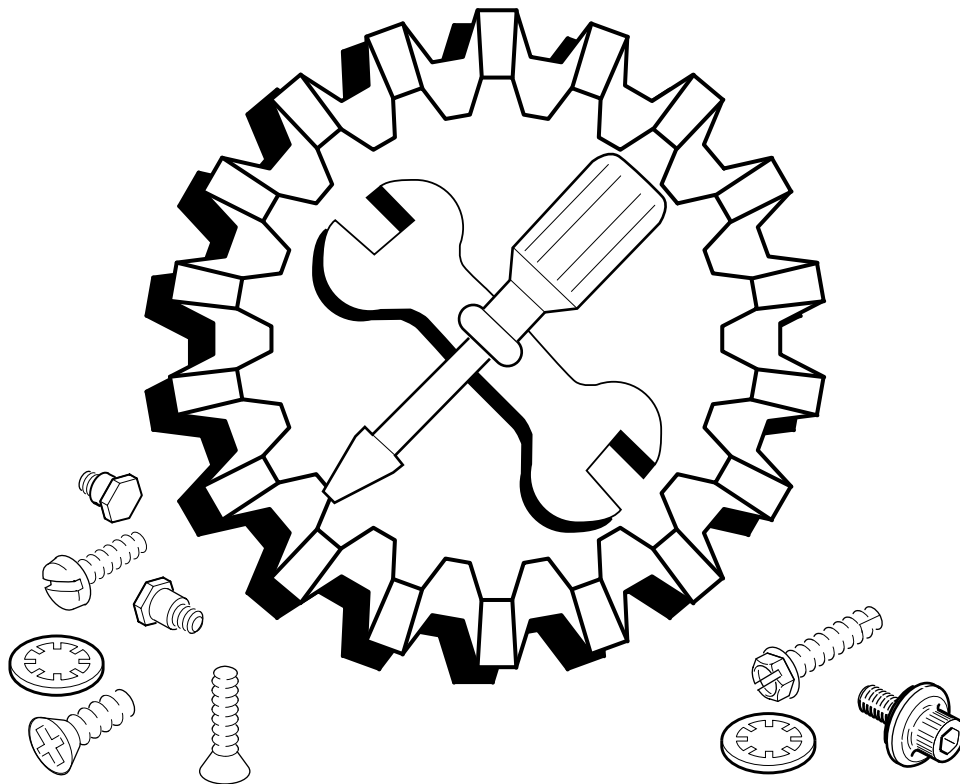


**BESSER**

# MAINTENANCE INSTRUCTIONS



**Preventive Maintenance Manual  
466377F0101**

**March 2001 • US\$50**

**BESSER** World Headquarters  
801 Johnson St. • Alpena, Michigan, 49707 • U.S.A.  
Phone (517) 354-4111

# **BESSER**

COMPANY NAME: .....

SERIAL NUMBER: .....

ASSEMBLY NUMBER: .....

WIRING DIAGRAM NUMBER: .....

INSTALLATION DRAWING NUMBER: .....

# PREVENTIVE MAINTENANCE

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## PREVENTIVE MAINTENANCE SPECIFICATIONS

	Royal Purple Synthetic Grease	Gear Motor Shell Omala 320 ISO 320	Gear Motor Mobil SHC 634	ATF Mobil ATF 210 Type F ISO 171	Hydraulic Oil Shell Tellus 46 ISO 3448	Grease Shell Alvania EP No. 1 NLG No. 1	Linear Lube Ball Screw Lubr.
<b>Besser Part No.</b>	<b>114135</b>	<b>112767</b>	<b>113929</b>	<b>113758</b>	<b>113920</b>	<b>090178</b>	<b>090121</b>
Mixer 80 Cubic Ft.		** 3 Gal.				*	
Skiploader SL-80			** 2 Gal.			*	
Bescopac					175 Gal.	*	
V3-12		** 1 Gal.		**2.5 Gal.		120 Lb. Drum	
Besser-Matic Includes Conveyors: Load, Unload and Pallet Return		**8 Motors @1.5 Gal. Each	** 2 Motors @1.5 Gal. Each		40 Gal.	*	Ball Screw 14.5 oz. Tube
LSC-40A					80 Gal. (2) @ 40 Gal. Each	*	
Depalleter					50 Gal.	*	
Vibrator Bearings	55 Gal. Drum						

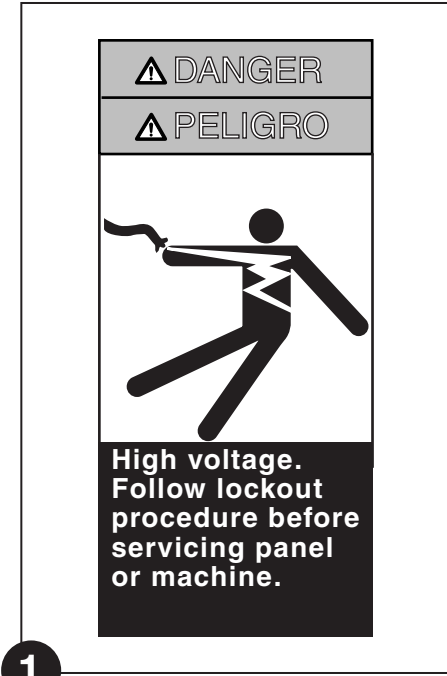
\* Equipment requiring manual lubrication (grease), the quantity required will vary depending on equipment and production/maintenance schedules. Provide minimum (1) 120 lb. drum per plant.

\*\* Prefilled at factory (Besser Company).

## SAFETY SIGNS

<b>Sign</b>	<b>Description</b>	<b>Required</b>
1	All Panels .....	1
2	Mixer .....	4
3	Concrete Products Machine.....	1
	Depalleter.....	2
4	Mixer .....	2
5	Skiploader .....	4
6	Skiploader/Mixer Platforms .....	8
7	Skiploader/Mixer Platforms .....	8
8	Vertical: Pallet Transport System .....	2
	Horizontal: LSC-40A/LSC-100 .....	6
	Pallet Transport System .....	4
9	Besser-Matic .....	4
10	Besser-Matic .....	4
11	Skiploader .....	4
12	All Panels .....	1
13	Overhead Block Transfer.....	4
14	Block Pusher.....	2
	Pallet Transfer System .....	4
15	Concrete Products Machine.....	2
16	Conveyors .....	12
17	Cuber .....	8
18	Cuber .....	3
	Block Turnovers.....	2
	Slat Conveyors.....	2

**To order safety decals, contact your local Besser representative  
or the Besser Central Order Department.  
Thank you!**



**1**  
**Large: 113236F0409**  
 High Voltage  
 Width 4 1/2 inch  
 Height 9 5/8 inch  
**Small: 113236F0204**  
 High Voltage  
 Width 2 inch  
 Height 4 1/8 inch



**2**  
**113237F0410**  
 Mixer Blade Hazard  
 Width 4 1/2 inch  
 Height 10 1/4 inch



**3**  
**Vertical: 113240F0307**  
 Crush Hazard  
 Width 3 1/2 inch  
 Height 7 1/2 inch  
**Horizontal: 113239F0604**  
 Crush Hazard  
 Width 6 5/8 inch  
 Height 4 inch



**4**  
**114692F1006**  
 Nip Points  
 Width 5 3/4 inch  
 Height 9 1/2 inch



**5**  
**114688F0906**  
 Crush Hazard  
 Width 6 1/4 inch  
 Height 9 1/2 inch



**6**  
**114689F0804**  
 Fall Hazard  
 Width 4 1/2 inch  
 Height 7 3/4 inch



7

**114690F0805**  
Falling Objects  
Width 4 3/4 inch  
Height 8 inch



8

**Vertical: 113244F0410**  
Crush Hazard  
Width 4 1/2 inch  
Height 10 inch  
**Horizontal: 113245F1005**  
Crush Hazard  
Width 10 inch  
Height 5 3/4 inch



9

**113242F0409**  
Crush Hazard  
Width 4 1/2 inch  
Height 9 5/8 inch



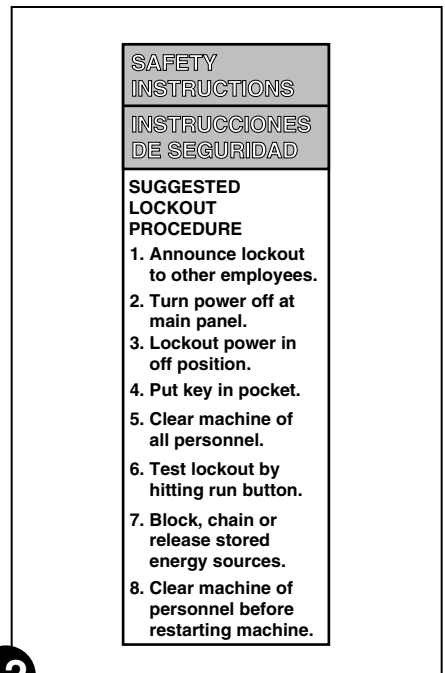
10

**113243F0410**  
Falling Objects  
Width 4 1/2 inch  
Height 10 inch



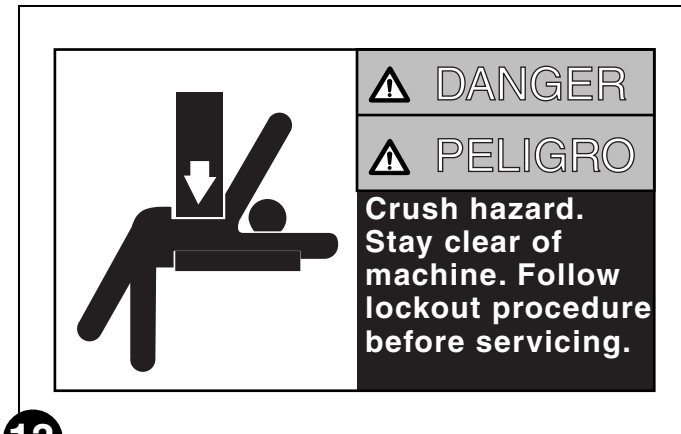
11

**114691F1006**  
Shear and Fall Hazards  
Width 5 3/4 inch  
Height 9 3/4 inch



12

**113249F0410**  
Safety Instructions Decal –  
Suggested Lockout Procedure  
Width 4 inch  
Height 10 inch



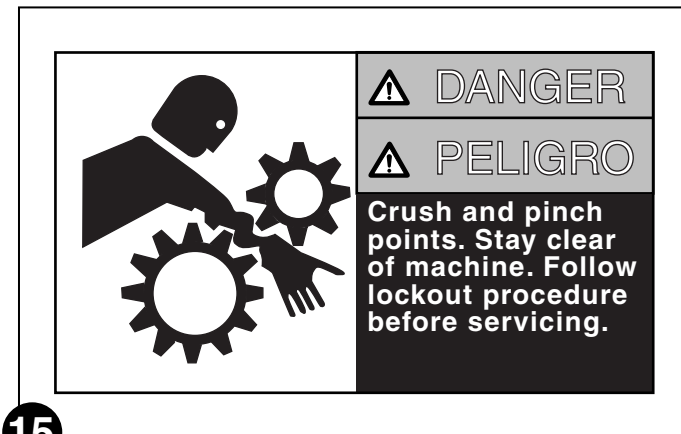
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**113238F1005**  
Crush Hazard  
Width 10 inch  
Height 5 3/4 inch



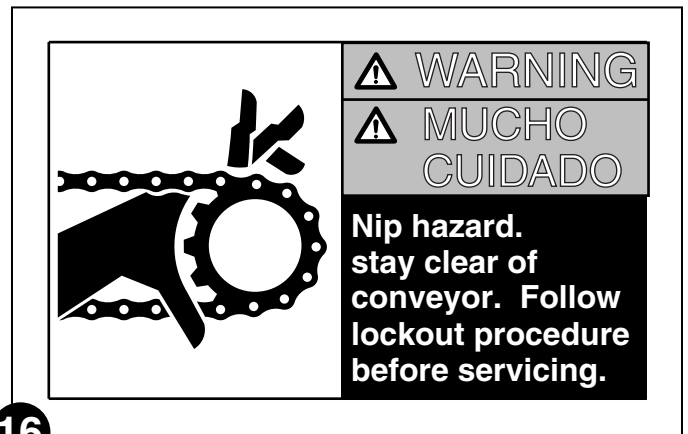
**14**

**113248F1006**  
Crush Hazard  
Width 10 inch  
Height 6 inch



**15**

**113241F0605**  
Crush and Pinch Points  
Width 6 5/8 inch  
Height 4 inch



**16**

**113246F0704**  
Nip Hazard  
Width 7 inch  
Height 4 1/2 inch



**17**

**113247F1006**  
Crush Hazard  
Width 10 inch  
Height 6 inch

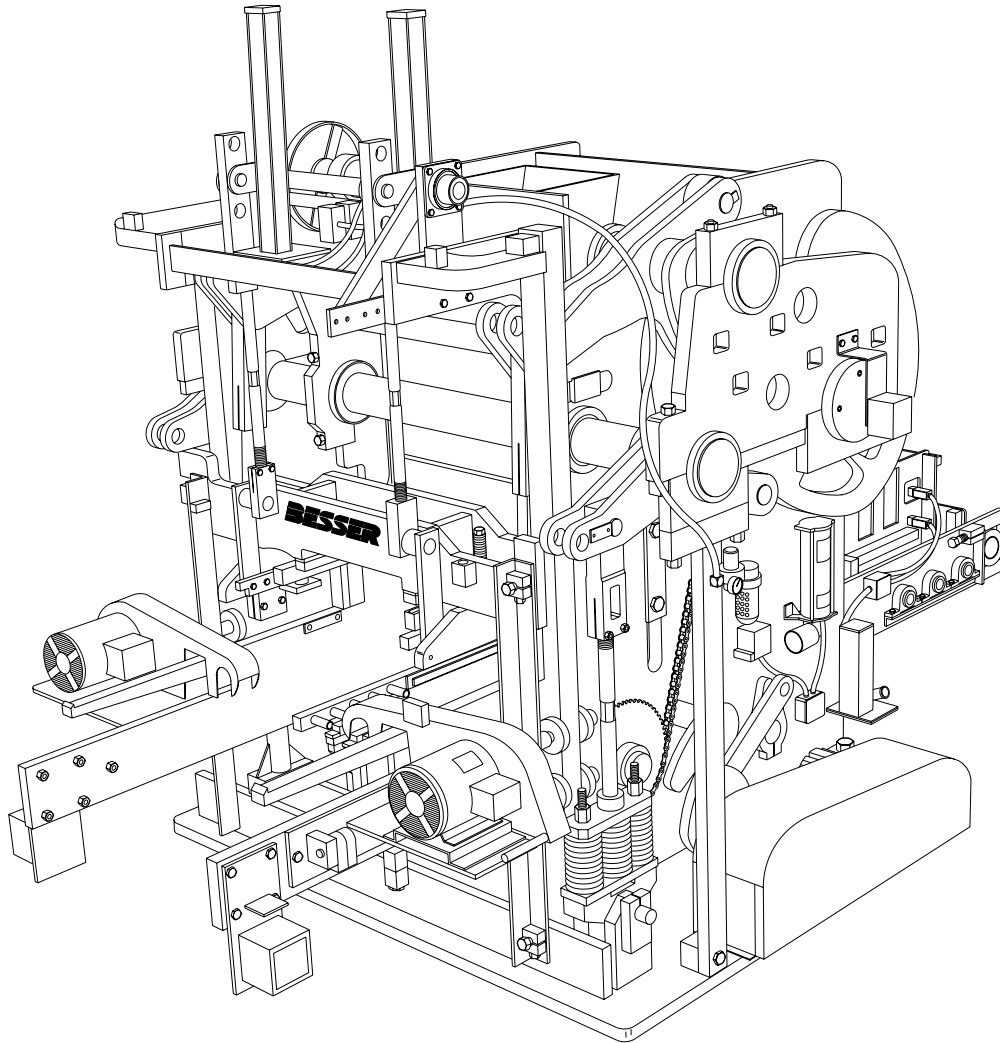


**18**

**113250F1006**  
Crush and Pinch Hazard  
Width 10 inch  
Height 6 inch



**SECTION 1**  
**CONCRETE PRODUCTS MACHINE**  
**MAINTENANCE INSTRUCTIONS**



**1.1 DAILY MAINTENANCE (8 HOURS)**

Assembly	Component	Special Instructions
Feedbox	Back bar and guide	Clean and replace when bent or worn more than .030 inch [.76 mm].
	Liners	Replace when bent or worn more than .060 inch [1.5 mm].
	Loose back bar	Replace when bent or worn more than .100 inch [2.5 mm].
	Hopper	Replace when bent or worn more than .100 inch [2.5 mm].
	Gate	Replace when bent or worn more than .100 inch [2.5 mm].
	Baffle	Replace when bent or worn more than .100 inch [2.5 mm].
	Apron plate	Replace when worn more than .125 inch [3 mm].
	Wear shoes	Replace when worn more than .125 inch [3 mm].
Air System	Filter	Drain water from filter. Inspect parts for cracks, corrosion, wear and distortion.
	Safety signs	Inspect and clean.
	Emergency stop	Verify operation.

*Table 1.1 Daily Maintenance (8 Hours)*

**1.2 BI-WEEKLY MAINTENANCE (80 HOURS)**

Assembly	Component	Special Instructions
Feedbox	Rollers	Replace when worn more than .010 inch [.25 mm].
	Bushings	Replace when worn more than .030 inch [.76 mm]
	Pins	Replace when worn more than .010 inch [.25 mm]
	Back top plate	Replace when worn more than .100 inch [2.5 mm]

*Table 1.2 Bi-Weekly Maintenance (80 Hours)*

**1.3 MONTHLY MAINTENANCE (160 HOURS)**

Assembly	Component	Special Instructions
	Lithium batteries	Verify "Battery Good" indicator is lit. Replace battery if light is not lit.

*Table 1.3 Monthly Maintenance (160 Hours)*

**1.4 QUARTERLY MAINTENANCE (480 HOURS)**

<b>Assembly</b>	<b>Component</b>	<b>Special Instructions</b>
Pinion Shaft	Sheave P/N 112339F6280	Replace when worn. Match with gauge #112541.
Feed, Stripper Head and Pallet Receiver Shafts and Links	Links	Replace when link ends become worn. Tighten to the appropriate torque.
Feedbox	Agitator sheave	Repair or replace when worn. Match with gauge #112541.
	Agitator belts	Check that the belts are level. If belts are not level, look for wear and tension. Match with gauge #112541.
	Agitator bearings	Replace when worn.
	Agitator nylons	Replace when worn to more than .030 inch [.76 mm] clearance.
	Agitator rollers	Replace when worn to more than .010 inch [.25 mm] clearance.
	Agitator bars	Replace when worn to more than .50 inch [13 mm] in diameter.
	Feedbox track	Replace when worn to more than .060 inch [1.5 mm].

*Table 1.4 Quarterly Maintenance (480 Hours)*

**1.5 SEMI-ANNUAL MAINTENANCE (960 HOURS)**

<b>Assembly</b>	<b>Component</b>	<b>Special Instructions</b>
Feed, Stripper Head and Pallet Receiver Shafts and Links	Bearings	Replace when worn to more than .030 inch [.76 mm] clearance.
	Rollers	Replace when worn to more than .010 inch [.25 mm] clearance.
	Bushings	Replace when worn to more than .030 inch [.76 mm] between feeler gauge pin and bushing.
	Pins	Replace when worn to more than .010 inch [.25 mm].
	Link bearings	Replace when worn to more than .030 inch [.76 mm] clearance.
	Link pins	Replace when worn to more than .010 inch [.25 mm] clearance.

*Table 1.5 Semi-Annual Maintenance (960 Hours)*

<b>Assembly</b>	<b>Component</b>	<b>Special Instructions</b>
Pallet and Block Delivery	Pallet conveyor chain	Adjust when pallet conveyor chain is 3% elongated and has sloppy rollers.
	Pallet conveyor bearings	Replace if there is .020 inch [0.5 mm] of radial movement.
	Pallet conveyor sprockets	Replace when no longer smooth when engaging chain.
	Pallet conveyor trunion shaft bearings	Replace if there is .020 inch [0.5 mm] of radial movement.
	Pallet conveyor chain track	Replace when there is 1/8 inch [3 mm] wear or it can no longer adjust.
	Pallet lugs	Replace when the pallet lugs won't consistently push pallets.
Pallet and Block Movings Bars	Linkage bearings	Replace when there is .010 inch [0.25 mm] of radial movement.
	Slides	Replace when you can no longer adjust.
	Guide rollers	Replace when the guide rollers won't turn or has .010 inch [0.25 mm] of radial movement.
	Pallet cradle	Replace when bent or broken.
	Block fingers	Replace when worn more than 1/16 inch [1.6 mm].
Pallet and Block Support Shaft	Linkage bearings	Replace when there is .030 inch [0.76 mm] of radial movement.
	Bearings	Replace when there is .030 inch [.76 mm] radial movement.
	Cam rollers	Replace when the cam rollers won't turn or has .005 inch [0.13 mm] of radial movement.
Pallet and Block Drive	Shaft bearings	Replace when there is .005 inch [0.13 mm] of radial movement.
	Link bearings	Replace when there is .005 [0.13 mm] of radial movement.
	Cam	Replace when surface becomes rough or panned.
	Gearbox	See manufacturer's manual.
	Drive belt and sheaves	See manufacturer's manual.
	Motor brake	See manufacturer's manual.

**Table 1.5** Semi-Annual Maintenance (960 Hours) – Continued

**1.6 ANNUAL MAINTENANCE (1920 HOURS)**

<b>Assembly</b>	<b>Component</b>	<b>Special Instructions</b>
Pinion Shaft	Bearings	Replace when there is .005 inch [.127 mm] of radial movement.
Cam Shaft	Bearings	Check that the bearings have enough clearance. Repair or replace the seals.
	Lithium batteries	Replace lithium batteries.

**Table 1.6** Annual Maintenance (1920 Hours)**1.7 BI-ANNUAL MAINTENANCE (3840 HOURS)**

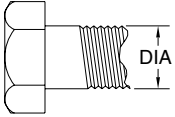
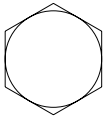
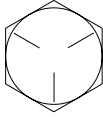
<b>Assembly</b>	<b>Component</b>	<b>Special Instructions</b>
Feedbox	Agitator motor	See manufacturer's manual.
Pallet and Block Drive	Motor	See manufacturer's manual.

**Table 1.7** Bi-Annual Maintenance (3840 Hours)**1.8 TOOLS**

<b>Tool</b>	<b>Part Number</b>
Belt and sheave gauge	#112541
Posydine stock gauge (inside unit)	
Belt tension gauge	#106666
Bearing feeler gauge .015 inch [.38 mm]	#094133
Pry bar (goose neck) (Mold centering)	#061397
Multiple lockout device	#111140
Padlock	#111139

**Table 1.8** Tools

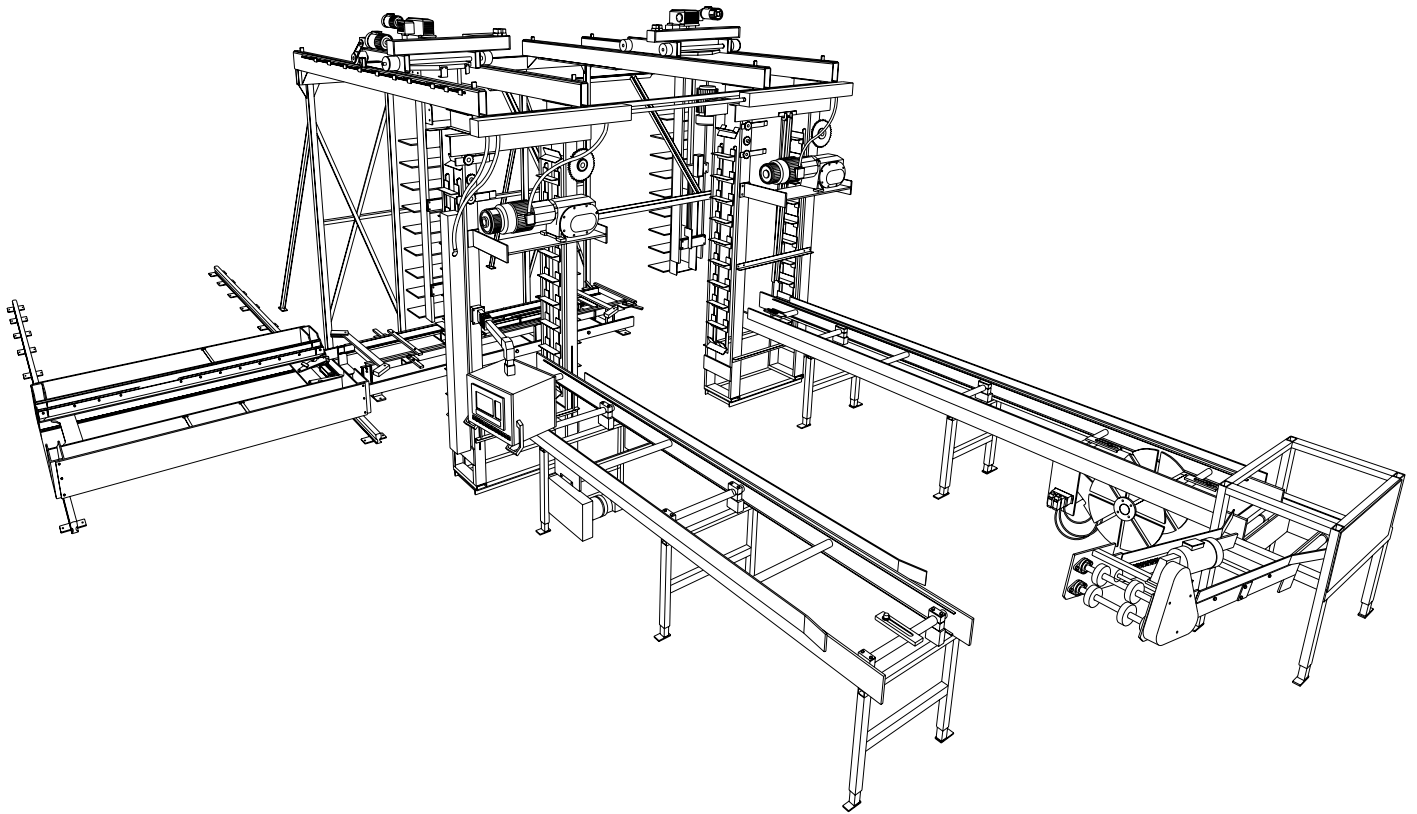
**1.9 BOLT TORQUE CHART**

<p><b>Threaded Diameter</b></p> 	<p><b>S.A.E. Grade 2</b></p> 	<p><b>S.A.E. Grade 5</b></p> 
1/4 inch	60 – 80 lb. inch	100 – 120 lb. inch
3/8 inch	20 – 30 lb. foot	30 – 40 lb. foot
1/2 inch	40 – 60 lb. foot	65 – 85 lb. foot
5/8 inch	90 – 110 lb. foot	140 – 160 lb. foot
3/4 inch	145 – 165 lb. foot	250 – 270 lb. foot
7/8 inch	165 – 185 lb. foot	420 – 440 lb. foot
1 inch	230 – 250 lb. foot	640 – 660 lb. foot
1 1/4 inch	500 – 520 lb. foot	1200 – 1250 lb. foot
1 1/2 inch	600 – 620 lb. foot	1400 – 1500 lb. foot

**Table 1.9** Bolt Torque Chart

# SECTION 2

## BESSER-MATIC MAINTENANCE INSTRUCTIONS



**2.1 DAILY MAINTENANCE (8 HOURS)**

Assembly	Component	Special Instructions
	Spades, accumulators, rackveyor, side shifter, conveyors	Check to make sure guards are in place. Adjust or replace sensors that are not in working order. Clean or replace safety signs.
	Safety signs	Inspect and clean.
	Emergency stop	Verify operation.

*Table 2.1 Daily Maintenance (8 Hours)*

**2.2 WEEKLY MAINTENANCE (40 HOURS)**

Assembly	Component	Special Instructions
Unloader Spade	Ball screw	Clean, lube or replace ball screw if there is dirt or it is worn.
	Turn gearbox	Add oil.
	Turn brake	Replace the turn brake if it is worn.
	Transfer gearbox	Add oil.
	Transfer brake	Replace if the transfer brake is worn.
	Transfer V-belts	Tighten or replace transfer V-belts if the tension is loose or the belts are worn.
	Elevator gearbox	Add oil.
	Elevator brake	Replace if the elevator brake is worn.
	Elevator V-belts	Tighten or replace the elevator V-belts if the tension is loose or the belts are worn.
Loader Spade	Ball screw	Clean, lube or replace ball screw if there is dirt or the ball screw is worn.
	Turn gearbox	Add oil.
	Turn brake	Replace if the turn brake is worn.
	Transfer gearbox	Add oil.
	Transfer brake	Replace if the transfer brake is worn.
	Transfer V-belts.	Tighten or replace transfer V-belts if the tension is loose or the belts are worn.
	Transfer guide rollers	Adjust the transfer guide rollers if they are out of alignment.
	Elevator gearbox	Add oil.
	Elevator brake	Replace if the elevator brake is worn.
	Elevator V-belts	Tighten or replace the elevator V-belts if the tension is loose or the belts are worn.
Loader Accumulator	Drive chain	Adjust the tension if the drive chain is loose.
	Gearbox	Add oil.
	Elevator brake	Replace if the elevator brake is worn.
	Elevator chain	Tighten the elevator chain if the tension is loose.

*Table 2.2 Weekly Maintenance (40 Hours)*

<b>Assembly</b>	<b>Component</b>	<b>Special Instructions</b>
Loader Accumulator – Continued	Taperlocks	Tighten the taperlocks if the tension is loose.
Unloader Accumulator	Drive chain	Adjust drive chain if the spring tension is loose.
	Gearbox	Add oil.
	Elevator brake	Replace if the elevator brake is worn.
	Elevator chain	Tighten the elevator chain if the tension is loose.
	Taperlocks	Tighten the taperlocks if the tension is loose.
Front Delivery Conveyor	Drive chain	Adjust the drive chain if the tension is loose.
	Gearbox	Add oil.
	Conveyor chain	Adjust the conveyor chain if the tension is loose.
Unloading Conveyor	Drive chain	Adjust drive chain if the spring tension is loose.
	Gearbox	Add oil.
	Conveyor chain	Adjust the conveyor chain if the tension is loose.
	Brake	Replace if brake is worn.
Rackveyor	Guide rollers	Lubricate the guide rollers.
	Cam followers	Lubricate the cam followers.
	Pusher springs	Adjust the pusher springs if the tension is too loose or too tight.
Side Shifter	Hydraulics	Tighten and replace the hydraulics if there are leaks.
Pallet Transfer Conveyor	Drive chain	Adjust the drive chain if the tension is loose.
	Gearbox	Add oil.
	Transfer chain	Adjust the drive chain if the tension is loose.
	Brake	Replace the brake if it is worn.
	Clutch roller	Adjust the clutch roller if the roller is not rolling in one direction.

**Table 2.2** Weekly Maintenance (40 Hours) – Continued

**PREVENTIVE MAINTENANCE**

**2.3 MONTHLY MAINTENANCE (160 HOURS)**

Assembly	Component	Special Instructions
Unloader Spade	Elevator ball screw	Clean, lube or replace the elevator ball screw if it is worn.
	Ball screw support bearing	Replace the ball screw support bearing if it is worn.
Loader Spade	Elevator ball screw	Clean, lube or replace the elevator ball screw if it is worn.
	Ball screw support bearing	Replace the ball screw support bearing if it is worn.
Loader Accumulator	Torque limiter	Adjust if the torque limiter is slipping.
	Shaft bearing	Replace if the shaft bearing is worn.
	Elevator chains	Lubricate with grease.
	Shelf angles	Replace if the shelf angles are bent or worn.
Unloader Accumulator	Torque limiter	Adjust if the torque limiter is slipping.
	Shaft bearing	Replace if the shaft bearing is worn.
	Elevator chains	Lubricate with grease.
	Shelf angles	Replace if the shelf angles are bent or worn.
	Lithium batteries	Verify "Battery Good" indicator is lit. Replace battery if light is not lit.

**Table 2.3** Monthly Maintenance (160 Hours)

**2.4 ANNUAL MAINTENANCE (1920 HOURS)**

Assembly	Component	Special Instructions
	Lithium batteries	Replace lithium batteries.

**Table 2.4** Annual Maintenance (1920 Hours)

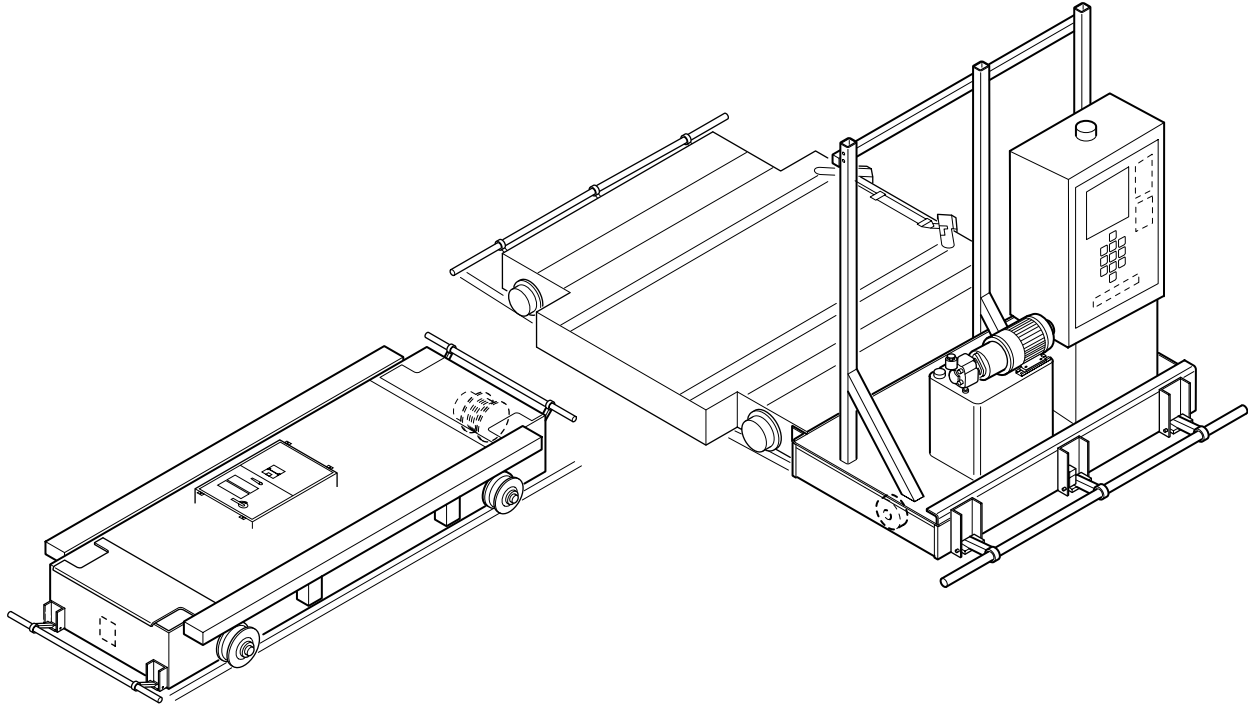
**2.5 LUBRICATION**

Item	Equipment/Component	Lubricant Type
1.	Drive Chains	All purpose grease
2.	Conveyor Chains	Dry lubricant
3.	Accumulators, Transfer Spades and Conveyor Gearboxes	Shell Omala 320 ISO 320 (8 motors x 1.5 gal. each)
4.	Bearings	EP#1 Grease
5.	Spade Turn Motor Gearboxes	Mobil SHC 634 (2 motors x 1.5 gal. each)
6.	Hydraulic Power Unit	Hydraulic Oil Shell Tellus 46 ISO 3448
7.	Ball Screw	Linear Lube

**Table 2.5** Lubrication Points and Schedule

# SECTION 3

## RACK TRANSFER SYSTEM MAINTENANCE INSTRUCTIONS



**3.1 DAILY MAINTENANCE (8 HOURS)**

Assembly	Component	Special Instructions
Transfer Car	Car safety bars	Verify safety bars are working.
	Signal light	Verify light is working. Replace light if needed.
	Signal horn	Verify horn is working.
	Safety signs	Inspect and clean.
	Emergency stop	Verify operation.
Crawler	Sensors	Inspect. Clean dust from sensors.
	Actuators	Inspect. Clean off top surfaces of actuators.
	Safety signs	Inspect and clean.
	Emergency stop	Verify operation.

*Table 3.1 Daily Maintenance (8 Hours)*

**3.2 MONTHLY MAINTENANCE (160 HOURS)**

Assembly	Component	Special Instructions
Transfer Car	Hydraulic filter	Inspect the filter.
	Lithium batteries	Verify that “Battery Good” indicator is lit. Replace battery if light is not on.
Crawler	Hydraulic filter	Inspect the filter.
	Lithium batteries	Verify that “Battery Good” indicator is lit. Replace battery if light is not on.

*Table 3.2 Monthly Maintenance (160 Hours)*

**3.3 QUARTERLY MAINTENANCE (480 HOURS)**

Assembly	Component	Special Instructions
Transfer Car	Hydraulic filter	Change the hydraulic filter.
	Hydraulic fluid	Change the hydraulic fluid.
Crawler	Hydraulic filter	Change the hydraulic filter.
	Hydraulic fluid	Change the hydraulic fluid.

*Table 3.3 Quarterly Maintenance (480 Hours)*

**3.4 SEMI-ANNUAL MAINTENANCE (960 HOURS)**

Assembly	Component	Special Instructions
Crawler	Cable	Check for wear or cable fatigue. Replace if needed.
	Cable reel springs	Check for loose or floppy cable that rewinds sloppily. Replace the springs.

*Table 3.4 Semi-Annual Maintenance (960 Hours)*

**3.5 ANNUAL MAINTENANCE (1920 HOURS)**

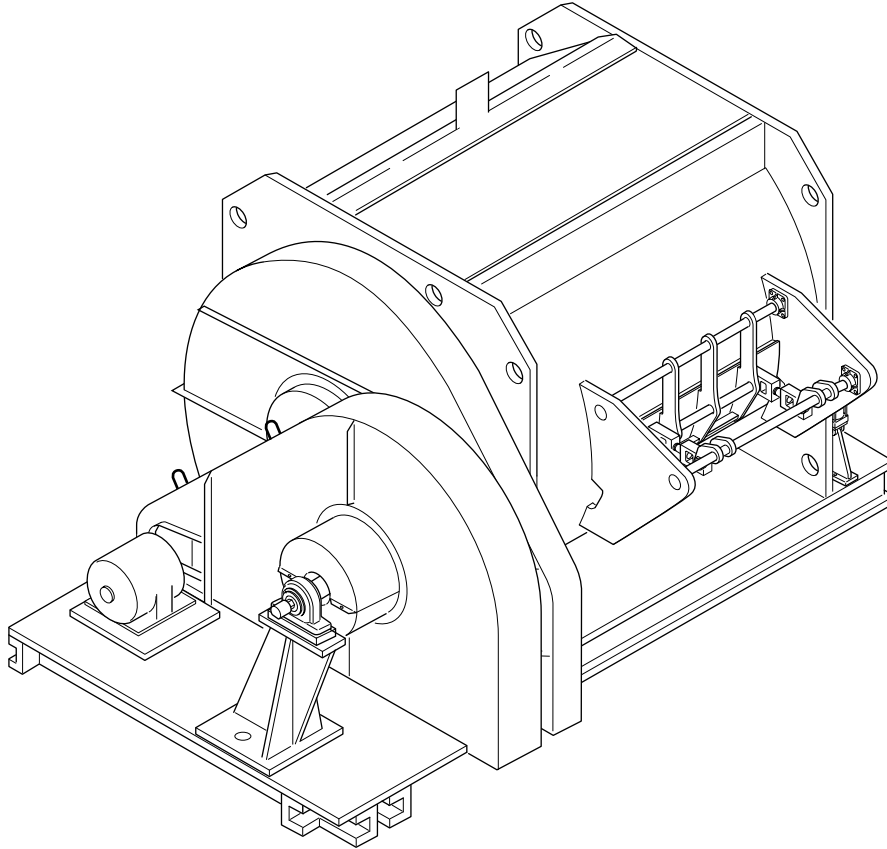
<b>Assembly</b>	<b>Component</b>	<b>Special Instructions</b>
Transfer Car	Lithium batteries	Change the batteries.
Crawler	Cable reel springs	Replace the springs.
	Lithium batteries	Change the batteries.

**Table 3.5** Annual Maintenance (1920 Hours)



# SECTION 4

## MIXER MAINTENANCE INSTRUCTIONS



**4.1 TWO HOUR MAINTENANCE**

Assembly	Component	Special Instructions
Blade Shaft – General	Manual lubrication dust seals	Lubricate dust seals.

*Table 4.1 Two Hour Maintenance***4.2 EACH USE MAINTENANCE**

Assembly	Component	Special Instructions
Interlocks	Mixer disconnect interlock	Test Mixer disconnect interlock.
Electric Motor and Power – General	Input power disconnect switch and lockout	Test input power disconnect switch and lockout
Air System	Lockout valve	Test lockout valve.

*Table 4.2 Each Use Maintenance***4.3 DAILY MAINTENANCE (8 HOURS)**

Assembly	Component	Special Instructions
Mixer Drum – General		Clean.
	Trough liners and bolts	Clean trough liners. Inspect liners for cracks and wear.
	Head liners and bolts	Clean head liners. Inspect liners for cracks and wear.
	Blade liners and bolts	Clean blade liners and bolts. Inspect liners for wear, cracks and fastener tightness.
	Blades and bolts	Clean blades and bolts. Inspect blades for cracks, wear, distortion and fastener tightness.
	Head scrapers and bolts	Clean head scrapers and bolts. Inspect parts for cracks, wear, distortion and fastener tightness.
	Blade arms and bolts	Clean blade arms and bolts. Inspect parts for cracks, wear, distortion and fastener tightness.
	Blade arm covers	Clean blade arm covers. Inspect cover and welds for cracks, wear and distortion.
	Tension strap and liner	Clean tension strap and liner. Inspect parts for cracks, wear, distortion and welds for wear and cracks.
	Blade shaft	Clean blade shaft. Inspect parts for cracks, wear and distortion.
	Blade shaft covers	Clean blade shaft covers. Inspect cover and weld for cracks, corrosion, wear and distortion.

*Table 4.3 Daily Maintenance (8 Hours)*

Assembly	Component	Special Instructions
	Arm cleaning rings	Clean arm cleaning rings. Inspect rings and weld for cracks, corrosion, wear and distortion.
	Shaft cleaning rings	Clean shaft cleaning rings. Inspect rings and weld for cracks, corrosion, wear and distortion.
	Cleaning ring retainer	Clean cleaning ring retainer. Inspect rings and weld for cracks, corrosion, wear and distortion.
	Moisture probes	Clean moisture probes. Inspect for wear.
	Shell, shroud and components	Clean shell, shroud and surrounding components. Inspect for cracks, wear and distortion.
	Front panel	Clean front panel. Inspect for cracks, wear and distortion.
	Safety signs	Inspect and clean.
	Emergency stop	Verify operation.
Water Pipe		Clean water pipe. Inspect for cracks, corrosion, wear and distortion.
Discharge Gate Assembly – General		Clean discharge gate assembly. Inspect parts for cracks, corrosion, wear, distortion and welds for wear and cracks. Test discharge gate assembly.
	Discharge gate and cylinder assembly.	Clean discharge gate and cylinder assembly Inspect parts for cracks, corrosion, wear and distortion.
	Gate shafts and bearings	Clean gate shafts and bearings. Inspect parts for cracks, corrosion, wear, distortion and welds for wear and cracks.
	Gate links	Clean gate links. Inspect welds for wear and cracks.
	Cylinder arm	Clean cylinder arm. Inspect parts for cracks, corrosion, wear and distortion.
	Cylinder bracket	Clean cylinder bracket. Inspect parts for cracks, corrosion, wear and distortion.
	Gate safety stop	Clean gate safety stop. Inspect parts for cracks, corrosion, wear and distortion. Test gate safety stop.
	Discharge chute	Clean discharge chute. Inspect parts for cracks, corrosion, wear and distortion.

**Table 4.3** Daily Maintenance (8 Hours) – Continued

Assembly	Component	Special Instructions
Clean Out Gate – General		Clean clean out gate. Inspect parts for cracks, corrosion, wear and distortion. Test clean out gate.
	Clean out gate assembly	Clean clean out gate. Inspect parts for cracks, corrosion, wear and distortion.
	Clean out gate cylinder	Clean clean out gate cylinder. Inspect parts for cracks, corrosion, wear and distortion.
Blade Shaft – General		Clean blade shaft. Inspect parts for cracks, corrosion, wear, distortion and welds for wear and cracks.
	Roller and thrust bearing housings	Clean roller and thrust bearing housings. Inspect parts for cracks, corrosion and distortion.
	Dust seals	Inspect parts for cracks, corrosion, wear and distortion.
Drive Shaft – General		Clean drive shaft. Inspect parts for cracks, corrosion, wear and distortion.
	Roller and spherical bearing housings	Clean bearing housings. Inspect parts for cracks, corrosion, wear and distortion.
	Belt tension <b>NOTE:</b> Daily first week then weekly.	Inspect parts for cracks and wear. Adjust belt tension. See specific manual section for more information.
Air System	Filter	Drain water from filter. Inspect parts for cracks, corrosion, wear and distortion.
Air System – Gate	Pressure setting	Inspect for correct setting.
Air System – Clean Out Gate	Pressure setting	Inspect fastener for tightness.
Air System – Clutch – Pressure Switch	Pressure setting	Inspect fastener for tightness.
Guards		Check that guards are properly assembled with no modifications (holes or cracks)
	Pulley	Inspect parts for cracks, corrosion, wear and distortion.

**Table 4.3** Daily Maintenance (8 Hours) – Continued

Assembly	Component	Special Instructions
	Gear	Inspect parts for cracks, corrosion, wear and distortion.
	Front panel	Inspect parts for cracks, corrosion, wear and distortion.
	Shroud	Inspect parts for cracks, corrosion, wear and distortion.
Trabon System		Clean trabon system. Inspect parts for cracks, corrosion and damage. Test trabon system.
Electric Motor and Power – General		Clean electric motor. Inspect parts for cracks, corrosion, wear and damage.
	Electric motor	Clean electric motor.
Switches	Gate open and close	Inspect parts for cracks, corrosion, wear and distortion. Confirm switch functions properly.
	Under speed	Inspect parts for cracks, corrosion, wear and distortion. Confirm switch functions properly.
	Zero speed	Inspect parts for cracks, corrosion, wear and distortion. Confirm switch functions properly.

**Table 4.3** Daily Maintenance (8 Hours) – Continued

**4.4 WEEKLY MAINTENANCE (40 HOURS)**

Assembly	Component	Special Instructions
Drive Shaft – General	Gears	Check oil level.
	Roller bearing	Lubricate roller bearing.
	Spherical bearing	Lubricate spherical bearing.
	Plain bearings	Lubricate plain bearings.
Air System – Discharge Gate	Regulator	Clean regulator. Inspect parts for cracks, corrosion and damage.
	Directional valve	Clean directional valve. Inspect parts for cracks, corrosion and damage.
	Flow control valve	Clean flow control valve. Inspect parts for cracks, corrosion and damage. Confirm valve is properly adjusted and locked.

**Table 4.4** Weekly Maintenance (40 Hours)

## PREVENTIVE MAINTENANCE



Assembly	Component	Special Instructions
Electric Motor and Power – General	Electric motor base	Clean electric motor base. Inspect parts for cracks, corrosion wear and distortion.
Air System – Clean Out Gate	Flow control valve	Clean flow control valve. Inspect parts for cracks, corrosion and damage. Confirm valve is properly adjusted and locked.
	Directional valve	Clean directional valve. Inspect parts for cracks, corrosion and damage.
Air System – Clutch	Directional valve	Clean directional valve. Inspect parts for cracks, corrosion and damage.
	Regulator	Clean regulator. Inspect parts for cracks, corrosion and damage.
Air System Clutch – Pressure Switch	Clutch pressure switch	Inspect parts for cracks, corrosion and damage. Confirm switch functions properly.
Mixer Drum – General	Blade liners to trough liner space	Inspect blade liner to trough liner space. Adjust blade liner and blades as necessary.
	Blade to trough liner space	Inspect blade to trough liner space. Adjust blade to trough liner.
	Blade to head liner space	Inspect blade to head liner space. Adjust blade to head liner.
	Head scraper to head liner space	Inspect head scraper to head liner space. Adjust head scraper to head liner.
Interlock	Pressure switch interlock	Confirm pressure switch interlock works properly.
Discharge Gate Assembly – General	Gate shaft bearings	Lubricate gate shaft bearings.
	Bushings – link end bushings	Lubricate bushings and link end bushings.
	Cylinder and gate arm pin	Lubricate cylinder and gate arm pin.
Blade Shaft – General	Gears	Check oil level.
	Roller and thrust bearings	Lubricate the roller and thrust bearings.

**Table 4.4** Weekly Maintenance (40 Hours) – Continued

**4.5 MONTHLY MAINTENANCE (160 HOURS)**

<b>Assembly</b>	<b>Component</b>	<b>Special Instructions</b>
Electric Motor and Power – General	Electric motor starter	Inspect parts for cracks, corrosion, wear and distortion.
	Input power disconnect switch and lockout	Inspect parts for cracks, corrosion, wear and distortion.
	Conduit and wire	Inspect parts for cracks, corrosion, wear and distortion.
Blade Shaft – General	Thrust bearing end play	Inspect part for cracks, corrosion, wear, distortion and welds for wear and cracks. Test thrust bearing end play. Adjust thrust bearing end play.
	Bull gear	Inspect parts for cracks, corrosion, wear and distortion.
Drive Shaft – General	Pinion gear	Inspect parts for cracks, corrosion, wear and distortion.

**Table 4.5** Monthly Maintenance (160 Hours)

**4.6 QUARTERLY MAINTENANCE (480 HOURS)**

<b>Assembly</b>	<b>Component</b>	<b>Special Instructions</b>
Air System – Discharge Gate	Air lines	Clean air lines. Inspect parts for cracks, corrosion, wear and distortion.
Air System – Clean Out Gate	Air lines	Clean air lines. Inspect parts for cracks, corrosion, wear and distortion.
Air System – Clutch	Air lines	Clean air lines. Inspect parts for cracks, corrosion, wear and distortion.
	Rotary union	Clean rotary union. Inspect parts for cracks, corrosion, wear and distortion.
Drive Shaft – General	Pulley	Clean pulley. Inspect parts for cracks, corrosion, wear and distortion.
	Sheave	Clean sheave. Inspect parts for cracks, corrosion, wear and distortion.
	Belts	Inspect parts for cracks and wear

**Table 4.6** Quarterly Maintenance (480 Hours)

**4.7 ANNUAL MAINTENANCE (1920 HOURS)**

Assembly	Component	Special Instructions
Mixer Structure		Inspect for loose fasteners. Inspect parts for cracks, corrosion, wear, distortion and welds for wear and cracks.
Blade Shaft – General	Roller bearing	Inspect part for cracks, corrosion, wear, distortion and welds for wear and cracks.
Drive Shaft – General	Roller bearing	Inspect part for cracks, corrosion, wear and distortion.
	Spherical bearing	Inspect part for cracks, corrosion, wear and distortion.

**Table 4.7** Annual Maintenance (1920 Hours)**4.8 REFER TO OEM FOR MAINTENANCE**

Assembly	Component	Special Instructions
Electric Motor and Power – General	Electric motor	Inspect parts for cracks, corrosion, wear, distortion and welds for wear and cracks.
Blade Shaft – General	Gears	Change and flush oil in the blade shaft gears.
Drive Shaft – General	Gears	Change and flush oil in the blade shaft gears.

**Table 4.8** Refer to OEM for Maintenance**4.9 MAINTENANCE AT DISASSEMBLY**

Assembly	Component	Special Instructions
Drive Shaft – General	Clutch	Inspect parts for cracks, corrosion, wear and distortion.
	Drive shaft	Inspect parts for cracks, corrosion, wear and distortion.

**Table 4.9** Maintenance at Disassembly

### 4.10 GENERAL LUBRICATION

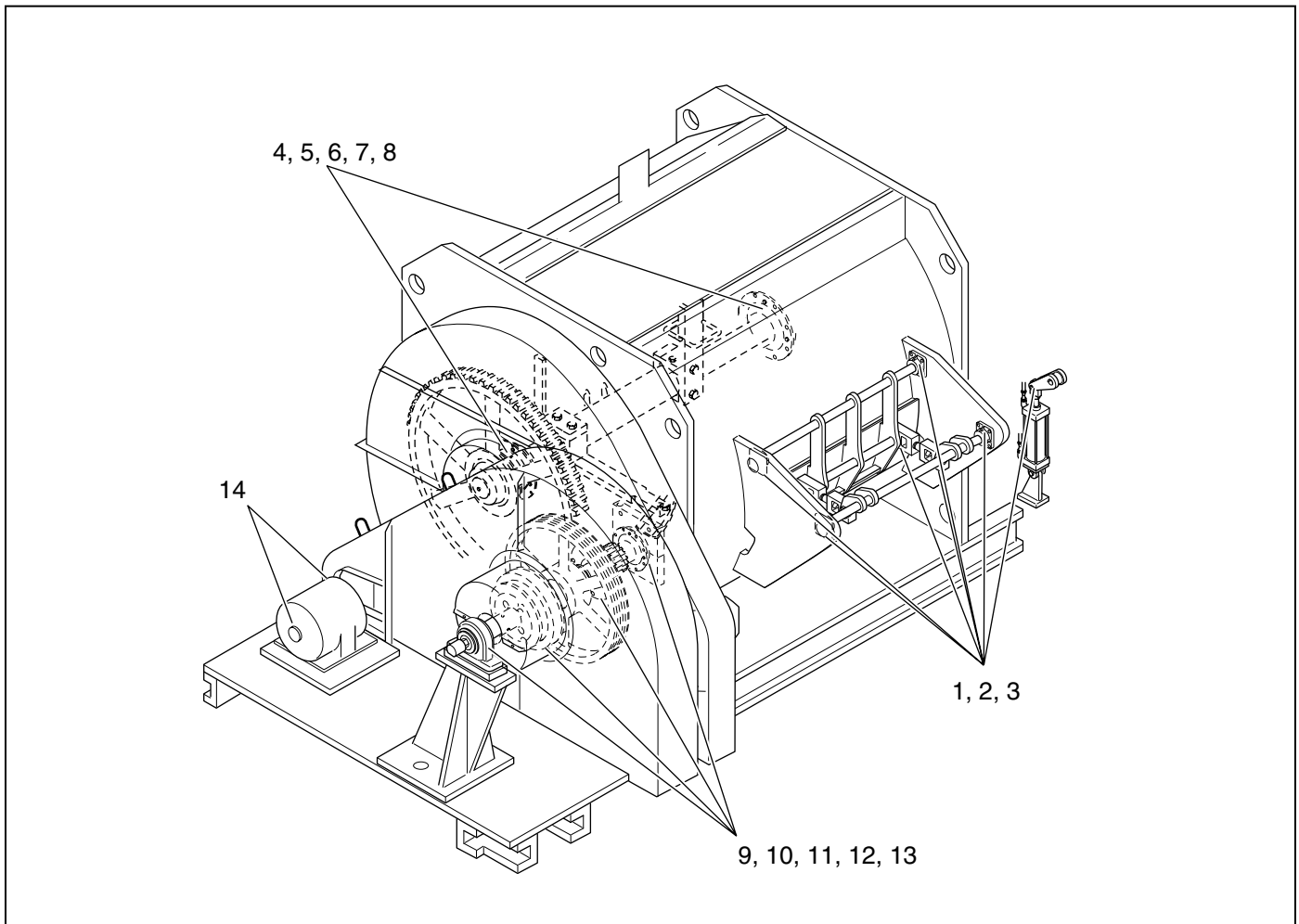
Regularly lubricating the Mixer's moving parts is vital to ensure optimum performance and a long operating life. Table 4.10 lists the recommended frequency of lubrication as well as lubricant specifications. Note that the numbers in the "Item" column correspond to the item number in Figure 4.1.

Bearings are factory-lubricated with a lubricant which is suitable for most applications. Extra protection may be required if the bearing is subject to excessive moisture, dust or corrosive vapor. In these cases, the bearing should contain as much grease as operating speed permits. (A full bearing with consequent slight leakage through the seal is the best protection against contaminants.)

In extremely dirty environments, the bearing should be purged daily to flush out contaminants. For added protection, shroud the bearing from falling material.

#### 4.10.1 Mixer Lubrication Points Legend

1. Gate Shaft Bearings
2. Link End Bushings
3. Cylinder and Gate Arm Pin
4. Roller Bearing
5. Thrust Bearing
6. Gear Oil
7. Gear Oil
8. Dust Seals
9. Gear Oil
10. Gear Oil
11. Roller Bearing
12. Spherical Bearing
13. Plain Bearings
14. Electric Motor



**Figure 4.1** Mixer Lubrication Points

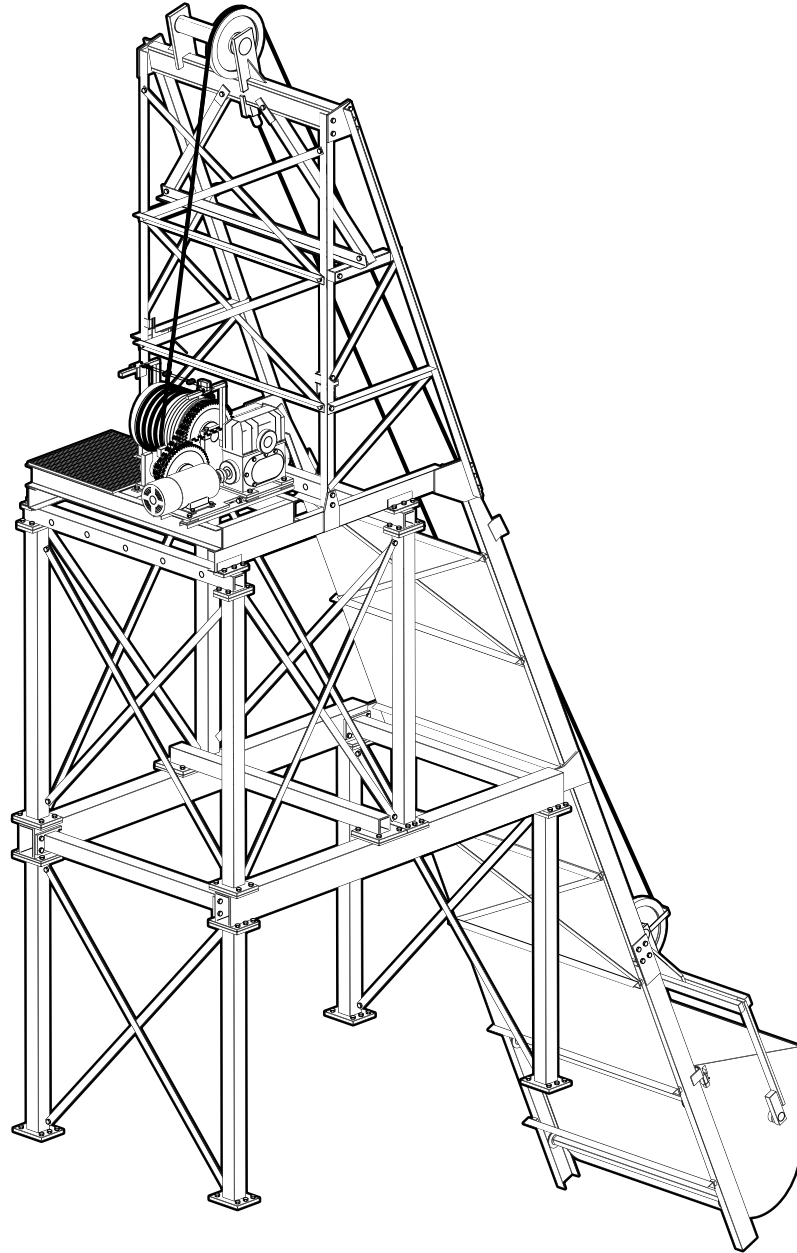
**4.11 LUBRICATION SCHEDULE**

Item	Equipment/Component	Lubricant Type	Scheduled Maintenance
	<b>Discharge Gate Assembly</b>		
1.	Gate Shaft Bearings	Purge with EP#1 grease as needed	Weekly
2.	Link End Bushings	Purge with EP#1 grease as needed	Weekly
3.	Cylinder and Gate Arm Pin	Purge with EP#1 grease as needed	Weekly
	<b>Blade Shaft – Assembly</b>		
4.	Roller Bearing	EP#1 Grease.	Weekly
5.	Thrust Bearing	EP#1 Grease.	Weekly
6.	Gear Oil	Check oil level and top off as needed.	Weekly
7.	Gear Oil	Change and flush oil at regular intervals.	
8.	Dust Seals	EP#1 Grease.	Every 2 Hours
	<b>Drive Shaft – Assembly</b>		
9.	Gear Oil	Check oil level and top off as needed.	Weekly
10.	Gear Oil	Change and flush oil at regular intervals.	
11.	Roller bearing	EP#1 Grease.	Weekly
12.	Spherical bearing	EP#1 Grease.	Weekly
13.	Plain bearings	EP#1 Grease.	Weekly
14.	<b>Electric Motor</b>	Refer to Motor Manufacturer Information.	

**Table 4.10** Mixer Lubrication Points and Schedule

# SECTION 5

## SKIPLOADER MAINTENANCE INSTRUCTIONS



**5.1 FOUR HOUR MAINTENANCE**

Assembly	Component	Special Instructions
	Bucket pit	Clean debris from the bucket pit. Refer to the manual.

*Table 5.1 Four Hour Maintenance***5.2 DAILY MAINTENANCE (8 HOURS)**

Assembly	Component	Special Instructions
	Cable	Inspect cable condition for fatigue or abrasions. Record any changes. Replace if needed.
	Down stop and down end travel	Adjust as needed.
	Switches	Verify integrity and proper operation.
	Up stop and up end travel	Verify integrity and proper operation.
	Switches	Verify integrity and proper operation.
	Cable switch	Verify integrity and proper operation.
	Drive assembly – general	Visually inspect. Listen for unusual noises.
	Skiploader and pit guards	Verify integrity.
	Chain – reducer/jack shaft	Adjust as needed – See Besser drawing 468339.
	Chain – jack shaft/cable drum	Adjust as needed – See Besser drawing 468339.
	Safety stops – bucket	Verify integrity.
	Safety signs	Inspect and clean.
	Emergency stop	Verify operation.

*Table 5.2 Daily Maintenance (8 Hours)*

**5.3 WEEKLY MAINTENANCE (40 HOURS)**

<b>Assembly</b>	<b>Component</b>	<b>Special Instructions</b>
	Bearing jack shaft	Inspect for dirt and debris.
	Bearing cable drum	Inspect for dirt and debris.
	Brake electric motor	Adjust as needed.
	Electric motor	Visually inspect.
	Coupling	Visually inspect for burrs or shaft misalignment.
	Gear reducer	Visually inspect. Check oil level and top-off if needed.
	Sprocket gear reducer	Visually inspect.
	1st reducer/jack shaft	Visually inspect.
	2nd reducer/jack shaft	Visually inspect.
	Cable drum	Visually inspect.
	Clamp cable drum	Visually inspect.
	Cable sheave and bushing – top	Visually inspect.
	Cable sheave and bushing – Bucket	Visually inspect.
	Shaft top cable sheave	Visually inspect.
	Rollers and bushings bucket	Visually inspect.
	Cable drum	Visually inspect
	Pins bail/bucket	Visually inspect.

*Table 5.3 Weekly Maintenance (40 Hours)*

**5.4 MONTHLY MAINTENANCE (160 HOURS)**

<b>Assembly</b>	<b>Component</b>	<b>Special Instructions</b>
	Axle bucket	Inspect.
	Bucket guide rails (tracks)	Inspect for wear.
	Wiring and conduit	Verify good working condition.
	Starter	Verify good working condition.

*Table 5.4 Monthly Maintenance (160 Hours)*

**5.5 QUARTERLY MAINTENANCE (480 HOURS)**

<b>Assembly</b>	<b>Component</b>	<b>Special Instructions</b>
	Bail bucket	Visually inspect.
	Bucket	Visually inspect.

*Table 5.5 Quarterly Maintenance (480 Hours)*

**5.6 SEMI-ANNUAL MAINTENANCE (960 HOURS)**

Assembly	Component	Special Instructions
	Electric motor	Blow out dirt from windings. Clean slip rings. Inspect and tighten all connections. Check current draw. Retighten all mounting bolts.

*Table 5.6 Semi-Annual Maintenance (960 Hours)*

**5.7 OTHER MAINTENANCE**

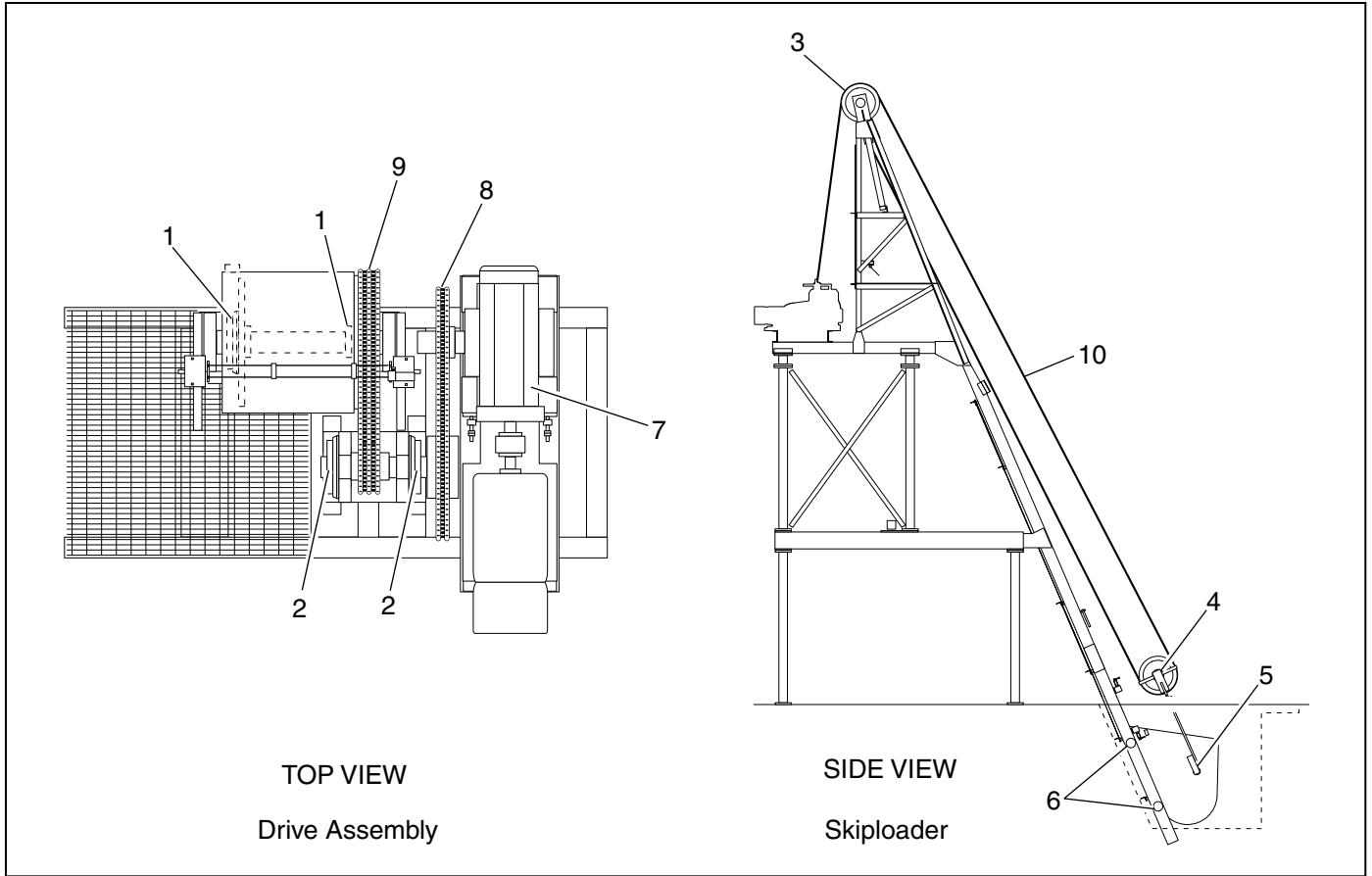
Assembly	Component	Special Instructions
	Jack shaft	Inspect when replacing bearings, sprockets and related parts.
	Cable drum shaft	
	Pin cable sheave – bucket	
	Pin cable anchor	

*Table 5.7 Other Maintenance*

**5.8 LUBRICATION**

Item	Equipment/Component	Special Instructions	Scheduled Maintenance
1	Bearings – Cable Drum	Purge with #2 consistency lithium base grease as needed.	Daily
2	Bearing – Jack Shaft	Purge with #2 consistency lithium base grease as needed.	Daily
3	Cable Sheave and Bushing – Top	Purge with EP#1 grease as needed.	Daily
4	Cable Sheave and Bushing – Bucket	Purge with EP#1 grease as needed.	Daily
5	Pins – Bail/Bucket	Purge with EP#1 grease as needed.	Daily
6	Rollers and Bushings – Bucket	Purge with EP#1 grease as needed.	Daily
7	Gear Reducer – Oil Reservoir	Check oil level and top off as needed.	Weekly
7	Gear Reducer – Oil Change	Drain and change oil at regular intervals.	As Needed
7	Gear Reducer – Grease Fittings	Refill lubricators with recommended grease. Refer to manual.	As Needed
8	Chain – Reducer/Jack Shaft	Lubricate with EP#1 grease.	Daily
9	Chain – Jack Shaft/Cable Drum	Lubricate with EP#1 grease.	
10	Cable	Refer to manual for lubrication instructions.	Weekly

*Table 5.8 Ski loader Lubrication Points and Schedule*

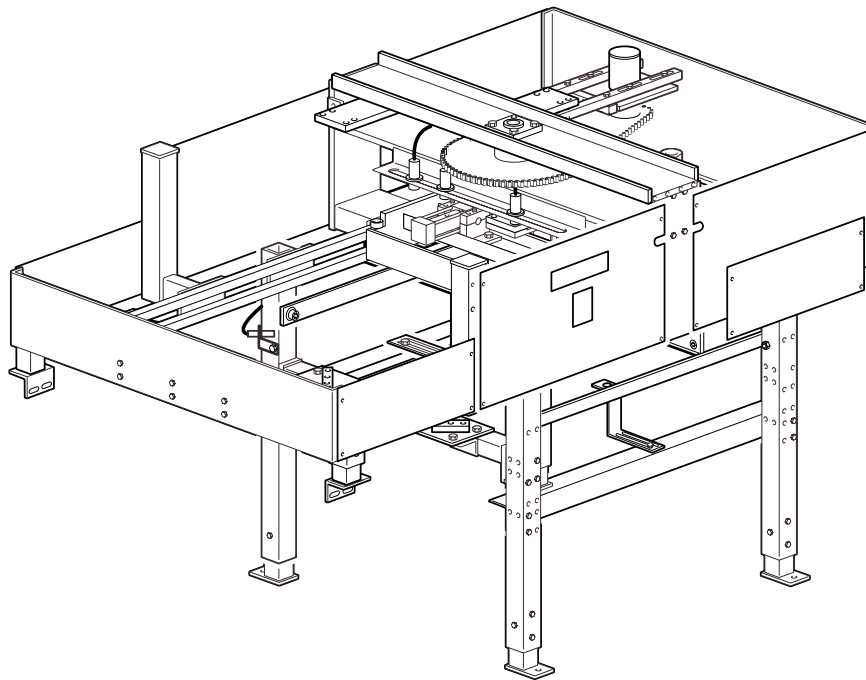


**Figure 5.1** Lubrication Points



## SECTION 6

# DEPALLETTER MAINTENANCE INSTRUCTIONS



**6.1 DAILY MAINTENANCE (8 HOURS)**

Assembly	Component	Special Instruction
	Electrical conduit	Inspect.
	Hydraulic lines	Inspect.
	Safety signs	Inspect and clean.
	Emergency stop	Verify operation.

*Table 6.1 Daily Maintenance (8 Hours)***6.2 WEEKLY MAINTENANCE (40 HOURS)**

Assembly	Component	Special Instructions
	Proximity sensors	Inspect and adjust if necessary.
	Limit switches	Inspect and adjust if necessary.
	Pusher plate	Inspect angular contact and adjust if necessary.
	Extension plate height	Inspect and adjust.

*Table 6.2 Weekly Maintenance (40 Hours)***6.3 MONTHLY MAINTENANCE (160 HOURS)**

Assembly	Component	Special Instructions
	Flanged cartridges	Lubricate.
	Hydraulic cylinder pivot Brackets and clevis pin	Lubricate.
	Cam followers	Lubricate.
	Camrol bearings	Lubricate.
	Lithium batteries	Verify "Battery Good" indicator is lit. Replace battery if light is not lit.

*Table 6.3 Monthly Maintenance (160 Hours)***6.4 ANNUAL MAINTENANCE (1920 HOURS)**

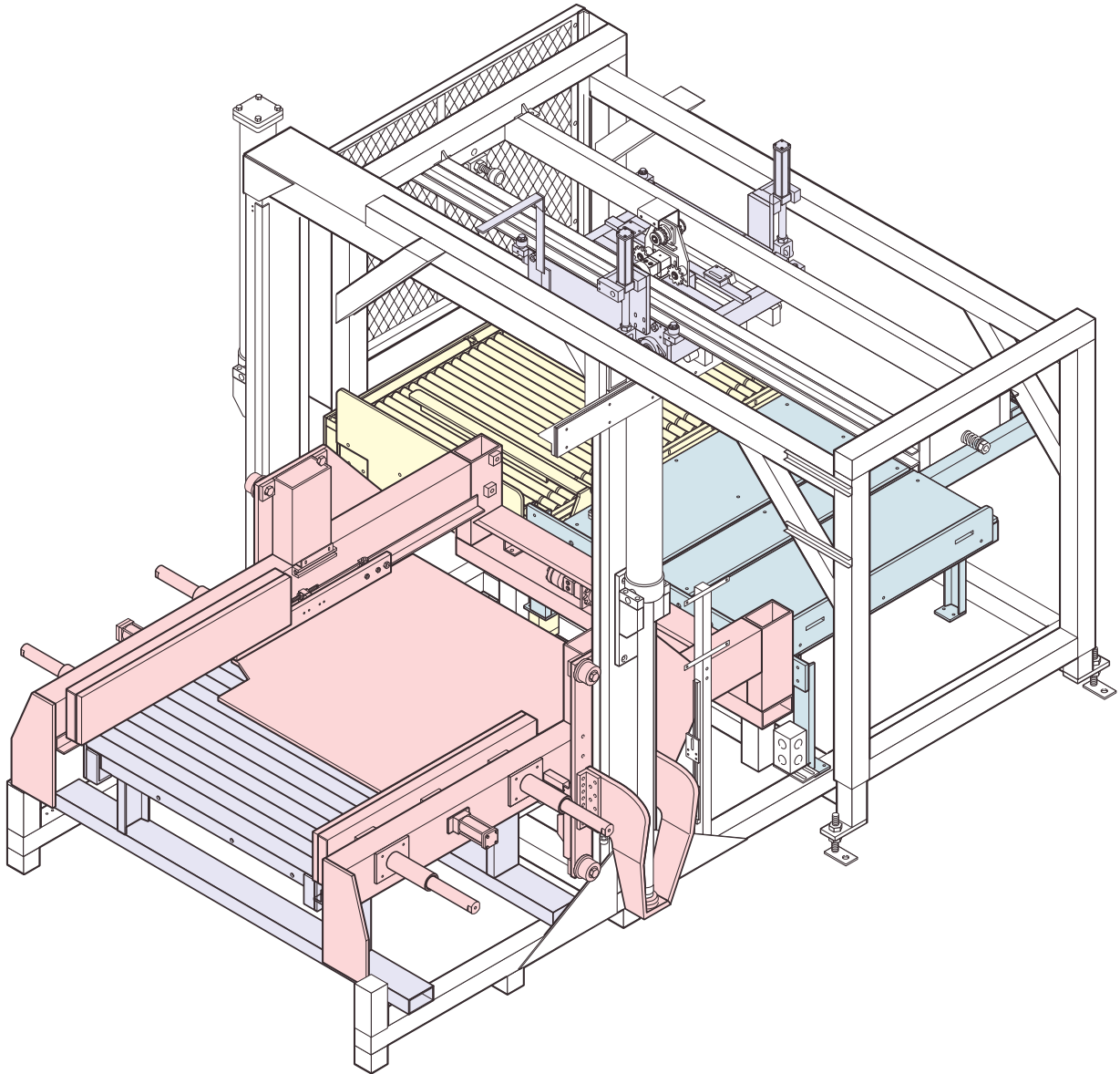
Assembly	Component	Special Instructions
	Lithium batteries	Replace lithium batteries.

*Table 6.4 Annual Maintenance (1920 Hours)***6.5 LUBRICATION**

Item	Equipment/Component	Special Instructions
1	Drive Chain	All Purpose Grease
2	Bearings	EP#1 Grease
3	Hydraulic Power Unit	Shell Tellus 46 ISO 3448

*Table 6.5 Lubrication Points and Schedule*

# SECTION 7 CUBER MAINTENANCE INSTRUCTIONS



**7.1 INITIAL 40 HOURS**

Assembly	Component	Special Instructions
		Check fasteners for tightness.
		Check for hydraulic leaks.
Lift	Lift wheels	Adjust the lift wheels, if required.
	Lift cylinders	Inspect the lift cylinders for wear.
	Vertical lift chains	Inspect the vertical lift chains for slack or wear. Tighten the vertical lift chains, if required.
	Idler sprocket shafts	Lubricate the idler sprocket shafts.
	Carriage drive chain	Inspect the carriage drive chain for slack or wear. Tighten the carriage drive chain, if required.
	Motor chain	Inspect the motor chain for slack or wear. Tighten the motor chain, if required.
	Carriage drive bearings	Lubricate the carriage drive bearings.
	Carriage drive	Inspect the carriage drive for wear.
	Idler sprockets	Inspect the idler sprockets for wear.
	Motor	Inspect the motor for corrosion or wear.
Lift Carriage	Camrolls	Inspect the camrolls for cracks or wear. Adjust the camrolls, if required.
	Chain guide	Inspect the chain guide for wear.
Gate	Gate bearings	Lubricate the gate bearings.
	Cylinder arm	Lubricate the cylinder arm.
	Bronze bushings	Lubricate the bronze bushings.
	Cylinders	Lubricate the cylinders.
Clamps	Clamp tube guide bushings	Inspect clamp tube guide bushings for wear.
	Clamp pads	Inspect the clamp pads for cracks or wear.
	Cylinders	Inspect the cylinders for wear.
Tier Table	Drive chain	Inspect the drive chain for wear. Adjust the drive chain, if required.
	Motor chain	Inspect the motor chain for wear. Adjust the motor chain, if required.
	Sprockets	Inspect the sprockets for wear.
	Motor	Inspect the motor for corrosion or wear.
	Camrolls	Inspect the camrolls for cracks or wear.
	Drive bearings	Lubricate the drive bearings.

**Table 7.1** Initial 40 Hours

Assembly	Component	Special Instructions
Cube Table	Rollers	Inspect rollers for wear.
	Camrolls	Inspect camrolls for cracks or wear.
	Idler sprockets	Inspect idler sprockets for wear.

**Table 7.1** Initial 40 Hours – Continued

**7.2 INITIAL 200 HOURS**

Assembly	Component	Special Instructions
		Check fasteners for tightness.
		Check for hydraulic leaks.
Lift	Lift wheels	Adjust the lift wheels, if required.
	Vertical lift chains	Inspect the vertical lift chains for slack or wear. Tighten the vertical lift chains, if required.
	Carriage drive chain	Inspect the carriage drive chain for slack or wear. Tighten the carriage drive chain, if required.
	Motor chain	Inspect the motor chain for slack or wear. Tighten the motor chain, if required.
Tier Table	Drive chain	Inspect the drive chain for wear. Adjust the drive chain, if required.
	Motor chain	Inspect the motor chain for wear. Adjust the motor chain, if required.

**Table 7.2** Initial 200 Hours

**7.3 DAILY MAINTENANCE (8 HOURS)**

Assembly	Component	Special Instructions
	Safety signs	Inspect and clean.
	Emergency stop	Verify operation.
	Sensors	Inspect. Clean dust from sensors.
	Actuators	Inspect. Clean off top surfaces of actuators.

**Table 7.3** Daily Maintenance (8 Hours)

**7.4 WEEKLY MAINTENANCE (40 HOURS)**

Assembly	Component	Special Instructions
		Check for hydraulic leaks.
Lift	Lift wheels	Adjust the lift wheels, if required.

*Table 7.4 Weekly Maintenance (40 Hours)***7.5 MONTHLY MAINTENANCE (160 HOURS)**

Assembly	Component	Special Instructions
		Check fasteners for tightness.
Gate	Cylinder arm	Lubricate the cylinder arm.
	Hydraulic filter	Inspect the filter.
	Lithium batteries	Verify that "Battery Good" indicator is lit. Replace battery if light is not on.

*Table 7.5 Monthly Maintenance (160 Hours)***7.6 QUARTERLY MAINTENANCE (480 HOURS)**

Assembly	Component	Special Instructions
Lift	Lift cylinders	Inspect the lift cylinders for wear.
	Vertical lift chains	Inspect the vertical chains for slack or wear. Tighten the vertical lift chains, if required.
	Idler sprocket shafts	Lubricate the idler sprocket shafts.
	Carriage drive chain	Inspect the carriage drive chain for slack or wear. Tighten the carriage drive chain, if required.
	Motor chain	Inspect the motor chain for slack or wear. Tighten the motor chain, if required.
	Carriage drive bearings	Lubricate the carriage drive bearings.
	Carriage drive	Inspect the carriage drive for wear.
	Idler sprockets	Inspect the idler sprockets for wear.
	Motor	Inspect the motor for corrosion or wear.
Lift Carriage	Camrolls	Inspect the camrolls for cracks or wear. Adjust the camrolls, if required.
	Chain guide	Inspect the chain guide for wear.

*Table 7.6 Quarterly Maintenance (480 Hours)*

<b>Assembly</b>	<b>Component</b>	<b>Special Instructions</b>
Gate	Gate bearings	Lubricate the gate bearings.
	Bronze bushings	Lubricate the bronze bushings.
	Cylinders	Lubricate the cylinders.
Clamps	Clamp tube guide bushings	Inspect clamp tube guide bushings for wear.
	Clamp pads	Inspect the clamp pads for cracks or wear.
	Cylinders	Inspect the cylinders for wear.
Tier Table	Drive chain	Inspect the drive chain for wear. Adjust the drive chain, if required.
	Motor chain	Inspect the motor chain for wear. Adjust the motor chain, if required.
	Sprockets	Inspect the sprockets for wear.
	Motor	Inspect the motor for corrosion or wear.
	Camrolls	Inspect the camrolls for cracks or wear.
	Drive bearings	Lubricate the drive bearings.
Cube Table	Rollers	Inspect rollers for wear.
	Camrolls	Inspect camrolls for cracks or wear.
	Idler sprockets	Inspect idler sprockets for wear.
	Hydraulic filter	Change the filter.
	Hydraulic fluid	Change the hydraulic fluid.

**Table 7.6** Quarterly Maintenance (480 Hours) – Continued

**7.7 ANNUAL MAINTENANCE (1920 HOURS)**

<b>Assembly</b>	<b>Component</b>	<b>Special Instructions</b>
	Lithium batteries	Change the batteries.

**Table 7.7** Annual Maintenance (1920 Hours)





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## **Specialty Molds & Service Parts:**

### **BESSER Proneq**

765 Bombardier  
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## **Concrete Products Equipment:**

### **BESSER Company**

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