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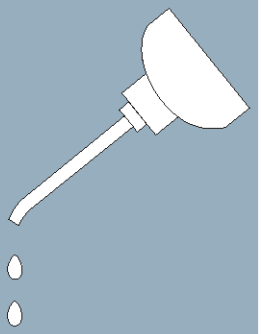
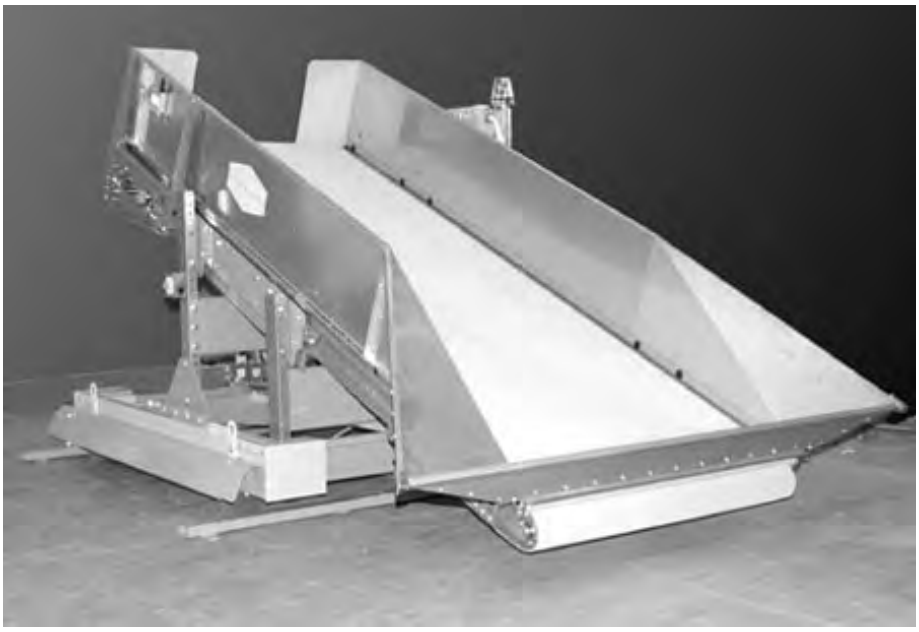
Installation and Service

CF6012TS, CF6014CS, CF6014MS, CF6014TS and CF6014VS





Read the separate safety manual before installing, operating, or servicing

PELLERIN MILNOR CORPORATION POST OFFICE BOX 400, KENNER, LOUISIANA 70063-0400, U.S.A.

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MPICF60TAE/19193A

PELLERIN MILNOR CORPORATION
LIMITED STANDARD WARRANTY

We warrant to the original purchaser that MILNOR machines including electronic hardware/software (hereafter referred to as "equipment"), will be free from defects in material and workmanship for a period of one year from the date of shipment (unless the time period is specifically extended for certain parts pursuant to a specific MILNOR published extended warranty) from our factory with no operating hour limitation. This warranty is contingent upon the equipment being installed, operated and serviced as specified in the operating manual supplied with the equipment, and operated under normal conditions by competent operators.

Providing we receive written notification of a warranted defect within 30 days of its discovery, we will—at our option—repair or replace the defective part or parts, EX Factory (labor and freight specifically NOT included). We retain the right to require inspection of the parts claimed defective in our factory prior to repairing or replacing same. We will not be responsible, or in any way liable, for unauthorized repairs or service to our equipment, and this warranty shall be void if the equipment is tampered with, modified, or abused, used for purposes not intended in the design and construction of the machine, or is repaired or altered in any way without MILNOR's written consent.

Parts damaged by exposure to weather, to aggressive water, or to chemical attack are not covered by this warranty. For parts which require routine replacement due to normal wear—such as gaskets, contact points, brake and clutch linings, belts, hoses, and similar parts—the warranty time period is 90 days.

We reserve the right to make changes in the design and/or construction of our equipment (including purchased components) without obligation to change any equipment previously supplied.

ANY SALE OR FURNISHING OF ANY EQUIPMENT BY MILNOR IS MADE ONLY UPON THE EXPRESS UNDERSTANDING THAT MILNOR MAKES NO EXPRESSED OR IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR USE OR PURPOSE OR ANY OTHER WARRANTY IMPLIED BY LAW INCLUDING BUT NOT LIMITED TO REDHIBITION. MILNOR WILL NOT BE RESPONSIBLE FOR ANY COSTS OR DAMAGES ACTUALLY INCURRED OR REQUIRED AS A RESULT OF: THE FAILURE OF ANY OTHER PERSON OR ENTITY TO PERFORM ITS RESPONSIBILITIES, FIRE OR OTHER HAZARD, ACCIDENT, IMPROPER STORAGE, MIS-USE, NEGLECT, POWER OR ENVIRONMENTAL CONTROL MALFUNCTIONS, DAMAGE FROM LIQUIDS, OR ANY OTHER CAUSE BEYOND THE NORMAL RANGE OF USE. REGARDLESS OF HOW CAUSED, IN NO EVENT SHALL MILNOR BE LIABLE FOR SPECIAL, INDIRECT, PUNITIVE, LIQUIDATED, OR CONSEQUENTIAL COSTS OR DAMAGES, OR ANY COSTS OR DAMAGES WHATSOEVER WHICH EXCEED THE PRICE PAID TO MILNOR FOR THE EQUIPMENT IT SELLS OR FURNISHES.

THE PROVISIONS ON THIS PAGE REPRESENT THE ONLY WARRANTY FROM MILNOR AND NO OTHER WARRANTY OR CONDITIONS, STATUTORY OR OTHERWISE, SHALL BE IMPLIED.

WE NEITHER ASSUME, NOR AUTHORIZE ANY EMPLOYEE OR OTHER PERSON TO ASSUME FOR US, ANY OTHER RESPONSIBILITY AND/OR LIABILITY IN CONNECTION WITH THE SALE OR FURNISHING OF OUR EQUIPMENT TO ANY BUYER.

BMP720097/19036

BIUUUD19 (Published) Book specs- Dates: 20081231 / 20081231 / 20081231 Lang: ENG01 Applic: UUU

How to Get the Necessary Repair Components

This document uses Simplified Technical English.
Learn more at http://www.asd-ste100.org.

You can get components to repair your machine from the approved supplier where you got this machine. Your supplier will usually have the necessary components in stock. You can also get components from the Milnor® factory.

Tell the supplier the machine model and serial number and this data for each necessary component:

- The component number from this manual
- The component name if known
- The necessary quantity
- The necessary transportation requirements
- If the component is an electrical component, give the schematic number if known.
- If the component is a motor or an electrical control, give the nameplate data from the used component.

To write to the Milnor factory:

Pellerin Milnor Corporation
Post Office Box 400
Kenner, LA 70063-0400
UNITED STATES

Telephone: 504-467-2787
Fax: 504-469-9777
Email: parts@milnor.com

— End of BIUUUD19 —

Trademarks

BNUUUU02.R01 0000158093 A.2 7/13/17 1:11 PM Released

These words are trademarks of Pellerin Milnor Corporation and other entities:

Table 1 Trademarks

AutoSpot™	GreenTurn™	Milnor®	PulseFlow®
CBW®	GreenFlex™	MilMetrix®	PurePulse®
Drynet™	Hydro-cushion™	MilTouch™	Ram Command™
E-P Express®	Linear Costa Master™	MilTouch-EX™	RecircONE®
E-P OneTouch®	Linear Costo™	Miltrac™	RinSave®
E-P Plus®	Mentor®	MultiTrac™	SmoothCoil™
Gear Guardian®	Mildata®	PBW™	Staph Guard®

End of document: BNUUUU02

BIUUUS27 (Published) Book specs- Dates: 20051111 / 20051111 / 20060323 Lang: ENG01 Applic: VIP VSR VSL VSE VST VGU

Safety—Shuttle

1. General Safety Requirements—Vital Information for Management Personnel [Document BIUUUS04]

Incorrect installation, neglected preventive maintenance, abuse, and/or improper repairs, or changes to the machine can cause unsafe operation and personal injuries, such as multiple fractures, amputations, or death. The owner or his selected representative (owner/user) is responsible for understanding and ensuring the proper operation and maintenance of the machine. The owner/user must familiarize himself with the contents of all machine instruction manuals. The owner/user should direct any questions about these instructions to a Milnor® dealer or the Milnor® Service department.

Most regulatory authorities (including OSHA in the USA and CE in Europe) hold the owner/user ultimately responsible for maintaining a safe working environment. Therefore, the owner/user must do or ensure the following:

- recognize all foreseeable safety hazards within his facility and take actions to protect his personnel, equipment, and facility;
- work equipment is suitable, properly adapted, can be used without risks to health or safety, and is adequately maintained;
- where specific hazards are likely to be involved, access to the equipment is restricted to those employees given the task of using it;
- only specifically designated workers carry out repairs, modifications, maintenance, or servicing;
- information, instruction, and training is provided;
- workers and/or their representatives are consulted.

Work equipment must comply with the requirements listed below. The owner/user must verify that installation and maintenance of equipment is performed in such a way as to support these requirements:

- control devices must be visible, identifiable, and marked; be located outside dangerous zones; and not give rise to a hazard due to unintentional operation;
- control systems must be safe and breakdown/damage must not result in danger;
- work equipment is to be stabilized;
- protection against rupture or disintegration of work equipment;
- guarding, to prevent access to danger zones or to stop movements of dangerous parts before the danger zones are reached. Guards to be robust; not give rise to any additional hazards; not be easily removed or rendered inoperative; situated at a sufficient distance from the danger zone; not restrict view of operating cycle; allow fitting, replacing, or maintenance by restricting access to relevant area and without removal of guard/protection device;
- suitable lighting for working and maintenance areas;
- maintenance to be possible when work equipment is shut down. If not possible, then protection measures to be carried out outside danger zones;
- work equipment must be appropriate for preventing the risk of fire or overheating; discharges of gas, dust, liquid, vapor, other substances; explosion of the equipment or substances in it.

1.1. **Laundry Facility**—Provide a supporting floor that is strong and rigid enough to support–with a reasonable safety factor and without undue or objectionable deflection–the weight of the fully loaded machine and the forces transmitted by it during operation. Provide sufficient clearance for machine movement. Provide any safety guards, fences, restraints, devices, and verbal and/or posted restrictions necessary to prevent personnel, machines, or other moving machinery from accessing the machine or its path. Provide adequate ventilation to carry away heat and vapors. Ensure service connections to installed machines meet local and national safety standards, especially regarding the electrical disconnect (see the National Electric Code). Prominently post safety information, including signs showing the source of electrical disconnect.

WARNING 1: Collision, Crushing and Pinch Hazards—Serious bodily injury or death can result to personnel in proximity to machinery/systems that traverse, elevate, extend, pivot, and/or tilt. The following mandatory minimum safety requirements must be installed with the machinery system: • Safety fence inclosing machine movement areas, • Lockable electrical interlocks on all gates, properly interfaced as shown on machine schematics, to disable machine movement when any gate is opened, • Signs to alert personnel to these hazards, placed prominently around the fenced area. Local codes may require additional precautions.

1.2. **Personnel**—Inform personnel about hazard avoidance and the importance of care and common sense. Provide personnel with the safety and operating instructions that apply to them. Verify that personnel use proper safety and operating procedures. Verify that personnel understand and abide by the warnings on the machine and precautions in the instruction manuals.

1.3. **Safety Devices**—Ensure that no one eliminates or disables any safety device on the machine or in the facility. Do not allow machine to be used with any missing guard, cover, panel or door. Service any failing or malfunctioning device before operating the machine.

1.4. **Hazard Information**—Important information on hazards is provided on the machine safety placards, in the Safety Guide, and throughout the other machine manuals. **Placards must be kept clean so that the information is not obscured. They must be replaced immediately if lost or damaged. The Safety Guide and other machine manuals must be available at all times to the appropriate personnel.** See the machine service manual for safety placard part numbers. Contact the Milnor Parts department for replacement placards or manuals.

1.5. **Maintenance**—Ensure the machine is inspected and serviced in accordance with the norms of good practice and with the preventive maintenance schedule. Replace belts, pulleys, brake shoes/disks, clutch plates/tires, rollers, seals, alignment guides, etc. before they are severely worn. Immediately investigate any evidence of impending failure and make needed repairs (e.g., cylinder, shell, or frame cracks; drive components such as motors, gear boxes, bearings, etc., whining, grinding, smoking, or becoming abnormally hot; bending or cracking of cylinder, shell, frame, etc.; leaking seals, hoses, valves, etc.) Do not permit service or maintenance by unqualified personnel.

2. Safety Alert Messages—Internal Electrical and Mechanical Hazards [Document BIUUUS11]

The following are instructions about hazards inside the machine and in electrical enclosures.

WARNING 2: Electrocution and Electrical Burn Hazards—Contact with electric power can kill or seriously injure you. Electric power is present inside the cabinetry unless the main machine power disconnect is off.

- Do not unlock or open electric box doors.

- Do not remove guards, covers, or panels.
- Do not reach into the machine housing or frame.
- Keep yourself and others off of machine.
- Know the location of the main machine disconnect and use it in an emergency to remove all electric power from the machine.

WARNING 3: Entangle and Crush Hazards—Contact with moving components normally isolated by guards, covers, and panels, can entangle and crush your limbs. These components move automatically.

- Do not remove guards, covers, or panels.
- Do not reach into the machine housing or frame.
- Keep yourself and others off of machine.
- Know the location of all emergency stop switches, pull cords, and/or kick plates and use them in an emergency to stop machine motion.

3. Safety Alert Messages—External Mechanical Hazards [Document BIUUUS12]

The following are instructions about hazards around the front, sides, rear or top of the machine.

CAUTION 4: Strike and Crush Hazards—A traveling machine such as a shuttle can strike, crush, or entrap you if you ride on it or enter its path. Traveling machines or their components can move automatically in any direction. Placing a system machine on line by energizing the machine control may immediately summon a shuttle or other traveling machine.

- Keep yourself and others off of machine.
- Keep yourself and others clear of movement areas and paths.
- Understand the consequences of placing a system machine on line.
- Know the location of all emergency stop switches, pull cords, and/or kick plates and use them in an emergency to stop machine motion.
- Know the location of the main machine disconnect and use it in an emergency to remove all electric power from the machine.

CAUTION 5: Crush and Entrap Hazards—A traveling machine such as a shuttle can crush or entrap you if the bed or bucket descends while you are under it. The bed or bucket can descend with power off or on.

- Keep yourself and others clear of movement areas and paths.

WARNING 6: Fall, Entangle, and Strike Hazards—Machine motion can cause you to fall or become entangled in or struck by nearby objects if you stand, walk, or ride on the machine. Shuttles and conveyor belts move automatically.

- Keep yourself and others off of machine.

4. Safety Alert Messages—Unsafe Conditions [Document BIUUUS14]

4.1. Damage and Malfunction Hazards

4.1.1. Hazards Resulting from Inoperative Safety Devices

WARNING 7: Multiple Hazards—Operating the machine with an inoperative safety device can kill or injure personnel, damage or destroy the machine, damage property, and/or void the warranty.

- Do not tamper with or disable any safety device or operate the machine with a malfunctioning safety device. Request authorized service.

WARNING 8: Electrocution and Electrical Burn Hazards—Electric box doors—Operating the machine with any electric box door unlocked can expose high voltage conductors inside the box.

- Do not unlock or open electric box doors.

WARNING 9: Entangle and Crush Hazards—Guards, covers, and panels—Operating the machine with any guard, cover, or panel removed exposes moving components.

- Do not remove guards, covers, or panels.

4.1.2. Hazards Resulting from Damaged Mechanical Devices

WARNING 10: Multiple Hazards—Operating a damaged machine can kill or injure personnel, further damage or destroy the machine, damage property, and/or void the warranty.

- Do not operate a damaged or malfunctioning machine. Request authorized service.

WARNING 11: Crush Hazards—Chain and hoist—A broken chain or a malfunctioning hoist can permit the belt/bucket assembly to fall or descend.

- Do not operate the machine with any evidence of damage or malfunction.

4.2. Careless Use Hazards

4.2.1. Careless Operation Hazards—Vital Information for Operator Personnel (see also operator hazards throughout manual)

WARNING 12: Multiple Hazards—Careless operator actions can kill or injure personnel, damage or destroy the machine, damage property, and/or void the warranty.

- Do not tamper with or disable any safety device or operate the machine with a malfunctioning safety device. Request authorized service.
- Do not operate a damaged or malfunctioning machine. Request authorized service.
- Do not attempt unauthorized servicing, repairs, or modification.
- Do not use the machine in any manner contrary to the factory instructions.
- Use the machine only for its customary and intended purpose.
- Understand the consequences of operating manually.

CAUTION 13: Goods Damage and Wasted Resources—Entering incorrect cake data causes improper processing, routing, and accounting of batches.

- Understand the consequences of entering cake data.

WARNING 14: Strike and Crush Hazards—Carelessly moving the machine with manual controls can cause it to strike, crush, entrap, or entangle personnel. You have total control of machine movement immediately after setting the Manual/Automatic switch to manual.

- Keep yourself and others clear of movement areas and paths.
- Understand the consequences of operating manually.

4.2.2. Careless Servicing Hazards—Vital Information for Service Personnel (see also service hazards throughout manuals)

WARNING 15: Electrocution and Electrical Burn Hazards—Contact with electric power can kill or seriously injure you. Electric power is present inside the cabinetry unless the main machine power disconnect is off.

- Do not service the machine unless qualified and authorized. You must clearly understand the hazards and how to avoid them.
- Abide by the current OSHA lockout/tagout standard when lockout/tagout is called for in the service instructions. Outside the USA, abide by the OSHA standard in the absence of any other overriding standard.

WARNING 16: Entangle and Crush Hazards—Contact with moving components normally isolated by guards, covers, and panels, can entangle and crush your limbs. These components move automatically.

- Do not service the machine unless qualified and authorized. You must clearly understand the hazards and how to avoid them.
- Abide by the current OSHA lockout/tagout standard when lockout/tagout is called for in the service instructions. Outside the USA, abide by the OSHA standard in the absence of any other overriding standard.

WARNING 17: Crush and Entrap Hazards—A traveling machine such as a shuttle can crush or entrap you if the bed or bucket descends while you are under it. The bed or bucket can descend with power off or on.

- Secure both red safety pins in accordance with the instructions furnished, then lock out and tag out power at the main machine disconnect before working under bed or bucket.

WARNING 18: Strike and Crush Hazards—A traveling machine such as a shuttle can strike, crush, or entrap you if you ride on it or enter its path. Traveling machines or their components can move automatically in any direction. Placing a system machine on line by energizing the machine control may immediately summon a shuttle or other traveling machine.

- Lock out and tag out power to the traveling machine at the main machine disconnect if you must work in the path of the traveling machine.

— End of BIUUUS27 —

1 Installation

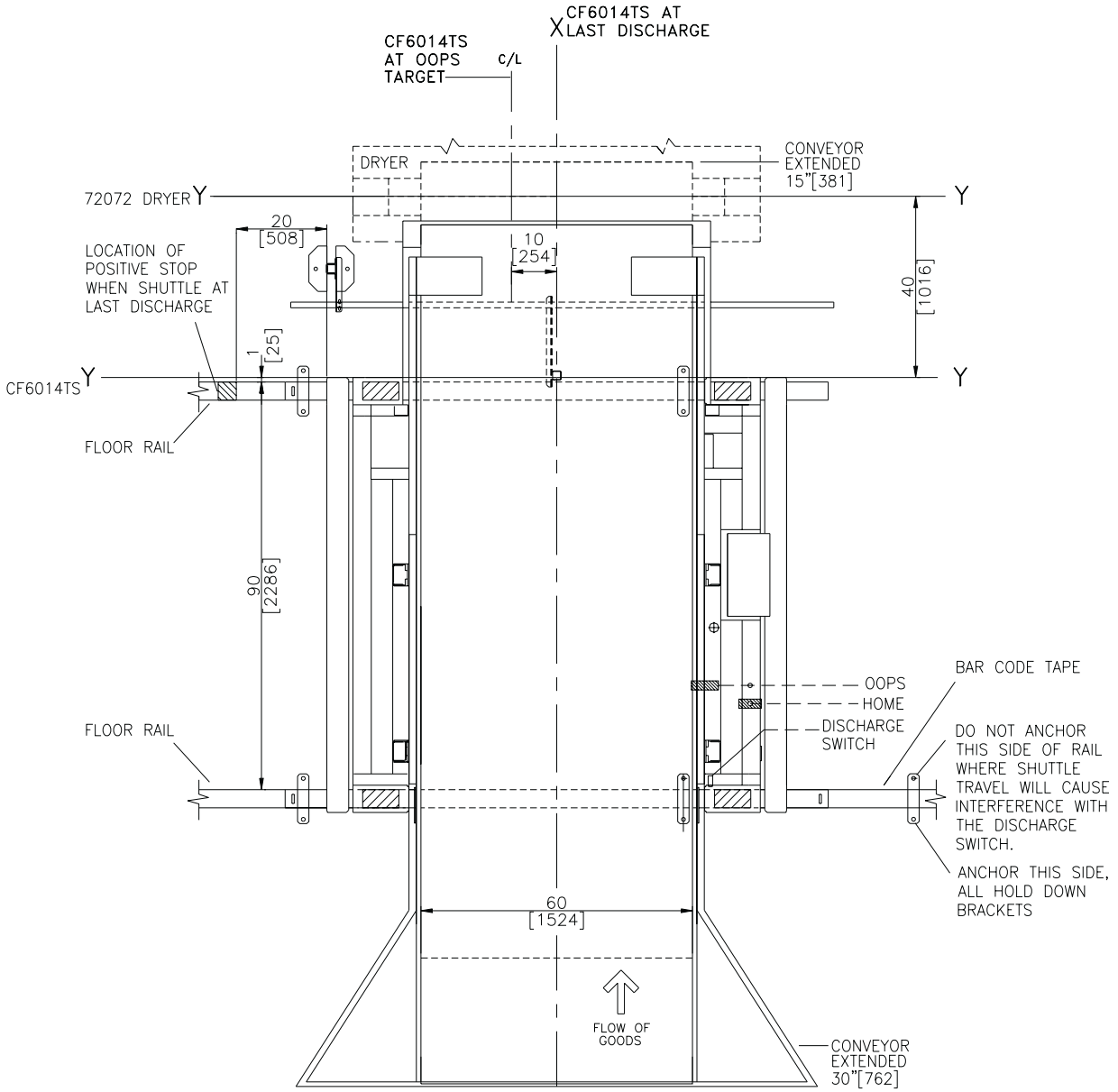
Pellerin Milnor Corporation
P. O. Box 400, Kenner, LA 70063-0400

Litho in U.S.A.

Rail Installation:

Rail Placement

SEE DIMENSIONAL DRAWING, BDCF60TSBE, FOR ADDITIONAL DIMENSIONAL INFORMATION. FOR THE CF6014TS SHUTTLE AND RAILS.



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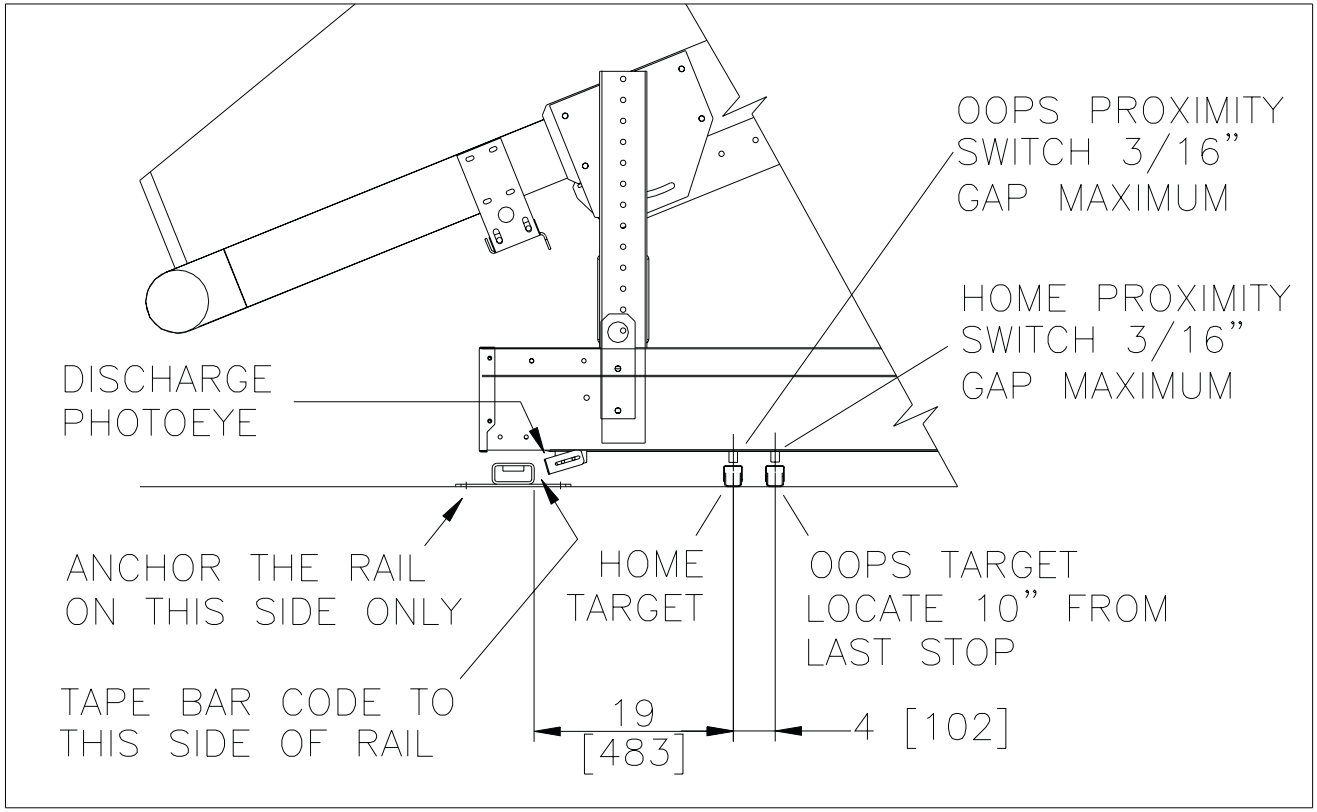
Litho in U.S.A.

Rail Installation:

Switch & Target Settings



Switches, Targets & Bar Code Installation

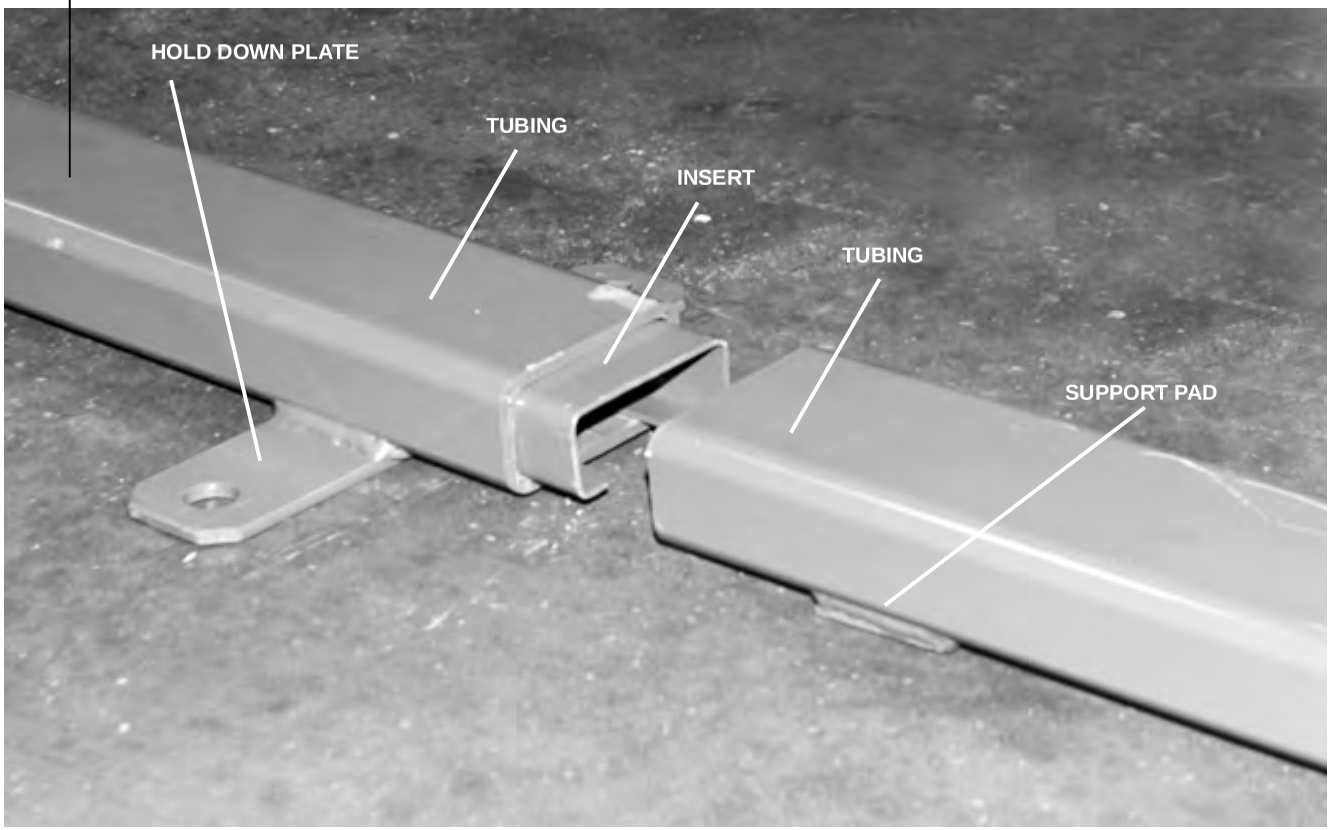
Pellerin Milnor Corporation
P. O. Box 400, Kenner, LA 70063-0400

Litho in U.S.A.

Rail Installation:

Floor Rail

SEE DIMENSIONAL DRAWING, BDCF60TSBE, FOR PROPER PLACEMENT OF FLOOR RAIL.



INSTALL TUBING INSERT AT EACH CONNECTION TO INSURE PROPER ALIGNMENT.
GROUT UNDER EVERY HOLD DOWN PLATE AND SUPPORT PAD.

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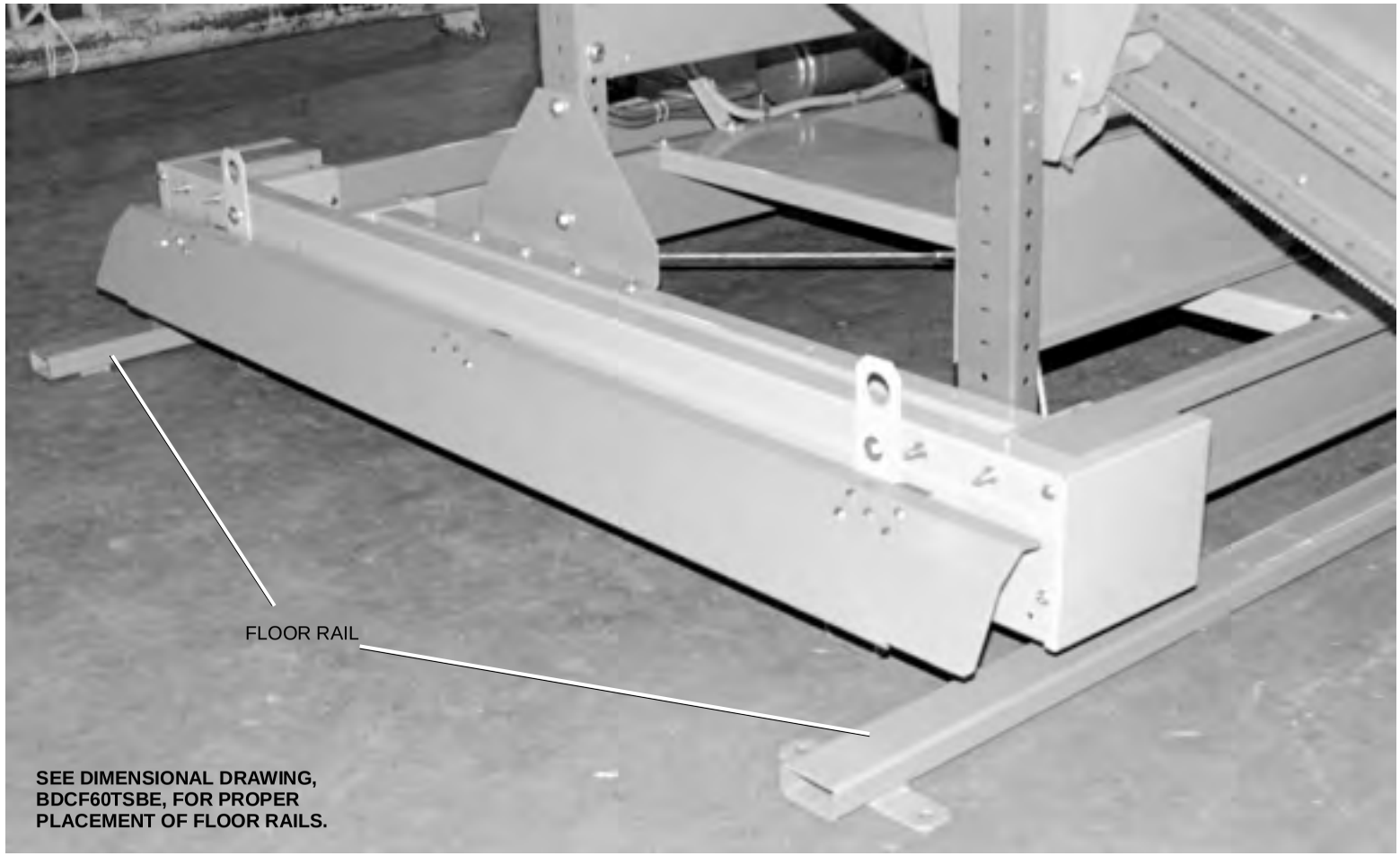
Rail Installation:

Floor Rail



SEE DIMENSIONAL DRAWING, BDCF60TSBE, FOR PROPER PLACEMENT OF FLOOR RAILS.

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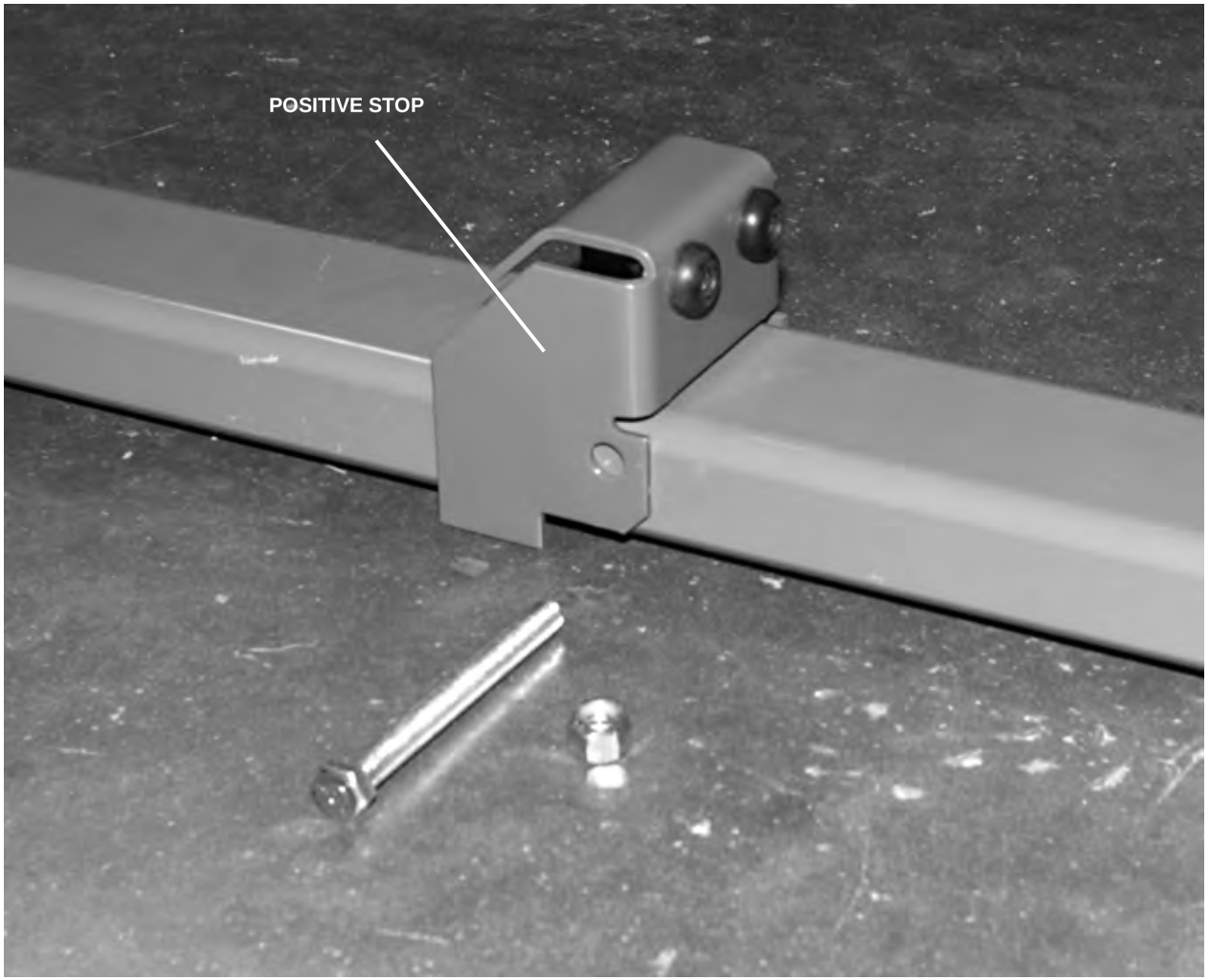
Rail Installation:

Floor Rail Positive Stop



BRING SHUTTLE TO THE LAST DISCHARGE. THEN, LOCATE POSITIVE STOP 20” AWAY FROM KICK PLATE.

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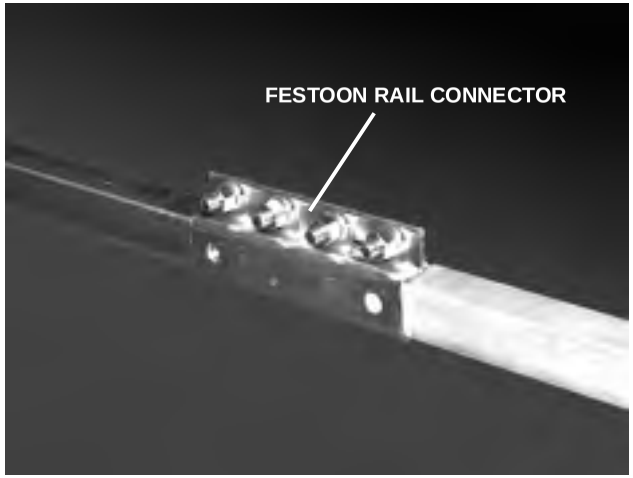
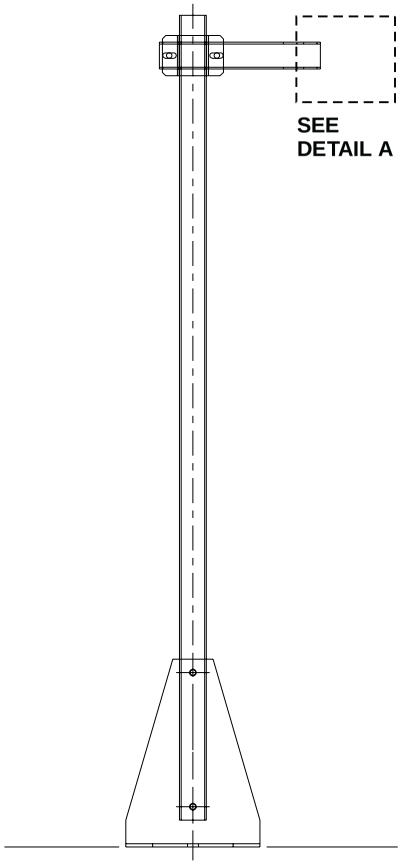
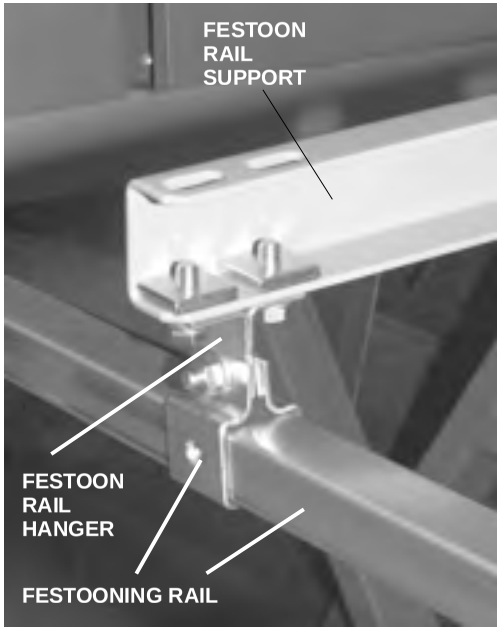
Rail Installation:

Festooning Rail





FESTOON RAIL
SUPPORT ASSEMBLY



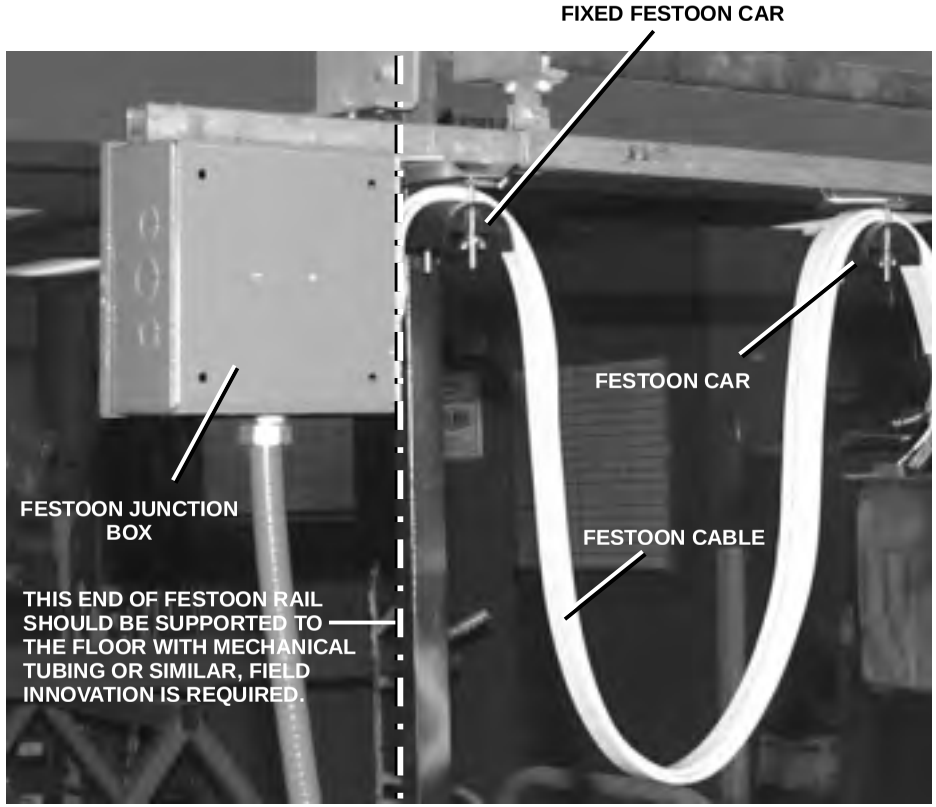
DETAIL A

Pellerin Milnor Corporation
P. O. Box 400, Kenner, LA 70063-0400

Litho in U.S.A.

Festoon Installation:

Shuttle Festoon Connection



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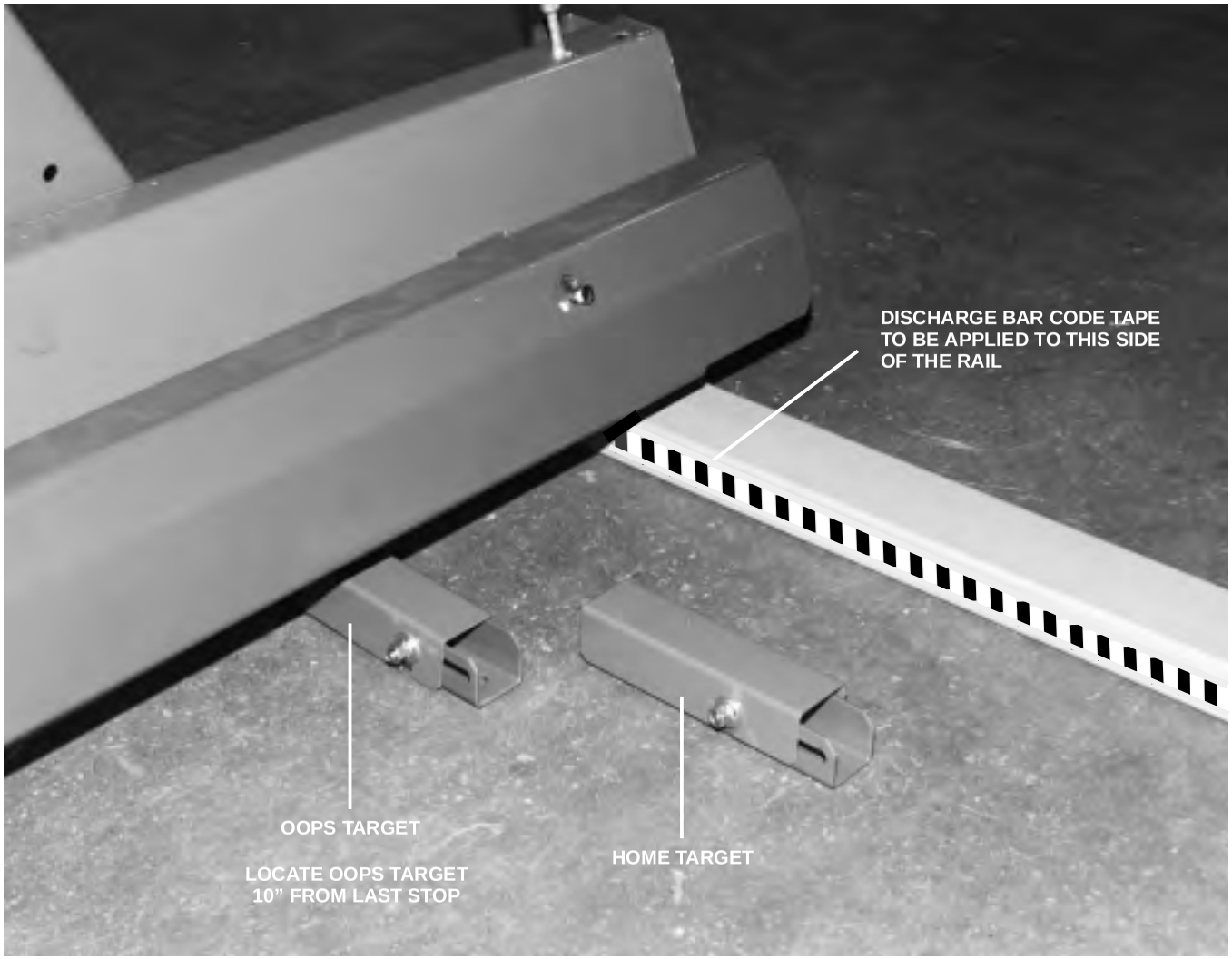
Litho in U.S.A.

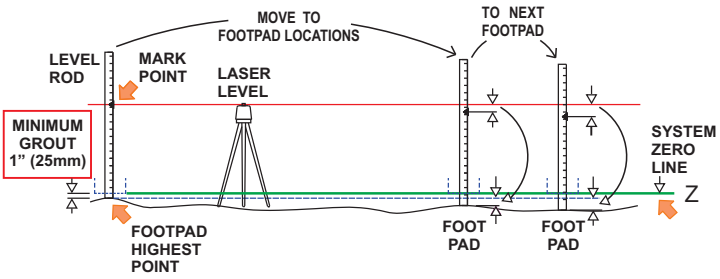
Target Installation:



ATTENTION INSTALLERS!

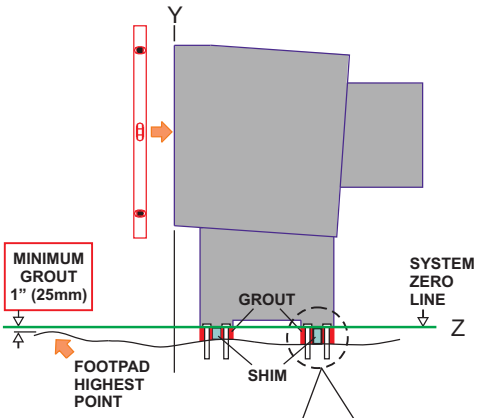
FLOOR IS UNEVEN

- Establish System Zero Line or Z.
- Find highest point in factory floor where footpads will be located.
- System Zero Line or Z is 1" above highest point.



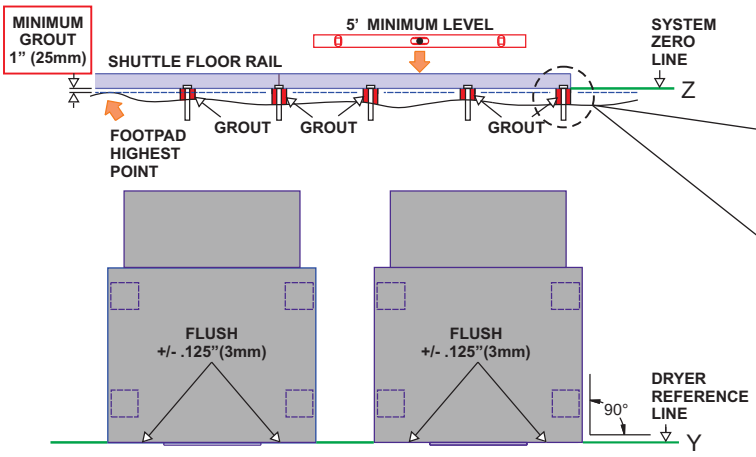
DRYER FEET MUST BE GROUTED

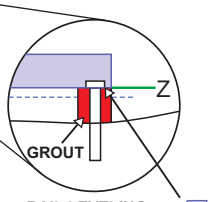
- Shim & level to System Zero Line or Z.
- Grout & anchor all brackets.

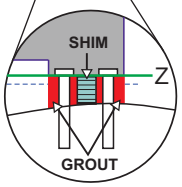


SHUTTLE RAIL BRACKETS MUST BE GROUTED TO Z

- Shim & level to System Zero Line or Z.
- Grout & anchor all brackets.

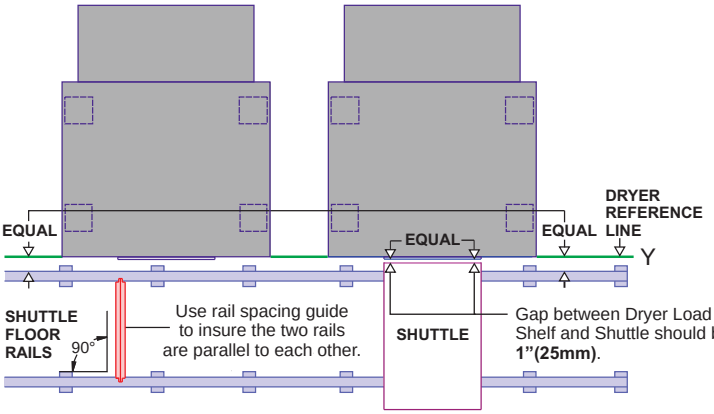


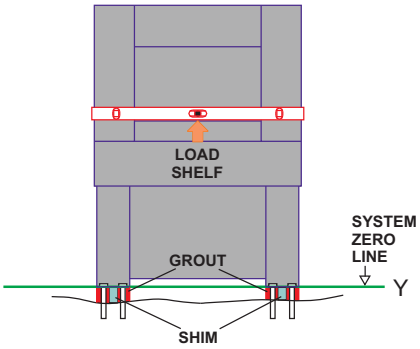




RAIL LEVELING PLATES ARE ALSO PROVIDED FOR FINE ADJUSTMENT OF RAIL.

DRYER FACES MUST BE FLUSH





DRYER MUST BE LEVEL

SHUTTLE RAILS MUST BE PERFECTLY PARALLEL TO DRYER FACES

- Floor rails must be parallel, level, and square along entire length of rail.

B2T2007003/2019193A

Installation of the Laser Positioner for Traversing Shuttles

NOTICE P1: "Remove power from the machine" means use the necessary safety procedure for your location. In the USA, this is the OSHA lockout/tagout (LOTO) procedure. More local requirements can also apply.

Milnor traversing shuttles manufactured after December 2010 are provided with a laser system to control shuttle travel along the rail (traverse) and the positions at which the shuttle stops. An older shuttle can be retrofitted with this system if it meets the following criteria:

- The system has, or is upgraded to Dryer/Shuttle controller (Drynet) software version 21010 or later and shuttle software with a matching date code.
- The shuttle has, or is upgraded to the microprocessor board with part number 08BSPE2T (2004 to current). The 08BSPE1T (circa 2000) and 08BSPET (circa 1994) will not work.
- The shuttle manual controls are housed in a stationary cabinet, not a shuttle-mounted box.

The laser positioner replaces the switches, targets, and mounting hardware previously used for this purpose. The laser positioner system uses the Banner L-Gage LT7 Laser.

1. Hardware Installation

WARNING 1: Strike and Crush Hazards—A traveling machine such as a shuttle can strike, crush, or entrap you if you ride on it or enter its path. Traveling machines or their components can move automatically in any direction. Placing a system machine on line by energizing the machine control may immediately summon a shuttle or other traveling machine.

- Except where specified in this instruction, remove power from the machine to work in or near the shuttle path.

The laser beam must be parallel with the axis of shuttle travel. Typically the laser and target are mounted approximately 7 feet (1.8 meters) above the floor and and horizontally centered on the shuttle frame, but this can be modified to suit the individual circumstances. The beam must be unobstructed at all times. Locate the hardware with respect to the shuttle as follows:

Stationary laser support post—in proximity to the stationary shuttle control cabinet.
Reflector—on the shuttle frame. Detailed mounting instructions follow.

Install the hardware as shown in the figures below. It is necessary to install the laser on the support post but not anchor the post until the laser is aligned with the target.

CAUTION 2: Risk of Costly Damage—Until the laser support post is anchored, it can fall if it or the cable is hit by an object such as a fork lift. This will likely destroy the laser.

- Use care to keep clear of the post except to intentionally reposition it during alignment.
- Route the cable away from any interference and secure it.

Figure 1: Laser to Post

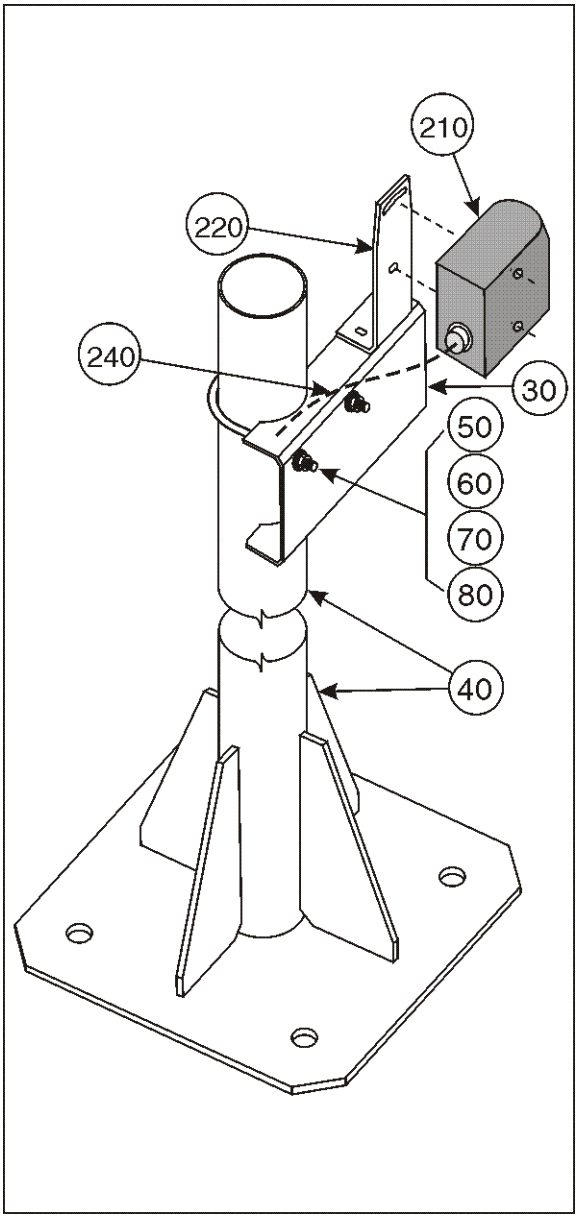


Figure 2: Reflector to Shuttle (Tube or J-rail frame)

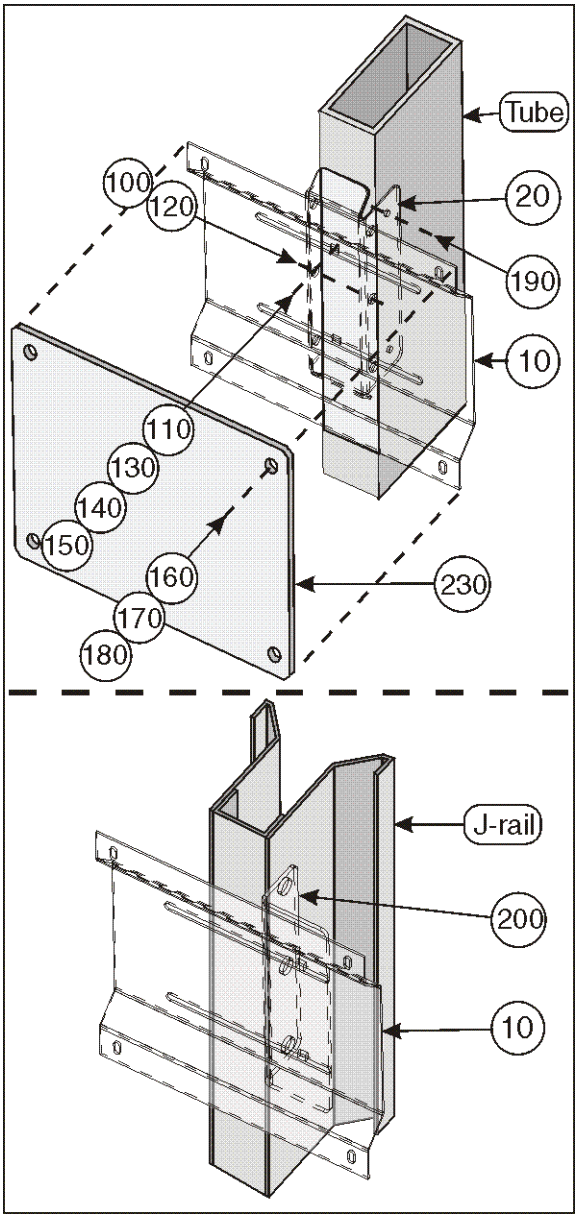


Table 1: Parts List for Figure 1 and Figure 2

Find the assembly for your machine and the letter shown in the "Item" column. The components for your machine will show this letter or the word "all" in the "Used In" column. The numbers shown in the "Item" column are those shown in the illustrations.				
Used In	**Item**	**Part Number**	**Description/Nomenclature**	**Comments**
Assemblies				
all	A	ALC420223	All mounting hardware except laser manufacturer components.	
Components				
A	10	04 24176	LASER TARGET FRAME	
A	20	04 24177	LASER TARGET TUBE RAIL MTG	Use with tubing type vertical frame member.
A	30	04 24146	LASER MTG CHANNEL	
A	40	W4 24180	LASER MOUNTING POST WLMT	
A	50	27A035C	U-BOLT 3/8-16X5.36 #0127316	
A	60	15U246	FLATWASHER 1"ODX25/64IDX1/8"30	
A	70	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
A	80	15G205	HXNUT 3/8-16UNC2B ZINC GR2	
A	100	15A002A	CARBOLT 1/4-20UNC2X3/4 ZINC GR	
A	110	15K046	HXCAPSCR 1/4-20 UNC2A X 2"GR5	
A	120	17N058	HEXRIVNUT 1/4-20 UNC-2B #2520-	
A	130	15U185	FLATWASHER(USS STD) 1/4" ZNC P	
A	140	15U180	LOCKWASHER MEDIUM 1/4 ZINCPL	
A	150	15G178	1/4"-20 HEXFLANGE NUT ZINC	
A	160	15N125	RDMACSCR 10-24UNC2AX1/2 ZC GR2	
A	170	15U135	FLATWASH#10 .4370DX.203IDX.04T	
A	180	15G126SZ	HXLOCKNUT 10-24 UNC STL/ZNC	
A	190	15P011	TRDCUT-F PANHD 10-24X1/2 NIKST	
A	200	04 24178	LASER TARGET J-RAIL MTG	Use with J-rail vertical frame member.
all	210	09RLE0001	Banner L-Gage LT7 Laser and mounting bracket	
all	220	09RLE0001B	Mounting Bracket and included fasteners	
all	230	09RLE0001R	50 meter Retro Reflector	
all	240	09RLE0001C	Multi-conductor cable and connector—30 foot (7.6 meters) length	
	Tube	--	A type of frame used on certain shuttles	
	J-rail	--	A type of frame used on certain shuttles	

2. Electrical Connections

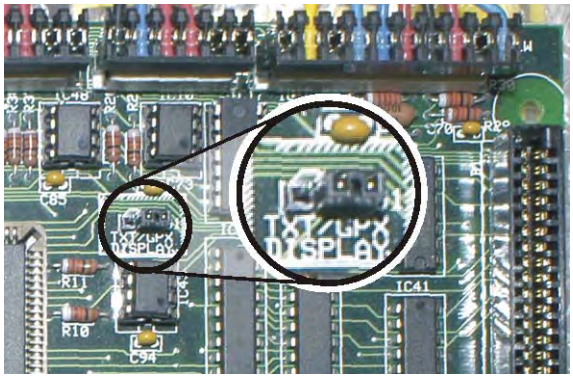
The electrical cable provided with this system has a pre-wired connector on one end that attaches to the laser. Shuttles manufactured after February 2011 have the control box end of the cable pre-wired also. The cable is secured to the control box. If the shuttle was not provided with the cable pre-wired, make connections as explained below. **Do not connect the cable to the laser until the wiring in the electric cabinet is completed.**

1. Determine the best route for the cable. Ensure that:
   - objects cannot strike the cable,
   - there is sufficient slack on each end to reach the connection points.

2. Route the cable and secure the center portion to protect against accidental movement. If not pre-wired, route the cable into the shuttle processor box through the hole in the box shown in Figure 3.
3. Set jumper J1 on the shuttle processor board to the GPX position as shown in Figure 4.

Figure 3: Hole in Shuttle Processor Box for Cable

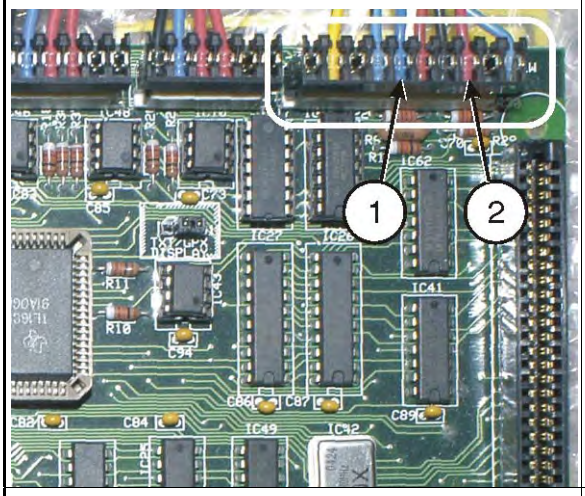
Figure 4: Jumper Position



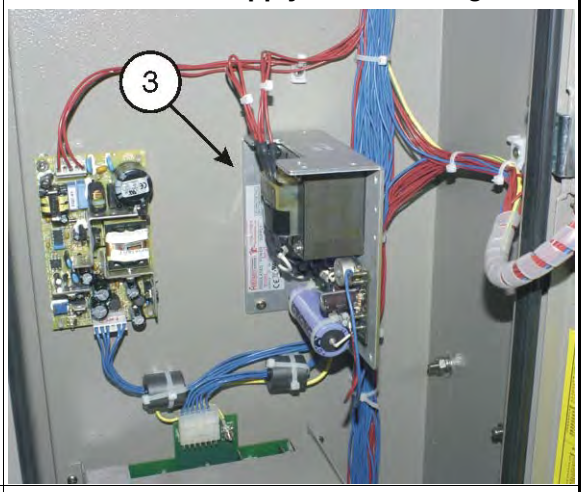
Only four of the conductors (the green, white, red, and blue wires) and the cable shield are used for this application. If the cable must be field-wired, make electrical connections as shown in Figure 5.

Figure 5: Connections—Previously Installed Shuttle

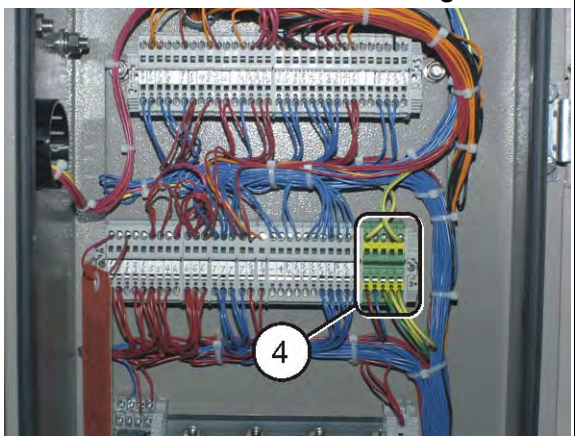
Connection Points in Processor Box



24 VDC Power Supply in Low Voltage Box



Ground Terminals in Low Voltage Box



Legend

1. MTA30, pin 5—connection point for White wire (TX+)
2. MTA30, pin 8—connection point for Gray/Pink wire (TX-)
3. 24VDC power supply—The 24VDC side is wire #102. Trace this wire to an available terminal and connect the red wire (Vcc) at this location.
4. Ground terminals—connect blue wire (Gnd) and cable shield to any available ground terminal.

3. Configure, Align, and Program

These instructions apply specifically to Banner L-Gage LT7 laser device. You received a manual with this device. **Review the safety information in this manual.** The manual provides more information than necessary to implement the laser positioner system for the shuttle. The following sections give the pertinent instructions. You can find detailed information in the Banner manual.

Display or Action	Explanation
	Energize the shuttle (at the MultiTrac or Drynet console). This will also apply power to the laser.
	Set the shuttle to the Manual mode (at the stationary shuttle control panel). This will take the shuttle off line.

Perform the procedures in this section with shuttle power on, but with the machine off line. **Use extreme care when you work in or near the shuttle path.**

3.1. Laser Configuration—Required configuration settings:

Serial interface: RS422

Baud rate: 19,200
Data Bits: 8
Stop Bits: 1
Data method: REPEAT

At the laser device:

Display or Action	Explanation
DIST mm >250000	This or a similar display indicates the laser run mode. The laser displays distance in hundredths of units.
	Accesses the laser program mode. This also activates the visible pilot laser used for alignment.
QuickSet <ENTER>	This is the first sub-menu in the Program menu.
	Scrolls the sub-menus. Select "UNIT".
UNIT <mm>	This display indicates the laser is configured for millimeter units. You can choose millimeters or inches (<inch>). If you want to change units:
	Accesses the *UNIT* field.
UNIT >mm	You can now select inch units.
	Toggles between *mm* and *inch* each time the key is pressed.
	Locks in the selected value.
UNIT <inch>	Indicates that the laser is configured for inch units. When the laser is properly aligned, the Run display will show the distance between the laser and target in hundredths of **inches**.
	Scrolls the sub-menus. Select the "SERIAL" sub-menu.
SERIAL <RS422>	This is the display you should see and indicates that the currently configured interface type is RS422. If you see any other value on the bottom line, access this field as follows.
	Accesses the field to select the type of interface.
SERIAL >RS422	You can now select another type of interface.
	Scrolls the interface types, which are: RS422, SSI 1/8, SSI1/10, and EXT.BUS. Select RS422.
	Locks in the selected value.
SERIAL <RS422>	Indicates that the laser is configured for an RS422 interface.
	Advances to the RS422 sub-menu.
RS422	Because the RS422 selection has it's own sub-menu, this display appears. This

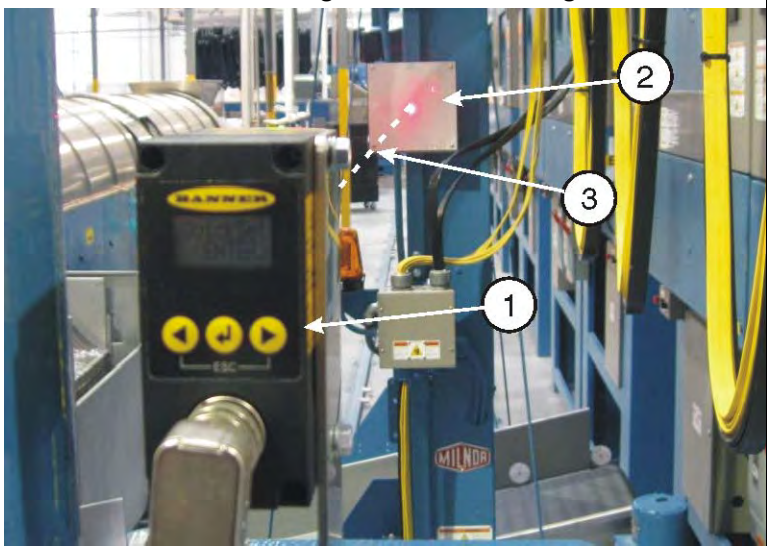
Display or Action	Explanation
<ENTER>	sub-menu has four data fields: baud rate, data bits, stop bit, and data method.
▶	Advances to the first field in the RS422 sub-menu: baud rate.
RS422 <19k2Bd>	19k2Bd is the correct value. If a different value appears on the bottom line, access this field and correct the value in the same manner as above. Otherwise, proceed to the Data Bits field.
▶	Advances to the next field in the RS422 sub-menu: data bits.
RS422 <8DATAb>	8DATAb is the correct value. If <7DATAb> appears on the bottom line, access this field and correct the value. Otherwise, proceed to the Stop Bits field.
▶	Advances to the next field: stop bits.
RS422 <1STOPb>	1STOPb is the correct value. If <2STOPb> appears on the bottom line, access this field and correct the value. Otherwise, proceed to the data method field.
▶	Advances to the next field: data method.
RS422 <REPEAT>	REPEAT is the correct value. If <SINGLE> appears on the bottom line, access this field and correct the value. Otherwise, return to the Run mode.
◀ + ▶, ◀ + ▶...	Returns to each higher-level menu, then the Run mode.

3.2. Laser and Reflector Alignment

1. At the laser device, access the program mode as previously explained. This activates the visible pilot laser used for alignment.
2. Adjust the orientation of the laser on its mounting brackets to place the beam at the center of the target.
3. Operate the shuttle in manual mode to move it along the shuttle path. Find manual operation instructions for the shuttle in the Drynet Dryer/Shuttle operator guide. As the shuttle traverses, observe the position of the beam on the target.
4. Move the laser post, and adjust the orientation of the laser and target to achieve the alignment described in Figure 6.
5. When alignment is achieved, anchor the laser post to the floor.
6. When the laser post is securely anchored, check the alignment again and make final adjustments.
7. Tighten the laser and target bracketry.

Figure 6: Laser and Reflector Alignment

View Looking from Laser to Target

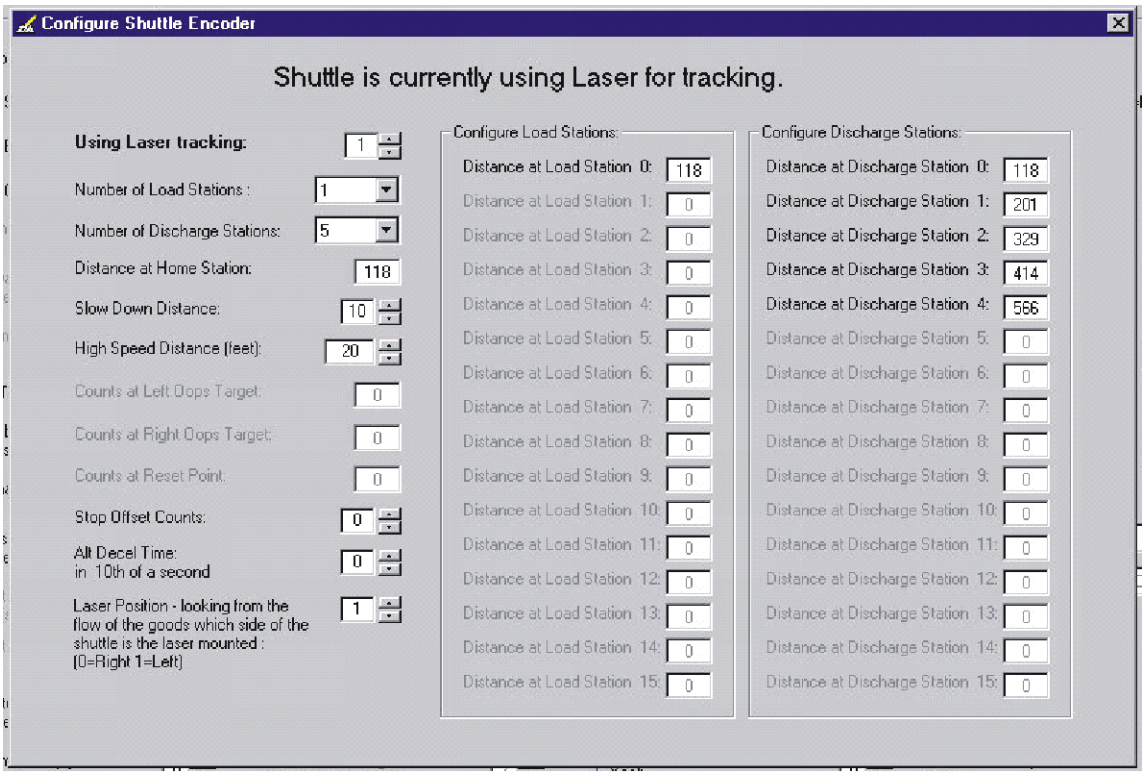


Legend

1. Laser device
2. Target
3. Laser beam. Align the laser device and the target so that the laser beam is parallel to the path of the shuttle and the beam remains centered in the target as the shuttle traverses. The reflector must be perpendicular to the laser beam and reflect the beam back to the laser. Otherwise, the laser will not register changes in distance in the run mode.

3.3. Drynet Configuration and Programming of Shuttle Stop Positions—The Drynet Dryer/Shuttle controller requires configure data to use the laser positioner. For example, it must know the distance between the laser and the target, as detected by the laser device, for each position at which the shuttle stops. Determine these values at the laser device. Enter this data at the Drynet or MultiTrac console, in the *Configure Shuttle Encoder* form (Figure 7).

Figure 7: *Configure Shuttle Encoder* **Form Configured for a Laser Device**



1. At the MultiTrac or Drynet console, access the shuttle Encoder form:
   a. In the Dryer/Shuttle Controller (DevComm Setup) window, select *Configure, Shuttles and Cobucs* on the menu. This displays one or more tabbed forms—one for each shuttle device in the system.
   b. Select the tab corresponding to the shuttle with the new laser device. This displays the main configuration form for this shuttle.
   c. Near the bottom right of the form, find the field *Shuttle has an Encoder.* Select (or re-select) the value 1. This displays the *Configure Shuttle Encoder* form (Figure 7).
2. Enter values in the fields on the left column of the encoder form in accordance with Table 2.
3. Do this procedure for each position at which the shuttle stops:
   a. At the stationary shuttle control box, manually move the shuttle to the stop position. Ensure that the shuttle is precisely aligned with the interfacing device.
   b. At the laser device, read the distance value in hundredths of units (inches or millimeters as previously configured). Hence, read the displayed value 26147 as 261 inches or millimeters.
   c. At the Drynet controller, enter this value (whole inches or millimeters) in the appropriate field:
      - Distance at Home Station
      - Distance at Load Station ___
      - Distance at Discharge Station ___

Table 2: Guidelines for Encoder Values for Laser Device

Data Field	Required Value or Guideline
Using laser tracking	1
Number of Load Stations	Per physical layout
Number of Discharge Stations	Per physical layout
Distance at Home Station	See Item 3 below.
Slow Down Distance	Between 6 and 10 inches (152 and 254 mm) recommended
High Speed Distance (feet)	Not currently implemented
Counts at Left Oops Target	Disabled and not applicable to laser device.
Counts at Right Oops Target	
Counts at Reset Point	
Stop Offset Counts	0
At Decel Time: in 10ths of a second	0
Laser Position	Face the direction that goods move as they are loaded onto the shuttle bed. If the post-mounted laser is located to the right of the shuttle, enter 0. If to the left of the shuttle, enter 1.

4. Testing

When you have entered all shuttle stop positions in the Drynet controller, test each position as explained in document BIVSRC01 "How to Test Traversing Shuttle Stop Positions."

— End of BIVSVI01 —

Service and Maintenance 2

BIVUUM01 (Published) Book specs- Dates: 20011109 / 20011109 / 20011109 Lang: ENG01 Applic: VSN

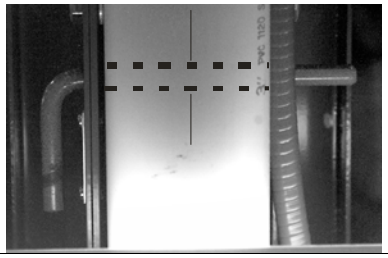
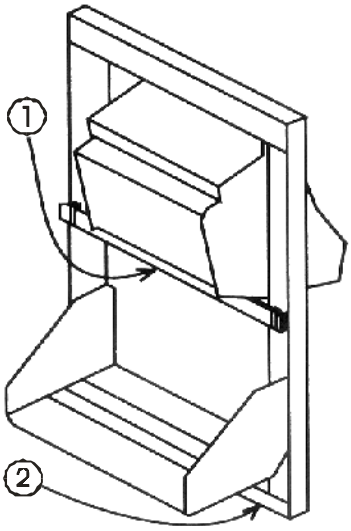
Shuttle Preventive Maintenance

1. General Information

WARNING 1: Crush Hazards—A traveling machine such as a shuttle can crush or entrap you if the bed or bucket descends while you are under it. The bed or bucket can descend with power off or on.

- Secure both red safety pins in accordance with the instructions furnished, then lock out and tag out power at the main machine disconnect before working under bed or bucket.

Figure 1: Safety Pin/Bar Use and Storage

Shuttle safety pins (inserted)	Cobuk Safety Bar
	

Legend

1. Safety bar installed
2. Safety bar storage position

2. Lubrication Precautions [Document BIUUUM01]

CAUTION 2: Machine Damage Hazard—Improper lubrication can damage machine components and cause the machine to malfunction.

- Do not mix petroleum and synthetic based lubricants.
- Do not use an unspecified lubricant without consulting the lubricant manufacturer.
- Do not apply grease with a pneumatic grease gun. Use only a hand-operated grease gun.
- Do not over-lubricate.
- Always clean grease fittings before adding grease. Clean off excess grease.
- Ensure that lubricants do not drip onto belts, brake shoes or drums.

WARNING 3: Entangle and Crush Hazards—Contact with moving components normally isolated by guards, covers, and panels, can entangle and crush your limbs. These components move automatically.

- Lock out and tag out power at the main machine disconnect before servicing, or in accordance with factory service procedures.
- Do not service machine unless qualified and authorized.

2.1. **Pumping Grease**—Pump grease slowly, taking 10-12 seconds to complete each stroke. A grease gun can build up extremely high pressure which will force seals out of position and cause them to leak.

2.2. **Grease Quantity**—Apply the quantity of grease called for in the checklist. Over-lubrication can be as damaging as under-lubrication. Where quantities are stated in strokes, one stroke of the grease gun is assumed to provide .0624 fluid oz. (1.77 grams) (by volume) of grease. Therefore, one fluid ounce (28.3 grams) of grease would be provided by 16 stokes of the grease gun. Determine the flow rate of your grease gun by pumping one ounce into a calibrated container. If fewer than 16 stokes are required, all quantities in strokes in the chart should be reduced accordingly, and if more than 16 strokes are required, the number of strokes should be increased. Before starting lubrication, make sure your grease gun is working and that you get a full charge of grease with every stroke.

2.3. **Lubricant Specifications**—Lubricant specifications are provided in the preventive maintenance checklist. Lubricants should be purchased locally. If a specified lubricant is not available locally, it is permissible to substitute a product that has been specified as equivalent by the lubricant manufacturer. If you cannot obtain either the specified lubricant or a valid equivalent locally, contact the Milnor Service Department for assistance.

3. Routine Maintenance

Notice 4: Machine Damage—Allowing too much chain slack when using manual operation to lower the shuttle beds for maintenance, can cause severe chain jams inside the hoist assembly, damaging the gear reducer and hoist assembly.

- Watch the chain coming out of the storage area when manually lowering the shuttle beds. Stop when the white painted links are visible (Figure 2).

Figure 2: Chain limit

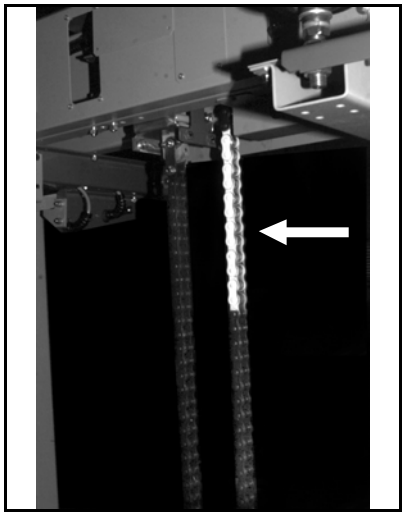


Table 1: Preventive Maintenance Checklist

Component	Procedure	Frequency	Lubricant/Figure
Hoist chain (shuttles)	Lubricate thoroughly (See machine damage notice above)	Monthly/200 hours	Procol white food lube chain and drive lubricant (or equivalent)
	Inspect the chain for wear and damage.	Annually	
Hoist gear reducer (CL and CF1440xx only), all other models use sealed gear reducers	Check oil level. Replace all solid plugs with supplied vented plugs.	At initial start up	Mobil SHC 634 Synthetic lubricant, Figure 8
	Drain oil. Clean magnetic drain plug. Refill to indicated level.	First 100 hours	
	Check oil levels. Add as necessary.	Every 3 months	
	Drain oil. Clean magnetic drain plug. Refill to indicated level.	Every 6 months	
	Grease hoist shaft bearings	Every 6 weeks	Shell Alvania EP 2 (or equivalent), Figure 8
Motors (if equipped with grease fittings)	See "MSSM0274AE...Motor Grease Instructions" in this manual.	Varies	Shell Alvania EP 2 (or equivalent)
Brake (Conwa and Conlo load conveyors only)	Over time, the air gap (Figure 7, item 1) increases, resulting in increased stop time. Adjust by alternatively turning each wear adjustment screw 1/8th of a turn until the desired air gap is reached. See the tag inside the housing for more information.	Annually	Shell Alvania EP 2 (or equivalent), Figure 7
Shuttle belts	Check condition, tension and tracking. Adjust as necessary.	Weekly	
Rail wheel grease points	Slowly grease, 2 strokes - 0.12 ounces (3.54 grams)	Every 6 weeks	Shell Alvania EP 2 (or equivalent), Figure 5
Cross member (shuttles)	Slowly grease idler pulley, 2 strokes - 0.12 ounces (3.54 grams)	Every 6 weeks	Shell Alvania EP 2 (or equivalent), Figure 3
Conveyor roller and offset drive grease points	Slowly grease, 2 strokes - 0.12 ounces (3.54 grams)	Every 6 weeks	Shell Alvania EP 2 (or equivalent), Figures 6 and 4
Cylinder oil reservoir (machines with extend or retract cylinders)	Add oil as required	Check level Monthly/200 hours	Shell Tellus 23 (or similar), Figure 9

Figure 3: Cross member grease point (chain removed for clarity)

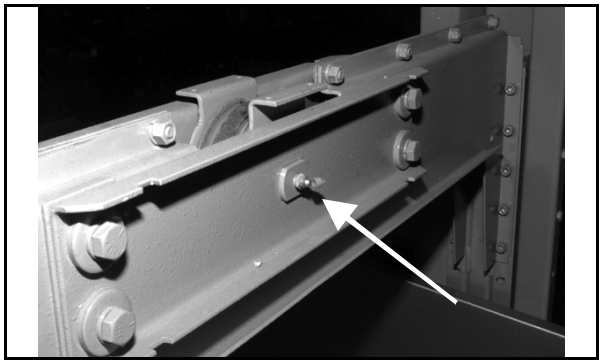


Figure 4: Offset drive grease points (if so equipped)

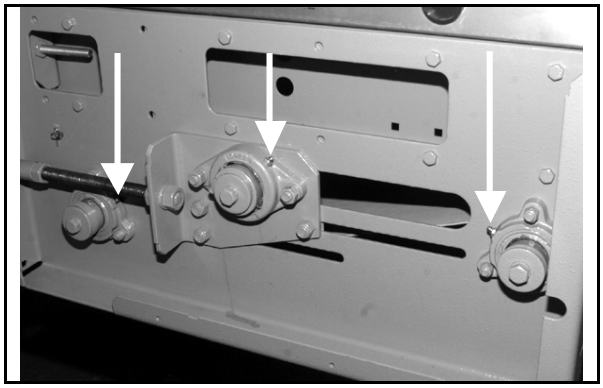


Figure 5: Rail wheel grease point

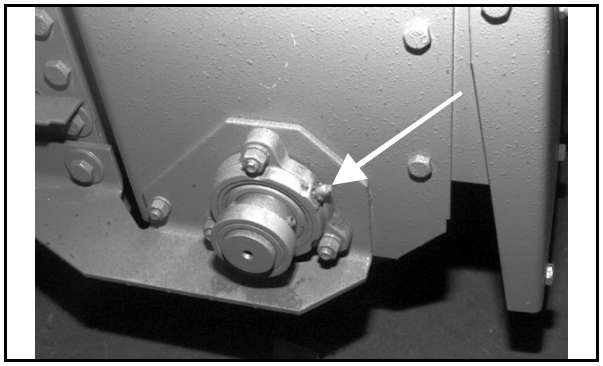


Figure 6: Conveyor roller grease point

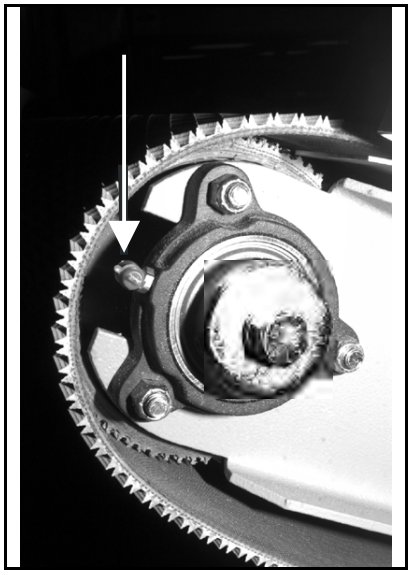


Figure 7: Conlo and Conwa brake adjustment

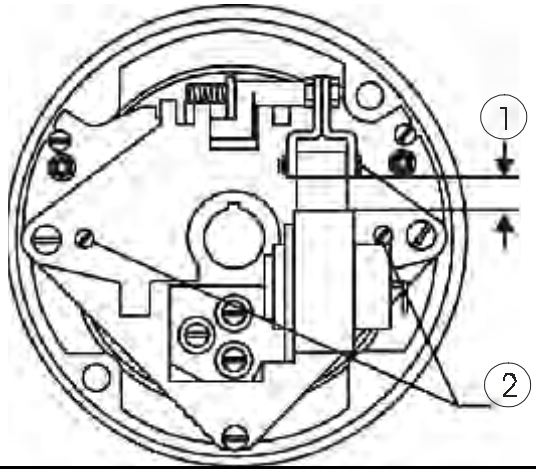
Brake wear adjustments	Legend
	**1.** 11/16" air gap **2.** Wear adjustment screws

Figure 8: CF40xxxx and CL40xxx motor and gear reducer maintenance points

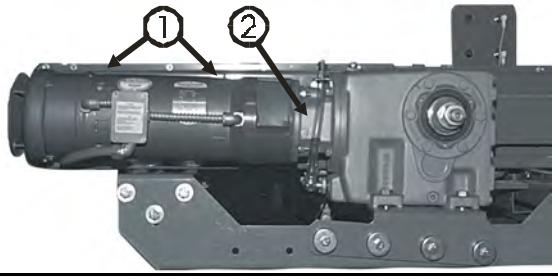
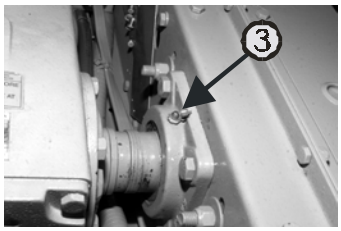
Motor and gear reducer assembly	Hoist shaft	Legend
		**1.** Hoist motor grease points **2.** Gear reducer level tube **3.** Hoist shaft grease point

Figure 9: Oil Reservoir (machines equipped with extend or retract air cylinders)

— End of BIVUUM01 —

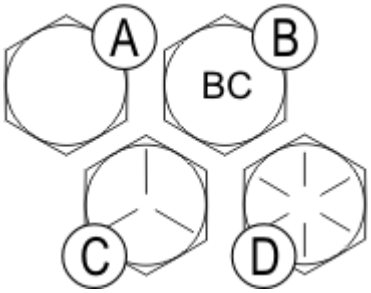
BIUUUM04 (Published) Book specs- Dates: 20180109 / 20180109 / 20180109 Lang: ENG01 Applic: UUU

Torque Requirements for Fasteners

This document uses Simplified Technical English. Learn more at http://www.asd-ste100.org.

The document about the assembly gives the torque requirements for other fasteners. **If fastener torque specifications or threadlocker requirements in an assembly document are different from this document, use the assembly document.**

Figure 1: The Bolts in Milnor® Equipment

The Marks on Bolt Heads	Legend
	**A.** SAE Grades 1 and 2, ASTM A307, and stainless steel **B.** Grade BC, ASTM A354 **C.** SAE Grade 5, ASTM A449 **D.** SAE Grade 8 and ASTM A354 BD

1. Torque Values

These tables give the standard dimension, grade, threadlocker, and torque requirements for fasteners frequently used on Milnor® equipment.

Note 1: Data from the Pellerin Milnor® Corporation “Bolt Torque Specification” (bolt_torque_milnor.xls/2002096).

1.1. Fasteners Made of Carbon Steel

1.1.1. Without a Threadlocker

Table 1: Torque Values for Standard Fasteners with Maximum 5/16-inch Diameters and No Lubricant

	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
Dimension	Pound-Inches	N-m	Pound-Inches	N-m	Pound-Inches	N-m	Pound-Inches	N-m
1/4 x 20	66	7	101	11	143	16	126	14
1/4 x 28	76	9	116	13	163	18	--	--
5/16 x 18	136	15	209	24	295	33	258	29
5/16 x 24	150	17	232	26	325	37	--	--

Table 2: Torque Values for Standard Fasteners Larger Than 5/16-inch Diameters and No Lubricant

	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
Dimension	Pound-feet	N-m	Pound-feet	N-m	Pound-feet	N-m	Pound-feet	N-m
3/8 x 16	20	27	31	42	44	59	38	52
3/8 x 24	23	31	35	47	50	68	--	--
7/16 x 14	32	43	49	66	70	95	61	83
7/16 x 20	36	49	55	75	78	105	--	--
1/2 x 13	49	66	75	102	107	145	93	126
1/2 x 20	55	75	85	115	120	163	--	--
9/16 x 12	70	95	109	148	154	209	134	182
9/16 x 18	78	106	121	164	171	232	--	--
5/8 x 11	97	131	150	203	212	287	186	252
5/8 x 18	110	149	170	231	240	325	--	--
3/4 x 10	172	233	266	361	376	510	329	446
3/14 x 16	192	261	297	403	420	569	--	--
7/8 x 9	167	226	429	582	606	821	531	719
7/8 x 14	184	249	473	641	668	906	--	--
1 x 8	250	339	644	873	909	1232	796	1079
1 x 12	274	371	704	954	994	1348	--	--
1 x 14	281	381	723	980	1020	1383	--	--
1 1/8 x 7	354	480	794	1077	1287	1745	1126	1527
1 1/8 x 12	397	538	891	1208	1444	1958	--	--
1 1/4 x 7	500	678	1120	1519	1817	2464	1590	2155
1 1/4 x 12	553	750	1241	1682	2012	2728	--	--
1 3/8 x 6	655	888	1469	1992	2382	3230	2085	2827
1 3/8 x 12	746	1011	1672	2267	2712	3677	--	--
1 1/2 x 6	869	1178	1949	2642	3161	4286	2767	3751
1 1/2 x 12	979	1327	2194	2974	3557	4822	--	--

Table 3: Torque Values for Plated Fasteners with Maximum 5/16-inch Diameters and No Lubricant

	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
Dimension	Pound-Inches	N-m	Pound-Inches	N-m	Pound-Inches	N-m	Pound-Inches	N-m
1/4 x 20	49	6	76	9	107	12	95	11
1/4 x 28	56	6	88	10	122	14	--	--
5/16 x 18	102	12	156	18	222	25	193	22
5/16 x 24	113	13	174	20	245	28	--	--

Table 4: Torque Values for Plated Fasteners Larger Than 5/16-inch Diameters and No Lubricant

	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
Dimension	Pound-feet	N-m	Pound-feet	N-m	Pound-feet	N-m	Pound-feet	N-m
3/8 x 16	15	20	23	31	33	44	29	38
3/8 x 24	17	23	26	35	37	49	--	--
7/16 x 14	24	32	37	50	52	71	46	61
7/16 x 20	27	36	41	55	58	78	--	--
1/2 x 13	37	49	56	76	80	106	70	93
1/2 x 20	41	55	64	85	90	120	--	--
9/16 x 12	53	70	81	110	115	153	101	134
9/16 x 18	59	79	91	122	128	174	--	--
5/8 x 11	73	97	113	150	159	212	139	186
5/8 x 18	83	110	127	172	180	240	--	--
3/4 x 10	129	173	200	266	282	376	246	329
3/14 x 16	144	192	223	297	315	420	--	--
7/8 x 9	125	166	322	430	455	606	398	531
7/8 x 14	138	184	355	474	501	668	--	--
1 x 8	188	250	483	644	682	909	597	796
1 x 12	205	274	528	716	746	995	--	--
1 x 14	210	280	542	735	765	1037	--	--
1 1/8 x 7	266	354	595	807	966	1288	845	1126
1 1/8 x 12	298	404	668	890	1083	1444	--	--
1 1/4 x 7	375	500	840	1120	1363	1817	1192	1590
1 1/4 x 12	415	553	930	1261	1509	2013	--	--
1 3/8 x 6	491	655	1102	1470	1787	2382	1564	2085
1 3/8 x 12	559	758	1254	1672	2034	2712	--	--
1 1/2 x 6	652	870	1462	1982	2371	3161	2075	2767
1 1/2 x 12	733	994	1645	2194	2668	3557	--	--

1.1.2. With a Threadlocker

Table 5: Threadlocker by the Diameter of the Bolt (see Note 2)

	Dimension			
LocTite Product	1/4-inch	1/4- to 5/8-inch	5/8- to 7/8-inch	1-inch +
LocTite 222	OK			
LocTite 242		OK		
LocTite 262			OK	
LocTite 272			High temperature	
LocTite 277				OK

Note 2: The acceptable bolt size ranges for various LocTite® threadlocking products is the LocTite manufacturer's **general** recommendation. Specific applications sometime require that a LocTite product is applied to a bolt size outside the ranges shown here. For example, Milnor specifies LocTite 242 for use on certain 1" bolt applications and has confirmed this usage with the LocTite manufacturer. You may see variances such as this in the documentation for specific machine assemblies.

Table 6: Torque Values if You Apply LocTite 222

Dimension	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
	Pound-inches	N-m	Pound-inches	N-m	Pound-inches	N-m	Pound-inches	N-m
1/4 x 20	60	7	96	11	132	15	108	12
1/4 x 28	72	8	108	12	144	16	--	--

Table 7: Torque Values if You Apply LocTite 242

Dimension	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
	Pound-feet	N-m	Pound-feet	N-m	Pound-feet	N-m	Pound-feet	N-m
5/16 x 18	11	15	17	23	25	34	22	30
5/16 x 24	13	18	19	26	27	37	27	37
3/8 x 16	20	27	31	42	44	60	38	52
3/8 x 24	23	31	35	47	50	68	--	--
7/16 x 14	32	43	49	66	70	95	61	83
7/16 x 20	36	49	55	75	78	106	--	--
1/2 x 13	49	66	75	102	107	145	93	126
1/2 x 20	55	75	85	115	120	163	--	--
9/16 x 12	70	95	109	148	154	209	134	182
9/16 x 18	78	106	121	164	171	232	--	--
5/8 x 11	97	132	150	203	212	287	186	252
5/8 x 18	110	149	170	230	240	325	--	--

Table 8: Torque Values if You Apply LocTite 262

Dimension	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
	Pound-feet	N-m	Pound-feet	N-m	Pound-feet	N-m	Pound-feet	N-m
3/4 x 10	155	210	240	325	338	458	296	401
3/4 x 16	173	235	267	362	378	512	--	--
7/8 x 9	150	203	386	523	546	740	477	647
7/8 x 14	165	224	426	578	601	815	--	--

Table 9: Torque Values if You Apply LocTite 272 (High-Temperature)

	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
Dimension	Pound-feet	N-m	Pound-feet	N-m	Pound-feet	N-m	Pound-feet	N-m
1 x 8	350	475	901	1222	1272	1725	1114	1510
1 x 12	383	519	986	1337	1392	1887	--	--
1 x 14	393	533	1012	1372	1428	1936	--	--
1-1/8 x 7	496	672	1111	1506	1802	2443	1577	2138
1-1/8 x 12	556	754	1247	1691	2022	2741	--	--
1-1/4 x 7	700	949	1568	2126	2544	3449	2226	3018
1-1/4 x 12	774	1049	1737	2355	2816	3818	--	--
1-3/8 x 6	917	1243	2056	2788	3335	4522	2919	3958
1-3/8 x 12	1044	1415	2341	3174	3797	5148	--	--
1-1/2 x 6	1217	1650	2729	3700	4426	6001	3873	5251
1-1/2 x 12	1369	1856	3071	4164	4980	6752	--	--

Table 10: Torque Values if You Apply LocTite 277

	The Grade of the Bolt							
	Grade 2		Grade 5		Grade 8		Grade BC	
Dimension	Pound-feet	N-m	Pound-feet	N-m	Pound-feet	N-m	Pound-feet	N-m
1 x 8	325	441	837	1135	1181	1601	1034	1402
1 x 12	356	483	916	1242	1293	1753	--	--
1 x 14	365	495	939	1273	1326	1798	--	--
1-1/8 x 7	461	625	1032	1399	1674	2270	1464	1985
1-1/8 x 12	516	700	1158	1570	1877	2545	--	--
1-1/4 x 7	650	881	1456	1974	2362	3202	2067	2802
1-1/4 x 12	719	975	1613	2187	2615	3545	--	--
1-3/8 x 6	851	1154	1909	2588	3097	4199	2710	3674
1-3/8 x 12	970	1315	2174	2948	3526	4781	--	--
1-1/2 x 6	1130	1532	2534	3436	4110	5572	3597	4877
1-1/2 x 12	1271	1723	2852	3867	4624	6269	--	--

1.2. Stainless Steel Fasteners

Table 11: Torque Values for Stainless Steel Fasteners 5/16-inch and Smaller

	316 Stainless		18-8 Stainless		18-8 Stainless with Loctite 767	
Dimension	Pound-Inches	N-m	Pound-Inches	N-m	Pound-Inches	N-m
1/4 x 20	79	9	76	9	45	5
1/4 x 28	100	11	94	11	56	6
5/16 x 18	138	16	132	15	79	9
5/16 x 24	148	17	142	16	85	10

Table 12: Torque Values for Stainless Steel Fasteners Larger Than 5/16-inch

	316 Stainless		18-8 Stainless		18-8 Stainless with Loctite 767	
Dimension	**Pound-feet**	**N-m**	**Pound-feet**	**N-m**	**Pound-feet**	**N-m**
3/8 x 16	21	28	20	27	12	16
3/8 x 24	23	31	22	29	13	18
7/16 x 14	33	44	31	42	19	25
7/16 x 20	35	47	33	45	20	27
1/2 x 13	45	61	43	58	26	35
1/2 x 20	47	64	45	61	27	37
9/16 x 12	59	81	57	77	34	46
9/16 x 18	66	89	63	85	38	51
5/8 x 11	97	131	93	125	56	75
5/8 x 18	108	150	104	141	62	84
3/4 x 10	132	179	128	173	77	104
3/4 x 16	130	176	124	168	75	101
7/8 x 9	203	275	194	263	116	158
7/8 x 14	202	273	193	262	116	157
1 x 8	300	406	287	389	172	233
1 x 14	271	367	259	351	156	211
1-1/8 x 7	432	586	413	560	248	336
1-1/8 x 12	408	553	390	529	234	317
1-1/4 x 7	546	740	523	709	314	425
1-1/4 x 12	504	683	480	651	288	390
1-1/2 x 6	930	1261	888	1204	533	722
1-1/2 x 12	732	992	703	953	422	572

2. Preparation

WARNING 2: Fire Hazard—Some solvents and primers are flammable.

- Use threadlocker and primers with sufficient airflow.
- Do not use flammable material near ignition sources.

1. Clean all threads with a wire brush or a different tool.
2. Remove the grease from the fasteners and the mating threads with solvent. Make the parts dry.

   Note 3: LocTite 7649 Primer™ or standard solvents will remove grease from parts.

3. Apply a spray of LocTite 7649 Primer™ or equal on the fasteners and the mating threads. Let the primer dry for one minute minimum.

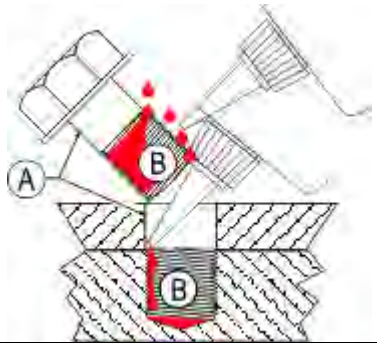
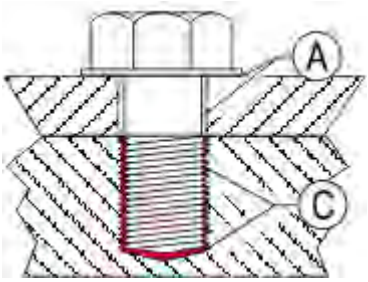
3. How to Apply a Threadlocker

CAUTION 3: Malfunction Hazard—Heat, vibration, or mechanical shocks can let the fasteners loosen if you do not apply the threadlocker correctly. Loose fasteners can cause malfunctions of the equipment.

- Read the threadlocker manufacturer's instructions and warnings. Obey these instructions.

Apply the threadlocker only to the areas where the fastener threads and the mating threads engage.

Figure 2: Blind Hole

Application	Coverage
	

Legend

A. No threadlocker here
B. Apply here
C. Fill all space with threadlocker

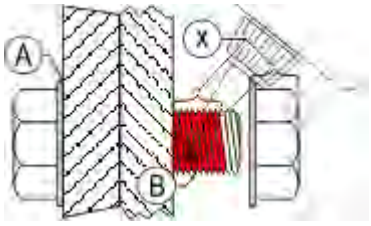
3.1. Blind Holes

1. Apply the threadlocker down the threads to the bottom of the hole.
2. Apply the threadlocker to the bolt.
3. Tighten the bolt to the value shown in the correct table (Table 5 to Table 11).

3.2. Through Holes

1. Put the bolt through the assembly.
2. Apply the threadlocker only to the bolt thread area that will engage the nut.
3. Tighten the bolt to the value shown in the correct table (Table 5 to Table 11).

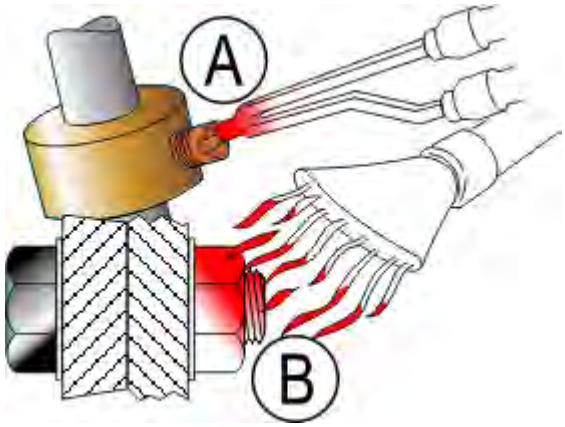
Figure 3: Through Hole

Application	Legend
	**A.** No threadlocker here **B.** Apply the threadlocker to this area **x.** Nut depth

3.3. Disassembly—For high-strength threadlocker, apply heat for five minutes. Disassemble with hand tools while the parts are hot.

For low-strength and moderate-strength threadlocker, disassemble with hand tools.

Figure 4: Disassembly

Apply Heat to a Small Area	Legend
	**A.** How to apply heat to a small fastener **B.** How to apply heat to a large fastener

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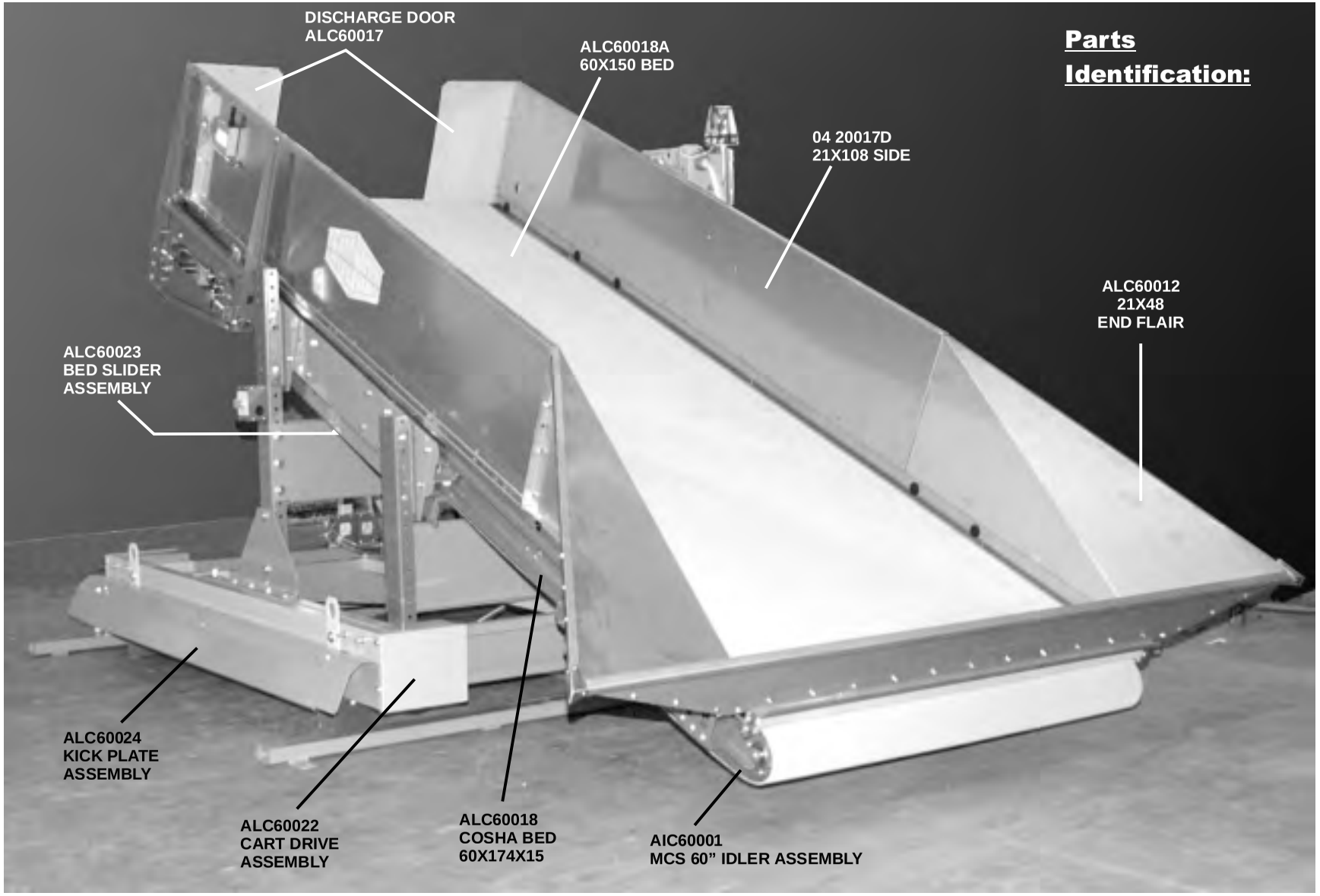

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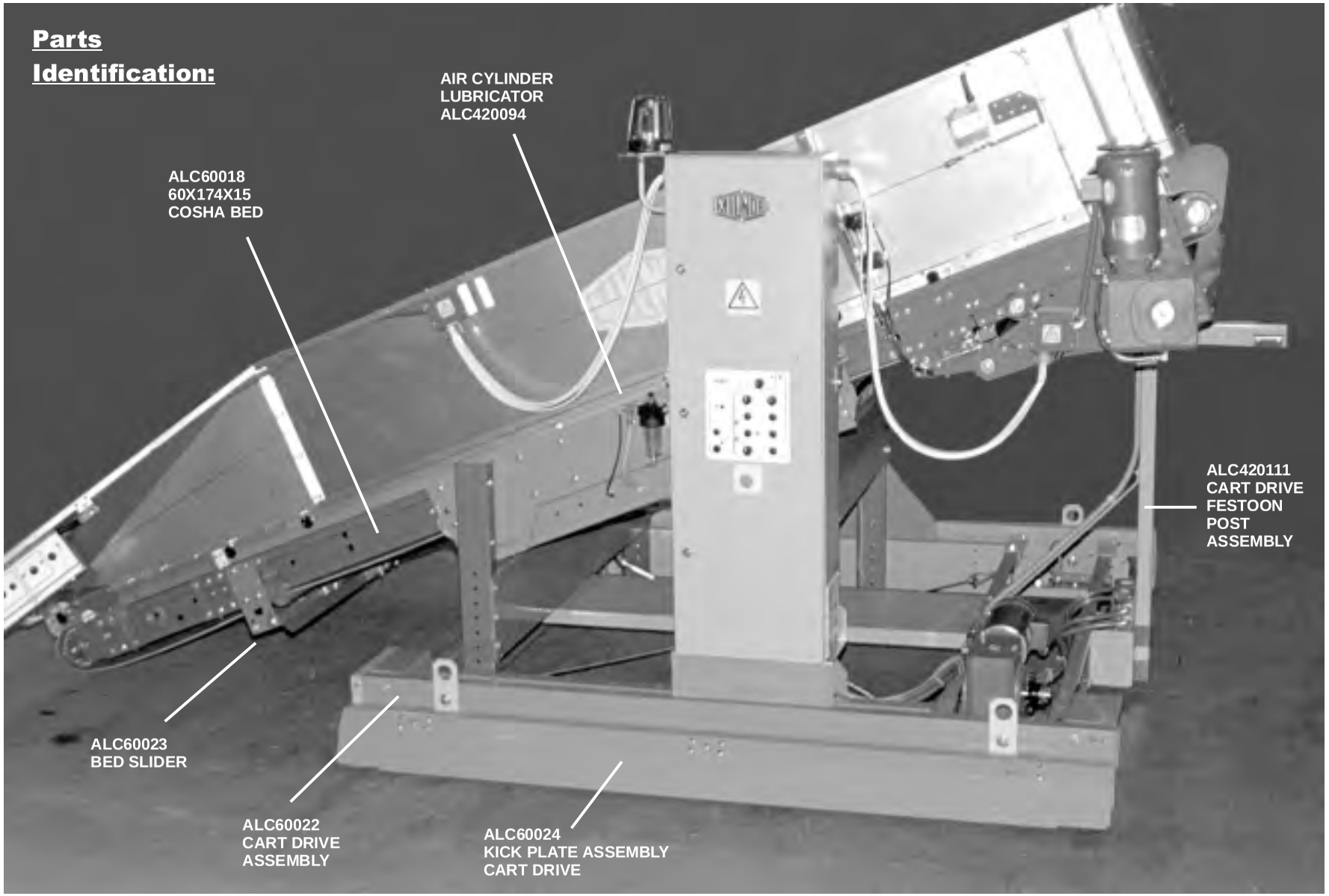

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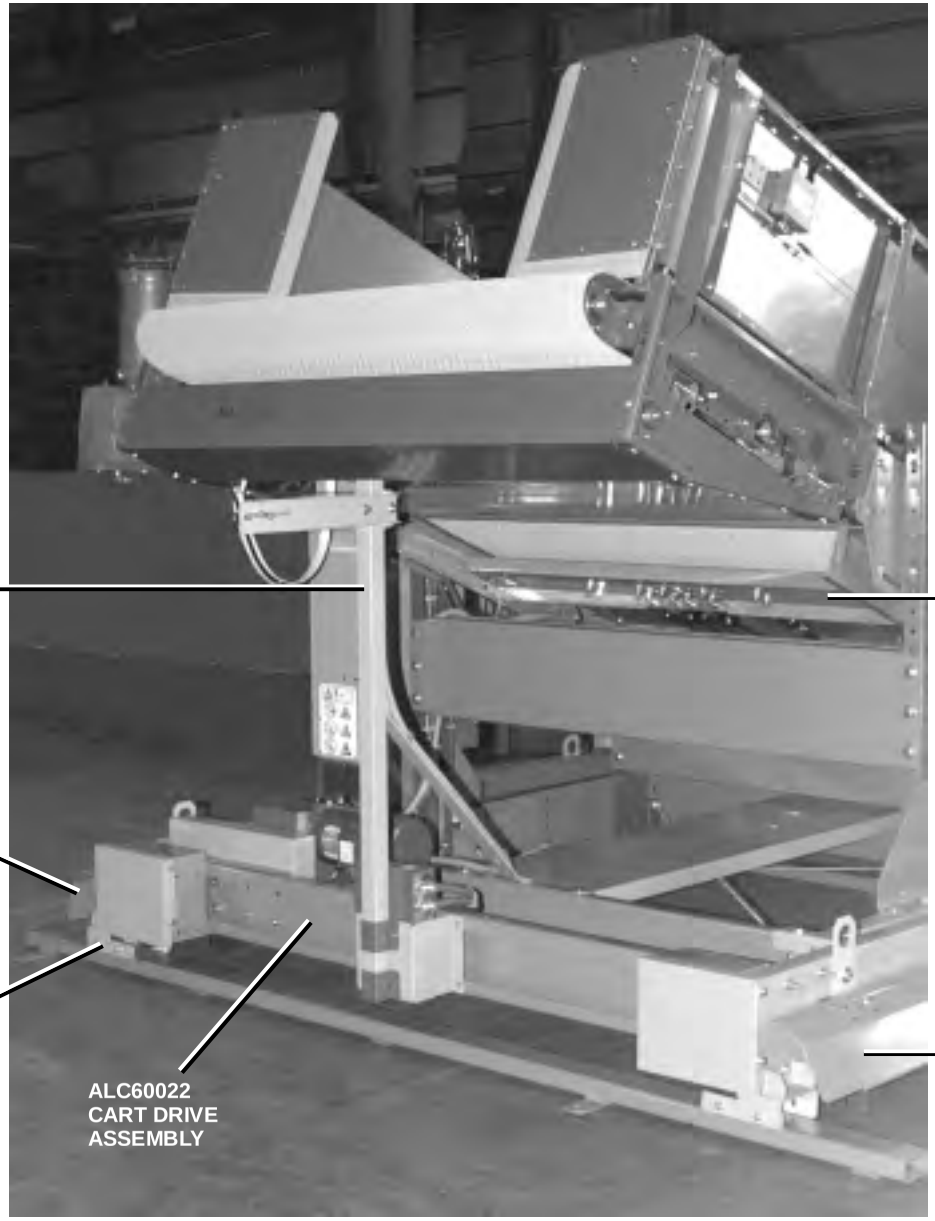

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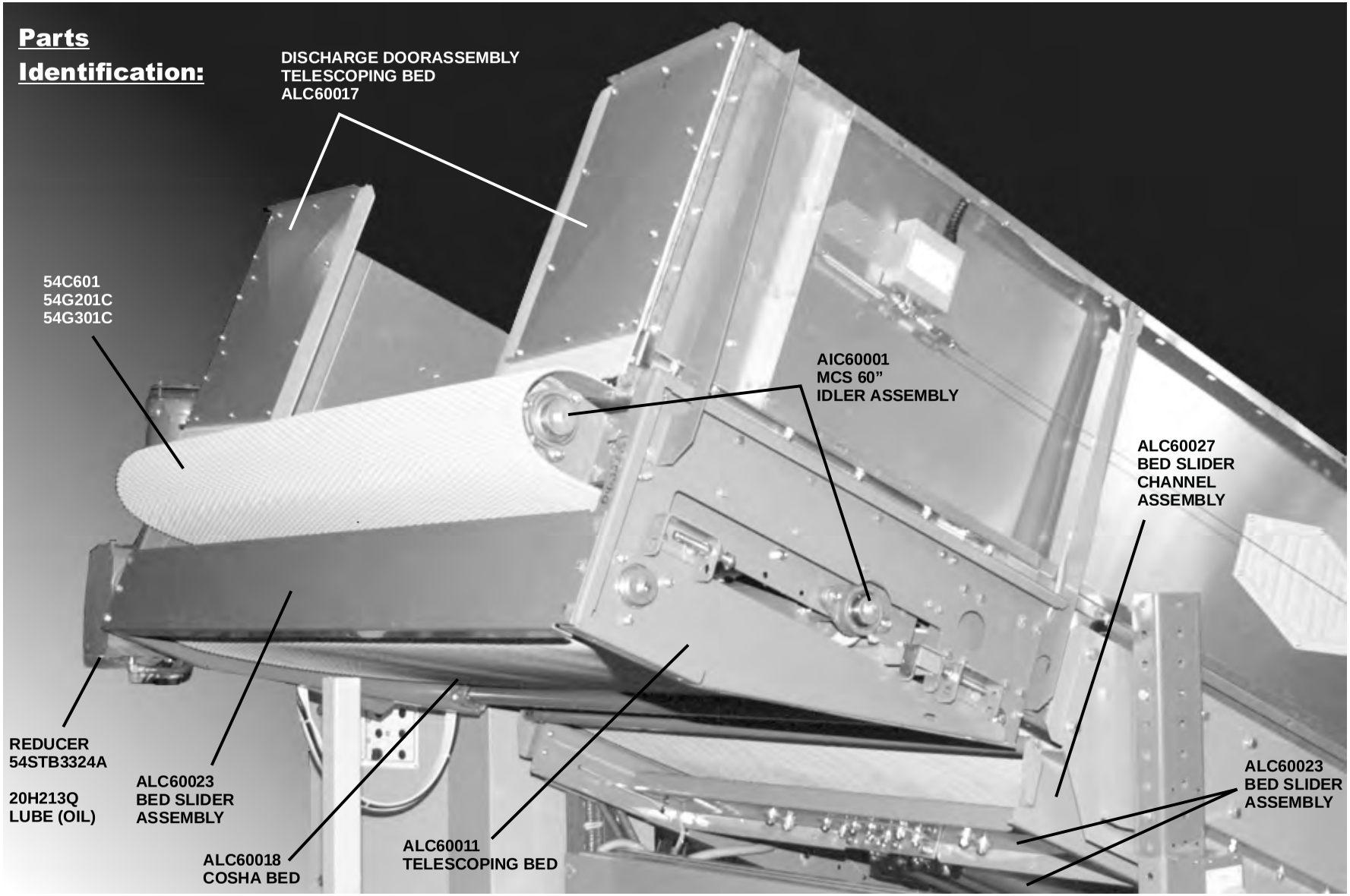

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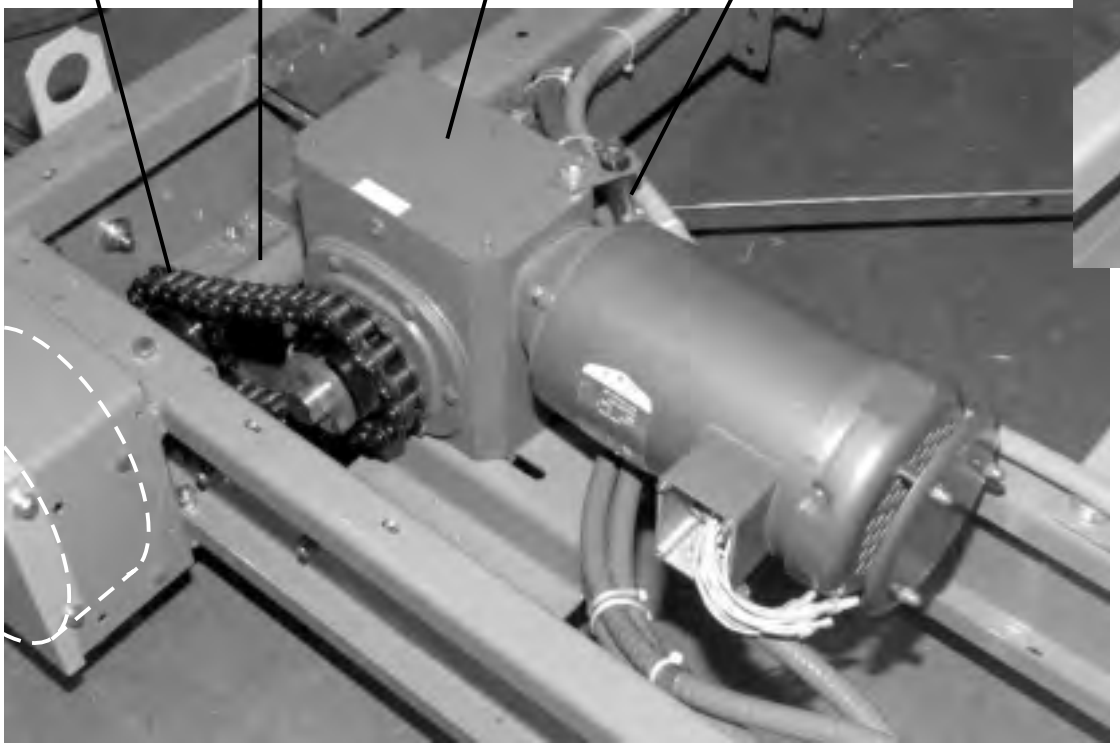

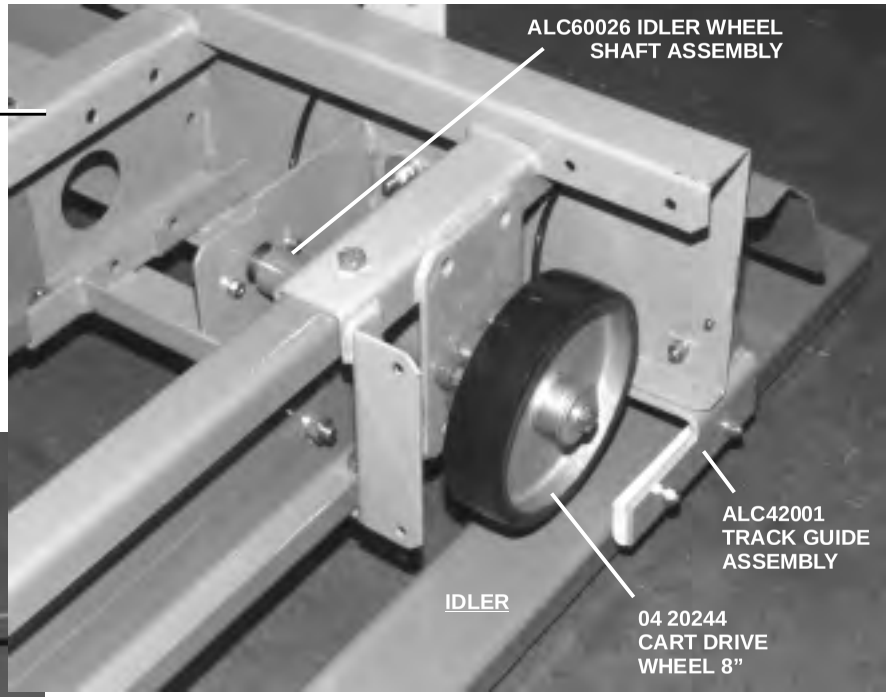

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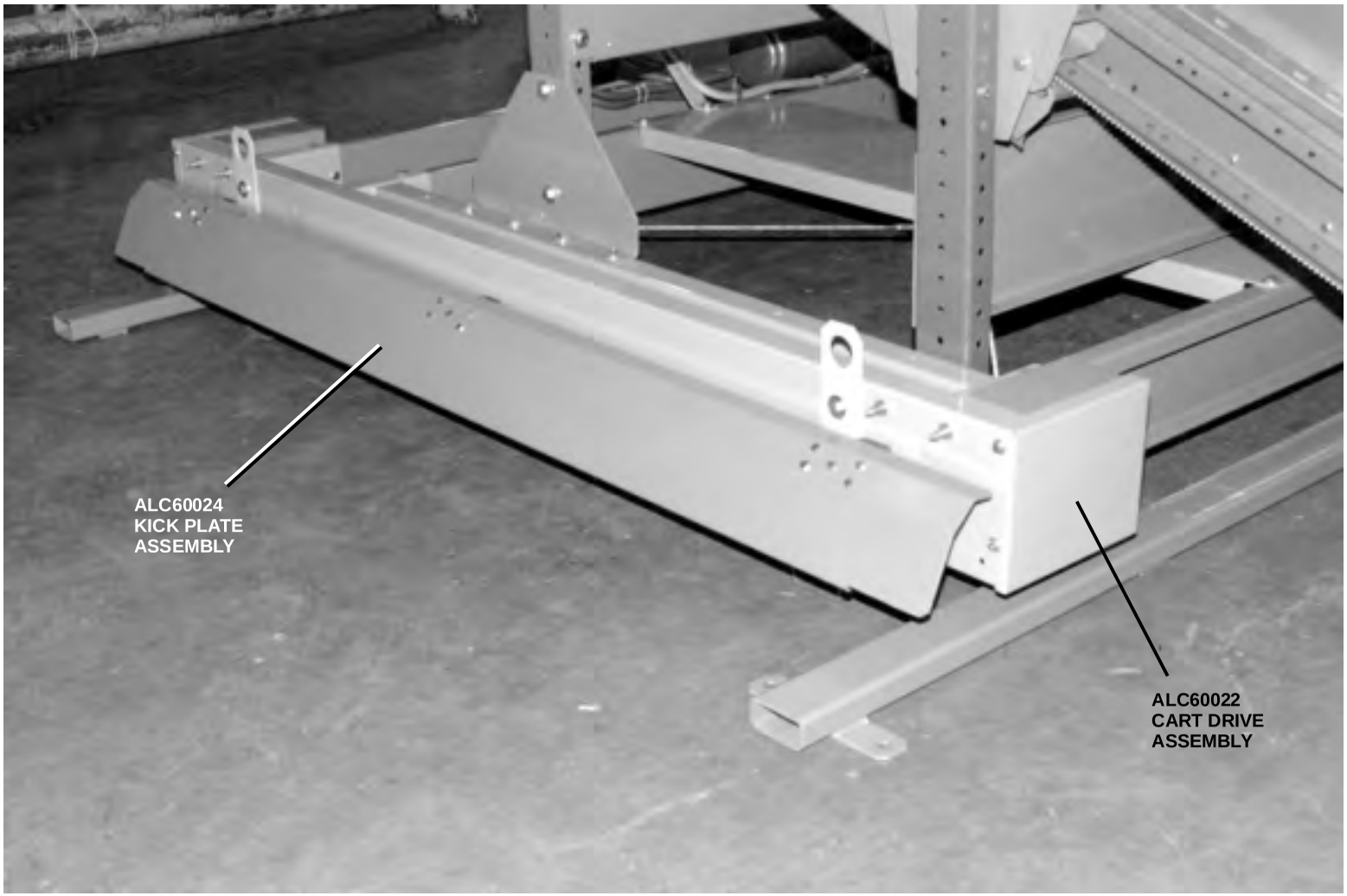

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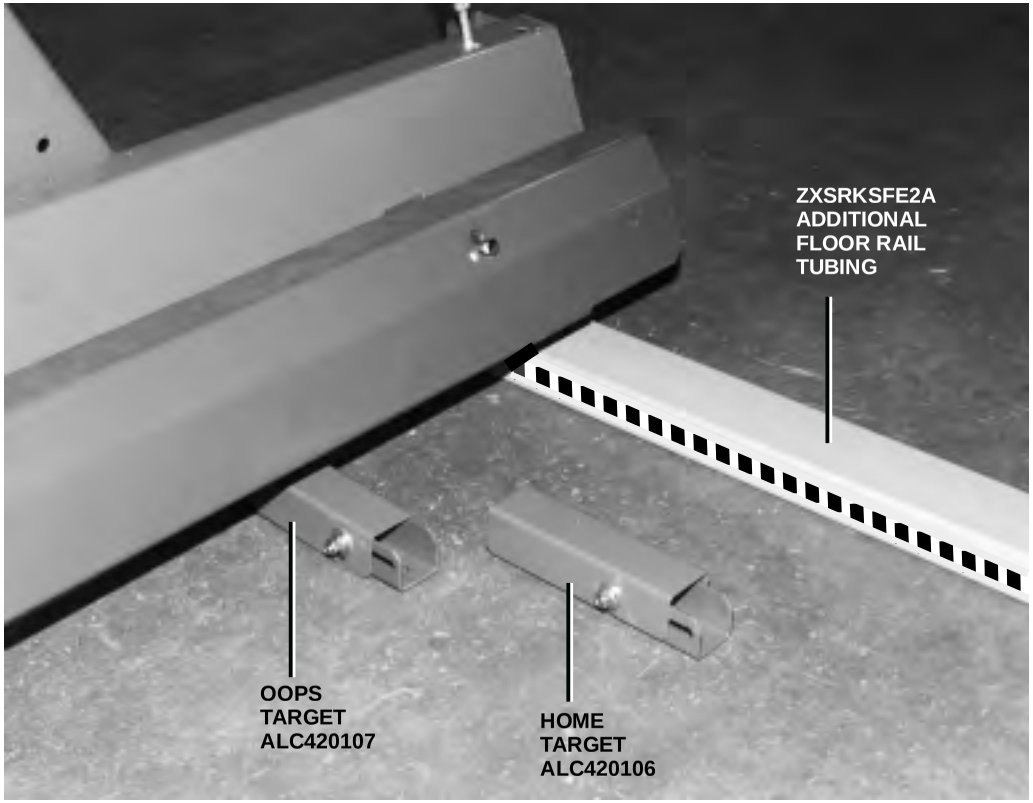
Rail Component Identification:



ALC420111
CART DRIVE
FESTOON POST
ASSEMBLY

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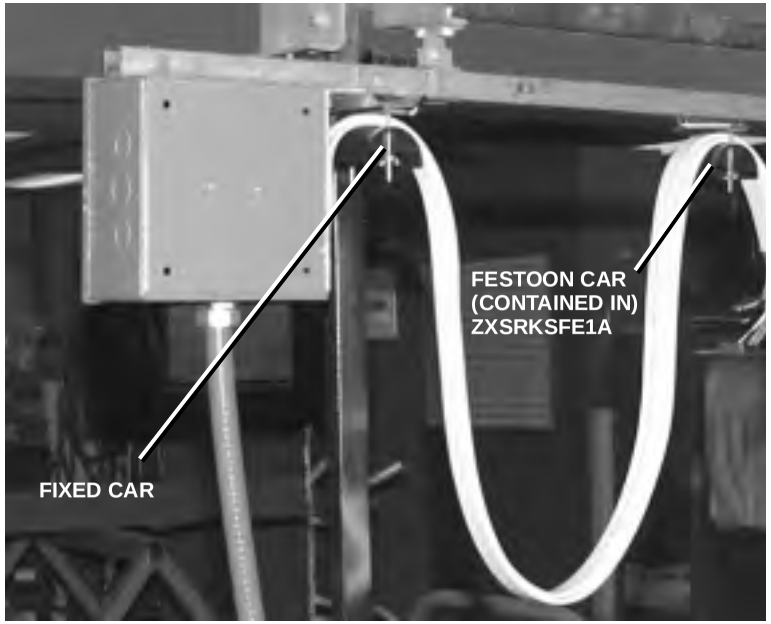

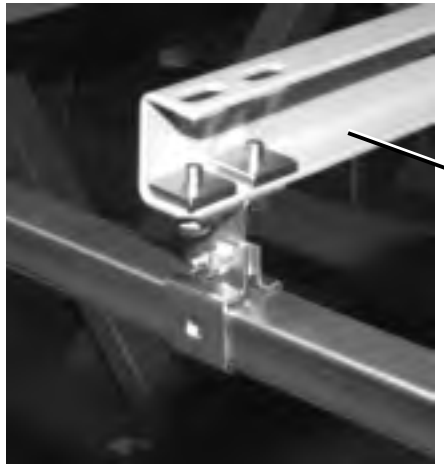

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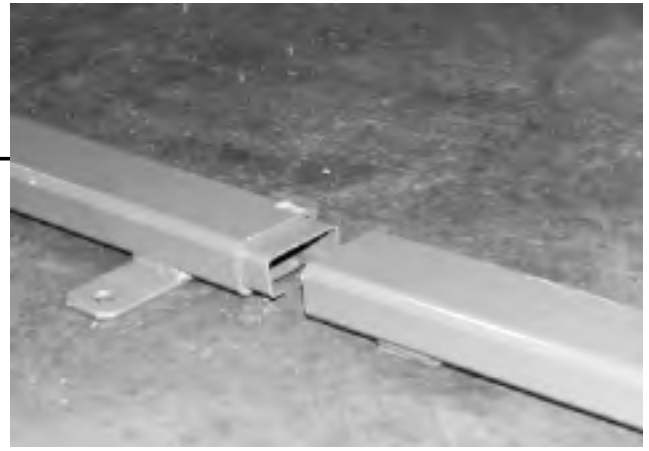

Parts List
CF6014TS

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Parts List

The list below comprises all of the Mechanical Parts for the model(s) covered by this manual. The Photo Section preceding is intended to aid in identifying the names and part numbers of the assemblies. The assemblies have been listed alphabetically with the components that make up that assembly following, indented. If an assembly number is listed as a component of another assembly, it can also be found in the alphabetical listing with its sub-components.

Assembly	Item	Part Number	Description
		04 20017D	CONVEYOR 21X108 SIDE EXT
		04 20244	CART DRIVE WHEEL 8" -SHUTTLE
		20H213	SYN. LUBE SHC634 (55GAL) E=1GA
		20H213Q	MOBIL SYN. LUBE #SHC634 E=1 QT
		54C601	BELT 60"100 TAN WDGEGRIP/BARE
		54G080	CONN LINK ANSI 80 SPRING CLIP
		54G080C	ROLLCHAIN ANSI 80-1R 1"P
		54G201C	CLIPERBLT H#UX-1SP430SS EA=1BX
		54G301C	BLTLACERCONN #13NYL-SS EA=1FT
		54STB3324A	REDUCER + 7/8-5/8 IN-ADAPTER
		54STB43260	REDUCER 60:1 GF6032AG
		60C509UT	WHEEL SINGLE 9"OD URETHANE
AIC60001	MCS 60" IDLER ASSY		
	A01	15H040	STDCOTTERPIN 1/8X3/4 ZINCPL
	A02	15U312	FLAWASHER 3/4ODX33/64IDX11GA
	P01	54A712	FLGBR 1/2"ID SCHATZ# AF3236
	P02	04 20034C	94311B MCS 60" IDLER SHAFT
	P03	04 20035C	94311B MCS 60" IDLER ROLLER
ALC36038	PIPING OIL LEVEL IND=726-732		
	30	51E507	HOSESTEM BRASS 1/4MPX1/2HOSEID
	40	60E006	PVC TUBING 1/2"ID X 11/16"OD
	50	27A044A	HOSECLAMP.687"ID ROTOR#HC11STR
	60	51P008B	PLUG SQSLD 1/4"BLK LVENT STEEL
	80	04 22525	94212B OIL TUBE RETAINING-BKT
	120	5SL0GBEC	NPTELB 90DEG STRT 3/8 BRASS125
	130	20C014S	PIPESEAL W/TEF #56765
ALC420094	AIR CYL LUBRICATOR ASSY		
	10	30N600	1/2"AIRLINE LUBE PARK#07L35BE
	20	07 20920	88512C OIL HOLDER BKT
	30	96N0013HU	01Z SHUTLVLV 1/2"4WAY CENTER-OFF
ALC420101	TRACK GUIDE ASSY-COSHM		
	10	W4 23390	98516C TRACK GUIDE WLMT
	20	X4 23391	98431B TRACK SLIDER UHMW BAR
	30	04 21664	94187B SHIM-BED SL PAD=COEL DS05
	40	27B25002SZ	SPCRROLL.39ID.125L.048T STLZNC
	50	15K110	HEXCAPSCR 3/8-16UNC2AX1.5 GR5-
	60	15U200	FLATWASHER(USS STD) 5/16"ZNC P
	70	15U266	FLATWASHER 1"0DX7/16"IDX3/16"
	80	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL
	90	15G205	HXNUT 3/8-16UNC2B ZINC GR2
ALC420106	HOME TARGET FLOOR MTG ASSY		
	10	04 23416	99273B FLOOR MTG TARGET-BASE
	20	04 23416A	99273B HOME TARGET-COSHM
	30	15A011	CARBOLT 3/8-16UNC2X1 ZINC GR2
	40	15U240	FLATWASHER(USS STD) 3/8" ZNC P
	50	15G205	HXNUT 3/8-16UNC2B ZINC GR2
ALC420107	OOPS TARGET FLOOR MTG ASSY		
	10	04 23416	99273B FLOOR MTG TARGET-BASE
	20	04 23416B	20002B OOPS TARGET-COSHM
	30	15A011	CARBOLT 3/8-16UNC2X1 ZINC GR2
	40	15U240	FLATWASHER(USS STD) 3/8" ZNC P
	50	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL
	60	15G205	HXNUT 3/8-16UNC2B ZINC GR2
ALC420109	FESTOON RAIL SUPPORT ASSY		
	10	04 23423	20000B FESTOON RAIL SUPPORT POST
	20	04 23422	20000C FESTOON POST BASE
	30	04 23424	20000B FESTOON RAIL MTG CHANNEL
	40	04 23425	20000B FESTOON POST CLAMP
	50	15K136	HEXCAPSCR 3/8-16UNCX3+1/2 GR5
	60	15K095	HXCPSCR 3/8-16UNC2AX1 GR5 ZINC
	70	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL
	80	15U240	FLATWASHER(USS STD) 3/8" ZNC P
	90	15G205	HXNUT 3/8-16UNC2B ZINC GR2
ALC420111	CARTDR FESTOON POST ASSY		
	10	04 23426	20001B FESTOON POST - CARTDR
	20	04 23425	20000B FESTOON POST CLAMP
	30	04 23427	20001C FESTOON POST MTG-CARTDR
	40	04 23428	20001B FESTOON PULL CHANNEL
	50	04 20750	85381B PAD=FESTOON CABLE CLAMP
	60	04 20750A	85243B SUPPORT=FESTOON FLAT CABLE
	70	04 20750B	85243B CHANNEL=PAD CLAMP FESTOON
	80	15A009	CARBOLT 5/16-18NC2X3.5 FULTHD
	90	15G193	HEXLOKNUT 5/16-18UNC2A NYL STL
	100	15K095	HXCPSCR 3/8-16UNC2AX1 GR5 ZINC
	110	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL
	120	15U240	FLATWASHER(USS STD) 3/8" ZNC P
	130	15G205	HXNUT 3/8-16UNC2B ZINC GR2
	140	04 23261	20001B FESTOON POST BRACING BAR
ALC60011	TELESCOPE BED ASSEMBLY-15"		
	10	APC60002	95453N 60" DR LAGGED 1.437 TELE BED
	20	Y4 22962	94291# 60W IDLER ROLLER ASSY-60"L
	30	Y4 22958	94342# 60W IDLE ROLLER ASSY-65.25
	40	X4 22965	94306C BELTSUPP ROLL 1.50DIAX65.25L
	50	04 22651	94306D TELESCOPE BED SUPPORT-LF
	60	04 22652	94306# TELESCOPE BED SUPPORT-RT
	70	04 22653	94306D BRACE=TELESCOPE BED SUPPORT
	80	04 22654	94306D UNDERBED COVER-FRONT
	90	04 22656	94306D CROSS BRACE-TELES BED

Parts List, cont.

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The list below comprises all of the Mechanical Parts for the model(s) covered by this manual. The Photo Section preceding is intended to aid in identifying the names and part numbers of the assemblies. The assemblies have been listed alphabetically with the components that make up that assembly following, indented. If an assembly number is listed as a component of another assembly, it can also be found in the alphabetical listing with its sub-components.

Assembly	Item	Part Number	Description
	110	04 22661	94312D CORNER BRKT-TELES BED
	120	04 22662	94312C SLIDING ANGLE .75X 26LG
	130	04 22664	94312C SHIM BED SLIDER PAD 3/8"THK
	140	04 22665	94313C BED SUPPORT SLIDER SHIM
	150	04 22667	94312C SPACER-TELES BED MTG SUPPORT
	160	W4 22657	94312# *AIRCYL CHANN-TELES BED=WLMT
	170	04 22629	94322B TELESCOPE END PROX SW TARGET
	180	04 23039A	95057B AIRCYL CHANN STIFF PLATE
	190	W4 22668	94312# *BED STOP CHANNEL=WLMT
	200	04 22655	94312D UNDERBED COVER-REAR
	210	04 22663	94313C SLIDING STRIP TELES BED
	220	04 22669A	94312B BED STOP ADJ BRKT
	230	15H051	STDCOTTERPIN 1/8X1+1/2ZINCPL
	240	15G239S	HEXJAMNUT 3/4-16UNF2 SS18-8
	250	17A049B	CLEVIS ROD END 3/4-16#RC-0750
	260	27C315	98272A AIR CYL 3.25"X15"X1"CLEVIS MT.
	270	17A045	CLEVIS PIN 3/4"X 3" DRILLED +
	280	04 22659	94316C BEARING CARRIER-LF
	290	04 22660	94316# BEARING CARRIER-RT
	300	04 22627	94316C TELESCOPE BED SUPPORT PLATE
	310	04 22627A	94316C TELESCOPE BED SUPT PLT SHIM
	320	04 22650	20001D BED=MCS 6ROL 60W TELE 24L
	340	54M010	GRSFIT 1/4-28NF90 ALEMITE1911B
	350	54AF1125	FLBRG #UCFL-206-102G-6 1+1/8"
	360	54AF10001	FLG BRG 1" BROWN#VF2S-116M
	370	W4 21450	87392B *AIR CYL CLEVIS MTG WELDMENT
ALC60012	ENDFLAIR 21HX48L 60W ASSY		
	10	04 22626	94306D ENDGATE=60 WIDE SHUTTLE
	20	04 22622	96516D 60WIDE SHTL FLAIRSIDE-LF
	30	04 22623	96516# 60WIDE SHTL FLAIRSIDE-RT
	40	04 21644	88436L BKT-FLAIRSIDE SUPP-COSLIDEB
	50	04 21645	90526B BRACE-FLAIRSIDE-COSLIDEB
	60	04 21647B	90267C FLAIRSIDE SUPP LF-COSL3814
	70	04 21647C	90267# FLAIRSIDE SUPP RT-COSL3814
	80	W4 21492C	90532# *COV PL WLMT-COSL3814-LF
	90	W4 21492D	90532# *COV PL WLMT-COSL3814-RT
	100	04 22634	94000Z ENDGATE BELT STRAP-60W
	110	04 22635	94000Z ENDGATE BELT FLAP-60W
ALC60017	DISCHARGE DOOR ASSY-TELE BED		
	10	04 22628	94321D 60W SIDE EXTENSION=DOOR END
	20	04 22628A	94321D 60W SIDE SUPT=DOOR END-RT

Parts List, cont.

Assembly	Item	Part Number	Description	Comments
	30	04 22628B	94321# 60W SIDE SUPT=DOOR END-LF	
	40	04 22628C	94321C 60W SHTL DOOR MTG ANGLE-RT	
	50	04 22628D	94321# 60W SHTL DOOR MTG ANGLE-LF	
	60	04 22628H	95227D DISC DOOR BELT MTG PLATE	
	70	04 22628G	94447D 60W SPRING HINGE=20"LX2"WIDE	
ALC60018	COSHA BED 60X174+15" TELESC			
	10	ALC60018A	95453N COSHA BED 60X150 NO SIDE EXT	
	20	ALC60011	95453N TELESCOPE BED ASSEMBLY-15"	
	30	ALC60012	95453N ENDFLAIR 21HX48L 60W ASSY	
	40	ALC60017	93000Z DISCHARGE DOOR ASSY-TELE BED	
	50	04 20017D	89507# CONVEYOR 21X108 SIDE EXT	
	60	04 21425B	92772C BEDEXT UNLOAD LF-1.5 SIDE	
	70	04 21425C	92772# BEDEXT UNLOAD RT-1.5 SIDE	
	130	54C601	01Z BELT 60"100 TAN WDGEGRIP/BARE	
	140	54G201C	CLIPERBLT H#UX-1SP430SS EA=1BX	
	150	54G301C	BLTLACERCONN #13NYL-SS EA=1FT	
	160	04 24033	95122C BED FESTOON CONN.BOX MTG BKT	
	170	04 21721	94272C +TARGET-UNLOAD STOP-COSL30+8	
ALC60018A	COSHA BED 60X150 NO SIDE EXT			
	10	04 22602	94382D MCS 108 SIDE MEMBER	
	20	04 20000	90241C +MCS 24" SIDE MEMBER	
	30	04 22603	94301D MCS X-MEMBER 60" BELT	
	40	04 22625	20001D TELESCOPE END X-MEMBER	
	50	04 20023A	88202# MCS MOD CONN BKT RIGHT END	
	60	04 20023B	88202# MCS MOD CONN BKT LEFT END	
	70	04 20024	89216C MCS CROSS MEMBER CONN BKT	
	80	04 20023	88202C MCS MOD SECTION CONN BKT	
	90	04 20118	90491B TIE ROD STRAP	
	100	04 21412C	95201D BRNGCARR-NO TORQARM-16"LG	
	110	APC60003	95453N 60" IDLER LAGGED ROLLER	
	120	04 22714A	98146C BRG CARRIER ADJUSTING BKT	
	130	54AF1437	FLANGE BRG.BROWN#VF3S-123M	
	140	04 22600	94373E BED SECTION 6ROL 60WX54L	
	150	04 22601	94441D BED=MCS 6ROL 60WX24LG	
	160	W4 22609	94442D *PIPE X-BRACE=60 WIDE-WLMT	
	170	04 22626C	94373D 60WIDE FRAME STIFFENER	
	180	04 22626A	94306C SIDE MEMBER CONNECTING CHANN	
	190	04 22626B	94443D 60W BED CONNECTING ANGLE	
ALC60022	CART DRIVE ASSY-60W SHUTL			
	10	W4 23245	20001D CART FRAME WLMT-DRIVE SIDE	
	20	W4 23246	20001D CART FRAME WLMT-IDLER SIDE	
	30	04 23247	20001D CART FRAME X-MEMBER 60W	
	40	04 23248	20001C CART MID FRAME BRACE	
	60	04 23264	20001B WHEEL COVER MTG BRKT	
	80	04 23266	20001B WHEEL COVER-CARTDRIVE	
	90	ALC420101	98000Z TRACK GUIDE ASSY-COSHM	
	100	04 23417A	20003B SHUTL STOP PROX.SW BRKT	
	110	ALC60025	99000Z DRIVE WHEEL/SHAFT ASSY	

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Assembly	Item	Part Number	Description
	120	ALC60026	99000Z IDLER WHEEL/SHAFT ASSY
	140	04 23061	95147D CONVEY SUPPORT 4.5"WX35.5"L
	150	04 23061A	95196D CONVEY SUPPORT 4.5"WX55.5"L
	160	04 23270	20001B BED SLIDER MTG PLATE
	170	04 23271	20001B BED SLIDER LEG ADAPTER
	180	04 23273	20001B LEG GUSSET
	190	04 23275	20001B LEG X-BRACE 60W CARTDR
	200	04 23250	20001B SHIPPING STAND-CARTDRIVE
	210	04 23251	20001B CONTROL BOX BASE-CARTDR
	220	04 23252	20001B CONTROL BOX TIE-IN BRKT
ALC60023	BED SLIDER ASSY 0+30 60W		
	10	04 23269	20001D BED SLIDER SUPPORT
	20	ALC60027	99000Z BED SLIDER CHANN ASSY
	50	04 23277	20001D BED SLIDER BELT SUPP PL
	60	04 21446	89286B SLIDING STRAP-CONV BED BOT
	70	04 22608	95141D DUAL AIRCYL 30"STK REAR MTG
	80	04 23278	20001D AIRCYL END MTG CARTDR-60W
	90	04 22619	94313C DUAL AIR CYL TOP ADJ BRKT
	100	04 22620	94313C DUAL AIR CYL BTM ADJ BRKT
	110	04 21488A	92492B LEG END ROLL SPT=COELDS05
	120	04 21923	94053C ELECT BOX MTG BRKT-COSTIK
	130	27C430	98272A AIR CYL 4"X30"X1" CLEVIS MT.
	150	17A045	CLEVIS PIN 3/4"X 3" DRILLED +
	160	15H051	STDCOTTERPIN 1/8X1+1/2ZINCPL
	170	15G239S	HEXJAMNUT 3/4-16UNF2 SS18-8
	180	17A049B	CLEVIS ROD END 3/4-16#RC-0750
	190	04 23279	20001B BELT SUPPORT ROLLER BRKT-RD
	200	04 23279A	20001B BELT SUPPORT ROLLER BRKT-DD
	210	AIC60001	95452N MCS 60" IDLER ASSY
ALC60024	KICKPLATE ASSY-CARTDR		
	10	04 23274	20001D KICKPLATE-CARTDRIVE
	11	04 23367A	9403B KICKPLATE GUSSET-RT
	12	04 23367B	99403# KICKPLATE GUSSET-LF
	20	04 23370	98412C KICKPLATE MTG BRKT
	30	04 23371	99111B KICKPLT SPRING SUPPORT
	40	04 23372	99341B KICKPLT SW MTG BKT
	50	01 09028	82343B SPRING=BRAKE.88OD2.5FL95#/"
	60	15K133	HXCAPSCREW 3/8-16UNC2AX3 GR5 Z
	80	15G218	01Z HXLOKNUT NYL 3/8-16 STL/ZNC
	90	15K147	HXCAPSCR 1/2-13UNC2X1 GR5 ZINC
	100	15U286	FLATWASHER 2"0DX17/32"IDX1/4"

Parts List, cont.

Assembly	Item	Part Number	Description	Comments
	110	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
	120	15G228	01Z HXCPNUT 1/2-13 UNC GR-2	
	130	15N140	RDMACSCR 10-24UNC2AX3/4 ZINC G	
	140	15G126SZ	01Z HXLOCKNUT 10-24 UNC STL/ZNC	
	150	15K039	HXCAPSCR 1/4-20UNC2AX3/4 GR5 Z	
	160	15U180	LOCKWASHER MEDIUM 1/4 ZINCPL	
	170	15G165	HXNUT 1/4-20UNC2BSAE ZC GR2	
	190	15K060	HXCAPSCR 5/16-18UNCAX3/4 GR5 Z	
	200	15U200	FLATWASHER(USS STD) 5/16"ZNC P	
	210	15U210	LOKWASHER MEDIUM 5/16 ZINCPL	
	220	15G185	HXNUT 5/16-18UNC2B SAE ZINC GR	
ALC60025	DRIVE WHEEL/SHAFT ASSY			
	10	X4 23267	20001D CART DRIVE WHEEL SHAFT	
	20	04 23260	20001B WHEEL BRNG MTG PLATE	
	30	54AF1437	FLANGE BRG.BROWN#VF3S-123M	
	40	54JH11437C	SHAFTCOLLAR 1.4375 CFG #23S	
	50	54STB43260	REDUCER 60:1 GF6032AG	
	51	20H213 02Z	SYN. LUBE SHC634 (55GAL) E=1GA	
	60	ALC36038	89137B PIPING OIL LEVEL IND=726-732	
	70	ALC36039A	89137B VENT PIPE-721-732 CONVEY40	
	80	54N080P15	SPRKT B#H80P15 - NO BUSHING	
	90	56Q1GP1	1+3/8" BUSH VPUL BROWNING P1	
	91	56Q1HP1	1+7/16" BUSH VPUL BROWNING P1	
	100	60C509UT	01Z WHEEL SINGLE 9"OD URETHANE	
	250	15K151	HXCAPSCR 1/2-13UNC24X1.25 GR5	
	260	15K203	HXCAPSCR TFL 1/2-13X5 GR5 ZINC	
	270	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
	280	15U286	FLATWASHER 2"0DX17/32"IDX1/4"	
	290	15G230	HXNUT 1/2-13UNC2B SAE ZINC GR2	
	300	15K081	HXCAPSCR 5/16-18UNC2AX3 GR5 ZN	
	310	15U200	FLATWASHER(USS STD) 5/16"ZNC P	
	320	15U210	LOKWASHER MEDIUM 5/16 ZINCPL	
ALC60026	IDLER WHEEL/SHAFT ASSY			
	10	X4 23268	20000C CART IDLER WHEEL SHAFT	
	20	04 23260	20001B WHEEL BRNG MTG PLATE	
	30	54AF1437	FLANGE BRG.BROWN#VF3S-123M	
	40	54AF10001	FLG BRG 1" BROWN#VF2S-116M	
	50	54JH11437C	SHAFTCOLLAR 1.4375 CFG #23S	
	60	04 20244	81113C CART DRIVE WHEEL 8" -SHUTTLE	
	70	15E197	SQMACHKEY 1/4X1 NOTAPER&HEAD	
	80	15K147	HXCAPSCR 1/2-13UNC2X1 GR5 ZINC	
	90	15U286	FLATWASHER 2"0DX17/32"IDX1/4"	
	100	15U300	LOKWASHER REGULAR 1/2 ZINC PLT	
	110	15A012	CARBOLT 3/8-16UNC2AX1+1/4 ZNC	
	120	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL	
	130	15G218	01Z HXLOKNUT NYL 3/8-16 STL/ZNC	
	140	15K063	02Z HXCPSC 5/16 18X1 GR8 ZC	
	150	15U210	LOKWASHER MEDIUM 5/16 ZINCPL	

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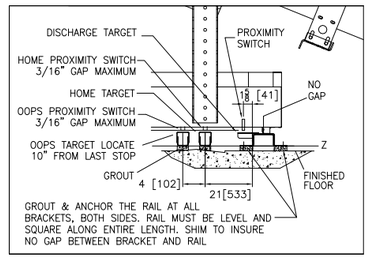
Assembly	Item	Part Number	Description
	160	15G185	HXNUT 5/16-18UNC2B SAE ZINC GR
ALC60027	BED SLIDER CHANN ASSY		
	10	15K151	HXCAPSCR 1/2-13UNC24X1.25 GR5
	20	15U300	LOKWASHER REGULAR 1/2 ZINC PLT
	30	15U280	01Z FL+WASHER(USS STD)1/2 ZNC PL+D
	40	15K110	HEXCAPSCR 3/8-16UNC2AX1.5 GR5-
	50	15K095	HXCPSCR 3/8-16UNC2AX1 GR5 ZINC
	60	15U200	FLATWASHER(USS STD) 5/16"ZNC P
	70	15U255	LOCKWASHER MEDIUM 3/8 ZINCPL
	80	15G205	HXNUT 3/8-16UNC2B ZINC GR2
	90	27B25002SZ	SPCRROLL.39ID.125L.048T STLZNC
	100	27B2100G0L	SPCRROLL.39ID.562L.048T STLZNC
	110	04 23276	20001C BED SLIDER CHANNEL-22LG
	120	04 21654B	90532B BED SL PAD 1.38THK=COSL3808
	130	04 20850C	89517B MK2 SLIDE PAD COSHA
	140	04 21441	87393B THREAD STRIP-SLIDING CHAN
	150	04 21664	94187B SHIM-BED SL PAD=COEL DS05
ZXSRKSFE1A	FIRST FLOOR RAIL TUBING-10FT		
	10	W4 23380	99407D FLOOR RAIL TUBING WLMT-10FT
	11	W4 23381	0002D FLOOR RAIL TARGET WLMT-10FT
	20	04 23358	98292D SHUTL RAIL POS STOP
	30	15K203	HXCAPSCR TFL 1/2-13X5 GR5 ZINC
	40	15G234N	HXLOCKNUT NYL 1/2-13UNC2 STL/Z
	50	60C001	RUBBER BUMPER-BLKW/WASHER #698
	51	15P010	2Z PHILPAN TRDCUTSCRTYP10-24X1/2S
	60	ALC420015A	98251N FESTOON RAIL ELEC BOX ASSY
	70	04 22847B	97513B FIXED FESTOON MTG FLATBAR
	90	15A011	CARBOLT 3/8-16UNC2X1 ZINC GR2
	10	015U255	LOCKWASHER MEDIUM 3/8 ZINCPL
	110	15G205	HXNUT 3/8-16UNC2B ZINC GR2
	120	ALC420106	99273N HOME TARGET FLOOR MTG ASSY
	130	ALC420107	99273N OOPS TARGET FLOOR MTG ASSY
	140	04 23417	20002B SHUTL DISCHARGE TARGET
	150	15P185	TRDCUT-F HXHD 1/4-20UNC2AX3/4
	160	15U180	LOCKWASHER MEDIUM 1/4 ZINCPL
	170	15U185	FLATWASHER(USS STD) 1/4" ZNC P
ZXSRKSFE2A	ADD'L FLOOR RAIL TUBING-10FT		
	10	W4 23380	99407D FLOOR RAIL TUBING WLMT-10FT
	11	W4 23381	20002D FLOOR RAIL TARGET WLMT-10FT
	20	04 23382	99062B FLOORRAIL TUBING INSERT

Parts List, cont.

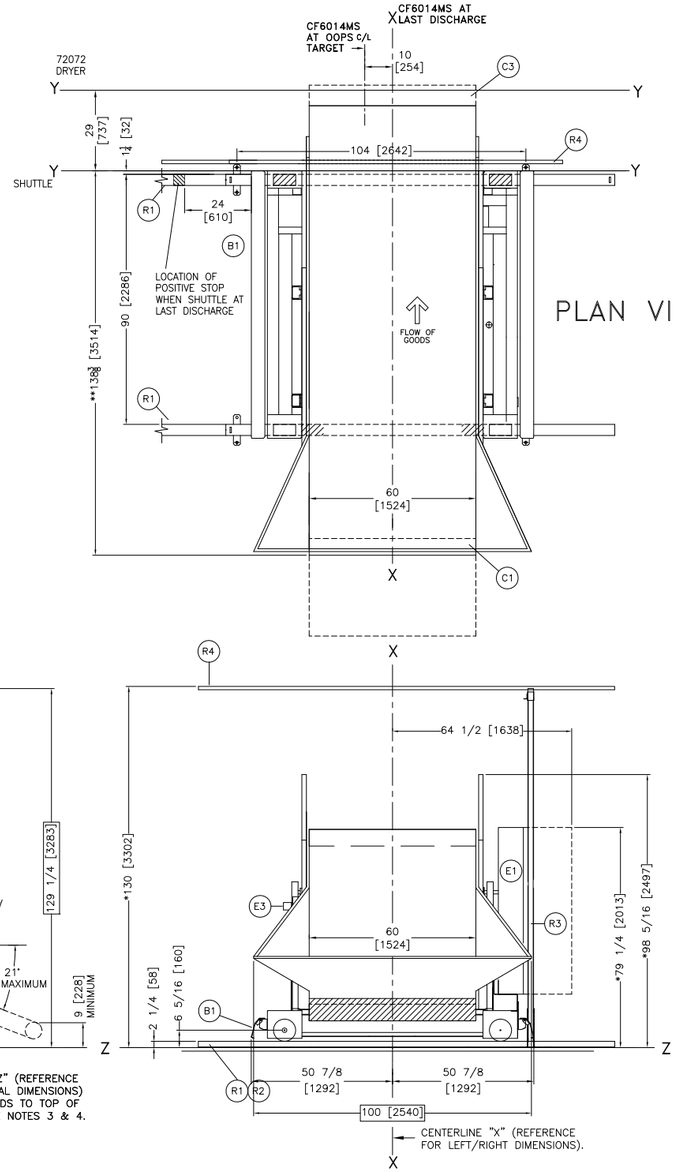
Assembly	Item	Part Number	Description	Comments
	30	04 23417	20002B SHUTL DISCHARGE TARGET	
	40	15P185	TRDCUT-F HXHD 1/4-20UNC2AX3/4	
	50	15U180	LOCKWASHER MEDIUM 1/4 ZINCPL	
	60	15U185	FLATWASHER(USS STD) 1/4" ZNC P	

Dimensional Drawings 3

WHEN THIS DRYER PEDESTAL EXTENDER IS USED WITH DRYER 7272TG1/TS1		CF6014MS DIMENSIONS				DIMENSION "C" 7272 DRYERS LOAD HEIGHT	
		DIMENSION "A"		DIMENSION "B"			
INCHES	mm	INCHES	mm	INCHES	mm	INCHES	mm
−7	−178	76	1930	126 1/2	3213	68	1727
−3 1/2	−89	79 1/2	2019	130	3302	71 1/2	1816
0	0	83	2108	133 1/2	3391	75	1905
3 1/2	89	86 1/2	2197	137	3480	78 1/2	1994
7	178	90	2286	140 1/2	3569	82	2083
10 1/2	267	93 1/2	2375	144	3658	85 1/2	2172
14	356	97	2470	147 1/2	3747	89	2261

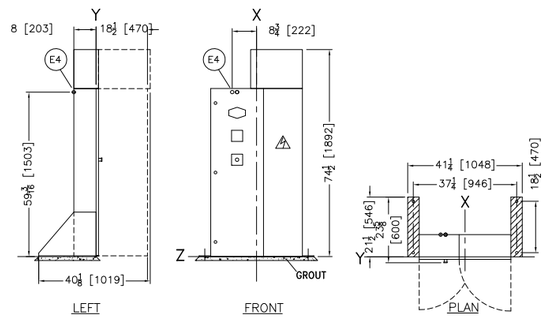


TARGETS & SWITCH INSTALLATION

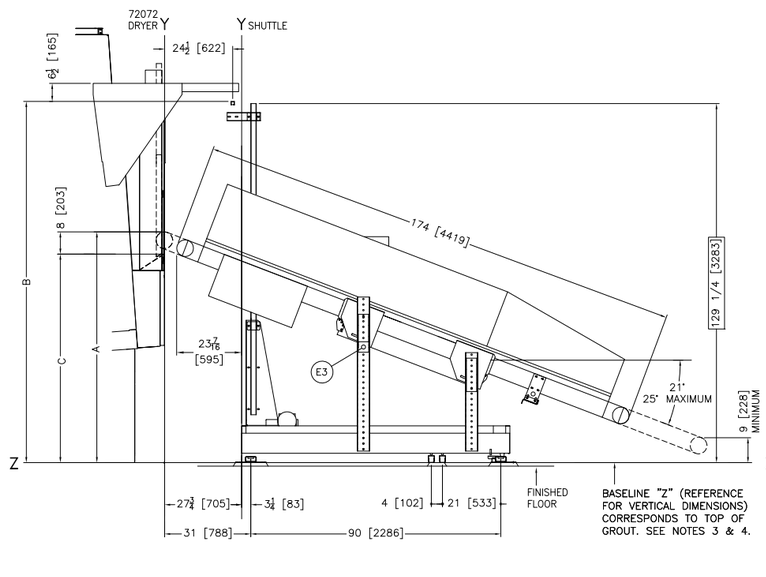


PLAN VIEW

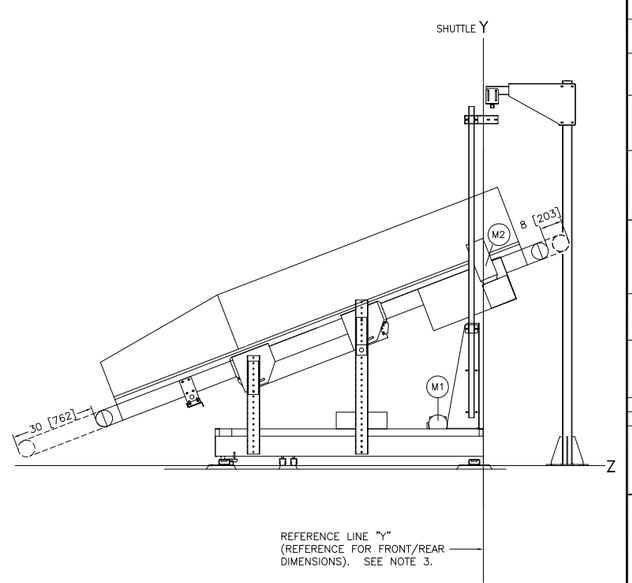
FRONT VIEW



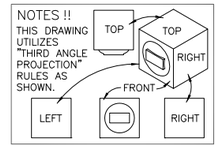
REMOTE MOUNT SHUTTLE CONTROL BOX
SEE NOTE 11.



LEFT VIEW



RIGHT VIEW



ITEM	LEGEND
R4	FESTOON RAIL. RAIL SUPPLIED BY MILNOR AND MAY BE PRICED SEPARATELY. SEE PRICE LIST.
R3	FESTOON RAIL SUPPORT
R2	BOTTOM DRIVE RAIL WITH TARGET MOUNTING. RAIL SUPPLIED BY MILNOR AND MAY BE PRICED SEPARATELY.
R1	BOTTOM DRIVE RAIL. RAIL SUPPLIED BY MILNOR AND MAY BE BY MILNOR AND PRICED SEPARATELY. SEE PRICE LIST.
M2	BELT MOTOR, UNDERDRIVE.
M1	CART DRIVE MOTOR
E4	ELECTRICAL & CONTROL CABLE CONNECTIONS FOR REMOTE SHUTTLE CONTROL BOX
E3	EMERGENCY STOP BUTTON. SEE NOTE 8.
E2	CONTROLS
E1	HIGH VOLTAGE CONTROL BOX IN RIGHT HAND POSITION.
C1	CONVEYOR EXTENDED 8"[203] TO DISCHARGE
B1	SAFETY KICK PLATE, SPRING LOADED.
A1	AIR CONNECTION, FROM FESTOONING, 1/2" NPT

NOTES

11 CONTROLS FOR THE COSHM SHUTTLE ARE CONTAINED IN THIS REMOTELY MOUNTED SHUTTLE CONTROL BOX WHICH MUST BE PLACED IN THE EQUIPMENT LAYOUT.

10 THE LENGTH DIMENSION(**) WILL VARY DEPENDING ON LOAD AND DISCHARGE HEIGHTS REQUIRED.

9 THE HEIGHT DIMENSIONS(*) ON THIS DRAWING SHOW THE PROPER HEIGHTS TO WORK WITH THE 58058 DRYER AT ZERO PEDESTAL EXTENDERS, 73"[1854] LOADING HEIGHT. INTERFACING HEIGHTS AND OTHER DRYER MODELS ARE SHOWN IN THE CHART.

8 EMERGENCY STOPS ARE ON BOTH LEFT AND RIGHT SIDES OF THE SHUTTLE ONE OF THE TWO EMERGENCY STOPS IS INSTALLED INTO THE DOOR OF THE CONTROL BOX. THE SECOND EMERGENCY STOP IS MOUNTED TO THE SIDE RAIL MEMBER OPPOSITE THE CONTROLS.

7 THE SHUTTLE NAME CONFIGURATION IS AS FOLLOWS:
CF = MICROPROCESSOR/TRANSLATE/NON-ELEVATE
60 = BELT WIDTH IN INCHES
14 = LENGTH OF BED (14 = 14'-6")
M = 30" TO LOAD + 8" TO DISCHARGE
S = SINGLE BED

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42 [1067] IF OBJECT IS A GROUNDED WALL (ie. BARE CONCRETE, BRICK, ETC.)
48 [1219] IF OBJECT IS ANY LIVE PART.
CHECK LOCAL ELECTRIC CODES FOR FURTHER RESTRICTIONS.

5 CUSTOMER TO SUPPLY CIRCUIT BREAKER OR FUSED BRANCH CIRCUIT DISCONNECT (SAFETY) SWITCHES WITH LAG TYPE FUSES FROM POWER SOURCE TO MACHINE. A SEPARATE GROUND WIRE MUST BE CONNECTED FROM DISCONNECT TO EQUIPMENT.

4 BASELINE "Z" IS THE SAME FOR ALL MILNOR MACHINES AND IS SHOWN ON ALL DIMENSIONAL DRAWINGS. THE DISTANCE BETWEEN BASELINE "Z" AND THE FINISHED FLOOR MAY VARY (WITH CHANGES IN FLOOR HEIGHT) AS REQUIRED TO INSURE THAT BASELINE "Z" IS HORIZONTAL AND ALL COMPONENTS REQUIRING GROUT ARE SET ON A MINIMUM 1" [25] THICK GROUT BED.

3 USE REFERENCE LINES "X", "Y", AND "Z" TO LOCATE ALL SERVICE CONNECTIONS.

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1 ALL DIMENSIONS SHOWN ARE APPROXIMATE, SUBJECT TO NORMAL MANUFACTURING TOLERANCES, AND TO OCCASIONAL CHANGES WITHOUT NOTICE THROUGH REDESIGN AND/OR RELOCATION OF COMPONENTS, ETC. DO NOT USE FOR CONSTRUCTION UNLESS CERTIFIED, AND IN NO EVENT PRE-PIPE CLOSER THAN FIVE FEET FROM MACHINE. FACTORY MUST BE CONSULTED FOR DIMENSIONS IF MACHINE IS TO BE MOVED THROUGH NARROW OR LOW CORRIDORS OR OPENINGS.

ATTENTION

MOST REGULATORY AUTHORITIES (INCLUDING OSHA IN THE USA) HOLD THE OWNER/USER ULTIMATELY RESPONSIBLE TO MAINTAIN A SAFE WORKING ENVIRONMENT. ACCORDINGLY, THE OWNER/USER MUST RECOGNIZE ALL FORESEEABLE SAFETY HAZARDS, FURNISH SAFETY INSTRUCTIONS AND GUIDANCE TO ALL PERSONNEL WHO MAY COME IN CONTACT WITH THE INSTALLATION, AND PROVIDE ALL NECESSARY ADDITIONAL SAFETY GUARDS, FENCES, RESTRAINTS, DEVICES, ETC., NOT FURNISHED BY THE EQUIPMENT MANUFACTURER OR VENDOR.

ATTENTION

THE FLOOR AND/OR OTHER SUPPORT COMPONENTS MUST HAVE SUFFICIENT STRENGTH (AND RIGIDITY WITH DUE CONSIDERATION FOR NATURAL OR RESONANT FREQUENCY THEREOF) TO WITHSTAND THE FULLY LOADED WEIGHT OF THE MACHINE INCLUDING THE GOODS, THE WATER, AND ANY REPEATED SINUSOIDAL (ROTATING) FORCES GENERATED DURING ITS OPERATION. WRITE THE FACTORY FOR ADDITIONAL MACHINE DATA FOR USE BY A COMPETENT SOIL AND/OR STRUCTURAL ENGINEER.

CF6014MS

DM 0 0.5M 1M
INCHES 0 12 24 36

DWG# BDCF60MSAE 2013482D

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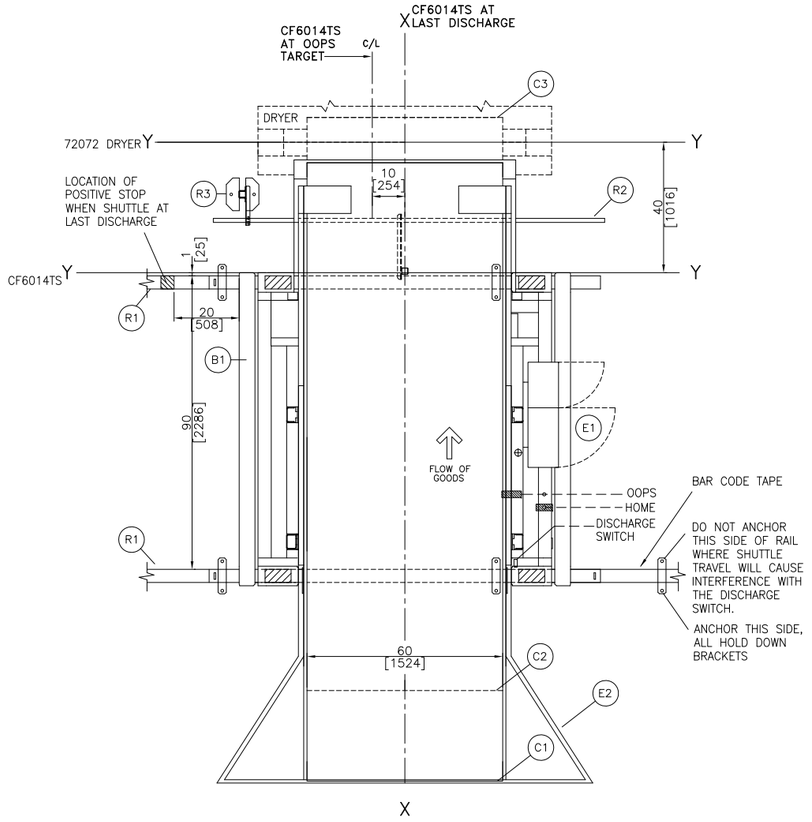
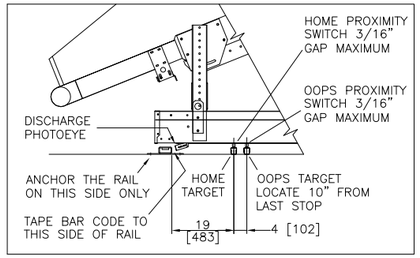
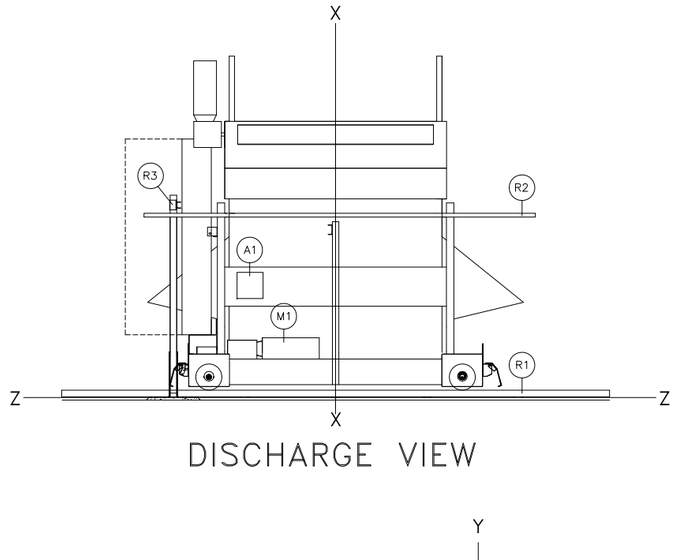
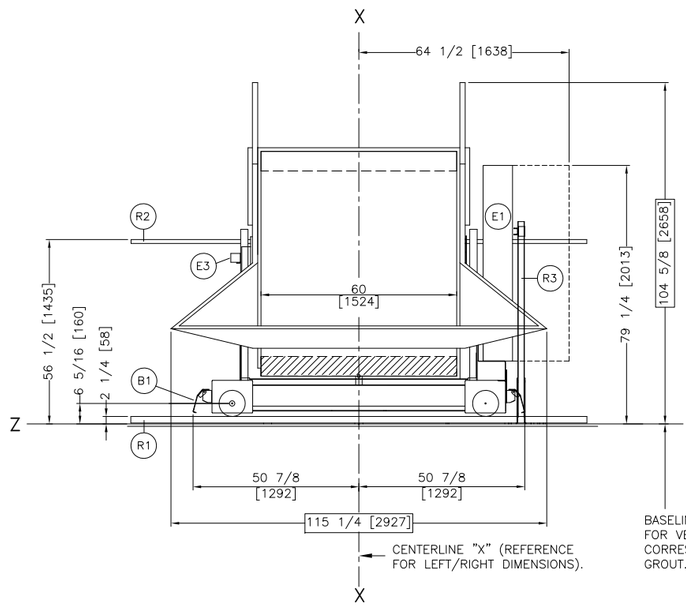


PLAN VIEW



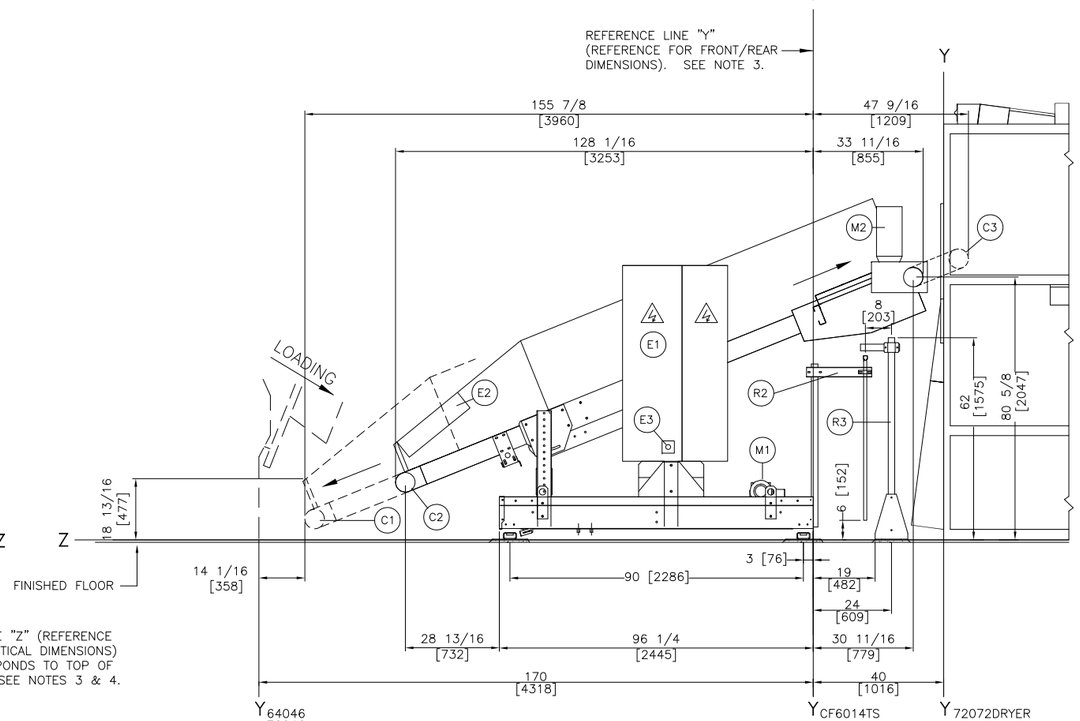


DISCHARGE VIEW



FRONT VIEW

BASELINE "Z" (REFERENCE FOR VERTICAL DIMENSIONS) CORRESPONDS TO TOP OF GROUT. SEE NOTES 3 & 4.



FOR INTERFACE DIMENSIONS TO OTHER MODELS, SEE BDCF60TSBB.

RIGHT VIEW

ITEM	LEGEND
R3	FESTOON RAIL SUPPORT
R2	FESTOON RAIL. RAIL SUPPLIED BY MILNOR AND MAY BE
	PRICED SEPARATELY. SEE PRICE LIST.
R1	BOTTOM DRIVE RAIL. RAIL SUPPLIED BY MILNOR AND MAY BE
	PRICED SEPARATELY. SEE PRICE LIST.
M2	BELT MOTOR, UNDERDRIVE.
M1	CART DRIVE MOTOR
E3	EMERGENCY STOP BUTTON. SEE NOTE 8.
E2	CONTROLS
E1	HIGH VOLTAGE CONTROL BOX IN RIGHT HAND POSITION .
C3	CONVEYOR EXTENDED 15"[381] TO DISCHARGE
C2	CONVEYOR RETRACTED TO TRAVEL
C1	CONVEYOR EXTENDED 30"[762] TO LOAD
B1	SAFETY KICK PLATE, SPRING LOADED.
A1	AIR CONNECTION, FROM FESTOONING, 1/2" NPT

NOTES

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CF6014TS

DM 0 0.5M 1M
INCHES 0 12 24 36

DWG# BDCF60TSBE 2009163D

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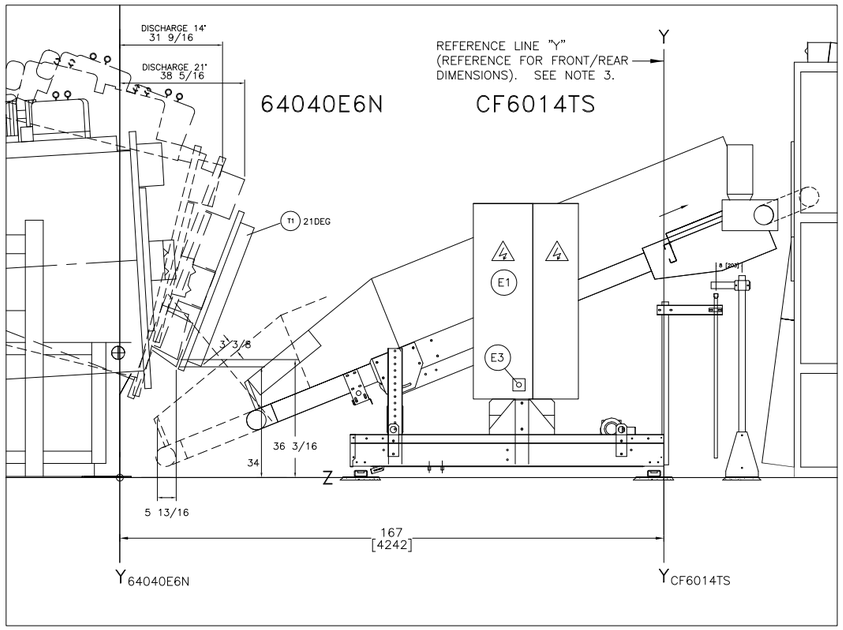

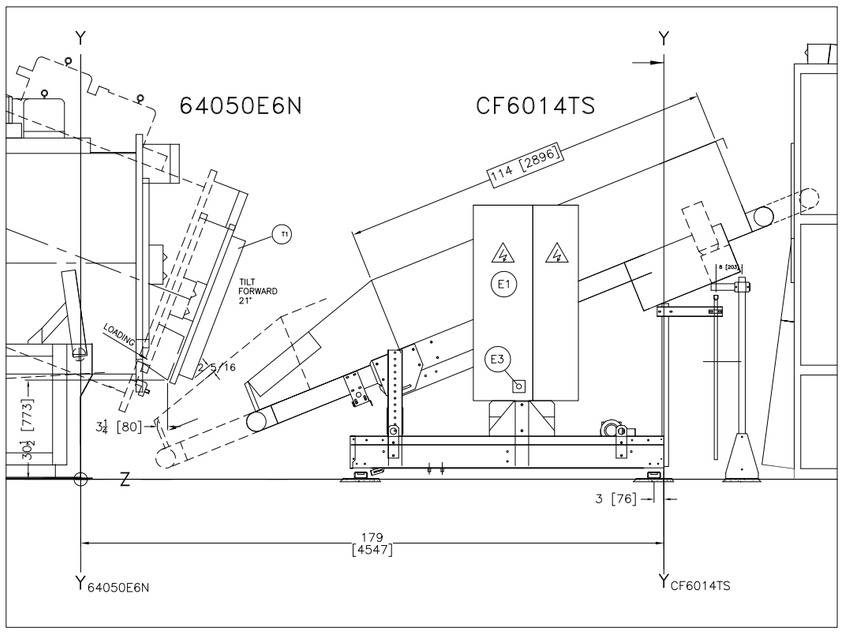

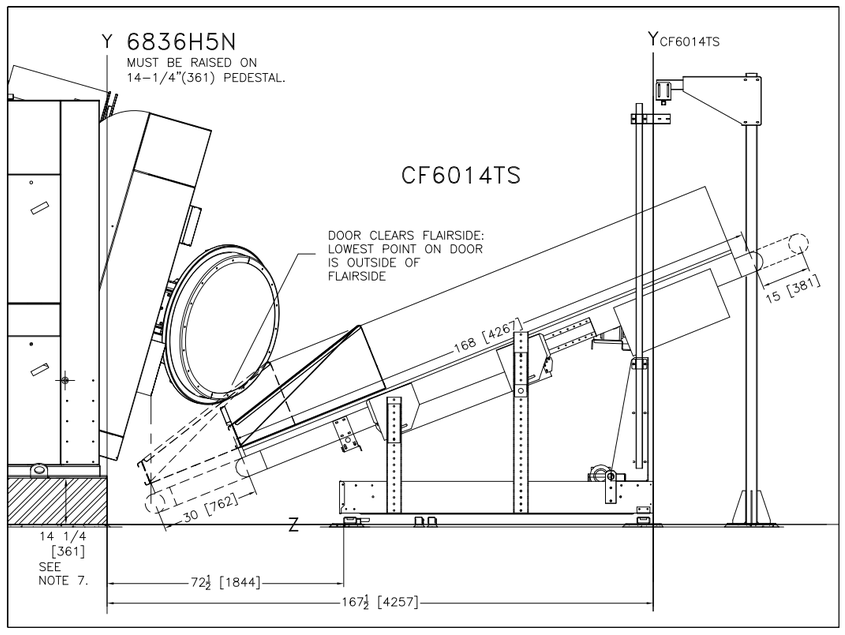

NOTES

7 THE 6836H5N MUST BE RAISED ON A 14-/4"[361] PEDESTAL TO DISCHARGE PROPERLY TO THE CF6014TS SHUTTLE. SEE BD6836H5BSAE.

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CF6014TS OPTIONS

DM 0 0.5M 1M
INCHES 0 12 24 36

DWG# BDCF60TSBB
2014033D

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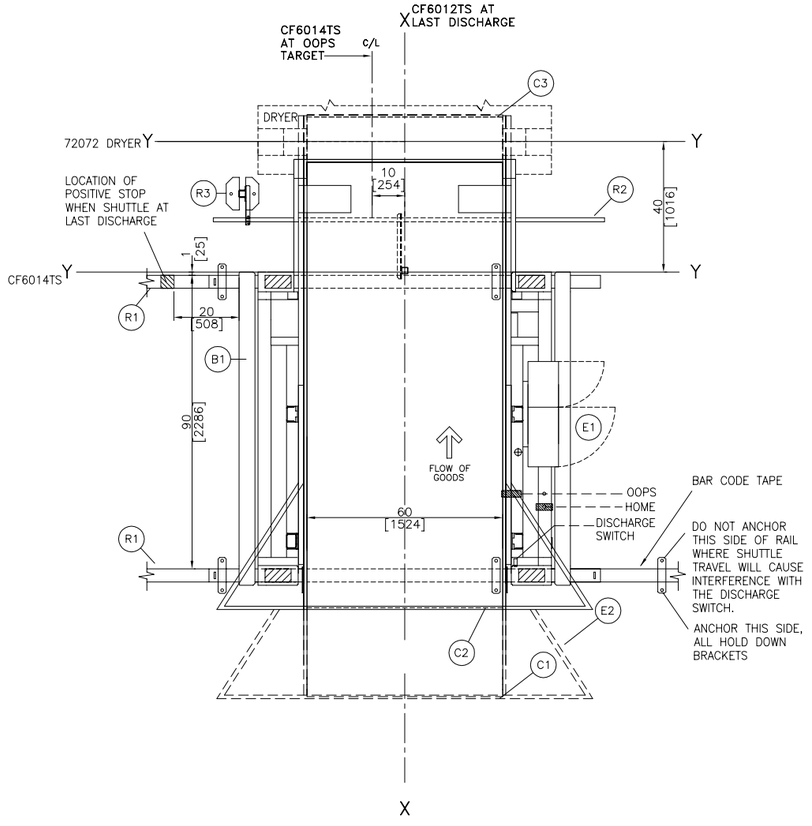
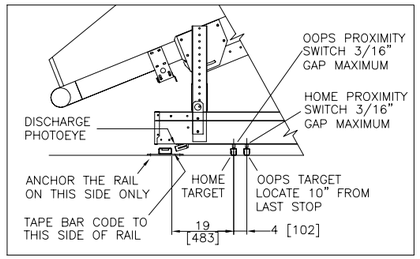
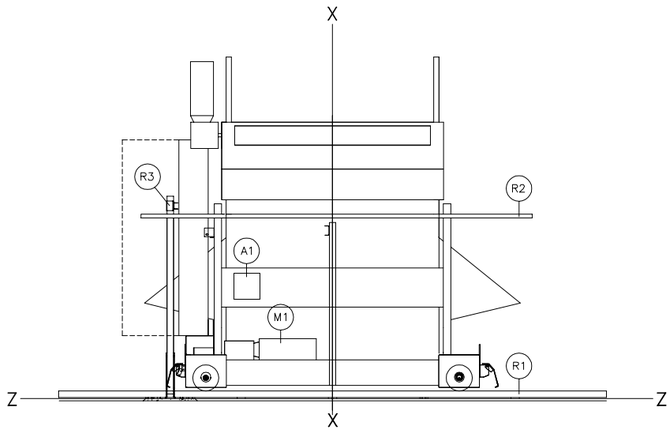
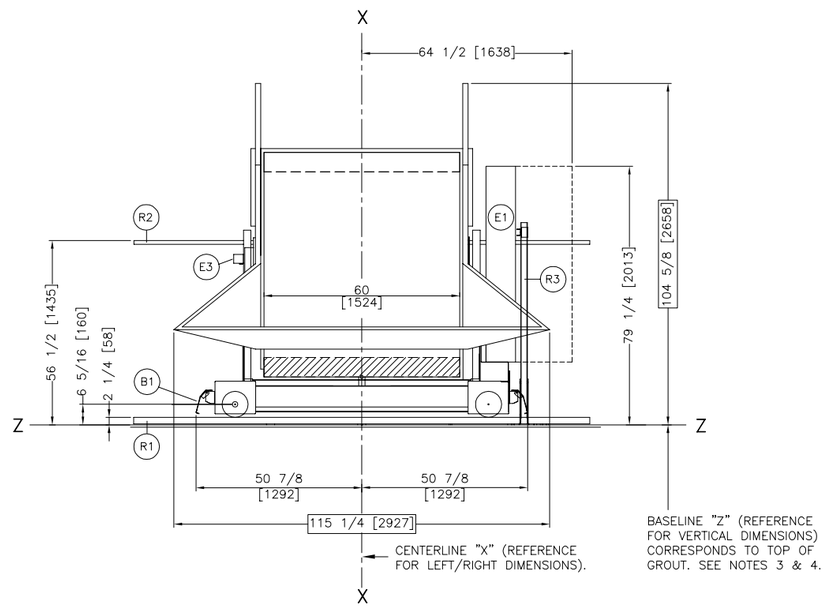


PLAN VIEW

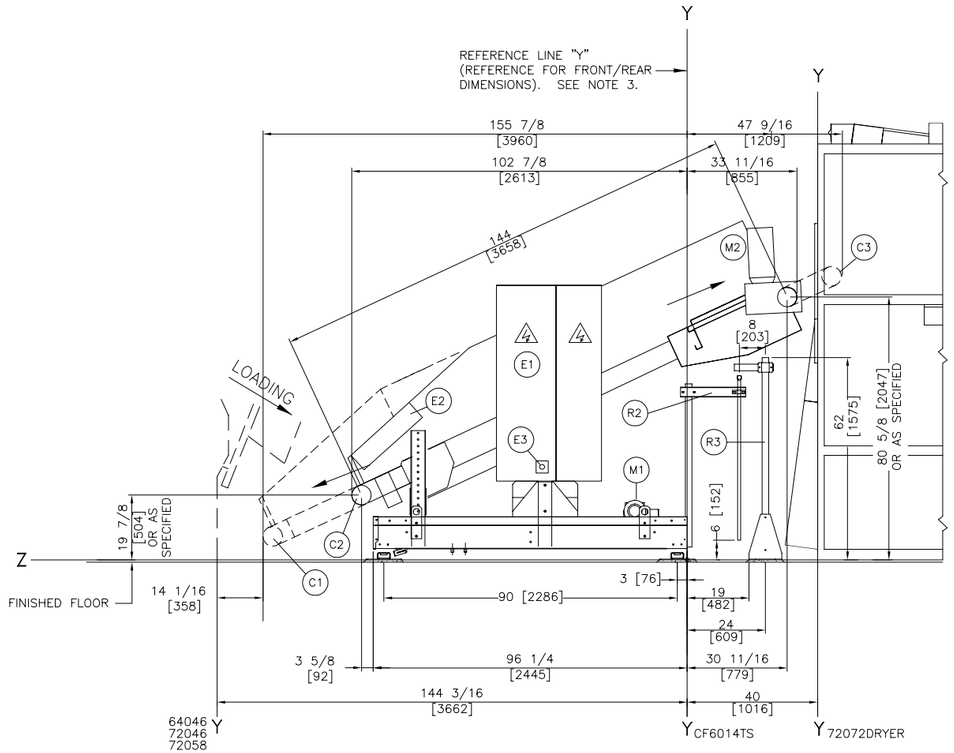




DISCHARGE VIEW



FRONT VIEW



RIGHT VIEW

ITEM	LEGEND
R3	FESTOON RAIL SUPPORT
R2	FESTOON RAIL. RAIL SUPPLIED BY MILNOR AND MAY BE
	PRICED SEPARATELY. SEE PRICE LIST.
R1	BOTTOM DRIVE RAIL. RAIL SUPPLIED BY MILNOR AND MAY BE
	PRICED SEPARATELY. SEE PRICE LIST.
M2	BELT MOTOR, UNDERDRIVE.
M1	CART DRIVE MOTOR
E3	EMERGENCY STOP BUTTON. SEE NOTE 8.
E2	CONTROLS
E1	HIGH VOLTAGE CONTROL BOX IN RIGHT HAND POSITION .
C3	CONVEYOR EXTENDED 15'[381] TO DISCHARGE
C2	CONVEYOR RETRACTED TO TRAVEL
C1	CONVEYOR EXTENDED 30"[762] TO LOAD
B1	SAFETY KICK PLATE, SPRING LOADED.
A1	AIR CONNECTION, FROM FESTOONING, 1/2" NPT

NOTES

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CF6012TS

DM 0 0.5M 1M
INCHES 0 12 24 36

DWG# BDCF6012AE
2007331D

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