

STATIONARY MASS-TER MOVER

OWNER'S & OPERATOR'S MANUAL

Effective May 16, 2011

Publication No. 1039421

IMPORTANT! The gearbox is shipped **Without Oil**.
Oil must be added before operation.
Refer to the Lubrication Section in this manual.

Converted to Pagemaker May 16, 2011



Hutchinson/Mayrath

A Division of GLOBAL Industries Inc.

Hutchinson/Mayrath • P.O. Box 629 • Clay Center, KS. 67432
Ph. 785-632-2161 • Fx. 785-632-5964 • Toll Free 800-523-6993



Hutchinson/Mayrath

A Division of **GLOBAL** Industries, Inc.

POLICIES AND PROCEDURES

Prices: Prices in effect at time of shipment will apply. Prices are subject to change without notice. All prices are F.O.B. Clay Center, Kansas. Orders shipped from locations other than Clay Center, Kansas will be subject to additional charges, such as back freight and/or additional freight.

Service Charge: A service charge will be assessed for all past due balances as permitted by state law not to exceed 1-1/2% per month.

Minimum Order: Processing and handling costs necessitate a minimum charge of \$15.00 net on all orders.

Back Orders: Back orders will be shipped as they become available. Contact Hutchinson/Mayrath Customer Service for alternative shipping options or if cancellation is desired.

Damaged Goods: It is the consignee's responsibility to check all shipments thoroughly upon receipt of goods. If any damage is discovered, it must be noted on the freight bill of lading before signing. The consignee must make necessary claims against the respective freight line. All damage claims must be submitted within 30 days of delivery receipt.

Shortages: All shortages must be noted at time of delivery. Shortages must be noted on the freight bill of lading before signing. Hutchinson/Mayrath must be advised of all concealed shortages upon discovery. Once notified of concealed shortages Hutchinson/Mayrath will advise corrective action to be taken.

Return of Goods: All returns must be approved by Hutchinson/Mayrath prior to shipment. All return requests will be issued a return authorization number. **NO RETURNS WILL BE ACCEPTED WITHOUT A RETURN AUTHORIZATION NUMBER AND PRIOR AUTHORIZATION FROM THE FACTORY.** All returns must be shipped prepaid. A 15% restocking charge will be applied to all returned merchandise. Custom Products may not be returned for credit. Only current products in new and salable condition may be returned. No safety devices may be returned for credit.

Modifications: It is the policy of Hutchinson/Mayrath to improve its product whenever possible and practical to do so. We reserve the right to make changes, improvements and modifications at any time without incurring the obligation to make such changes, improvements and modifications on any equipment sold previously.

Limited Warranty: (a) For a period of (1) year after receipt of goods by the original consumer buyer, Hutchinson/Mayrath will supply free of charge replacement parts for parts that prove defective in workmanship or material. Defective parts must be returned freight prepaid to a specified Hutchinson/Mayrath location. Only Hutchinson/Mayrath original repair parts may be used for warranty repairs.
(b) This limited warranty does not extend to parts designed to wear in normal operation and be replaced periodically; or to damage caused by negligence, accident, abuse or improper installation or operation.
(c) **GOODS NOT MANUFACTURED BY HUTCHINSON/MAYRATH CARRY ONLY THE MANUFACTURER'S WARRANTY.**
(d) **THIS UNDERTAKING IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

FAILURE TO FOLLOW THE INSTRUCTIONS CONTAINED IN THE OWNER'S & OPERATOR'S MANUALS AND THE ITEMS LISTED BELOW WILL RESULT IN THE VOIDING OF THIS LIMITED WARRANTY.

- (1) Improper assembly, including failure to properly install all safety equipment.
- (2) Improper installation.
- (3) Unauthorized alternations of goods.
- (4) Goods operated when obviously in need of repair.
- (5) Use of unauthorized repair parts.
- (6) Irresponsible operation.
- (7) Used to handle materials other than free flowing, nonabrasive and dry materials, as intended.
- (8) Damaged through abusive use or accident.

Limitation of Liability: BUYER AGREES THAT IN NO EVENT SHALL HUTCHINSON/MAYRATH HAVE LIABILITY FOR DIRECT DAMAGES THE EXCESS OF THE CONTRACT PRICE OF THE GOODS IN RESPECT OF WHICH CLAIM IS MADE. BUYER FURTHER AGREES THAT IN NO EVENT SHALL HUTCHINSON/MAYRATH ON ANY CLAIM OF ANY KIND HAVE LIABILITY FOR LOSS OF USE, LOSS OF PROFITS, OR FOR ANY INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES.

GENERAL SAFETY STATEMENT

This manual was written with the safety of the operator and others who work with the equipment as our prime concern. The instructions presented will help the reader learn SAFE day to day work practices. We want you as our partner in safety.

It is your responsibility as an owner, operator or supervisor to know what specific safety requirements and precautions exist and to make these known to all other personnel working with the equipment or in the area, so that they too may safely perform their duties and avoid any potentially hazardous situations.

Please remember safety equipment provides important protection for persons around a grain handling system that is in operation. Be sure all ALL safety shields and protection devices are installed and properly maintained. If any shields or guards are damaged or missing, contact your dealer to obtain the correct items.

Avoid any alterations of the equipment. Such alterations may create a dangerous situation where serious injury or death may occur.

SAFETY ALERT SYMBOL

The symbol shown below is used to call your attention to instructions concerning your personal safety. Watch this symbol - it points out important safety precautions. It means "ATTENTION! Become alert! Your personal safety is involved!" Read the message that follows and be alert to the possibility of personal injury or death.



WARNING

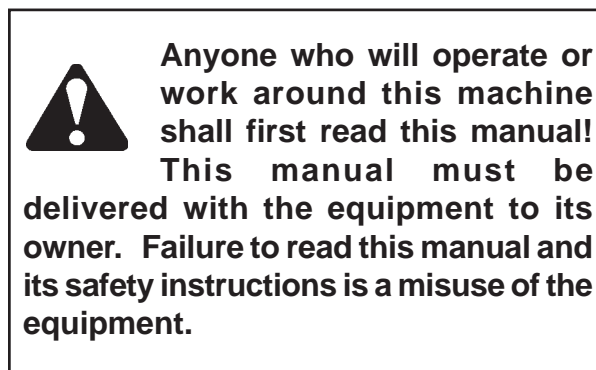


TABLE OF CONTENTS

General Safety Statements	1
Safety Symbol	1
Operator Qualifications	3
Sign-off Sheet	3
Safety Decals	3
Machine Inspection	4
Designated Work Area	4
Operating Procedures	4-6
General Auger Information	4
Start-up and Break-in Information	4
Shutdown	5
Power Source	5
Lockout	5
Drive - Power Calculation	6
Lubrication and Maintenance	7-9
Trouble Shooting	7
Design Ideas	8-9
Assembly Instructions	10-23

SERIAL NUMBER

To ensure efficient and prompt service, please furnish us with the model and serial number of your auger in all correspondence or other contact. The serial plate is located on the right hand side panel of the head (discharge) section.

RIGHT AND LEFT DESIGNATION

When determining which is the left or right hand side of the unit, it is as if a person were standing at the intake end and looking toward the discharge end.

OPERATOR QUALIFICATIONS

Operation of this Mass-ter Mover shall be limited to competent and experienced persons. In addition, anyone who will operate or work around a Mass-ter Mover must use good common sense. It is your responsibility as an owner or operator or supervisor, to know what specific requirements precautions and work hazards exist and to make these known to all other personnel working with the equipment or in the area, so that they too may take any necessary safety precautions that may be required. In order to be qualified, the operator must also know and meet all other requirements, such as:

1. Some regulations specify that no one under the age of 16 may operate power machinery. This includes Mass-ter Movers. It is your responsibility to know what these regulations are in your area or situation.

2. Current OSHA regulations state in part: "At the time of initial assignment and at least annually thereafter, the employer shall instruct every employee in safe operation and servicing of all equipment with which the employee is, or will be involved."*
3. It shall be the duty of all operators to see that children and/or other persons stay out of the work area! Trespass into the work area by anyone not involved in the actual operation, or trespass into a hazard area by anyone, shall result in an immediate shut down by the operator.
4. A person who has not read and understood all operating and safety instructions is not qualified to operate the machine.

*Federal Occupational Safety & Health Standards\ for Agriculture Subpart D, Section 1928.57 (a) (6).

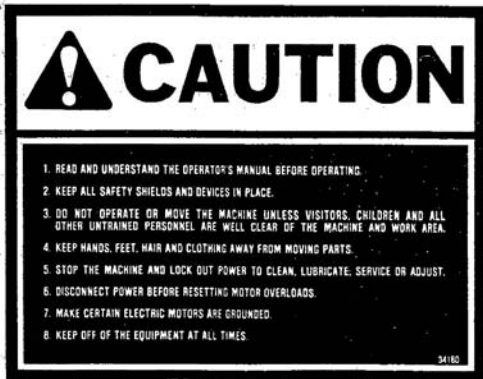
SIGN OFF SHEET

As a requirement of OSHA, it is necessary for the employer to train the employee in the safe operation and safety procedures with this conveyor. We include this sign off sheet for your convenience and personal record keeping.

DATE	EMPLOYER SIGNATURE	EMPLOYEE SIGNATURE

SAFETY DECALS

Check components as specified below to insure that safety decals are present and in good condition. If a decal cannot be easily read for any reason or has been painted over, replace it immediately. Decals may be ordered through your Hutchinson Dealer.



**"CAUTION" Decal
Part No. 34180**



**"DANGER" Decal
Part No. 34218**

OPERATING PROCEDURES

MACHINE INSPECTION

After delivery of your new conveyor and/or completion of assembly and before each use, inspection of the machine is mandatory. This inspection should include, but not be limited to:

1. Inspect the conveyor for loose bolts, missing chain parts, missing or damaged paddles and the overall chain condition.
2. Check chain tension. See Page 14.
3. Check the condition and tension of drive belts and adjust as necessary.
4. Inspect sheaves for alignment and see that they are securely fastened.
5. Check oil level in drive reducer.
6. Check all safety signs and replace any that are worn, missing or illegible. The safety signs are listed in the front of this manual. Safety signs may be obtained from your dealer or ordered from the factory.
7. Check that the belt guard is installed and the door latch closed.

WORK AREA

The area around the conveyor and inside the grain storage units is considered the work area. Use the following to ensure a safe working environment.

RULES FOR SAFE WORK AREA

Under no circumstances should persons not involved in the operation be allowed to trespass into the work area.



It shall be the duty of all operators to see that children and/or other persons stay out of the work area! Trespass into the work area by anyone not involved in the actual operation, or trespass into a hazard area by anyone shall result in an immediate shutdown by the operator.

It shall be the responsibility of all operators to see that the work area has secure footing, is clean and free of all debris and tools which might cause accidental tripping and/or falling. It shall also be their responsibility to keep the work area clean and orderly during the operation.

OPERATING PROCEDURES

START-UP AND BREAK-IN OPERATIONS

It is essential to inspect your conveyor and drive components before adding power and to know how to shut down in an emergency. During the operation of your conveyor, one person shall be in a position to monitor the operation.

Any conveyor, when it is new or after it sits idle for a season, should go through a “break-in” period. It should be run at partial capacity at full speed until the inside of the housing becomes polished, before attempting full capacity. A failure will most likely occur when it is run at full capacity before it has a chance to “shine up”. If at all possible, do not start or stop the Mass-ter Mover under load, especially before the housing becomes well polished, as this may cause the unit to stall.

During the initial start-up and break-in period, the operator should watch for any unusual vibrations or noises.

Keep all safety shields and devices in place.



Keep hands, feet and clothing away from moving parts.

The operator should have a full view of the Work Area and check that all personnel are out of Hazard Areas before adding power.

FULL LOAD OPERATING PROCEDURES

During the regular operation of your Mass-Ter Mover, one person shall be in a position to monitor the operation.

It is also good practice to inspect the unit periodically during the actual operation. You should be alert for unusual vibrations, noises and the loosening of any fasteners.

SHUTDOWN

Normal Shutdown

1. Make certain that the hopper and conveyor are empty before stopping unit.
2. Before the operator leaves the work area, the power source shall be locked out.

Intermittent Operation Shutdown

1. Consideration should be given to the proper size machine for a batch drying or any intermittent type operations. For start-stop operations, select a Mass-ter Mover that will operate at 1/2 or 3/4 of full load. When the Mass-Ter Mover is stopped and restarted under full load, damage may result.
2. In situations where a unit will be pressure-fed, a control gate must be used to restrict the flow. This will keep the unit from filling so full that it tends to jam. Examples of situations where this can occur are formed hopper pits under storage bins; dump pit to wet holding tank; bulk (hopper bottom) tank unloading.

Emergency Shutdown

1. Should the machine need to immediately shut down under full load, disconnect and lock out the power source. Clear as much grain from the hopper and conveyor as is possible.
2. Never attempt to restart when full. Starting the unit under full load may result in damage. Such damage is considered abuse of the equipment.



Whenever you must service and adjust your equipment, make sure you stop the motor and lock out your power source!

POWER SOURCE

Always use a motor with required horsepower suggested in the "Horsepower Recommendations: charts on page 6. Use a motor that operates at 1750 RPM.

The horsepower recommendations are for conveying reasonably dry grain at varying angles. High moisture grain (above 15%) will require greater power and maximum possible capacity will be less with high moisture grain than with dry grain.



1. **Electric motors and controls shall be installed by a qualified electrician and must meet the standards set by the National Electrical Code and all local and state codes.**
2. **A magnetic starter should be used to protect your motor when starting and stopping. It should stop the motor in case of power interruption, conductor fault, low voltage, circuit interruption, or motor overload. Then the motor must be restarted manually. Some motors have built-in thermal overload protection. If this type motor is used, use only those with a manual reset.**
3. **Disconnect power before resetting motor overloads.**
4. **Reset and motor starting controls must be located, so that the operator has full view of the entire operation.**
5. **Make certain electric motors are grounded.**
6. **Shut off power to adjust, service or clean.**
7. **Keep all guards and shields in place.**

LOCKOUT

A main power disconnect switch capable of being locked only in the off position shall be provided. This shall be locked whenever work is being done on the Mass-Ter Mover.

OPERATING PROCEDURES

DRIVE - POWER CALCULATION

First - Select the desired capacity and closest angle of operation.
 Second - Using the tables below, determine what the "H.P. per foot" (*kw/m*) is for the selected capacity and angle of operation.
 Third - Multiply the conveyor length by "H.P. per foot" (*kw/m*) to find the required horsepower (*kw*). Use the next larger standard horsepower motor.

DRIVE POWER FORMULA

Conveyor length x "H.P. per foot" (*kw/m*) = Required H.P. (*kw*)

EXAMPLE

Model 50

60' (18.29 m) Long Conveyor

[Angle of Operation - 30°]

[Capacity - 3300 BPH] (89 TPH)

Table Shows .136 "H.P. per foot" - (.331 *kw/m*)

60' x .136 = 8.16 H.P. (18.29 m x .331 = 6.05 *kw*)

{Use a 10 HP (7.5 *kw*) motor}

MODEL 50 POWER TABLE

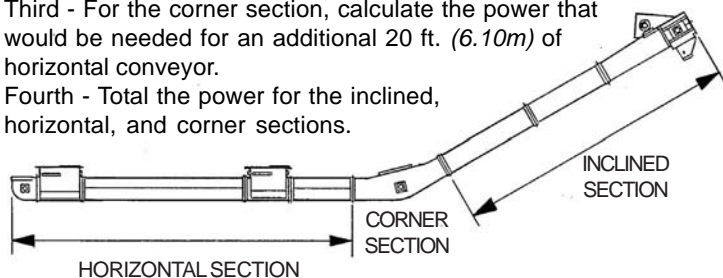
ANGLE OF OPERATION	UP TO 2500 BPH (68 TPH) 150 FPM (45.72 MPM)				UP TO 3300 BPH (89 TPH) 200 FPM (60.96 MPM)				UP TO 4100 BPH (111 TPH) 250 FPM (76.20 MPM)					UP TO 5000 BPH (135 TPH) 300 FPM (91.44 MPM)					
	HOR	15°	30°	45°	HOR	15°	30°	45°	HOR	15°	30°	45°	60°	HOR	15°	30°	45°	60°	90°
HP PER FOOT (<i>kw/m</i>)	.048 (.117)	.072 (.175)	.103 (.251)	.137 (.334)	.063 (.153)	.095 (.231)	.136 (.331)	.181 (.441)	.078 (.190)	.119 (.290)	.169 (.412)	.228 (.556)	.327 (.797)	.095 (.231)	.142 (.346)	.207 (.505)	.275 (.671)	.337 (.822)	.394 (.961)
MAXIMUM LENGTH FT. (m)	300' (91)	200' (61)	140' (43)	100' (30)	300' (91)	210' (64)	140' (43)	100' (30)	300' (91)	200' (61)	140' (43)	100' (30)	70' (21)	300' (91)	210' (64)	140' (43)	100' (30)	80' (24)	70' (21)
MAX. HP (<i>kw</i>)	15 (11)	15 (11)	15 (11)	15 (11)	20 (15)	20 (15)	20 (15)	20 (15)	25 (18.5)	25 (18.5)	25 (18.5)	25 (18.5)	25 (18.5)	30 (22)	30 (22)	30 (22)	30 (22)	30 (22)	30 (22)

MODEL 85 POWER TABLE

ANGLE OF OPERATION	UP TO 4100 BPH (111 TPH) 150 FPM (45.72 MPM)				UP TO 5500 BPH (149 TPH) 200 FPM (60.96 MPM)				UP TO 7000 BPH (189 TPH) 250 FPM (76.20 MPM)					UP TO 8500 BPH (230 TPH) 300 FPM (91.44 MPM)				
	HOR	15°	30°	45°	HOR	15°	30°	45°	HOR	15°	30°	45°	60°	HOR	15°	30°	45°	60°
HP PER FOOT <i>kw/m</i>	.067 (.163)	.107 (.261)	.158 (.385)	.211 (.514)	.092 (.224)	.147 (.358)	.215 (.524)	.292 (.712)	.118 (.287)	.187 (.456)	.277 (.675)	.372 (.907)	.457 (1.11)	.143 (.348)	.227 (.553)	.336 (.819)	.451 (1.10)	.559 (1.36)
MAXIMUM LENGTH FT. (m)	220' (67)	140' (43)	90' (27)	70' (21)	210' (64)	130' (40)	90' (27)	60' (18)	210' (64)	130' (40)	90' (27)	60' (18)	50' (15)	280' (85)	170' (52)	110' (34)	80' (24)	70' (21)
MAX. HP (<i>kw</i>)	15 (11)	15 (11)	15 (11)	15 (11)	20 (15)	20 (15)	20 (15)	20 (15)	25 (18.5)	25 (18.5)	25 (18.5)	25 (18.5)	25 (18.5)	40 (30)	40 (30)	40 (30)	40 (30)	40 (30)

POWER REQUIREMENT FOR A CONVEYOR THAT INCLUDES A CORNER SECTION

First - Calculate the power for the inclined section using the above instructions.
 Second - Calculate the power for the horizontal portion.
 Third - For the corner section, calculate the power that would be needed for an additional 20 ft. (6.10m) of horizontal conveyor.
 Fourth - Total the power for the inclined, horizontal, and corner sections.



MODEL 85 POWER TABLE

ANGLE OF OPERATION	UP TO 10,000 BPH (270 TPH) 400 FPM (121.92 MPM)				
	HOR	15°	30°	45°	60°
HP PER FOOT <i>kw/m</i>	.18 (.439)	.28 (.683)	.42 (1.024)	.56 (1.365)	.70 (1.706)
MAXIMUM LENGTH FT. (m)	200' (61)	130' (40)	90' (27)	65' (20)	50' (15)
Max. HP (<i>kw</i>)	40 (30)	40 (30)	40 (30)	40 (30)	40 (30)

IMPORTANT: Because the gear reducer is shipped without oil, it is necessary to add the proper amount of oil before running. Use a high grade petroleum base, rust and oxidation inhibited (R & O) gear oil. Follow the instructions on the reducer nameplate, warning tags and in the installation manual.

Under normal industrial operating conditions, the lubricant should be changed every 2500 hours of operation or every 6 months, whichever occurs first. Drain the reducer and flush it with kerosene, clean the magnetic drain plug and refill to its proper level with new lubricant. **CAUTION: TOO MUCH OIL WILL CAUSE OVERHEATING AND TOO LITTLE WILL RESULT IN GEAR FAILURE. CHECK OIL LEVEL REGULARLY.**

Under extreme operating conditions, such as rapid rise and fall of temperature, dust, dirt, chemical particles, chemical fumes or oil sump temperatures above 200 deg. F., the oil should be changed every 1 to 3 months depending on severity of conditions.



Never clean, adjust or lubricate a machine that is in operation.

All head shaft and tail shaft bearings are supported by self-aligning, sealed ball bearings, which have been packed at the factory, but operator should lubricate at approximately fifty (50) hour intervals. Lubricate lightly with SAE multipurpose type grease.

TROUBLE SHOOTING

Extreme noise from trunking.

1. Conveyor chain is too loose. Check chain tension and adjust, if necessary. See Page 14.
2. Improper assembly or misalignment of trunking. Loosen trunk connection(s) that are source of noise and disassemble. Check for end smoothness and grind, if necessary. Check for correct alignment of center divider. See "Trunking Assembly" on Pages 11 and 12.

Belt slippage on electric drive.

1. Incorrect belt tension.
2. Unit is plugged. Clean the grain and any obstructions from the machine, as is possible.

Grain returning to the intake end through the top of the trunking.

1. The discharge spout may be mounted backwards. Spout must be mounted so that it slopes back towards the main body of the unit. Refer to page 18.
2. Partially blocked discharge; remove obstruction.

Unit not running to full capacity.

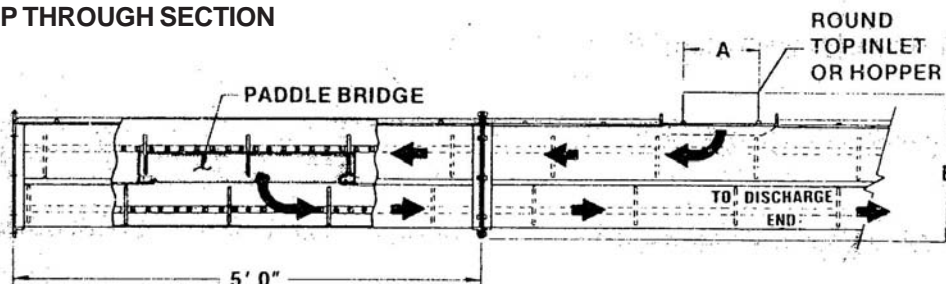
1. Grain is high in moisture. A low capacity will likely be achieved with high moisture grain. Excessive feeding of high moisture grain can cause plugging.
2. Chain speed is too slow. See recommended chain speed on horsepower charts.
3. Obstruction at intake.

Paddle breaking or bending.

1. Paddles may be coming loose from the chain. Keep paddles securely connected to chain. See page 13 thru 14.
2. Truck misalignment. (See page 11.)
3. Frequent starts under loads. Allow machine to clean out before shutting down.
4. Sprockets at intake or discharge may be off center. Align in center of trunking.
5. Overfeeding; adjust the feeding of the unit to allow less grain to enter while maintaining full speed.

DESIGN IDEAS

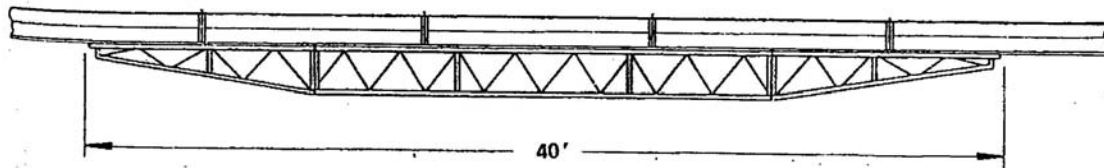
1. Grain is carried in the bottom section. Chain travel is toward the intake end in the top section.
2. A completed conveyor has a fixed grain flow. The trunk sections must be assembled with the center dividers overlapped at the various section connections for the correct flow direction. The conveyor should not be operated in reverse direction. (See overlap detail Fig. 2 on page 11.)
3. Mass-Ter Movers must be adequately supported to be rigid and straight. Supports should be adequate on 20' centers. A maximum span is 30'.
4. The Mass-Ter Movers will handle a wide range of free flowing grains. It should not be used with highly corrosive material such as fertilizer.
5. The capacity charts on the Mass-Ter Mover reflect actual achievable results. However, good design generally will suggest using the next higher speed-capacity rate. This assures capacity without requiring absolute full 100% output.
6. **DO NOT** exceed maximum lengths listed in the horsepower charts. See page 6.
7. Conveyor sections are available in solid, welded top construction or a bolt-on cover. The bolt-on cover is convenient for service or inspection. Units must not be run without the cover. Customer preference will govern the style of cover choice. However, when a 15°, 30° or 45° is used, the first section after it (toward discharge) must be the solid top style.
8. A 15°, 30° or 45° incline section can be used with any unit. However, the horizontal portion should not exceed 40'. See horsepower charts for design limits on the incline section.
9. Chain tension can be checked by attempting to tilt one paddle from the vertical plane. When the chain tension is proper, the paddle will rotate to a minimal amount from the chain. Chain tension is adjusted by dual take-ups which are located at the discharge end. See page 14.
10. Overfeeding a Mass-Ter Mover may cause plugging. Intake rate should not exceed the particular capacity of the drive and chain travel.
11. For intermediate inlets, you must use the optional units provided in this catalog. They contain necessary chain and paddle guides and inlet flow control. **DO NOT** cut random inlets without using these inlet adapters and/or inlet hopper. See page 19 for inlet adapters and inlet hoppers. When intermediate inlets are a significant distance from the inlet, you may wish to use a drop through section. This will allow grain to drop through to the lower section without having to go to the boot end. The inlet must be located in the first section toward the discharge end from the drop through section. An inlet will not perform satisfactorily if it is located in the drop through section. **The distance that grain is conveyed "Backward" to a drop through or to the boot end, should be added to total length to properly determine horsepower requirements.** Use different length of conveyor sections to adjust outlet to desired location.

5' DROP THROUGH SECTION

DESIGN IDEAS

12. The standard boot contains an inlet cover located approximately 5' from the end. If you use this as an inlet, add the inlet adapter. The inspection cover, which is located at the extreme end, may also be used as an inlet.
13. Center and intermediate bin well inlets allow grain flow directly into the lower grain conveying section. As a result, it is not necessary to use an inlet adapter or drop through section with them.
14. If Mass-Ter Mover is installed out of doors, we recommend trunk flange joints & bolt-on covers be sealed with liquid-tight sealant (such as caulking) to prevent moisture from entering. Check seals periodically.
15. 40' Truss for Models 50 & 85 Mass-Ter Mover.

For support of spans up to 50 feet on permanently installed Mass-Ter Movers systems, see page 17.



NOTE: Support rails for the truss must be welded to the Mass-Ter Mover.

ASSEMBLY INSTRUCTIONS








Assembly of a stationary Mass-Ter Mover Conveyor System is unique with each and every situation. Some systems may be comprised of a number of trunk sections (covered or solid) with a variety of inlets and outlets, including hoppers, pit hoppers, spouts and inclined sections with accompanying hardware and supports. Other systems may be extremely simple, comprised of only a hopper, one truck section and a discharge.

The assembly instructions in this manual offer information as how to assemble all possible components in any given system, simple or complex. Specific, detailed instructions are not given for motor mounts, due to the many variations in their assembly.

BOLT INFORMATION

All bolts should be tightened to the recommended torques shown in the table below

NOTE: When hardware is plated, reduce torque values by 25%.

GENERAL TORQUE SPECIFICATION TABLE (Revised 2-74)													
USE THE FOLLOWING TORQUES WHEN SPECIAL TORQUES ARE NOT GIVEN													
NOTE: These values apply to fasteners as received from supplier, dry, or when lubricated with normal engine oil. They do not apply if special graphited or moly-disulphide greases or other extreme pressure lubricants are used. This applies to both UNF and UNC threads.													
SAE Grade No		2				5				8 *			
Bolt head identification marks as per grade NOTE: Manufacturing Marks Will Vary						  				  			
Bolt Size		Torque				Torque				Torque			
Inches	Millimeters	Foot Pounds	Newton-Meters	Foot Pounds	Newton-Meters	Foot Pounds	Newton-Meters	Foot Pounds	Newton-Meters	Foot Pounds	Newton-Meters	Foot Pounds	Newton-Meters
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
1/4	6.35	5	6	6.8	8.13	9	11	12.2	14.9	12	15	16.3	20.3
5/16	7.94	10	12	13.6	16.3	17	20.5	23.1	27.8	24	29	32.5	39.3
3/8	9.53	20	23	27.1	31.2	35	42	47.5	57.0	45	54	61.0	73.2
7/16	11.11	30	35	40.7	47.4	54	64	73.2	86.8	70	84	94.9	113.9
1/2	12.70	45	52	61.0	70.5	80	96	108.5	130.2	110	132	149.2	179.0
9/16	14.29	65	75	88.1	101.6	110	132	149.2	179.0	160	192	217.0	260.4
5/8	15.88	95	105	128.7	142.3	150	180	203.4	244.1	220	264	298.3	358.0
3/4	19.05	150	185	203.3	250.7	270	324	366.1	439.3	380	456	515.3	618.3
7/8	22.23	160	200	216.8	271.0	400	480	542.4	650.9	600	720	813.6	976.3
1	25.40	250	300	338.8	406.5	580	696	786.5	943.8	900	1080	1220.4	1464.5
1-1/8	25.58					800	880	1084.8	1193.3	1280	1440	1735.7	1952.6
1-1/4	31.75					1120	1240	1518.7	1681.4	1820	2000	2467.9	2712.0
1-3/8	34.93					1460	1680	1979.8	2278.1	2380	2720	3227.3	3688.3
1-1/2	38.10					1940	2200	2630.6	2983.2	3160	3560	4285.0	4827.4

* Thick nuts must be used with Grade 8 bolts

TRUNKING ASSEMBLY

Assemble on a level surface spacious enough to accommodate the unit when laid out full length. It is recommended that the unit be elevated 3-4 feet above ground level during assembly. Make sure support stands or blocks are well anchored to prevent tipping. Assembly area should have access to a chain hoist or other lifting device.

Use 3/8" x 1" grade 5 bolts with lockwashers and nuts to join trunking and to attach head to trunking. Each connection on Model 50 trunking requires ten bolts, Model 85 trunking requires twelve bolts.

ASSEMBLY OF TWO "SOLID COVER" TRUNK SECTIONS

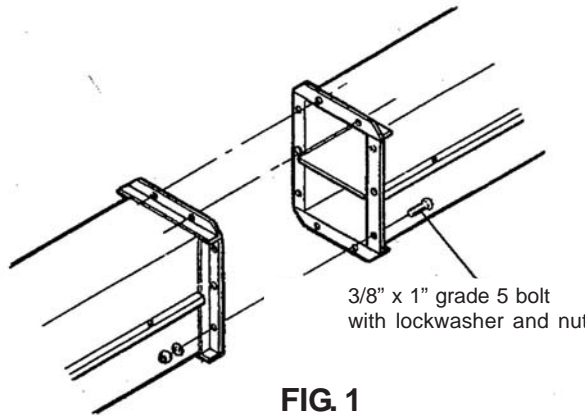
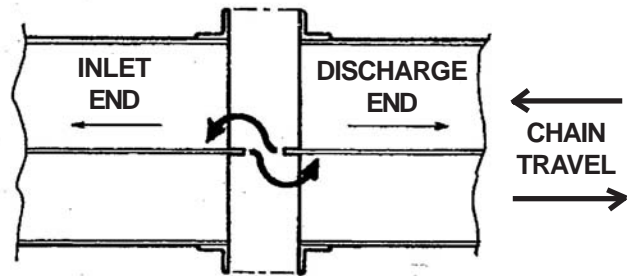


FIG. 1



IMPORTANT OVERLAP CENTER PARTITION AS SHOWN

FIG. 2

IMPORTANT:
OVERLAP CENTER PARTITION AS SHOWN

ASSEMBLY OF TWO "BOLT-ON COVER" TRUNK SECTIONS

NOTE: If Mass-Ter Mover is installed out of doors, we recommend trunk flange joints and bolt-on covers be sealed with liquid-tight sealant (such as caulking) to prevent moisture. Check seals periodically.

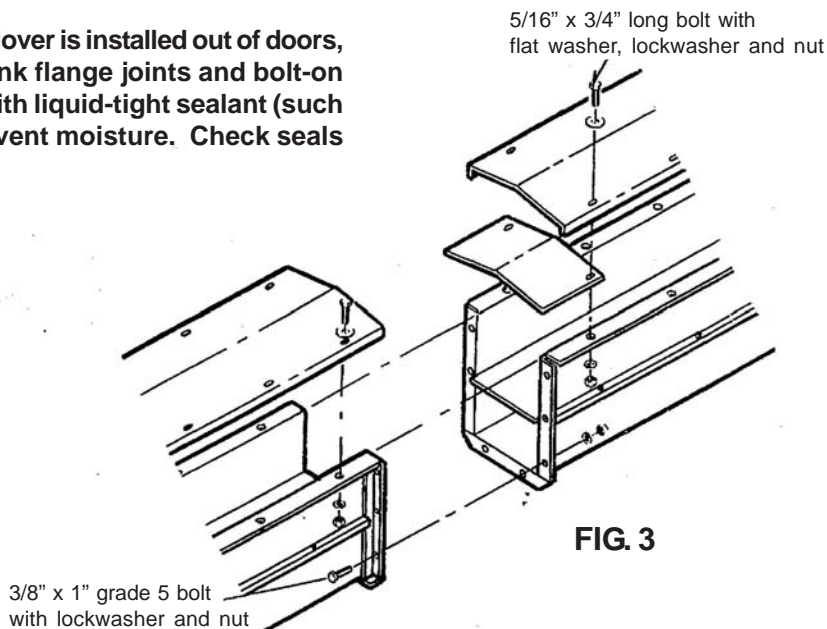


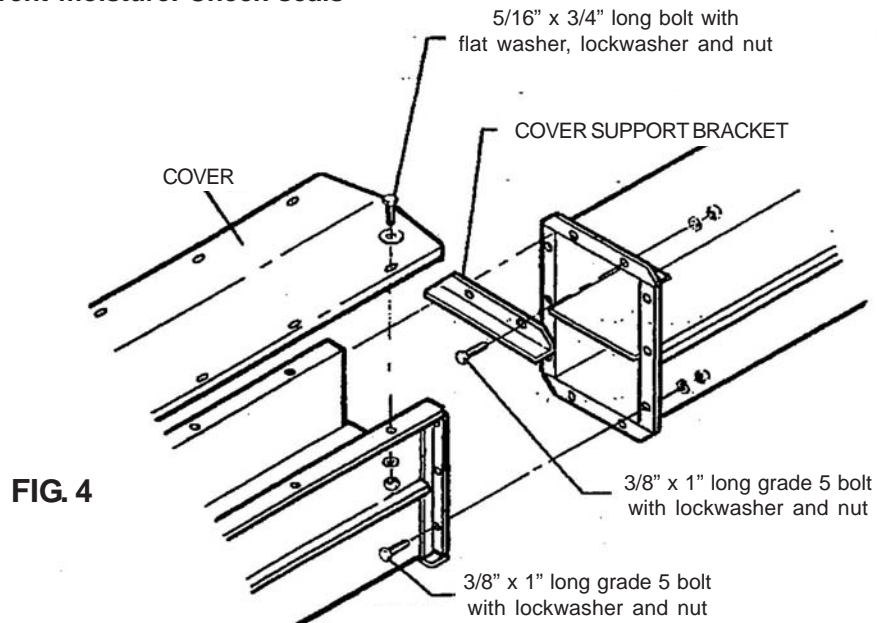
FIG. 3

ASSEMBLY INSTRUCTIONS

TRUNKING ASSEMBLY

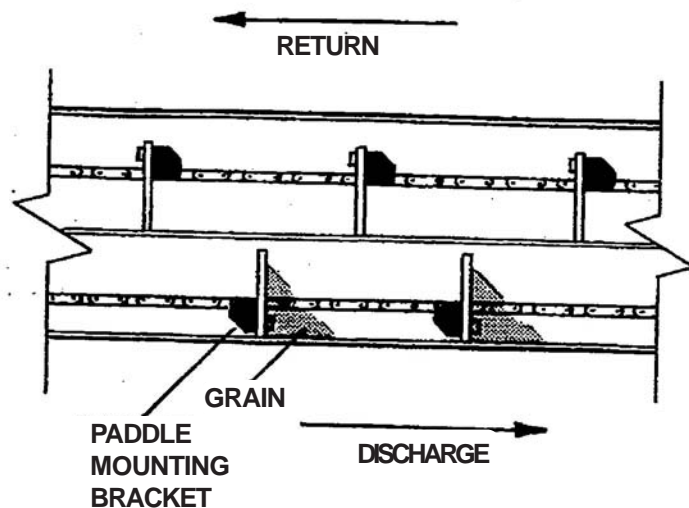
ASSEMBLY OF A "SOLID COVER" TRUNK SECTION AND A "BOLT-ON COVER" TRUNK SECTION

NOTE: If Mass-Ter Mover is installed out of doors, we recommend trunk flange joints & bolt-on covers be sealed with liquid-tight sealant (such as caulking) to prevent moisture. Check seals periodically.



CONVEYOR CHAIN AND PADDLES

It is important to install chain so that the paddle mounting brackets will be behind the paddles as grain is moved up the trunking. See Fig. 5.



NOTE: UNIT SHOWN WITH PARTIAL LOAD

CONVEYOR CHAIN AND PADDLE ASSEMBLY

The paddles can be assembled to the conveyor chain before installing the chain into the housing. The chain model number is stamped on the side of the chain links. Be sure that **ALL** of the conveyor chain is the same type. Bolt the paddles to chain using two 5/16" x 1-1/4" bolts, with two flat washers and two lock nuts per each paddle, for the Model 50 and using four 5/16" x 1-1/2" bolts, with four flat washers and four lock nuts per each paddle for the Model 85.

IMPORTANT: Do not overtighten bolts for attaching paddles to chain. Excessive tightening can deform the paddles. Recommend 15 to 20 ft.-lbs. of torque on paddle bolts.

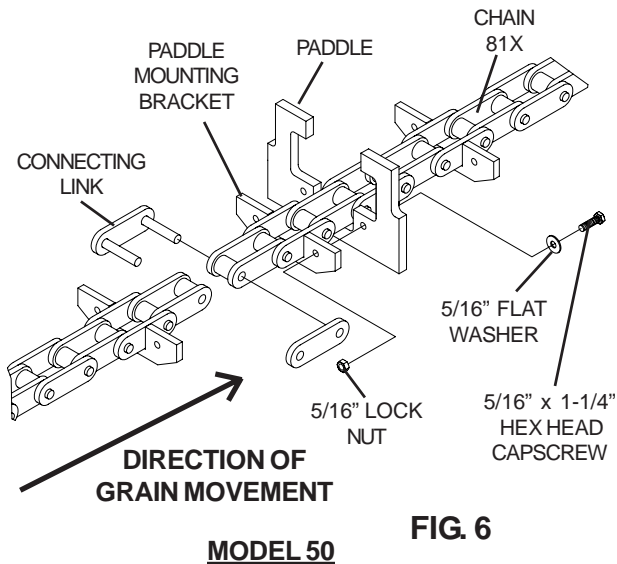


FIG. 6

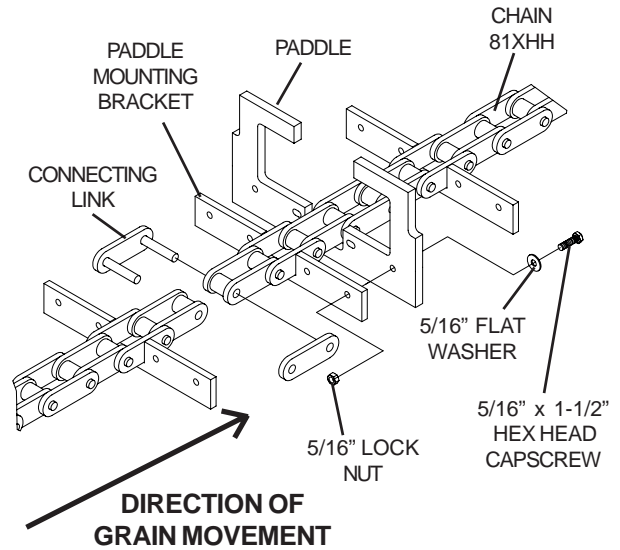


FIG. 7


Regular inspections should be established in order to ensure that the conveyor chain is in good operating condition at all times.

1. Inspect the conveyor chain for loose bolts, missing chain parts, missing or damaged chain paddles and the overall chain condition.
2. Check chain tension; see page 14 for chain adjustment.
3. Check conveyor sprocket to see that it is centered and setscrews are tight.

IMPORTANT SERVICE - MAINTENANCE NOTICE:

The life of the conveyor chain will be shortened when the chain is allowed to sit in water or is operated in acidic conditions, so avoid these situations.

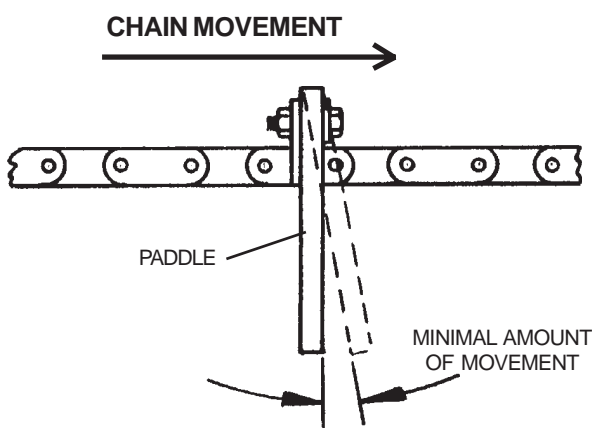
To extend chain life, spray a light coat of oil on the chain after each season's use. Use extreme caution; keep away from moving chain and paddles.



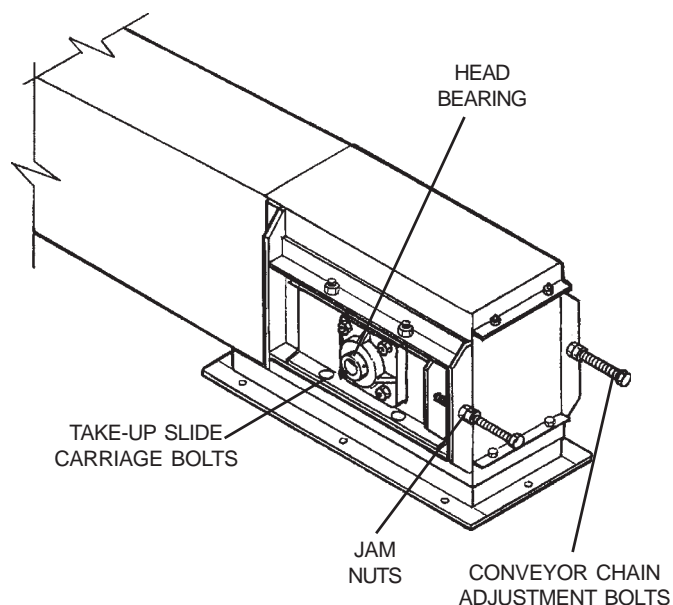
Whenever you must service or adjust your equipment, make sure you stop the machine and lock out your power source!

**CONVEYOR CHAIN
TENSION ADJUSTMENT**

1. To check conveyor chain tension, grasp one of the paddles at the intake end and attempt to rotate it up toward the chain. See Fig. A. Proper chain tension should allow only minimal rotation of the paddle. To adjust, go onto Step 2.
2. Loosen the four carriage bolts on each take-up slide at the discharge end of the unit. Move jam nuts on conveyor chain adjustment bolts in direction desired to either loosen or tighten chain. Jam nuts should be moved equal amounts so that sprocket shaft remains straight. Check it by measuring from the shaft at each bearing to the head end.

**FIG. 8**

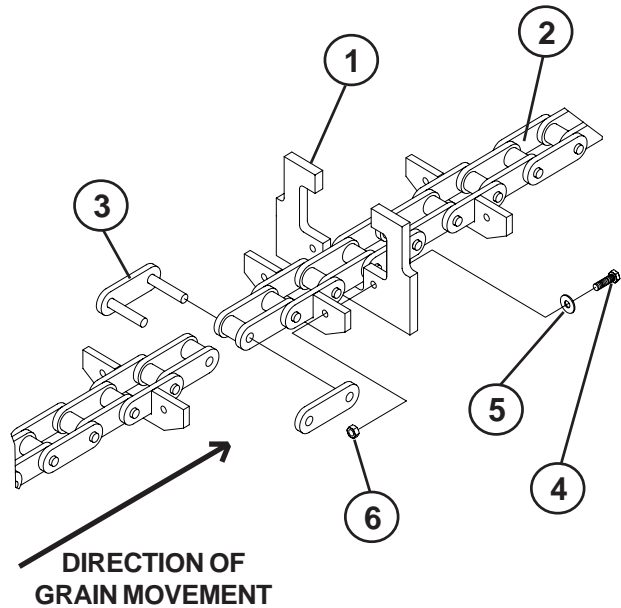
3. If chain is still too loose after these adjustments, it may be necessary to remove one or more links from the chain.
4. Tighten carriage bolts on take-up slides. Make sure main shaft is square with chain and trunking.
5. It is important to operate the conveyor at reduced capacity for the first 1000 bushels until the housing and internal parts become polished. Operate at the recommended speed during this period. Operation at full capacity during this initial period will result in high power requirements. It is important not to overtighten the conveyor chain. However if the chain is not sufficiently tight, it will slip at the lower drive sprocket as capacity is increased. Should this occur, shut off the grain flow to the unit and shut down after the unit has emptied. Tighten the conveyor chain as described above. Limit the tightening process to 1/4" of travel for conveyors 70 ft. and longer and to smaller increments for shorter conveyors. Restart the conveyor and operate normally. The tightening process may be repeated, if necessary. **DO NOT** overtighten.

**FIG. 9
(Drive not shown)**

CHAIN & PADDLE PARTS

MODEL 50 MASS-TER MOVER STATIONARY UNITS

REF. NO.	PART NO.	DESCRIPTION
1	1005441	Plastic Paddle 3/8" Thick
1	1005593	Plastic Paddle f/AR Units
2	1038004	81X Chain with Brackets 10' 2-7/32" lg. (48 pitches)
3	420154	Connecting Link
3	420200	Offset Link
—	1005566	12 Tooth 1-1/2" Bore Sprocket
—	1005565	12 Tooth 2" Bore Sprocket
4	4727-1	Capscrew 5/16" x 1-1/4"
5	33023	5/16" Flat Washer
6	33135	5/16" Lock Nut

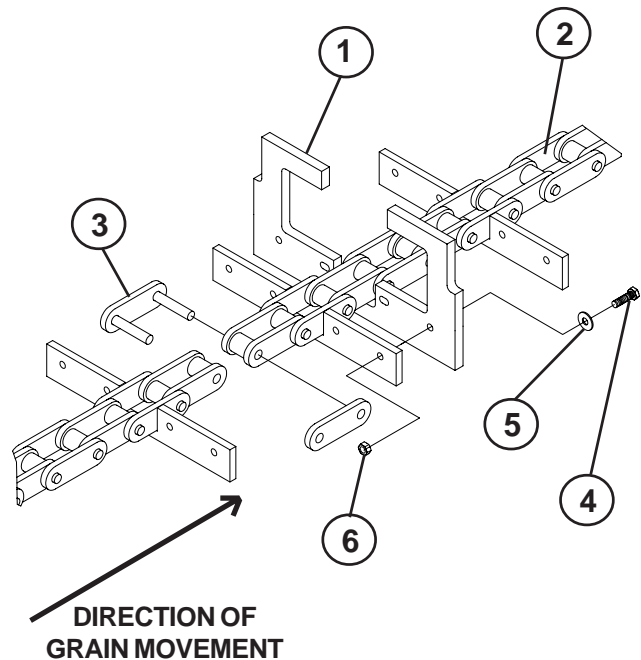


MODEL 50

FIG. 10

MODEL 85 MASS-TER MOVER STATIONARY UNITS

REF. NO.	PART NO.	DESCRIPTION
1	1005588	Plastic Paddle 1/2" Thick
1	1005594	Plastic Paddle f/AR Units
2	1038009	81XHH Chain with Brackets 10' 2-7/32" lg. (48 pitches)
3	1017077	Connecting Link
3	1034495	Offset Link
—	420092	16 Tooth 2" Bore 3-10 HP and Stationary Boot
—	420065	16 Tooth 2-7/16" Bore
4	4736	Capscrew 5/16" x 1-1/2"
5	33023	5/16" Flat Washer
6	33135	5/16" Lock Nut



MODEL 85

FIG. 11

NOTICE:

The drive components will be assembled to the head at the factory. The motor and motor sheave will need to be installed.

IMPORTANT: Use the proper size and speed motor to ensure satisfactory conveyor operation. Too small of a motor will not supply the horsepower required to achieve capacity and possible damage to the motor will occur.

Too large of a motor may cause high stress on conveyor components resulting in shorter life of those components.

IMPORTANT: Use the size of sheave furnished in burlap bag. If another size of sheave is used or substituted, improper chain speed and unsatisfactory conveyor operation will result.

Mount the sheaves as close to the belt guard back as possible. Align sheaves by using a straight edge, place across the outer faces of both sheaves. Be sure drive keys are properly installed. Secure in place using taper lock bushing. Check sheave alignment again after sheaves are secure to shafts.

Install the belts onto the sheaves and set belt tension. To tighten belts, use the reducer torque arm.

Check all fasteners to see if they are tight.

Close and latch belt guard.



Keep all safety shields and devices in place.

IMPORTANT: Because the gear reducer is shipped without oil, it is necessary to add the proper amount of oil before running. Use a high grade petroleum base, rust and oxidation inhibited (R & O) gear oil. Follow the instructions on the reducer name plate, warning tags and in the installation manual supplied in the reducer box.

40' STATIONARY TRUSS ASSEMBLY

MODEL 50 AND MODEL 85

1. If your 10' trunk sections (solid or bolt-on cover types) do not have the mounting plates (A) (4" x 116-3/4" long) attached, see Fig. 12.

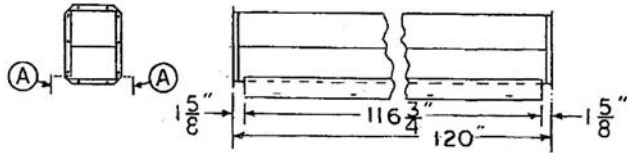


FIG. 12

2. Weld mounting plates to side of trunk sections with 1/8" fillet weld (1-1/2" long) centered on every eight inches. Bottom of trunk section should be welded the same way with welds centered in between welds on sides. **NOTE: Location of mounting plates in Fig. 12** Keep mounting plates (with holes down) 3-1/2" below bottom of trunk sections and centered between end flanges. Paint welds with a good grade of exterior type paint.

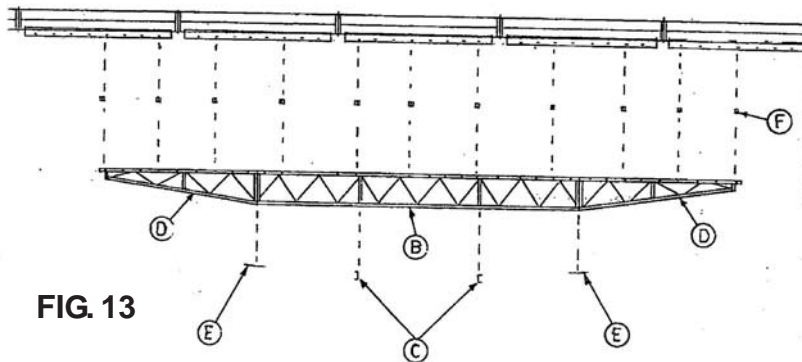


FIG. 13

3. See Fig. 13 for proper size and location of trusses required for assembly. 20' trusses are identical. Tapered trusses (9' 5-1/2" long) are made with two right and two lefts. Connect both tapered trusses (D) and main truss (B) end vertical angles together with three 3/8" x 1" hex head bolts, lock washers and nuts (12 required). Tighten these bolts now. **NOTE:** Leave all other bolts loose until complete truss is assembled to trunk sections.
4. Position truss sides as shown in Fig. 13. Align holes of the truss sides to mounting plate on trunk section and bolt together using 3/8" x 1" hex head bolts, flat washers (2 per bolt), lock washers and nuts (42 required).

5. Slide spacer bars (F) (On Model 50 use 9-5/16" long spacer and on Model 85 use 13-5/16" long spacer) in between mounting plates (A) and truss sides and bolt together using 3/8" x 1-1/4" (grade 5) hex head bolts, flat washers and nuts (22 required). See Fig. 14.

NOTE: Location of spacer bars (F), they should be installed in the vertical position. (Narrow part up and down.)

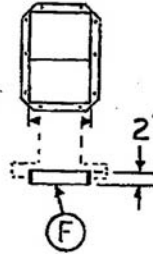


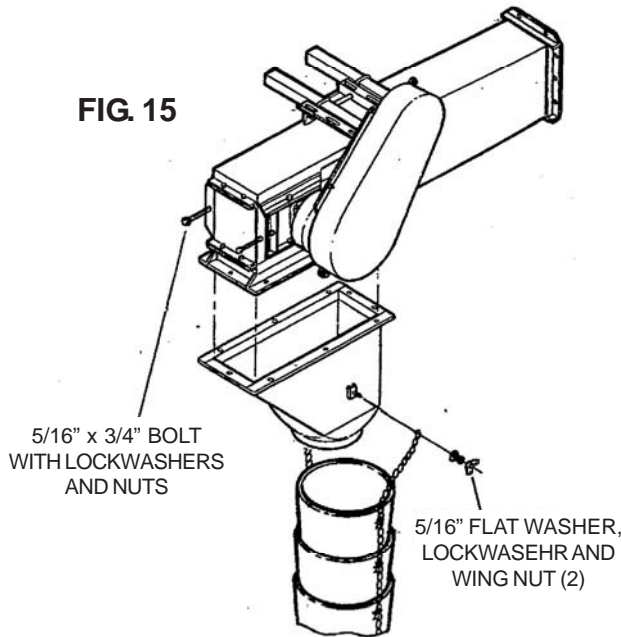
FIG. 14

6. Connect both main trusses (B) together at bottom of both vertical angles (except angles under connecting plates) using two cross braces (4" x 13" on Model 50 or 4" x 17" on Model 85) (C) and four 3/8" x 3/4" long hex head bolts, lockwashers and nuts per cross brace.
7. Attach lower connecting plates (E) (On Model 50 - 13" x 13-1/2" or On Model 85 - 13" x 17-1/2") to bottom of tapered truss and main truss sides where end vertical angles have been joined together. See Fig. 13. Use eight 1/2" x 1-1/4" hex head bolts, lockwashers and nuts to secure each lower connecting plate in place.
8. Tighten all bolts installed in Steps 4 through 8.

OUTLETS ASSEMBLY

ADAPTOR SPOUT

Use 5/16" x 3/4" bolts with lockwashers and nuts to attach adaptor spout to head assembly. See Fig. 15. **IMPORTANT: On inclined units, the adapter spout must be attached, as shown for grain to discharge properly.**



NOTE: If adapter spout needs to be mounted in another direction than what is shown, the customer will need to drill additional holes in adapter spout flange. This should only be done on horizontal units, not on inclined units.

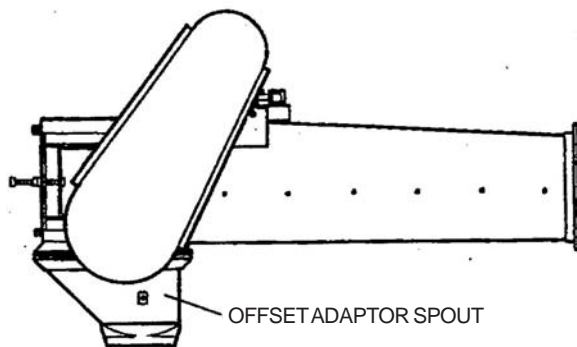


FIG. 16

OPTIONAL BUCKET SPOUT

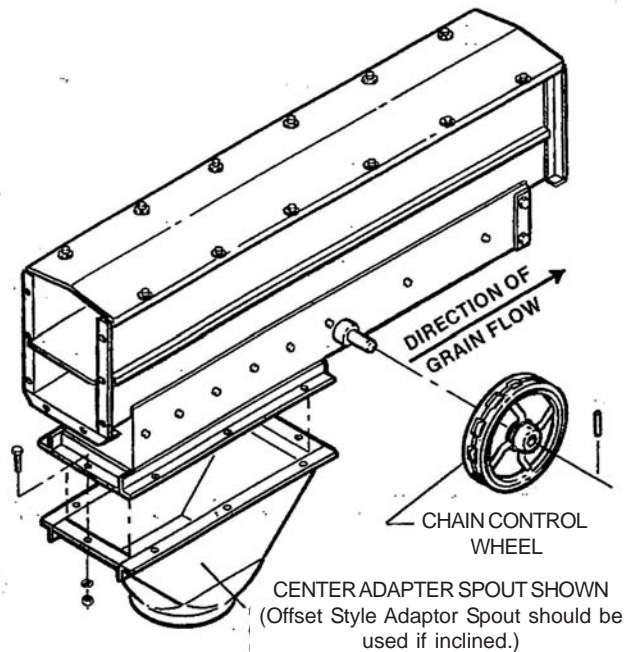
Place optional bucket spout snugly around adapter spout. Slip chain links over studs on adapter spout and secure with 5/16" flat washers, lockwashers and wing nuts. See Fig. 17.

RACK & PINION CONTROLLED OUTLET

An intermediate outlet operated by a rack and pinion control device can be used in horizontal and inclined positions.

IMPORTANT: When installed on an incline, the outlet should be at the lower end of the conveyor section to insure proper operation of rack and pinion gate control.

Offset style adapter spout can be used when trunking is horizontal to achieve desired outlet location.



INLET ASSEMBLY

TOP INLET HOPPER WITH COVER

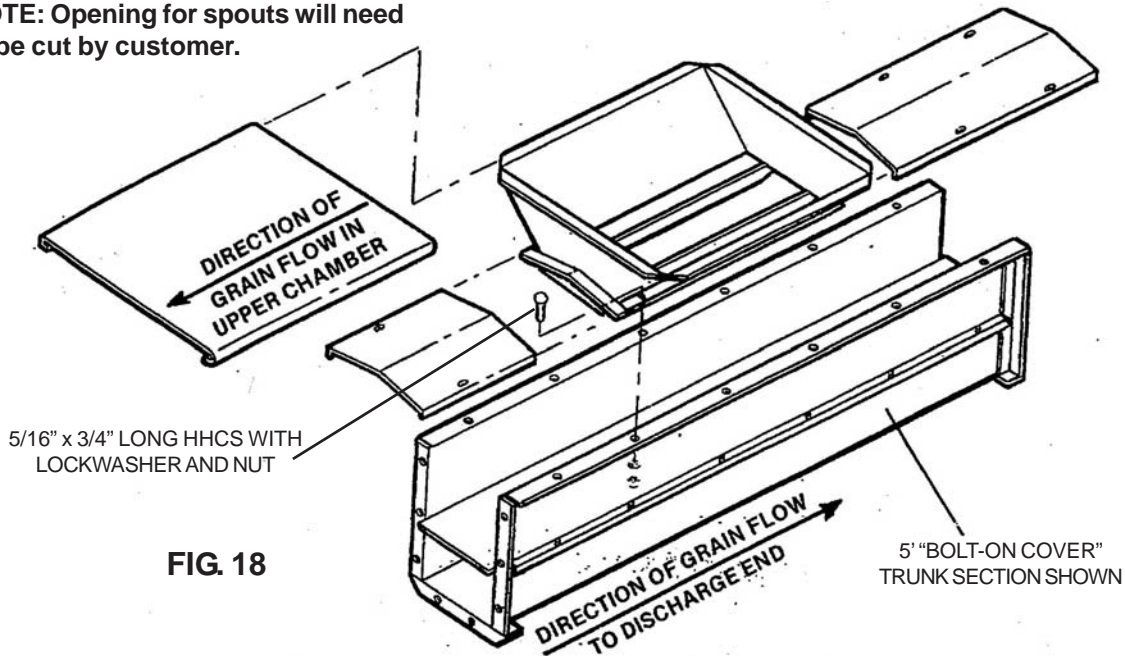
Top inlet hopper can be installed anywhere along a "Bolt-on Cover" trunk section. Top covers will need to be cut to length after hopper is located.

NOTE: When intermediate inlets are a significant distance from the boot, a drop through section should be considered. See Page 9.

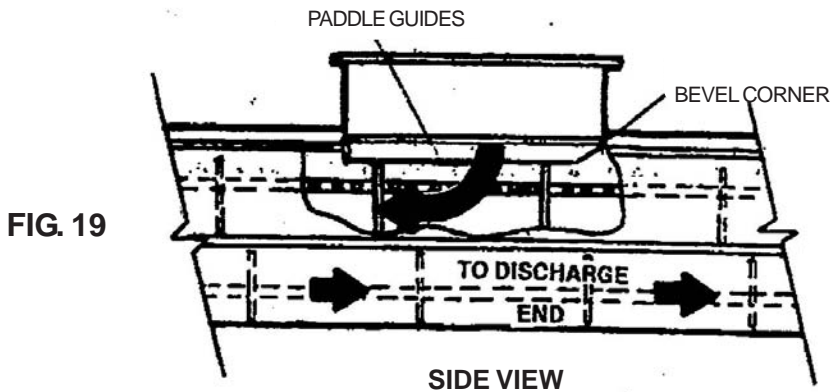
NOTE: Opening for spouts will need to be cut by customer.

When drop through sections are used, they should be installed next to intermediate inlets on the side toward the boot. This allows grain from the inlet to drop through to the lower grain carrying chamber at that point rather than the grain moving to the boot end before dropping through.

Sealant should be used where covers are attached to the inlet hopper. Sealant is also recommended around openings cut in hopper covers for entry of grain from other conveyors or down spouts.



IMPORTANT: The beveled end on paddle guides on the bottom of the inlet needs to be properly installed to avoid paddle damage. See Fig. 19.



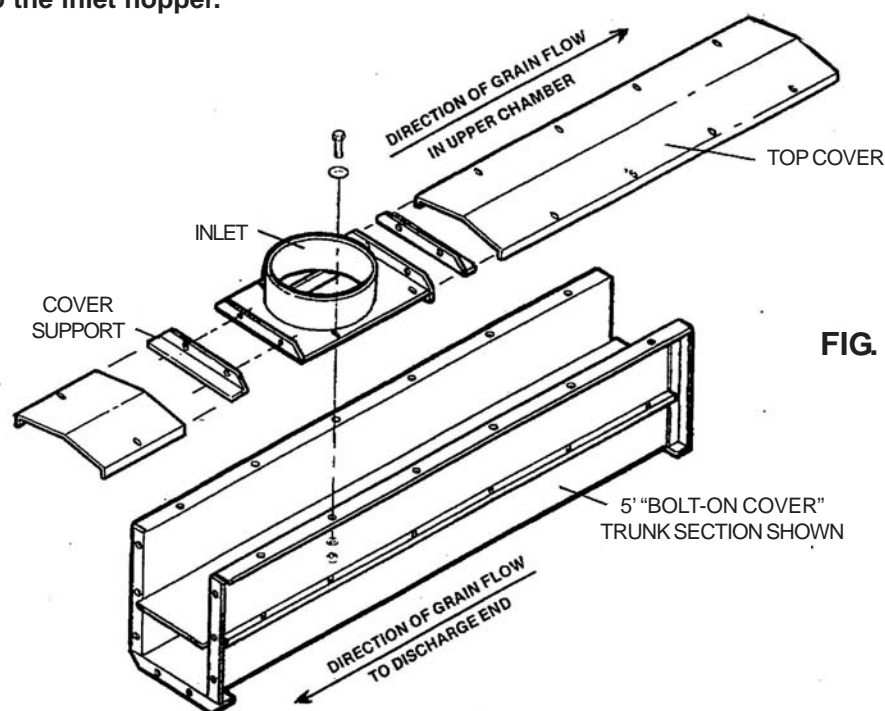
INLET ASSEMBLY**TOP INLET HOPPER WITH COVER**

This top inlet hopper can be installed anywhere along a "Bolt-on Cover" trunk section. If bolted next to trunk flange, a cover support is not required. Top covers will need to be cut to length after inlet is located.

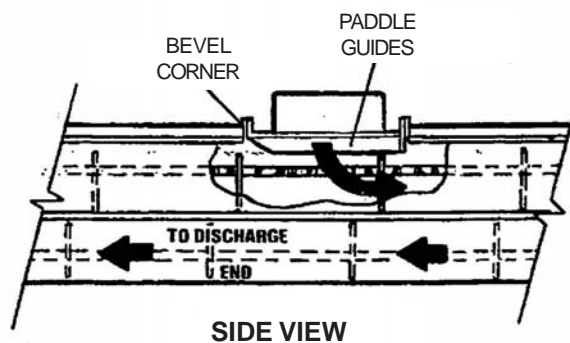
NOTE: When intermediate inlets are a significant distance from the boot, a drop through section should be considered. See Page 8.

When drop through sections are used, they should be installed next to intermediate inlets on the side toward the boot. This allows grain from the inlet to drop through to the lower grain carrying chamber at that point rather than the grain moving to the boot end before dropping through.

Sealant should be used where covers are attached to the inlet hopper.

**FIG. 20**

IMPORTANT: The beveled end on paddle guides on the bottom of the inlet needs to be properly installed to avoid paddle damage.



INLET ASSEMBLY

STANDARD BOOT WITH INLET

Top inlets can be installed on a boot section. Round inlet can replace bolt-on cover.

HINGED COVER
IMPORTANT: Keep closed during operation.

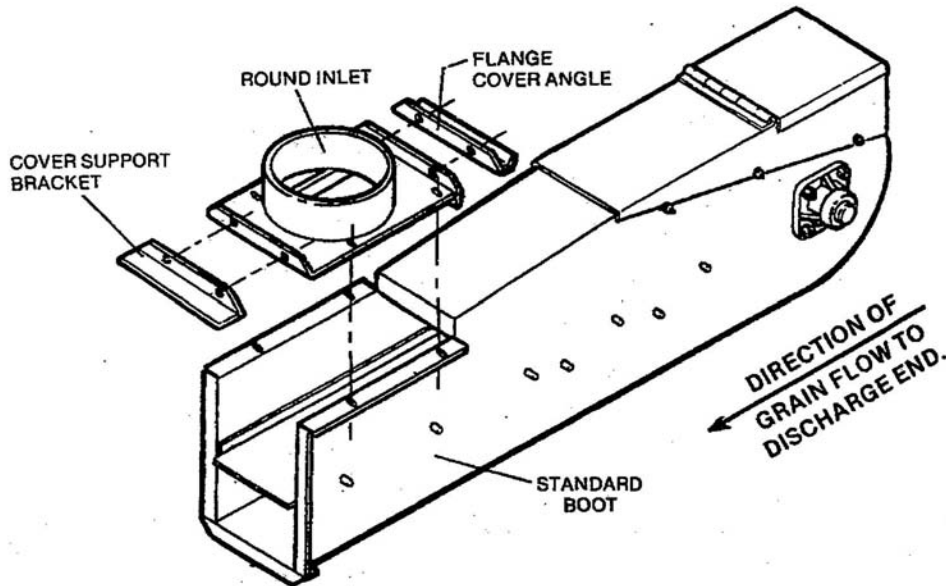


FIG. 22



IMPORTANT: The beveled end on paddle guides on the bottom of the inlet needs to be properly installed to avoid paddle damage. See Fig. 23.

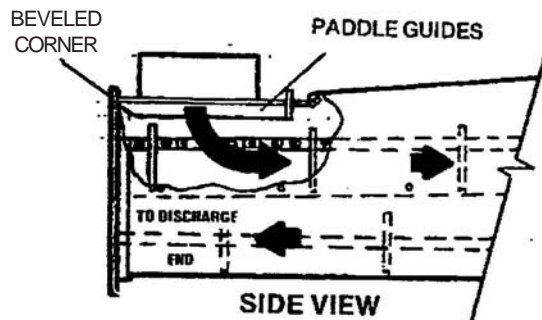


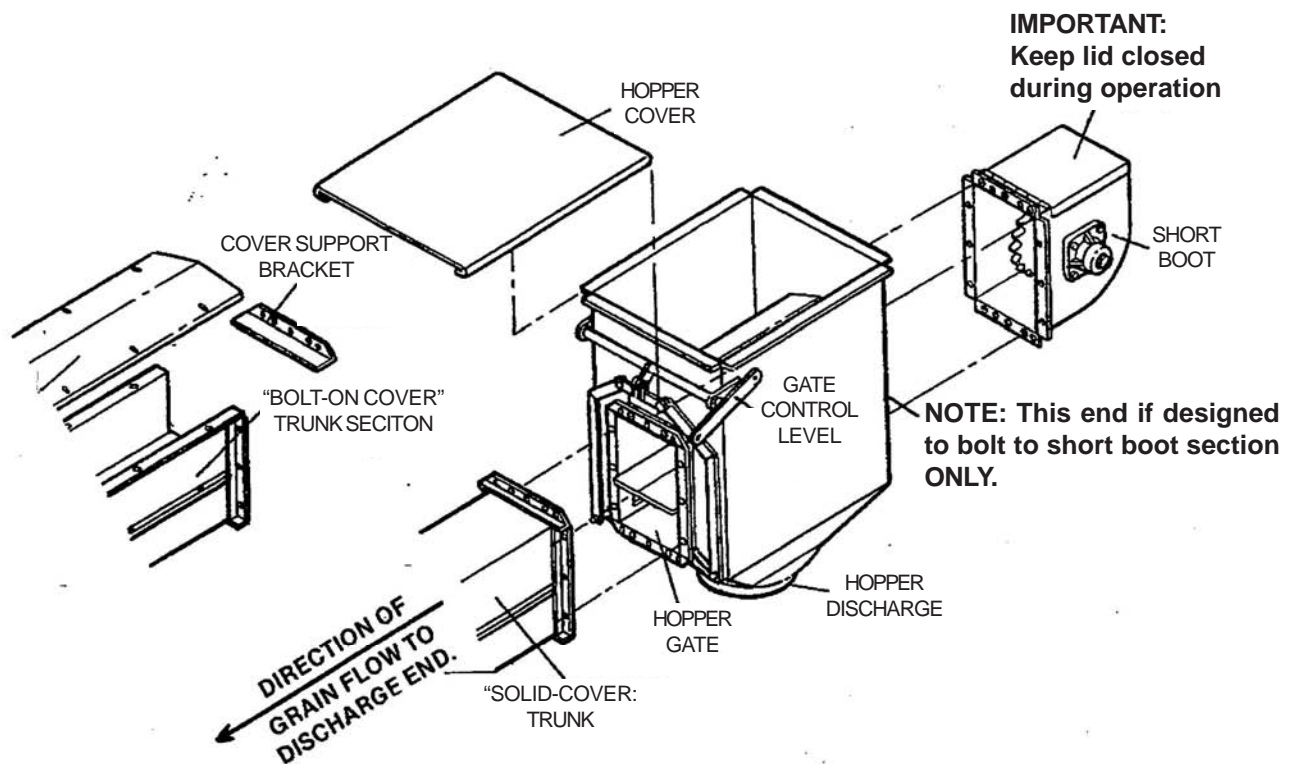
FIG. 23

IMPORTANT: Danger signs are included on each boot and each section of conveyor. During installation, notice their location and see that they are in good condition and visible. If additional signs are needed, please order sign #34218.

After installation, make sure all inlets have covers and the covers are properly installed.

INLET ASSEMBLY**FLOW THROUGH HOPPER**

Use this hopper at the inlet end of a conveyor when that end is directly over the first discharge point. The bottom gate can be opened for grain flow without running the conveyor. This method will likely be more convenient than alternative bypass valves and spouts..

**FIG. 24**

INLET ASSEMBLY

PIT HOPPERS

Pit hoppers are available for drive-over pits.

IMPORTANT:
Keep lid closed
during operation.

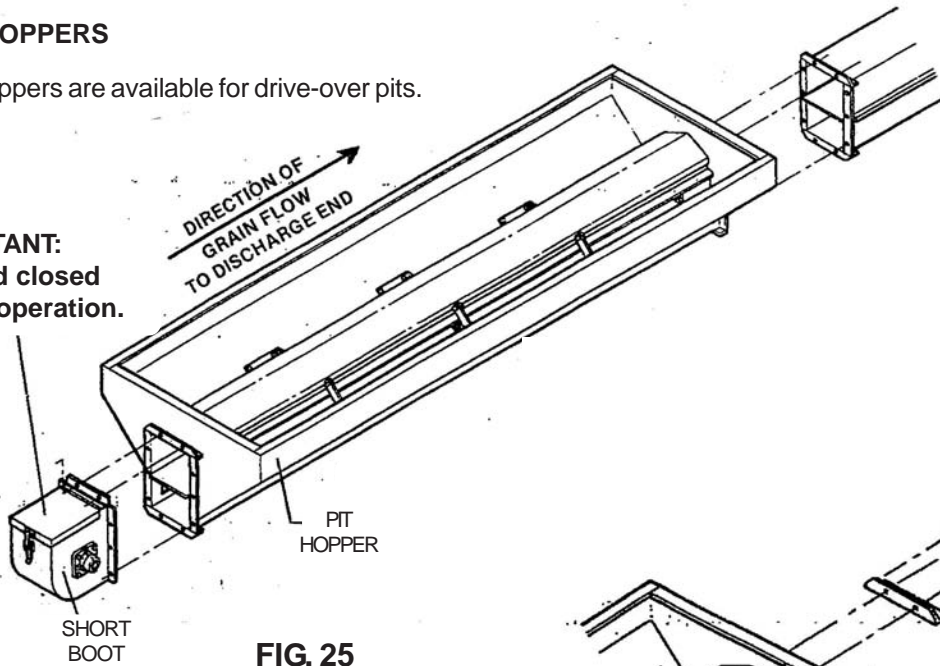


FIG. 25

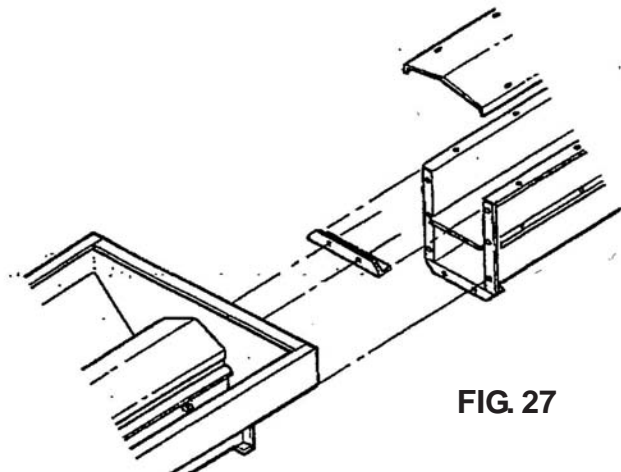


FIG. 27

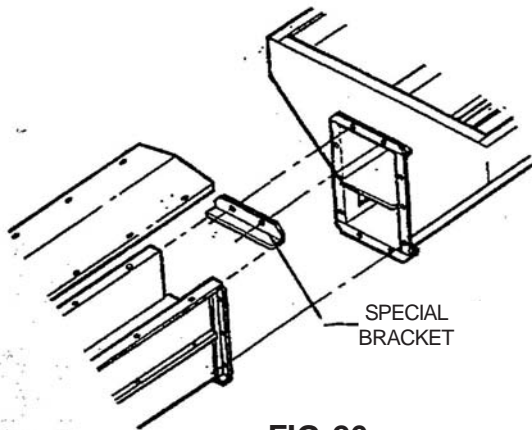


FIG. 26

NOTE: This end has a larger trunk flange for bolting on a short boot. For bolting a standard trunk section a special flange bracket is required. (Not illustrated.) See chart for proper part number.

	FLANGE BRACKET PART NO.	
	Model 50	Model 85
Bolt-on Lower Trunk Section	52637	52639
Solid Cover Trunk Section	Not Required	52541

CONCRETE PIT DIMENSIONS

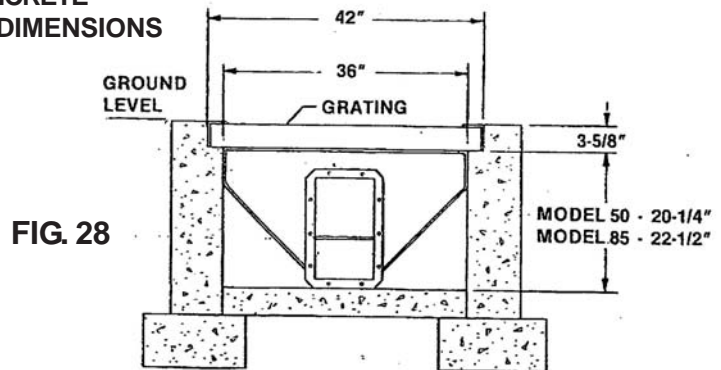


FIG. 28



Hutchinson/Mayrath

A Division of **GLOBAL** Industries, Inc.

P.O. Box 629 514 W. Crawford Clay Center, KS 67432
Phone 785-632-2161 1-800-523-6993 FAX 785-632-5964