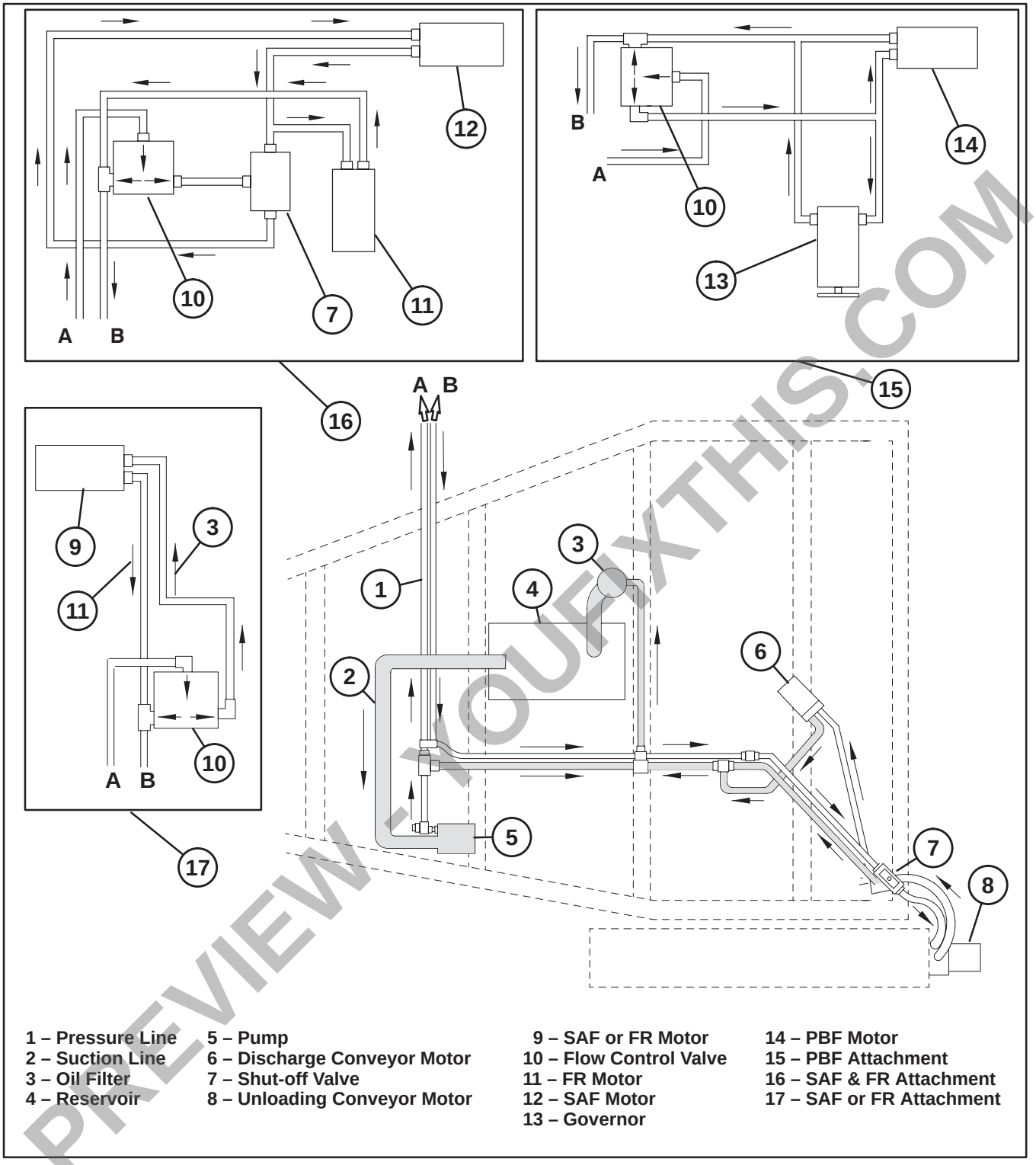


1 – Pressure Line
2 – Suction Line
3 – Oil Filter
4 – Reservoir
5 – Pump
6 – Discharge Conveyor Motor
7 – Shut-off Valve
8 – Unloading Conveyor Motor
9 – SAF or FR Motor
10 – Flow Control Valve
11 – FR Motor
12 – SAF Motor
13 – Governor
14 – PBF Motor
15 – PBF Attachment
16 – SAF & FR Attachment
17 – SAF or FR Attachment

Fig. 19: Hydraulics Systems Diagrams

Drive Line Components (Fig. 18)

All MX170 Mixers have the same basic components shown in the illustration. Mixer models with Self-contained Hydraulic Systems have a Double Sheave on the end of the Main Drive Shaft which is linked by two Belts to the Hydraulic Pump.

Hydraulic System (Fig. 19)

All Mixers have a Self-contained Hydraulic System featuring Hydraulic Motor-operated Discharge and Unloading Conveyors as well as Hydraulic Motor-operated Feeder Attachments (as applicable) or a Gravity Feeder Attachment. The Self-contained

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either or both the Intake Auger Drive or the Transmission Drive shear devices, mechanical failure(s) such as broken Chain(s), a Transmission breakdown, a sheared Key . . . etc., or abnormal crop conditions.

Overfeeding

If plugging develops from overfeeding, the tractor will choke down and even stall. To remove the plugging, proceed as follows:

1. Shut the tractor off and disengage the PTO.
2. Shut off the Feeder Attachment.
3. Open the Mill Screen Cover, remove the Screen and allow the material to fall down into the Intake Auger.
4. Disengage the Mill/Blower Drive Sheave Pin.
5. Restart the tractor and engage the PTO at a slow speed to convey the material into the Tank.
6. Shut the tractor off and disengage the PTO.
7. Replace the Mill Screen, close and latch the Cover, engage the Mill/Blower Drive Sheave Pin and restart the tractor and PTO.
8. Bring the Mill up to the proper running speed and restart the Feeder Attachment. If the condition of the crop remains the same, BE SURE to reduce the feeding speed to avoid overfeeding.

Mill Drive Belt Slippage

If plugging develops from slipping of the Mill/Blower Drive Belt, the Mill and Blower will gradually slow down without much reduction in tractor PTO speed. To remove the plugging, follow steps 1 through 6 above. After the plugging has been removed, readjust the Drive Belt tension per details in the Adjustments chapter. Then, replace the Mill Screen, close and latch the Cover, engage the Mill/Blower Drive Sheave Pin, restart the tractor and PTO, bring the Mill Cylinder up to the proper operating speed and resume grinding.

Shear Bolts

Blockage in the Mixer or component failure will cause the tractor to choke down or stall. Proceed as follows:

1. Shut the tractor off and disengage the PTO.
2. Shut off the Feeder Attachment.
3. Open the Jackshaft Drive Chain Guard and check if the Transmission Drive Shear Bolt has failed. If it has sheared, replace the Bolt.

NOTE: *Transmission Drive Shear Bolt failure will usually cause the Shear Bolt for the Intake Auger Drive to fail.*

4. As necessary, open the large Front Guard and rotate the Mill Drive Sheave with the Mill/Blower Drive Sheave Pin engaged. Observe if the Shear Flange and Sprocket are rotating. If NOT, the end of the Bolt is sheared. The Shear Flange and Sprocket Flange MUST be aligned so that the Bolt in the Sprocket Flange aligns with the slot in the Shear Flange. Loosen the Nut and turn the Bolt three (3) complete turns. Then, tighten the Nut to lock the Bolt position.
5. Close and latch the large Front Guard, restart the tractor and PTO and resume operation.

Mechanical Failure(s)

If a mechanical failure occurs, shut off the tractor and disengage the PTO. Then, open the necessary Guard to inspect the Drive Chain, Sprocket or Key on the Intake Auger, Jackshaft or Transmission Drives. Repair or replace any broken component.

If NO mechanical failure is detected, proceed to remove the Transmission Drive Shear Bolt and attempt to rotate the Jackshaft clockwise. If the Jackshaft turns freely, internal Transmission component failure is probable. If the Jackshaft will NOT rotate at all clockwise, try turning it counterclockwise. If it can be turned clockwise, proceed to unload the material in the Mixing Tank either through the Cleanout Cover or with the Discharge Conveyor. After the Tank is emptied, inspect the Mixing Auger and Transmission for cause of the plugging. As required, make the necessary corrective repair. Last, after the cause of the plugging has been corrected, replace and resecure all Guards and components before attempting to resume operation.

Crop Condition

Abnormal crop conditions prevent smooth flow of the crop into the Mill Inlet. If plugging occurs in the Mill Inlet or the Attachment Hopper, the Mixer will continue to operate with NO apparent sign of Cylinder slow-down or tractor loading.

WARNING

BEFORE attempting to unplug the Mill Inlet or Attachment Hopper, BE SURE to exercise the MANDATORY SAFETY SHUTDOWN PROCEDURE (page 12).

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TORQUE SPECIFICATIONS

NOTE: *Use these torque values when tightening* ***GEHL*** *hardware (excluding: Locknuts and Self–tapping, Thread Forming and Sheet Metal Screws) unless specified otherwise.*

All torque values are in Lb-Ft except those marked with an * which are Lb-In
(For metric torque value Nm, multiply Lb-Ft value by 1.355 or Lb-In value by 0.113)

Unified National Thread	Grade 2		Grade 5		Grade 8	
	Dry	Lubed	Dry	Lubed	Dry	Lubed
8-32	19*	14*	30*	22*	41*	31*
8-36	20*	15*	31*	23*	43*	32*
10-24	27*	21*	43*	32*	60*	45*
10-32	31*	23*	49*	36*	68*	51*
1/4-20	66*	50*	9	75*	12	9
1/4-28	76*	56*	10	86*	14	10
5/16-18	11	9	17	13	25	18
5/16-24	12		19	14		20
3/8-16	20	15	30	23	45	35
3/8-24	23	17	35	25	50	
7/16-14	32	24	50	35	70	55
7/16-20	36	27	55	40	80	60
1/2-13	50	35	75	55	110	80
1/2-20	55	40	90	65	120	90
9/16-12	70	55	110	80	150	110
9/16-18	80	60	120	90	170	130
5/8-11	100	75	150	110	220	170
5/8-18	110	85	180	130	240	180
3/4-10	175	130	260	200	380	280
3/4-16	200	150	300	220	420	320
7/8-9	170	125	430	320	600	460
7/8-14	180	140	470	360	660	500
1-8	250	190	640	480	900	680
1-14	270	210	710	530	1000	740

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CHAPTER 13
TROUBLESHOOTING

NOTE: *This Troubleshooting guide presents problems, causes and suggested remedies beyond the extent of loose, worn or missing parts and it was developed with the understanding that the machine is in otherwise good operating condition. Refer to the index at the back of this manual for Chapter and Topic page references. BE SURE to exercise the MANDATORY SAFETY SHUTDOWN PROCEDURE (page 12), BEFORE making any adjustments or repairs.*

MILL & MIXER DRIVE

PROBLEM	CAUSE	REMEDY
Power Shaft vibrates excessively.	Improper tractor hook-up.	Adjust hook-up.
	Tractor being operated at an angle.	Align tractor straight-away with Mixer.
	Power Shaft bent.	Replace Power Shaft.
	Power Shaft Bearings worn.	Replace Bearings.
Mill does NOT turn.	Pin NOT engaged (improperly engaged).	Correctly engage Pin.
	Mill/Blower Drive Belt slipping.	Readjust Belt tension.
Mixing Auger NOT turning.	Transmission Shear Bolt sheared.	Replace Bolt and correct cause of Bolt failure.
	Sprocket Key(s) sheared.	Replace Key(s).
	Transmission Gear Key(s) sheared.	Replace Key(s).
	Broken Shaft(s).	Replace Shaft(s).
Intake Auger NOT turning.	Intake Auger Shear Bolt sheared.	Replace Bolt and correct cause of Bolt failure.
	Front Drive Chain is broken or disconnected.	Repair or replace Chain.

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CHAPTER 2
SPECIFICATIONS

All Dimensions are in Inches (Millimeters) Unless Otherwise Noted

Model & Description . . . . . MX170 Mixall®
Recommended Tractor Power . . . . . Up to 115 hp (Up to 86 kw) with 540 RPM PTO or Up to 145 hp (Up to 108 kw) with 1000 RPM PTO
Tank Capacity . . . . . 170 cu ft (4.81 cu m) . . . . . or 135 Bushels (48 Hectoliters)
Overall Length 157 (3,990)
Overall Height 112 (2,845)
Transport Width (Maximum) 96 (2,440)
Ground Clearance 10 (255)
Hydraulic System . . . . . Self-contained . . . . . (Includes Pulley-driven Pump, Reservoir, ... Filter and Pressure Relief Valve)
Mill to Tank Intake Diameter 7 (180)
Tire Size . . . . . 15 x 12.5L on 8 Bolt Hubs
Concentrate Hopper . . . . . 26 (660) W x 23 (585) L . . . . . x 32 (815) Above the Ground

Discharge & Unloading Conveyor Characteristics

Conveyor Diameters 8 (205)
Unloading Conveyor Length 144 (3,660)
Unloading Conveyor Height . . . . . Adjustable . . . . . up to 151 (3,825)
Unloading Rate . . . . . 28 Bu/Min (10 Hl/Min)
Drives . . . . . Independent Hydraulic Motors

540 RPM* Mixer Weights (Approximate)

w/Gravity Feeder (GF) . . . . . 3325 lb (2480 kg)
w/Power Bale Feeder (PBF) . . . . 3900 lb (2908 kg)
w/Swinging Auger Feeder (SAF) 3700 lb (2760 kg)
w/Feed Roll Feeder (FR) . . . . . 3500 lb (2610 kg)
w/Swinging Auger Feed Roll Feeder (SAFR) . . . . . 3790 lb (2826 kg)

Mill & Blower Characteristics

Cylinder & Blower Speed . . . . . 2700 RPM
Hammers . . . . . 66; 4-way Reversible
Inlet Opening 21 (535)
Cylinder Diameter 20 (510)
Drive . . . . . 8 “A” Section Banded Drive Belt

SAF Characteristics

Conveyor Length 84 (2135)
Auger Diameter 12 (305)
Infeed Hopper
Width . . . . . 42 (1065); has Fold-in Flare
Height . . . . . Adjustable As low as 20 (510)
Drive . . . . . Direct Independent Hydraulic Motor

FR Characteristics

Drive . . . . . Direct Independent Hydraulic Motor

SAFR Characteristics

Conveyor Length 84 (2135)
Auger Diameter 12 (305)
Infeed Hopper
Width . . . . . 42 (1065); has Fold-in Flare
Height . . . . . Adjustable As low as 20 (510)
Drive . . . . . Two Hydraulic Motor Drives . . . . . has Shut-off Valve for Swinging Auger . . . . . Feeder to use Feed Roll Separately

PBF Characteristics

Throat or Cylinder Width 24 (610)
Feeder Table Length 78 (1980)
Cylinder Diameter 21 (535)
Feeding Rate (Adjustable) . . . . . Up to 4-1/2 42″ Bales per Minute
Drives . . . . . Governor-controlled Table Apron, ... Chain-driven by Independent Hydraulic Motor . . . . . and Belt-driven Cutting Cylinder . . . . . driven by Tractor PTO
Standard Features
. . . . . Built-in Small Grain Hopper with Weather Cover
Optional Feature
. . . . . Accessory 21″ long Feeder Table Extension

*** Available 1000 RPM units are approximately 20 lb (15 kg) heavier for GF & SAF models and 40 lb (30 kg) heavier for a PBF model. In addition, add 40 lb (30 kg) for any unit with Weigh Scales.**

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CHAPTER 17
MAINTENANCE LOG

NOTE: *Under extreme operating conditions, more frequent service than recommended intervals may be required. You MUST decide if your actual operation requires more frequent service based on your use.*

SERVICE EVERY 10 HOURS	
COMPONENT and SERVICE REQUIRED	**PROCEDURE and/or CHAPTER TOPIC REFERENCE (Check Page No. in Index)**
Lubricate Chains and appropriate grease fittings.	Refer to the **Lubrication** chapter for Grease Fitting locations.
Oil Unloading Conveyor Winch and Pulleys and Rotating Telescoping PTO Drive Guard.	Refer to **Lubrication** chapter.

Date After Service is Completed							

SERVICE EVERY 50 HOURS	
Check Roller Chain tension.	Refer to **Adjustments** chapter for details.
Check Mill/Blower Drive Belt tension.	Refer to **Adjustments** chapter for details.
Inspect condition of Unloading Conveyor Cable and Winch Mechanism.	See Unloading Conveyor topic in **Service** chapter.
Check Tire Pressure and Wheel Nut Torque.	Inflate Tires to 36 PSIG (252 kPa) and torque Wheel Nuts to 90 ft-lb (124 Nm).
Check Hydraulic System oil level.	Refer to details in **Lubrication** chapter.
Lubricate appropriate grease fittings.	Refer to **Lubrication** chapter for Grease Fitting locations.
Oil Transport Latch Mechanism(s) and Mill/Blower Shifter Pin.	Refer to **Lubrication** chapter.

Date After Service is Completed							

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CHAPTER 6
OPERATION

EMERGENCY SHUTDOWN

In an emergency or in case a foreign object enters the Mill Inlet, STOP Mixer operation IMMEDIATELY by disengaging the tractor PTO.

GENERAL INFORMATION

WARNING

BEFORE starting the tractor engine and running the Mixer, review and comply with ALL SAFETY recommendations set forth in the SAFETY chapter of this manual.

NOTE: *Before starting to grind material, BE SURE the Tank Lid and Discharge Slide are closed and the Collector Cover is open*.

Best performance, smooth operation, uniformity of mixing and extended component life are obtained by operating the Mixer on level ground. To prolong the life of the Drive Line components, always maintain a straight-line alignment between the tractor and Mixer.

The most efficient grinding will be obtained by maintaining the tractor rated PTO speed which produces a Mill Cylinder speed of 2700 RPM. Cylinder speed should NOT be allowed to exceed 3000 RPM or drop below 2400 RPM. Before starting to grind, BE SURE the Discharge Slide is completely closed.

For best mixing action inside the Tank, add supplements after a small amount of feed has been ground. Then add dry granular materials next and hay or straw last. Grind heavy feeds before light feeds since light feeds do NOT mix as readily if ground first. When heavy feeds are high in moisture content, the heavy damp material should be mixed into the light material to obtain a better mixing action.

NOTE: *DO NOT attempt to grind feeds with too high a moisture content. This can cause a packing problem, plugging and result in poor mixing. Abnormally damp materials will NOT feed nor mix well.*

Liquids, such as molasses, should only be added either by using an accessory Molasses Attachment or by direct application through the Mixing Tank Lid (and only after the Tank is filled halfway).

Observe the action of the ground feed through the Mixer Tank Windows. When the Tank is full, grinding should be stopped immediately. After all the ground material is cleared out of the Mill, stop the Mixer by exercising the MANDATORY SAFETY SHUT-DOWN PROCEDURE (page 12) and disengaging the Pin on the Mill/Blower Drive Sheave.

NOTE: *DO NOT overfill the Mixing Tank. This will cause the feed to pack and place unnecessary stress on the Drive Line components.*

Also, always keep the Tank Lid closed and properly latched in position so that, if the Tank accidentally becomes overloaded, the Lid can pop open and release pressure inside the Tank.

The three full-length Windows on the side of the Tank are calibrated with numbers representing bushels of ground feed. Check all three Windows for an accurate visual indication of the amount of material in the Tank.

NOTE: *For the best achievable accuracy in rationing or proportioning, the Mixer should be equipped with an optional Electronic Scale.*

After grinding is completed, stop the tractor and disengage the Mill/Blower Drive Sheave Pin. Then, start the tractor again and allow the Mixer to continue running for several minutes to thoroughly mix the ground feed. If the Mixer is to be transported for any distance, it is advisable to disengage the Mill and allow the Mixer to run.

NOTE: *To prevent damage to the Telescoping Drive and Drive Line components while transporting the Mixer with the Tank full and mixing, disengage the tractor PTO before turning corners.*

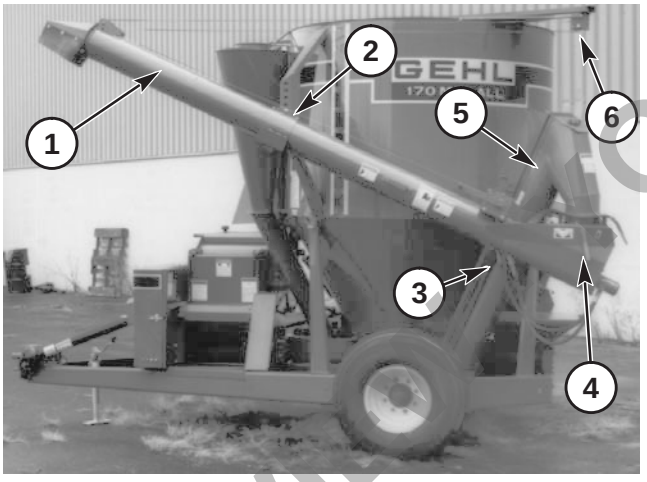
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DISCHARGE CONVEYOR (Figs. 23 & 24)

The Discharge Conveyor is a Hydraulic Motor-driven Auger which removes the ground feed from the Mixing Tank and discharges it into the Unloading Conveyor. A single Shut-off Valve controls the Hydraulic Motor which operates at a single constant speed determined by the speed of the tractor PTO. A manual Crank-controlled Sliding Plate is provided to regulate the amount of feed passing through the Discharge Chute, the inlet to the Discharge Conveyor. A Pop-up Cover is provided on top of the Discharge Conveyor for overflow protection. The Cover will automatically raise if a backup condition develops in the Unloading Conveyor.

NOTE: *The proper sequence for operating the Discharge Conveyor is to always activate the Hydraulic Shut-off Valve to start the Motor before opening the Discharge Chute. After the Mixing Tank has been unloaded, BE SURE to close the Discharge Chute.*

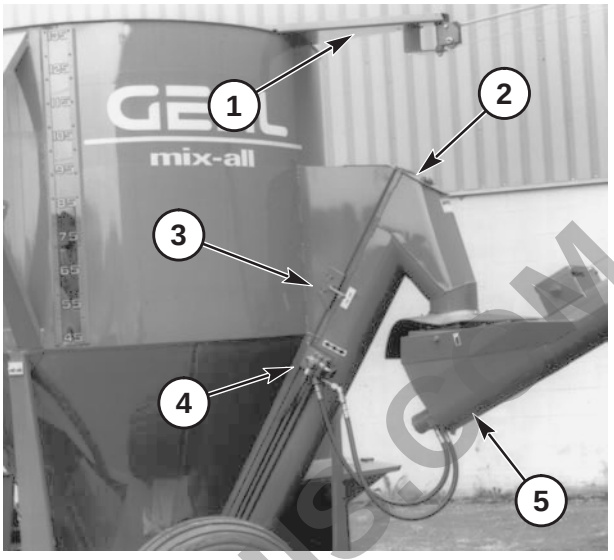


1 – Unloading Conveyor
2 – Transport Lock Pin Securing Conveyor to Transport Bracket Mounted to Transport Support Brace
3 – Winch Handle
4 – Friction Brake Handle
5 – Discharge Conveyor
6 – Pulley & Pivot

Fig. 23

FEEDER ATTACHMENTS

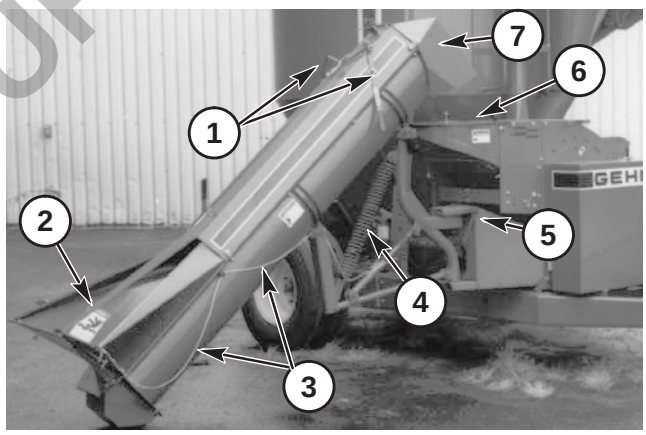
NOTE: *As a safeguard for the Mill components as well as livestock, a Magnet is installed into the bottom of the Mill Hopper on all Feeder Attachments. This Magnet will extract harmful metal debris before it enters the Mill Inlet.*



1 – Winch Cable Tensioner Spring
2 – Pop-up Cover on Discharge Conveyor
3 – Sliding Plate Control Crank (Each Side)
4 – Shut-off Valve
5 – Unloading Conveyor

Fig. 24: Discharge & Unloading Conveyors

Swinging Auger Feeder (Fig. 25)



1 – Auger Shut-off or Speed Control Handle
2 – SAF Infeed Hopper
3 – Lift Latch Control Rope
4 – Counter-balance Spring
5 – Pivot Lock Handle
6 – Hopper Lid
7 – Grain Shield

Fig. 25: Swinging Auger Feeder (SAF)

The Swinging Auger Feeder (SAF) Attachment is designed primarily to convey material into the Mill from trailers, storage bins or cribs. It is available (factory installed) on one of the Mixer models which has a Self-contained Hydraulic System. This Attachment is composed of an Infeed Hopper, Hydraulic Motor-driven, Loading Auger and Mill Hopper with Weather Cover. The Loading Auger can be swung in and locked against the Mixer Tank Support Brace, for transporting, or swung out and locked at any point along a 180°

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