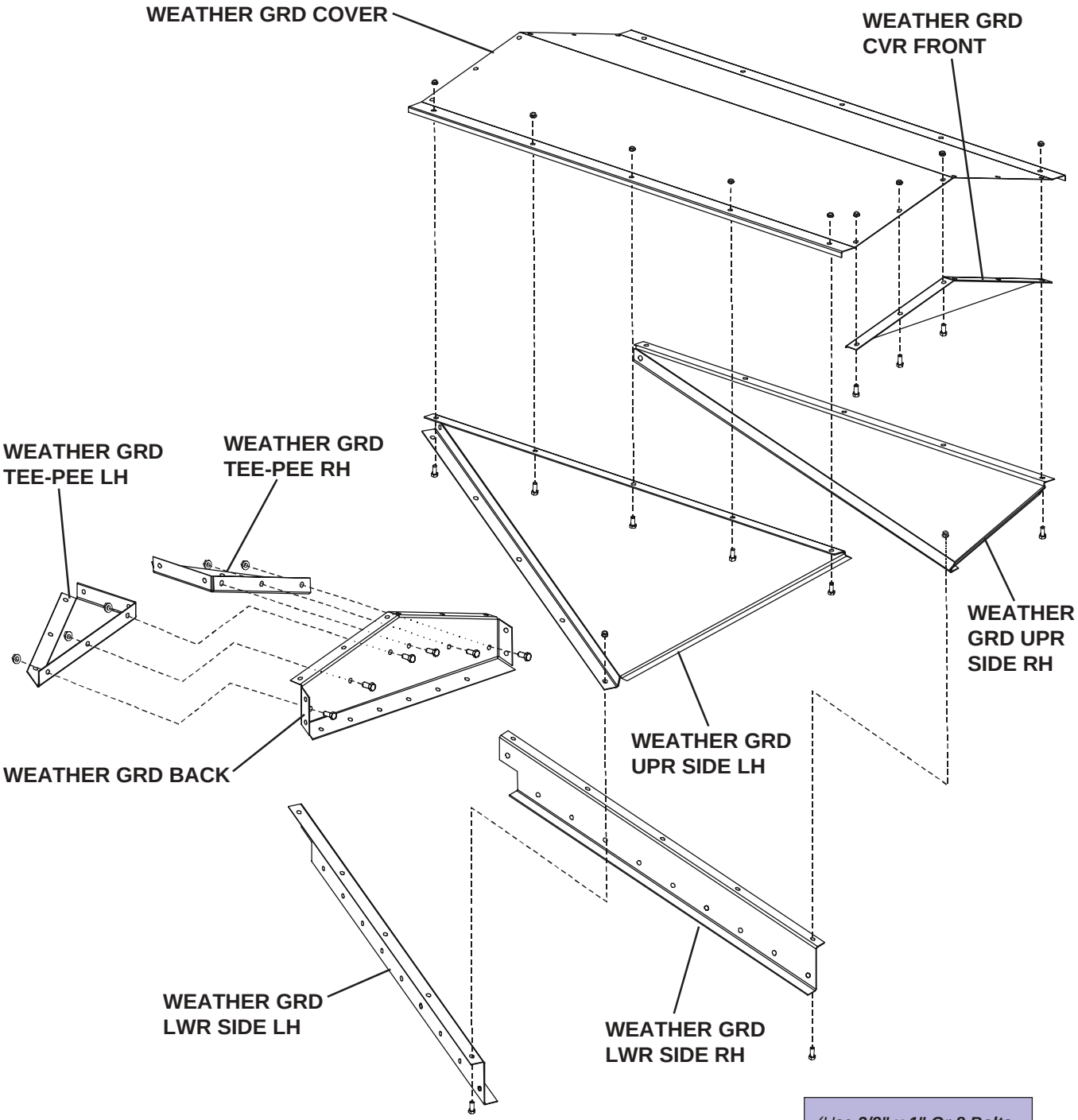
10-F. Assembled access door.

10-G. Access Door with Latch and Safety Labels.



10-H. Close-up of Weather Guard. (Cover Removed)

Weather Guard Assembly



*(Use **3/8" x 1" Gr 8 Bolts** with **Flanged Nuts** unless otherwise noted.)*

Fig. 10-5

SECTION 11

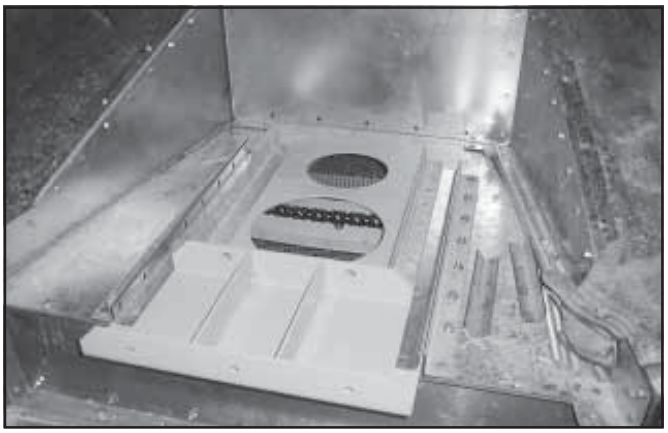
Drive Assembly

1. Place the *SLIDE PL WELD*ment between the angles on the Drive Mount. Slide it toward the center to engage the slot on the back of the Mount. Bolt the ***GUIDE TOP SP*** formed angles to the Guide Bottom angles using 3/8" x 1-1/4" Gr. 5 Bolts and Flanged Nuts.

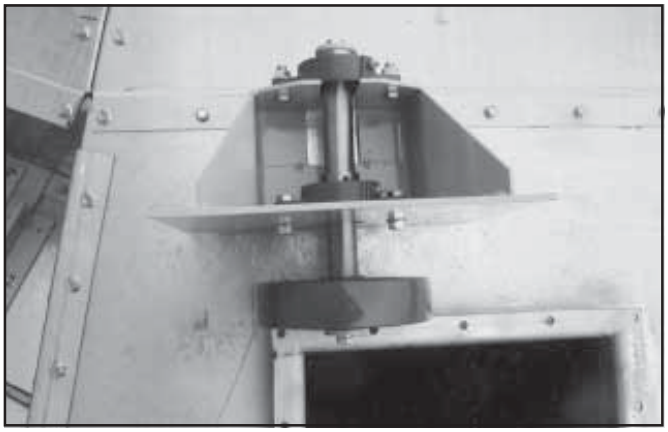
2. Locate the *PW SLIDE WELD*ment, the two ***BEARING 2-BLT FLG 107 SC,*** the ***PW SHAFT*** and the White UHMW ***PW SHFT SEAL.*** Slide the Bearings on the non-keyed end of the Shaft with the flanges toward the keyed end. Slide the Shaft Seal on from the keyed end stopping just below the lower Bearing Flange. Mount this assembly to the Slide Weldment using the 1/2" x 1-1/2" Gr. 8 Bolts with the Flanged Nuts on the bearing flanges.

3. Tap the Shaft flush with the top Bearing and tighten a setscrew to hold the position. Straighten the Shaft with the Weldment and tighten the Bearing Retainer Bolts. Tighten all the setscrews on the lower Bearings. Place the Key into the Keyway, and slide the ***PRESSURE WHEEL*** over the key and shaft with the setscrew(s) opposite the Weldment. Tighten the setscrew(s) when the Wheel is flush with the end of the shaft. Using a 1/2" x 1-1/2" Gr. 8 Bolt, Lock Washer and Flat Washer bolt a ***PW SHAFT KEEPER PL*** on each end of the shaft and tighten the bolts. The pressure wheel must be straight with the weldment.

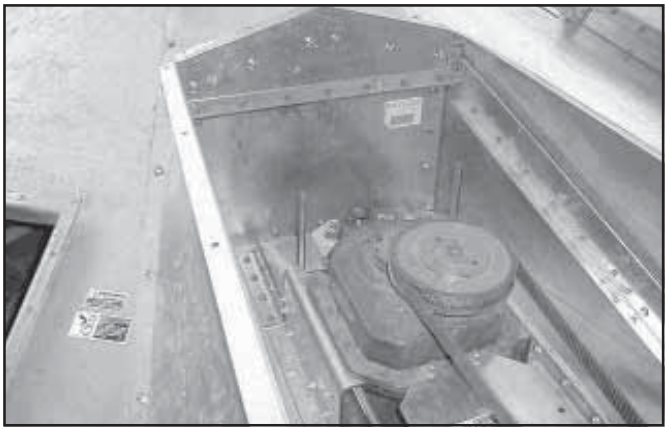
4. Before setting the Pressure Wheel Assembly in place, install the ***GUIDE BTM PW*** on each side of the opening using 3/8" x 1-1/4" Gr. 5 Bolts with the Flanged Nuts on the top. Set the Pressure Wheel into place and tighten the Guide bolts. Using the same bolts, install the ***GUIDE TOP PW*** angles and tighten them. **Verify that the Pressure Wheel slides freely after the Guides are tightened.** (See Fig. 11-1)



11-A. Drive Assembly.



11-B. Close-Up of Pressure Wheel.



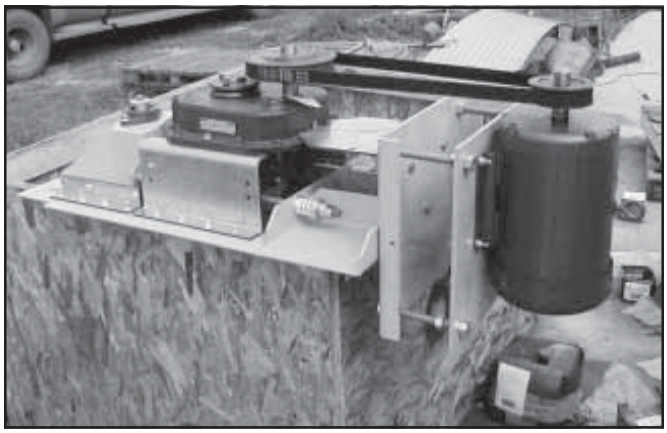
11-C. Assembled Drive with Weather Guard Components.

5. Locate the *REDUCER, SHAFT MT*, the *RDCR SEAL PL*, the Left and Right ***RDCR SIDE MT***(s), the ***RDCR MT CROSS*** and the ***RDCR PL SEAL***. Note that the Input Shaft of the Reducer is toward the outside of the unit. Install the Left and Right Reducer Side Mounts on the sides of the Drive using the existing hardware. Where utilized, a ***BELT GUARD BRKT*** mounts on each side of the Drive as well. The Mount Cross part bolts to each Side Mount. **Move the breather on the Drive to the Input Shaft side. (See Fig. 11-1)**

6. The *DRIVE SHAFT* is inserted into the Drive with the key in place and the shaft extension opposite the Input Shaft. Slide the ***BUSHING TAPER ASM*** (Taper Lock Bushings) into place, but do not tighten them at this time. Slide the Reducer Plate Seal over the shaft from the extended end, then slide the Reducer Seal Plate into position. This plate bolts to the Reducer Side Mounts using the 3/8" x 1-1/4" Gr. 5 Bolts and Flanged Nuts. The Seal Bolts to this plate using the provided 5/8" Gr. 5 Bolts and Nuts.

7. Install the 1/2" Square Key on the end of the Drive Shaft, and slide the ***DRV SPRKT*** onto the shaft with the setscrew(s) toward the Drive. Set the Sprocket to be flush with the end of the Drive Shaft and tighten the setscrew(s). Using a 3/4" x 2" Gr. 8 Bolt, Lock Washer and Flat Washer, fasten the ***SHAFT KEEPER PL*** to the end of the shaft.

8. Measure the distance between the top of the Drive Slide Plate and the Drive Chain inside the unit and adjust height of the Sprocket to match this measurement. Tighten the Taper Locks on the Drive holding this distance. Set the entire drive assembly into place on the Slide Plate, align the bolt holes and install 3/8" x 1-1/4" Gr. 5 Bolts with the Flanged Nuts to the outside. **Verify that the Sprocket and the Drive Chain are aligned with each other.** Tighten the bolts.



11-D. Drive Assembly.

11-E. Drive shaft and sprocket installed.

11-F. Assembled Drive with Guard.

9. Locate the 3/4" threaded *DRV SCREW*s and the ***COMP SPRING***s as well as 3/4" Nuts. Start a nut about 2" on one end of each Drive Screw. Work the rods through the holes in the Drive Slide Plate where the nut is in contact with the Pressure Wheel Weldment. Spin a nut on each rod to retain it to the Pressure Wheel. Place the Compression Springs over the other end of the threaded rods, install a Flat Washer and two 3/4" Nuts on each rod.

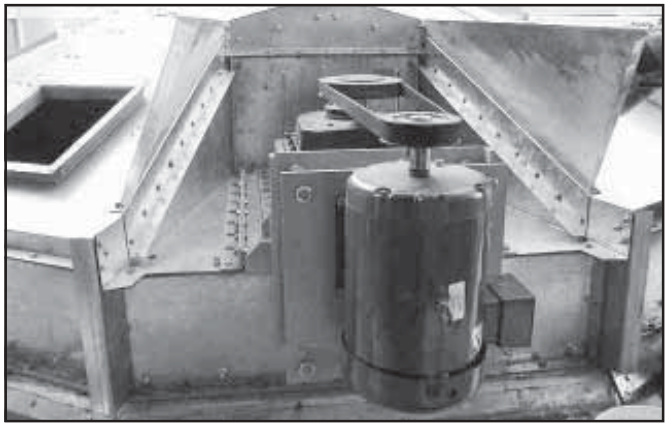
10. Tighten the 3/4" Nuts on the Pressure Wheel side, then tighten the Nuts at the Compression Spring. This will engage the Drive Sprocket. The alignment of the Chain and Sprocket should allow an easy engagement. If this is not the case, review the procedure for setting the height of the Sprocket. Evenly tighten the Springs to 1/2 compression and tighten the second nut to lock the position. Proper tensioning of the Springs allows good engagement of the Sprocket without exerting excessive stress on the shafts.

11. This is a convenient time to add the desired lubrication to the Reducer Drive. **Drives are shipped without lubrication.** See the Drive Manufacturer's recommendations for lubrication type and quantity.

12. Assemble the Motor Mount(s) by bolting the ***MOTOR MT BASE*** to the end of the Drive Slide Plate with 1/2" x 1-1/2" Gr. 8 Bolts and Flanged Nuts. Connect the ***DRIVE MT RDCR BRKT*** from the Motor Mount Base to the Flange on the Reducer Drive. The remaining ***BELT GUARD BRKT***s bolt where required to this plate. Install the four 3/4" threaded rod ***MTR MT SCREW***s through the holes on the Motor Mount Base with a Nut on each side. Spin an additional Nut on each stud, and install the ***MTR MT TOP***, retaining it with more Nuts. All of the drive components should be tightened at this time.

13. Install the *MOTOR* on the Motor Mount Top plate. Working with the Bill of Materials to insure proper placement, install the Drive Pulleys and Belts. Verify the alignment of these components per standard practice. Tension the belts using the Mounting Studs. If a weather guard is used, skip the guard installation. Otherwise, install the ***BELT GUARD LH-BTM*** and ***RH-BTM*** over the previously installed Brackets using 3/8" x 1-1/4" Gr.5 Bolts and Flanged Nuts and connect the overlapped flanges. Install the ***BELT GUARD TOP*** with the same bolts to complete the Drive assembly.

11-G. Complete assemblies.



11-H. Complete assembly with weather guard.

Drive Assembly

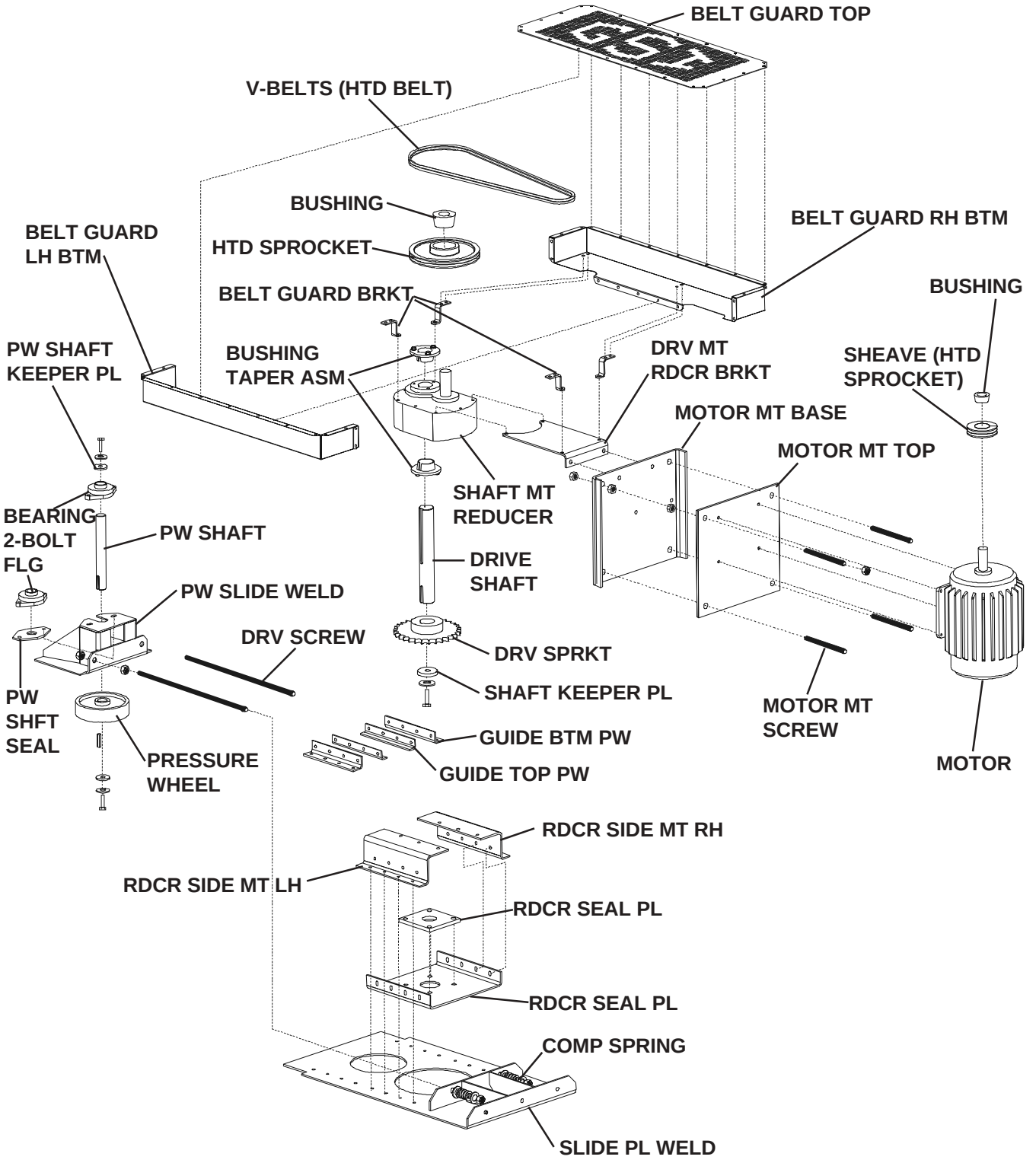


Fig. 11-1

SECTION 12

Electric Gate Drive Assembly: *(optional equipment)*

1. Unless upgrading from a manual gate, The *GATE DRV MT BRKT* should have been installed during the lower cone assembly. If not, review the directions and install it at this time.

2. Locate the *GATE DRV THRD'D ROD* and *GATE DRV TRIP NUT WELMT.* Spin the Trip Nut onto the Threaded Rod about 4" from the keyed end. Slide this assembly through the Cover Weldment on the Outer Shell of the Unit. Insert the Threaded Rod into the Gate Shaft Universal Joint and examine the position of the Trip Nut.

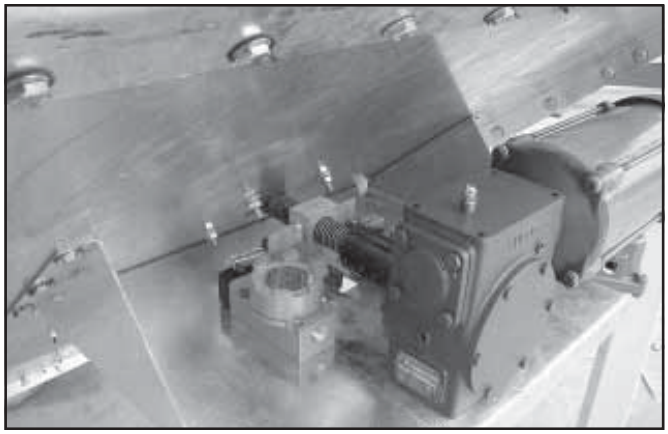
3. The Trip Nut must engage the formed slot on the Gate Drive Mount Bracket where sufficient travel is available within the slot for the operation of the gate. If required, rotate the Threaded Rod within the U-Joint for proper Nut placement. Once the location has been established, align the clearance hole and thread a 3/8" x 1-1/2" Gr. 8 into the Universal Joint setscrew hole and tighten it.

4. A *LIMIT SWITCH DPST* installs on each side of the Trip Nut over the holes in the Mount Plate using #10 - 32 x 1" Screws with Lock Washers and Flat Washers, two per Limit Switch. Install the Lever Rods where they will contact the tabs on the Trip Nut. Verify the Bypass Gate is in the open position, and set the Open Limit Lever where the switch is tripped. Manually close the gate and repeat the operation with the Close Limit Lever. Reopen the Gate.

5. Install the long 1/4" key in the slot on the *COUPLING CLAMP* and place it over the Threaded Rod. The ***GEAR REDUCER*** output shaft engages this Coupling as well. As the Reducer is installed, watch for the alignment of the retainer bolts on the base. Using 3/8" x 3/4" Gr. 5 Bolts with Lock Washers, install and tighten the Reducer mount bolts, then tighten the Clamp Bolts.

6. An envelope can be found in the Reducer Box with the mounting bolts for the "C" Face fractional horsepower ***MOTOR***. Being careful to keep the key in place, install the C-Face Motor and tighten the bolts. Also in the envelope is the vent plug for the Gear Reducer. **Add lubrication to the Reducer** and install the vent in the filler hole.

7. While a close estimate of the Gate position can be made at the time of installation, proper operation of the gate must be verified after the Gate Drive is operational. To prevent damage to the Drive Components, position the Limit Switches to stop the travel of the Bypass Gate before it reaches the mechanical limits of travel. When setting the Limit Switches, open and close the Gate Several times to insure proper operation.



12-A. Electric Gate Drive Assembly.

12-B. Internal Gate Components.

SECTION 13

Safety Gate Installation

Larger Scalpers and some Scalper/Screeners come standard with a Safety Gate which installs below the Whole Grain Discharge. The Safety Gate is Closed when service access to the Lower Cone is required. On units so equipped, **Lock the Safety Gate closed before entering the Lower Cone area.**

Verify that the Safety Gate is in the fully opened position when operating the cleaner.

If the Safety Gate requires assembly, use the directions in Section 4 for the Bypass Gate assembly procedures. Note that the gate part names are similar, except that Safety Gate part numbers start with "***SG***" while the Bypass Gate parts start with "***G***".

Sealing Up The Shell

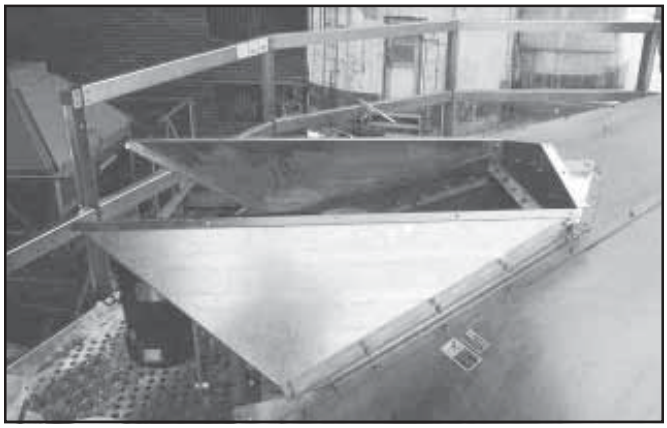
The nature of the manufacturing process will leave some areas which require supplemental sealant to ensure a water tight installation. Tubes of Grey Caulking have been provided for this purpose. Pay particular attention to the location where multiple sheets come together, around the Top Cap, the Ring Beam, and entry doors.

Weather Stripping is provided for sealing around the Access Doors and Inspection Doors, along the Weather Cover and other removable components which require a seal.

Safety Labels:

At the front of this manual the location of the Safety and Identification Labels is shown. Locate the Safety Labels and install them according to this diagram.

Thoroughly clean the location where the Labels are to be mounted. Remove the backing from the Safety label, orient and carefully install them as shown. Proper installation is level to the eye and free of blisters created by air trapped beneath the Label



13-A. Weather Guard Components with Typical Safety Labels.

SECTION 14

General Operating Principles

If the Rota-Max scalper is not going to be used for a period of time, it is recommended that the by-pass gate be kept open, allowing material to pass through the unit. This will prevent unwanted accumulation of product in the bypass area or on the screens.

Before initial operation of the unit, inspect the drive assembly as listed on page 71 under “Inspection and Maintenance” section. It is particularly important to verify the compression spring tension and sprocket height. Improper adjustment of these components can damage the drive sprocket or chain.

Prior to scalping, the internal bypass gate is closed. On Series I equipment this is a “Butterfly” valve and on Series II a Rack and Pinion gate. While these gates can be adjusted proportionally, there are few scalping operations where this is advisable; they should generally be used fully opened or fully closed.

The Impeller drive is started and product is introduced into the unit. As the product enters the unit, it is concentrated by the inlet liner and deadheads at the top of the bypass tube then flows out onto the screens. The Impeller assembly spreads the material evenly over the screen surface, retaining the oversized material and progressing it to the secondary separation area, while allowing the appropriately sized material to flow through the screen. (See Fig. 9-1 on page 46 and 9-3 on page 49)In normal operation, the majority of the scalping is done in the primary separation area.

In standard free flowing whole grain applications, a set of secondary arms moves the material back toward the center before moving it out to the final separation area. Finally the oversized material is moved to the overs discharge. Use chart 4-1 on page 69.)

Significant modification of the scalper performance can be made by altering the wiper length or arm angle as detailed in chart 14-1.

Where a Gravity Screener is incorporated, the material which has passed through the upper screen is spread by gravity over the lower screen surface, and discharges the unit through the clean grain discharge. The undersized FM gathered to the lower discharge at the center of the unit. Series I equipment has the capacity to Screen independently of the Scalper Operation by opening the scalper gate and closing the screener gate. This gate may be proportionally adjusted to allow for variable cleaning conditions. On Series II Scalper/Screeners, it is recommended that a proportional gate assembly be used below the fines discharge where reintroduction of the fines is desirable.

The impeller arms utilize a urethane wiper to move the grain and contact the screen. Wiper rubbers are reversible for extended wear. The impeller assembly rotates on a bushing made of UHMW-PE, and uses tip blocks of the same material in the area of the impeller outer web. The tip blocks should not be in contact with the screen surface during normal operation. If contact occurs, review the maintenance section.

Cleaning rollers are attached to the trailing edge of the main impeller arms. The purpose of these rollers is to keep closely sized material from getting lodged in the screen media. Standard rollers can be added as required for specialized applications.

Impeller Arm Modification Guide

The guidelines listed here are general in nature, and apply to most types of free flowing whole grains, and have been included that the versatility of the product might be enhanced. While these alterations can fine tune the performance of the Rota-Max Scalper, they do not change the basic application of this equipment. Specific Modifications are listed in the recommended order of application.

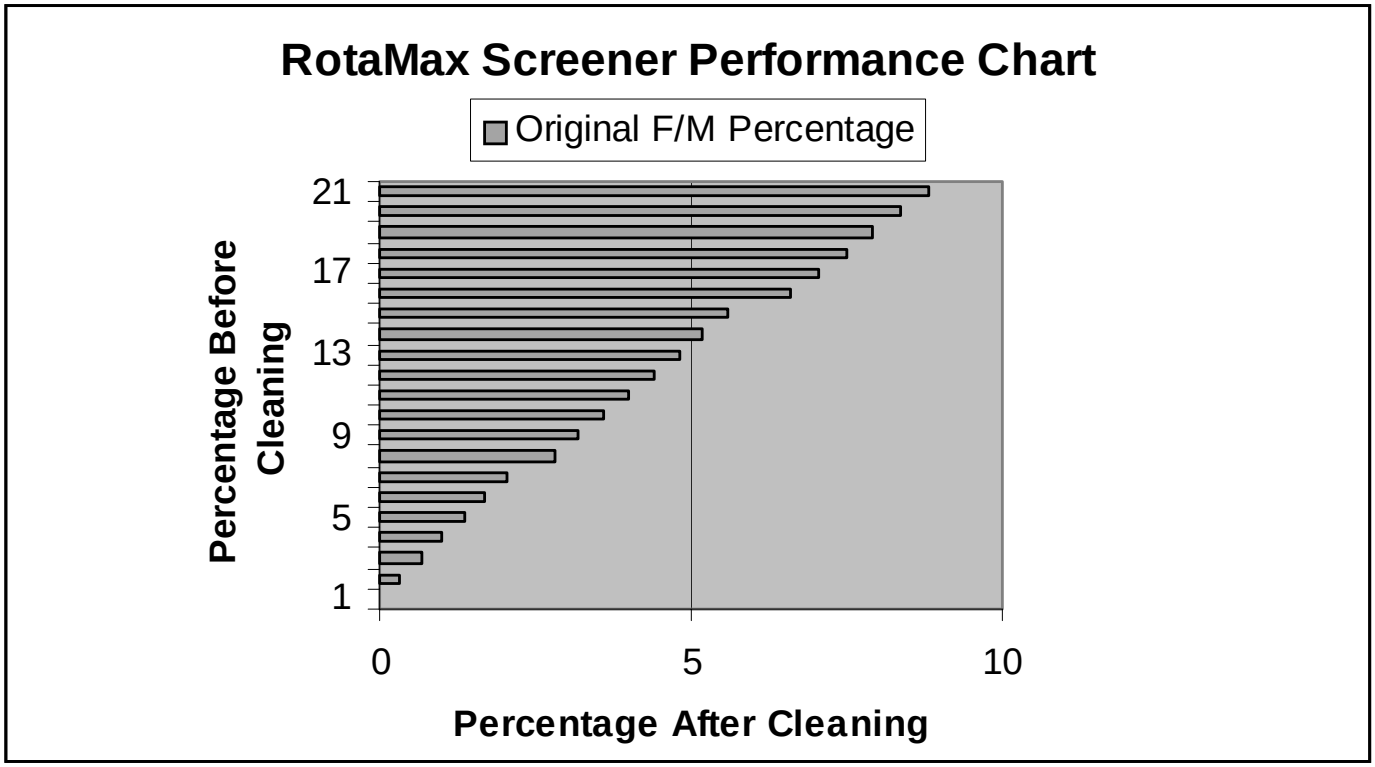
DESIRED RESULT	SPECIFIC MODIFICATION	MECHANISM OF CHANGE
REMOVE MORE OVERSIZED MATERIAL	Remove the Wiper from the Short Mid Arm Add additional length to the Main Arm Wipers so material moves through the primary separation area faster Increase the Rotational Angle* of the Long Mid Arm Blank off the outer screen area Add more Overs Discharge locations Field modify the Overs Discharge to extend below the screen	These changes reduce the amount of time the material is in contact with the scalper screen This will tend to increase the total rejected material, as well as decrease the degradation of friable oversized FM The component of classifiable material in the overs may increase An increase in unit capacity may be realized
DECREASE THE REJECTED WHOLE PRODUCT	Remove up to half of the Main Arm End Wipers Remove up to half of the Long Mid Arm Wipers Decrease the Rotational Angle* of the Long Mid Arm Install Screens with larger openings	These changes increase the amount of time the material is in contact with the screen There will be an increase in the degradation of friable FM There may be an increase in the amount of closely sized FM in the Cleaned Product There may be a decrease in unit capacity in high FM situations

*Rotational Angle is the measured angle as established by drawing a radial from the center of the unit to the leading edge of the Impeller Arm. Negative Rotational Angles move material toward the center of the unit as demonstrated by the Short Mid Arm and Positive Rotational Angles move material outward on the screen. Long Mid Arm Rotational Angle must remain Positive for proper unit operation.

Chart 14-1

ESTIMATED CLEANING CAPACITY

For Scalper/Screeners, estimated cleaning capacity can be found by reviewing the following chart. Remember that there are numerous factors, which can alter screener performance. The following chart is a general guideline only, and may not match specific removal rates.



SECTION 15

Maintenance

Proper maintenance will prolong the life of the equipment. Be certain to follow all established safety procedures prior to working on this equipment. Be certain all power is disconnected and locked out to this and any associated equipment before starting work. Keep records of maintenance performed to this unit. One possible format is included with this manual.

INITIAL START-UP OR AFTER MAINTENANCE CHECKLIST

1. Inspect the Drive Sprocket. Check that the drive sprocket engages the drive chain evenly. It may be necessary to loosen the Drive Spring tension to verify this alignment. Make adjustments to sprocket height as required by using the taper lock bushings.

2. Verify the drive spring tension. The drive spring tension can be checked visually. Springs should be compressed to 1/2 of their maximum compression. If required, loosen each lock nut and make the necessary adjustments. Spring compression is important; excessive spring tension may cause unnecessary wear on the bearings and pressure wheel, while overly loose springs may allow the sprocket to disengage the drive chain.

3. Verify the general condition of the drive. Verify oil level and type following the reducer drive manufacturer's manual. Inspect the for condition and tension. Replace worn or damaged drive belts. Check that all guards and associated safety covers are properly installed. Check for loose bolts or setscrews on the drive or associated shafts.

4. Inspect the interior of the unit. Lock-out power as required prior to entering the unit. Check that no tools or spare parts have been left inside the unit.

5. Inspect the Impeller Assembly. Carefully check that all bolts are in place and tight. Check that the Wiper Rubbers are in place as desired. Verify the condition of the Cleaning Rollers and check the associated mounting brackets for cracks or wear. Inspect the Tip Blocks to insure they are not contacting the screen. If required, loosen the connection bolts and set to 3/4" clearance.

6. Visually confirm that the bypass gate opens and closes properly and completely. When installed, information on electric gate operation can be found in the Options Section of this manual.

7. Make a General Inspection of the overall unit. Check for missing or loose bolts on the outer shell. If included, be certain the gate drive actuator covers are installed. Verify that inspection and access doors are properly installed and closed and, where equipped, locked.

8. When applicable, verify that the fines discharge is clear of obstructions. Check for the accumulation of FM in the discharge plenum.

REGULAR INSPECTIONS AND MAINTENANCE

The stated inspection intervals are general in nature, suitable for average conditions and applications, and may need to be modified to suit specific operational requirements.

DAILY INSPECTIONS

1. Observe the general condition of the unit. Verify that guards and access covers are in place. Check for signs of lubricant leakage in the area of the drives and bearings. Check for indication of drive belt wear, looseness or misalignment.

2. Verify that the Drive Support Plate moves freely. A range of motion on the drive plate up to 3/4" is considered normal.

3. Listen to the operating equipment. Changes in the basic sound of operation can often provide early detection of pending problems. Review the troubleshooting guide for additional information.

4. Examine samples of the cleaned and removed product. Observed changes in the properties of these products may indicate the need for additional equipment maintenance.

5. Verify that all material discharge locations are unobstructed.

6. Keep the area around this equipment safe and clear of obstacles. Survey the area around the Scalper, including access platforms and ladders, support structures and related equipment for objects or conditions which may pose a hazard to the safe operation of this equipment.

WEEKLY INSPECTIONS

Weekly inspections should include all of the daily inspections as well as those listed below.

1. Following the established safety procedures, visually inspect the Impeller Arm assembly for loose or missing fasteners, damage or wear. Correct any deficiencies found.

2. Visually inspect the Screen Media for blinding or damage. It is common for a small percentage of the screen to have material caught in it. Should damage be found, repairs can often be made as detailed in the Troubleshooting Guide.

3. Visually inspect the Drive Sprocket and Pressure Wheel assembly. Inspect the compression springs. Misalignments or adjustments should be made as required.

4. Clean the exterior of the unit. Remove any accumulations of material found to prevent damage to the finish of the unit.

MONTHLY INSPECTIONS

Monthly inspections should include the daily and weekly inspections in addition to the following.

1. Verify the drive lubricant level and type. Follow the drive manufacturer's recommendations.

2. Lubricate bearings as required for the condition and application. Use caution when lubricating bearings, as seal damage can result if excessive lubrication is introduced. Follow established bearing maintenance guidelines for your application.

3. Check the condition, pulley alignment and tension of the drive belts. Make adjustments as necessary. Always replace damaged belts.

4. Inspect the impeller Tip Block assemblies for spacing or indication of excessive screen contact. Review the Troubleshooting guide for additional information.

5. Visually inspect the center bushing. There should be not less than 1/4" of material visible below the retainer lip. Replace the bushing when required.

6. Examine the Cleaning Rollers for condition and wear. Replace worn or damaged retainer clips or bolts. Verify that all associated fasteners are properly installed and tightened.

7. Operate and inspect the Bypass Gate. Verify proper travel and gate adjustment.

8. Where included, visually check the condition of the screener screens for wear or damage. Replace or repair as needed.

SEMIANNUAL INSPECTIONS

Include all Daily, Weekly and Monthly Inspections in the Semiannual Inspection.

1. Inspect or test the drive lubricant for signs of metal or excessive wear in the drive.

2. Inspect the bearings for wear or seal damage.

3. Examine the alignment and condition of the Drive Sprocket, Drive Chain and Pressure Wheel. Replace any components with excessive wear. Verify that all set screws and retainer bolts are in place and properly tightened.

4. Physically inspect the condition of the Impeller Arm. Check that all fasteners are properly tightened. Replace damaged or missing Wiper Rubbers appropriate to the intended configuration.

5. Check the condition of the Wear Lining in the unit. Replace worn material as required.

6. Inspect the outer shell of the equipment for damage. External indication of impact or structural damage should be investigated fully.

7. Examine the general area of the installation, including peripheral equipment and support structures. Evidence of encroachment, structural damage or unsafe conditions should be examined carefully and repaired immediately as required.

SECTION 16

TROUBLESHOOTING

ALWAYS USE PROPER SAFETY PROCEDURES WHEN INSPECTING OR SERVICING THIS EQUIPMENT.

SYMPTOM	POSSIBLE CAUSE	SOLUTION
UNUSUALLY LOUD OPERATION	FOREIGN OBJECTS IN UNIT	Remove foreign material. Inspect Impeller Assembly for damage. Inspect screens for damage.
	MISSALIGNED DRIVE COMPONENTS	Adjust height of Drive Sprocket or Impeller Arms as required. Verify that the Impeller clearance is uniform as it rotates.
	LOOSE INTERNAL COMPONENTS	Locate and tighten components. Inspect Impeller Assembly for damage. Inspect screens for damage.
OVERSIZED FM IN CLEAN GRAIN	BYPASS GATE NOT FULLY CLOSED	Verify position of gate. With electric gate, verify limit switch position.
	SCREENS OUT OF PLACE	Verify correct positioning of screen media.
	DAMAGE TO SCREENS	Repair or replace damaged screens as required.
UNIT NOT REACHING CAPACITY	EXCESSIVE FM IN PRODUCT	Reduce the feed rate to the unit.
	HIGH MOISTURE LEVEL OF PRODUCT	Reduce the feed rate to the unit. Install screens with larger openings. Dry the product prior to scalping.
	PRODUCT SIZE /SCREEN OPENING RATIO TOO CLOSE	Install larger opening screen.
	INTERMITTENT OPERATION OF IMPELLER ARMS	Verify that drive springs are properly tensioned. Verify the alignment of the drive components. Inspect the electrical system (by others).

TROUBLESHOOTING

ALWAYS USE PROPER SAFETY PROCEDURES WHEN INSPECTING OR SERVICING THIS EQUIPMENT.

SYMPTOM	POSSIBLE CAUSE	SOLUTION
EXCESSIVE PRODUCT IN OVERS DISCHARGE	PRODUCT SIZE/SCREEN OPENING RATIO TOO CLOSE	Replace screen with a larger sized opening. Reduce the feed rate while handing the larger product.
	UNDESIREABLE FOREIGN MATERIAL IN PRODUCT, i.e., MUD, SNOW, CLUMPS OR MATERIAL	Prevent the undesirable material from entering the unit. Reduce the feed rate until the material passes. Reduce the size of the Foreign Material.
	EXCESSIVE SCREEN BLINDING DURING OPERATION	Install larger screen media. Install additional cleaning rollers. Reduce the feed rate until the larger material is cleaned.
	IMPELLER SPEED IS INCORRECT	Change Impeller RPM as required for the application.
	PRODUCT CHARECTERISTICS HAVE CHANGED	Check the Product size/screen ratio.
UNIT NOT CLEANING TO SPECIFICATION	EXCESSIVE FM IN PRODUCT	Reduce the feed rate to the unit.
	WRONG SECONDARY CLEANING ARM CONFIGURATION	Reconfigure the wiper installation to match desired conditions.
	WORN WIPERS ARE NOT PROPERLY MOVING THE MATERIAL	Replace the worn wipers as required.
	PRODUCT SIZE /SCREEN OPENING RATIO TOO LARGE	Install smaller screen media. Install different geometry screen media.
	DAMAGE TO THE SCREEN MEDIA	Inspect the screens, repair or replace as required.

WARRANTY

THE COMPANY WARRANTS ALL PRODUCTS MANUFACTURED TO BE FREE OF DEFECTS IN MATERIAL AND WORKMANSHIP UNDER NORMAL USAGE AND CONDITIONS FOR A PERIOD OF TWELVE (12) MONTHS AFTER RETAIL SALE TO THE ORIGINAL END USER OF SUCH PRODUCTS. OUR ONLY OBLIGATION IS, AND PURCHASER'S SOLE REMEDY SHALL BE TO REPAIR OR REPLACE, AT THE COMPANY'S OPTION AND EXPENSE, PRODUCTS THAT, IN THE MANUFACTURERS SOLE JUDGEMENT, CONTAIN A MATERIAL DEFECT DUE TO MATERIALS OR WORKMANSHIP. ALL DELIVERY AND SHIPMENT CHARGES TO AND FROM THE FACTORY WILL BE PURCHASER'S RESPONSIBILITY. EXPENSES INCURRED BY OR ON BEHALF OF THE PURCHASER WITHOUT PRIOR WRITTEN AUTHORIZATION FROM AN AUTHORIZED EMPLOYEE OF THE COMPANY SHALL BE THE SOLE RESPONSIBILITY OF THE PURCHASER.

EXCEPT FOR THE ABOVE EXPRESS LIMITED WARRANTIES, THE COMPANY MAKES NO WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE IN CONNECTION WITH (i) PRODUCT MANUFACTURED OR SOLD BY THE COMPANY OR (ii) ANY ADVICE, INSTRUCTION, RECOMMENDATION OR SUGGESTION PROVIDED BY AN AGENT, REPRESENTATIVE OR EMPLOYEE OF THE COMPANY REGARDING OR RELATED TO THE CONFIGURATION, INSTALLATION, LAYOUT, SUITABILITY FOR A PARTICULAR PURPOSE, OR DESIGN OF SUCH PRODUCT OR PRODUCTS.

IN NO EVENT SHALL THE COMPANY BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOSS OF ANTICIPATED PROFITS OR BENEFITS. PURCHASER'S SOLE AND EXCLUSIVE REMEDY SHALL BE LIMITED TO THAT STATED ABOVE, WHICH SHALL NOT EXCEED THE AMOUNT PAID FOR THE PRODUCT PURCHASED. THIS WARRANTY IS NOT TRANSFERABLE AND APPLIES ONLY TO THE ORIGINAL PURCHASER. WE SHALL HAVE NO OBLIGATION OR RESPONSIBILITY FOR ANY REPRESENTATIVE OR WARRANTIES MADE BY OR ON BEHALF OF ANY DEALER, AGENT OR DISTRIBUTOR OF THE COMPANY.

THE COMPANY ASSUMES NO RESPONSIBILITY FOR FIELD MODIFICATIONS. MODIFICATIONS TO THE PRODUCT NOT SPECIFICALLY COVERED BY THE CONTENTS OF THIS MANUAL WILL NULLIFY ANY PRODUCT WARRANTY THAT MIGHT HAVE BEEN OTHERWISE AVAILABLE. THE USE OF OUR EQUIPMENT TO HANDLE MATERIALS OTHER THAN FREE FLOWING, NONABRASIVE AND DRY MATERIALS, AS INTENDED, WILL RESULT IN THE VOIDING OF THIS LIMITED WARRANTY.

THE FOREGOING WARRANTY SHALL NOT COVER PRODUCTS OR PARTS WHICH HAVE BEEN DAMAGED BY NEGLIGENT USE, MISUSE, ALTERATION, OR ACCIDENT. ANY NEGLIGENT USE, MISUSE, ALTERATION, OR DAMAGE DUE TO ACCIDENT, AS DETERMINED BY A COMPANY REPRESENTATIVE, MAY VOID THE WARRANTY. THIS WARRANTY COVERS ONLY PRODUCTS MANUFACTURED BY THE COMPANY. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED. WE RESERVES THE RIGHT TO MAKE DESIGN OR SPECIFICATION CHANGES AT ANY TIME, BEARING NO RESPONSIBILITY TO MAKE SIMILAR DESIGN OR SPECIFICATION CHANGES ON PREVIOUSLY SOLD MERCHANDISE.

PRIOR TO INSTALLATION, PURCHASER HAS THE RESPONSIBILITY TO RESEARCH AND COMPLY WITH ALL FEDERAL, STATE, AND LOCAL CODES WHICH MAY APPLY TO THE LOCATION AND INSTALLATION.

07/21/98

This Equipment shall be installed in accordance with the current installation codes and applicable regulations which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installation occurs.

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