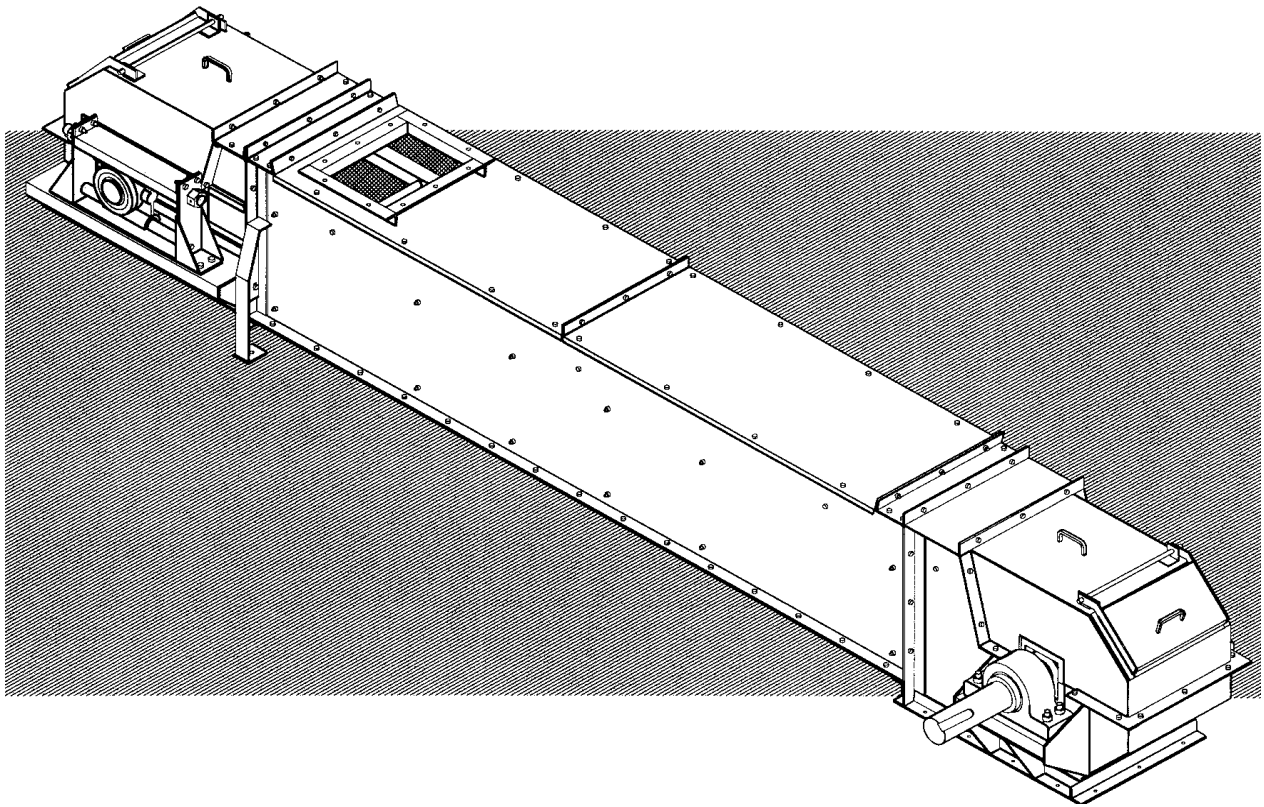


Installation and Maintenance Manual



**“HFB” Heavy Drag-Flite
En-Masse Conveyor**

Introduction

Essmueller conveyors are designed for long, trouble-free service. Durability and performance are results of engineering skill, craftsmanship, and materials that go into Essmueller products.

This manual contains instructions for installation, operation, and maintenance of HFB Heavy Duty Flat-Bottom conveyors. With proper installation, safety awareness, and a periodic maintenance program, you can expect many years of satisfactory performance.

Safety Responsibility

It is the responsibility of contractor, installer, and user to supplement materials and services furnished by The Essmueller Company with items necessary to make installation compliant with the law. Electrical controls, machinery guards, supports, railing, and walkways are some of the elements of a safe workplace. A Safety Operations Plan is recommended by OSHA, National Fire Protection Association (NFPA), and insurance associations.

Essmueller HFB Heavy-Duty Flat-Bottom conveyors are not designed to handle *hazardous materials* or operate in a hazardous environment. Hazardous materials include those that are explosive, flammable, toxic, highly acetic or alkaline in nature. Special construction is usually required, and Essmueller should be consulted for such applications.

Most accidents result from carelessness or negligence. As a minimum, the following provisions should be followed in order to avoid an unsafe or hazardous condition:

1. Conveyor must not be operated until completely enclosed with power transmission guards in place. If conveyor is to be opened for inspection, cleaning, or observation, conveyor driving motor must be locked out electrically. Motor lockout should be made in a manner that prevents restarting by anyone, however remote the area, unless conveyor housing has been closed and power transmission guards are in place.

2. Inlets with exposed openings should be constructed with a grated covering. Grating with *maximum* 2¹/₂" width (x any length) openings will prevent entry of most items capable of damaging equipment while providing a level of safety for personnel. If nature of material is such that grating cannot be used, open sections of conveyor are to be guarded by railing, with warning signs posted conspicuously. Entire conveyor is to be guarded by railing if it must have an open housing as a condition of its application.

3. Do not use rod or stick to poke material into inlets. Do not place body parts in conveyor openings while conveyor is running. Use eye and ear protection when working near operating conveyors. Do not stand or walk on top of conveyor. Do not remove covers or power transmission guards.

4. Do not exceed conveyor's rated capacity, or convey material it was not designed to handle. Do not increase conveyor speed, extend length, or increase angle of incline. Do not add or enlarge inlet openings, intermediate discharges, or remove baffles or divider pans without contacting Essmueller for recommendations.

5. Avoid frequent stopping and restarting of conveyor under load and "dump" flooding of material without bypass or metering inlet. Such actions affect drive, shafts, chain and bearings, and are detrimental to conveyor service life.

6. Safety Devices are available to shut off power to conveyor drive motor or activate alarms when discharge is interrupted or conveyor becomes plugged and overloaded. Conveyor can be interlocked with "downstream" equipment to stop conveyor if other devices become overloaded or stall. Sensors and trigger events include: *Tailshaft speed sensor*—conveyor stalls due to foreign material in trough, or drive end is still running while opposite end has stopped. *Head relief door with limit switch*—plugged discharge. *Slack chain detector*—loose or broken chain.

Conveyors operate efficiently only if material flow fills the trough, but SAFETY must not be compromised. Devices to stimulate material may be used on chutes and hoppers connected to conveyor inlet and discharge. These include *feeders*, *industrial vibrators* and *air slides*, some of which are available for pneumatic, electric, or hydraulic power. These should operate *intermittently* or *on demand* to minimize material compaction. Inlet spouts with magnetic *clean-out panels* can collect "tramp" metal. Traps must be routinely serviced or self-cleaning types used. *Proximity sensors* or relief doors on discharge chutes can detect overfilling before conveyor plugs.

7. Do not disconnect safety devices or motor circuit heaters. Either of these may result in DEATH OR SERIOUS INJURY to personnel, loss of product, increased maintenance and repair costs.

8. Practice good "housekeeping" around conveyor and drive at all times. "Horseplay" should be absolutely forbidden.

9. Safety Signs must not be removed, tampered with, painted over, or obscured in any way. If labels are damaged or become unreadable, replacements are available from Essmueller or the Equipment Manufacturers Council of the AFIA.

If owner or installer needs help in designing a safe installation and a safe working place, Essmueller will assist in selection of special devices, equipment, and signs. This includes "Lock-Out Tag-Out" procedures and enclosure of hazardous components.

SAFETY: Essmueller subscribes to standards of the ANSI Safety Sign Standard program as administered by the Equipment Manufacturers Council (EMC) of the American Feed Industry Association (AFIA). Essmueller equipment will be labeled in accordance with this program, on all removable covers, guards, inspection doors, end relief doors, inlets, discharges, and all head and tail sections.

Essmueller "HFB" Heavy Flat-Bottom Conveyor

To insure maximum performance and trouble-free service from Essmueller equipment, install and maintain conveyors in accordance with following Instructions.

A. Shipment

1. Tail Section will be shipped completely assembled.
2. Head Section will be shipped completely assembled with bearings and sprocket.
3. Intermediate Trough will be shipped in 10'-0" long assembled sections. Trough wider than 36¹/₂" with thick liners[†] and bottom[†] may be shipped in 5'-0" lengths. Most installations require one or more special length trough sections.
4. Chain is assembled in standard 10'-0" lengths with connecting pins and "T"-head cotters. It is usually necessary to furnish one partial length of chain less than ten feet long. Double-chain conveyors will have partial length sections for each run of chain. These will be of different lengths.
5. Flights and flight fasteners are assembled to chain. Assembled chain will be shipped inside trough sections.
6. Assembly bolts will be boxed and identified.
7. "Direct Inlets" are assembled on trough covers at factory except when they are to be installed in the field. Bypass, self-metering, hopper inlets[†] and conveyor bend sections[†] are considered as trough for shipping.
8. Discharge gates[†] are fitted to trough at factory, then removed for shipment. Hand wheels will be removed and placed in parts crate for shipment. Drive components and guards for motorized gates will be assembled on gates. Air-operated gate cylinders, solenoid valve, and limit switches will be shipped assembled on gates.
9. Conveyor drive[†], when furnished by Essmueller, will be shipped as loose components unless factory assembly is specified. Drive is shipped *dry* and must be filled in the field with a lubricant recommended by manufacturer.

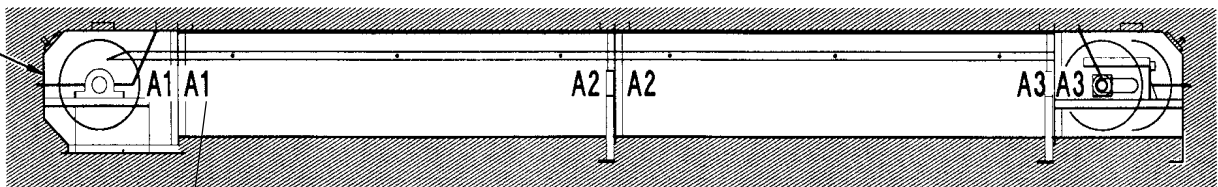
B. Field Assembly

1. Refer to Assembly Drawings furnished by The Essmueller Company. These were drawn especially for your application and approved by a purchaser's representative. DO NOT attempt to install conveyor without assembly drawings. Essmueller will send new copies if originals are lost. AutoDesk "AutoCad" compatible "dxf" or "dwg" release 12, and Hewlett-Packard "ME10" "modelMI" or "compMI" format drawings are available on 3¹/₂" disk or via the Internet.



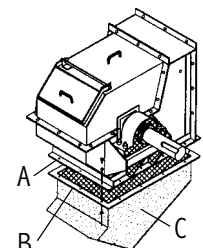
For inquires or correspondence, refer to Serial Number and Model Number on conveyor nameplate.

Match Marked Assembly Drawing



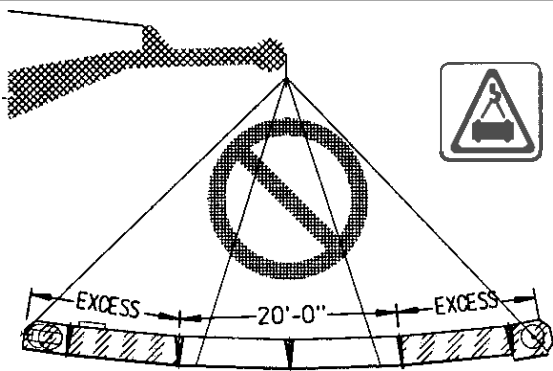
Actual Match Marks are located on flange ends or inside trough

2. Start assembly by positioning Head Section. Level head section and add enough structural members to support not only the head but also the drive. Attach discharge flange A to mating flange B of chute or inlet C of equipment to receive material from the conveyor.



Installing Head Section

[†] Option



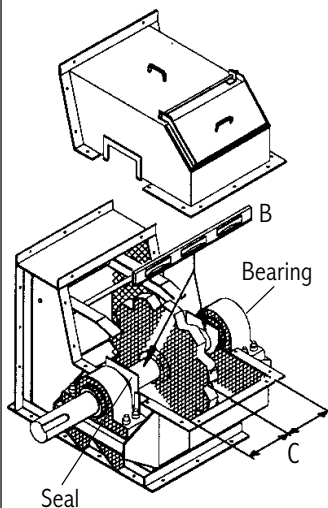
Avoid Hoisting Damage

Attempting to hoist long conveyor sections can permanently deform trough components.

Areas of probable damage:

- bent bottoms—"grab" flites and leak dust along sides
- rippled sides—create turbulence in material
- warped covers—leak dust and admit water
- cracked welds at flanges—weaken structure of trough

Do not attempt to hoist assembled conveyor components longer than 20'-0" into position onto supporting structure. Before lifting any conveyor section or drive, make sure rated capacity of hoisting equipment exceeds weight of the heaviest combined sections to be elevated.

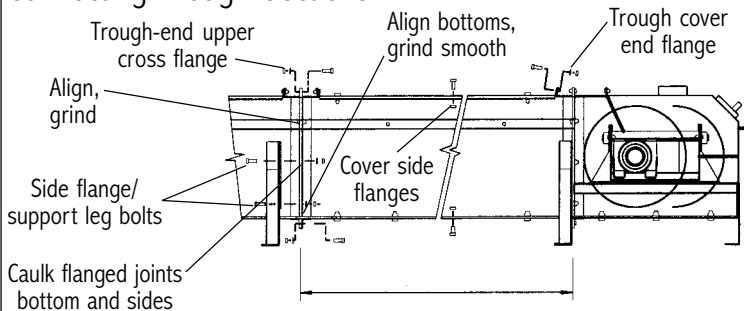


Level head and shaft B before connecting trough sections. Adjust discharge spout or apply supports to head section if required. If head is not leveled at beginning of installation, it will be difficult to correct later.

Make sure sprocket is centered between side walls at C, or 2-chain sprockets are centered between wall and return rail center divider. After trough assembly and drive installation, recheck level of shaft and sprocket centering.

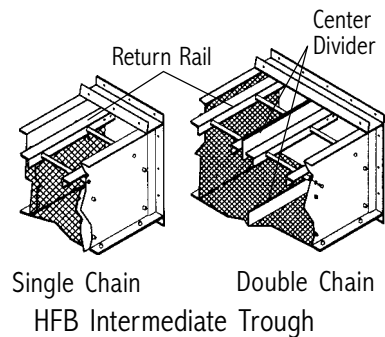
Verify that shaft(s) are perpendicular to conveyor axis and sprocket(s) are centered on shaft(s). A misaligned shaft or incorrectly positioned sprocket will cause rapid chain, sprocket, and flight wear.

Connecting Trough Sections



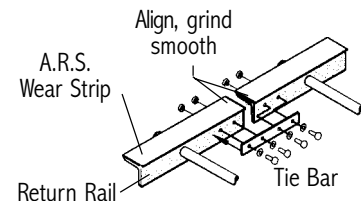
3. Position intermediate trough sections in sequence shown on assembly drawing. Refer to match markings on drawing and trough sections to identify components and placement.

4. When assembling trough sections, apply caulking compound to each flange joint (not supplied by Essmueller). Align bottoms of adjacent sections to insure they are flush and joints are smooth.

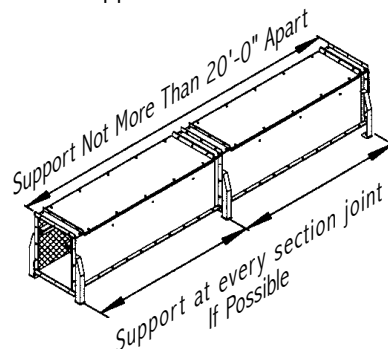


"C"-clamps may be helpful in aligning bottoms, which should be ground smooth to prevent noise and damage to flights. Tighten flange bolts and remove excess caulking.

5. Chain return rails should be aligned and bolted with tie bars. Top surface of return rail wear plates must be aligned and ground smooth to prevent noise and flight damage.



6. Conveyor should be supported at flanged trough joints with support members not more than twenty feet apart.



Support feet are shipped loose, one pair for every standard trough section. A channel support is shipped loose for tail section.

7. Check head and tail sprockets and bearings to insure that set-screws are tight on shafts and centered in trough. Double-chain sprockets are to be centered between side wall (or wear liner) and center divider of the trough. Make sure head sprocket key is seated and secured.

8. Every effort has been made at the factory to insure bolts, set screws, and sprockets have been properly installed and tightened, however, some loosening may occur during shipment or installation.

9. Attachments for offset side-bar chain are welded off-center so that flights are near middle of pitches (links).

The cutout in full-width U.H.M.W. flights must be facing "up" on bottom strand of chain.

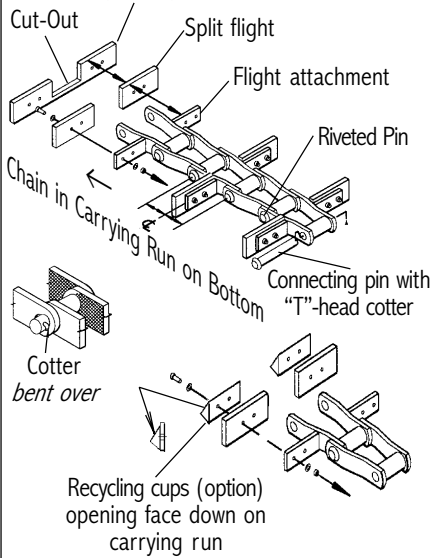
Riveted pins connect pitches into 10'-0" strands. Where strands join, connecting pins with "T"-head cotters are used. Pins are sized for drive fit into side-bar. Before installing pins, lubricate with S.A.E. 30 motor oil. When driving

pins in or out of chain, place a heavy backup bar, pipe, or tubing against sidebar, opposite the driving force.

With connecting pin in place, insert "T"-head cotter into hole in small end of pin and drive firmly into place. Projecting ends of "T"-head cotters should be bent over to prevent working out.

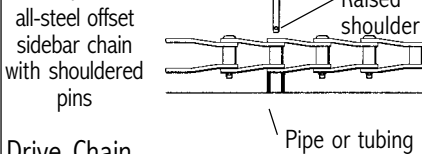
HFB Chain Assembly

Full-width flight every 8th to 10th attachment

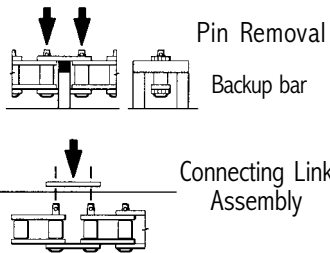


Chain Connection

Conveyor Chain



Drive Chain



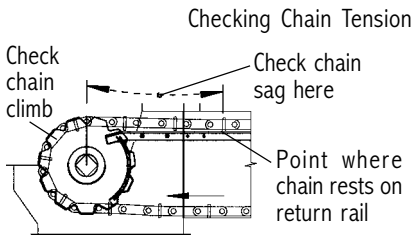
Installing connecting links of roller chain.

10. Proper chain tension is critical to life and operation of the conveyor. Double-chain conveyors have tandem screw take-up (T-U) shafts—one for each run of chain, $\approx 24\frac{1}{2}$ " apart. Adjustment procedures are same for both runs.

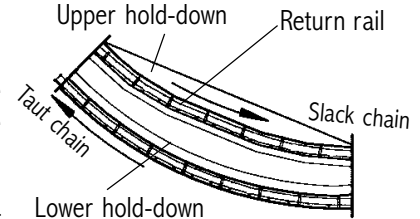
The objective of setting chain tension is to tighten until chain pitches remain on root diameters of head and tail

sprockets and chain does not climb up sprocket teeth while running.

A certain amount of sag is normal. HFB chain tension is checked behind head sprocket(s) where ALL slack accumulates.



As a "Rule of Thumb" for *straight* conveyors: $\frac{1}{4}$ " to $\frac{1}{2}$ " sag or deflection is acceptable when pressure is applied midway between top of head sprocket and point where flights contact return rails.



Conveyors with *bend sections* require additional slack in chain—up to double the amount of deflection, as checked behind the head. Tension should be loosened until return strand does not rub against cover or hold-down rails of bend section.

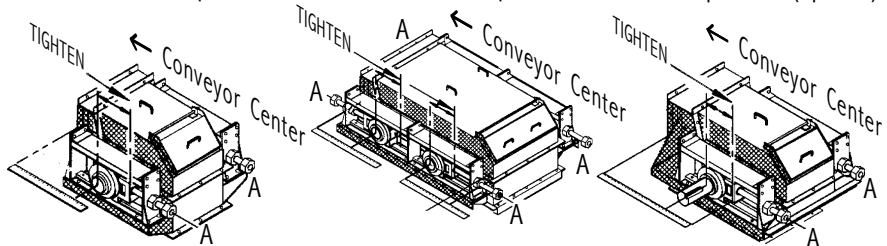
Action of chain in bend section

Adjust screw take-ups as far as they will go toward flanged trough end of Take-up tail or head (special). Take-up shaft(s) must be perpendicular to conveyor centerline. Check by measuring from shaft to trough flanged end on each side of conveyor. Adjust until both sides are equal.

Standard Take-Up Tail

2-Chain Take-Up Tail

Take-Up Head (special)



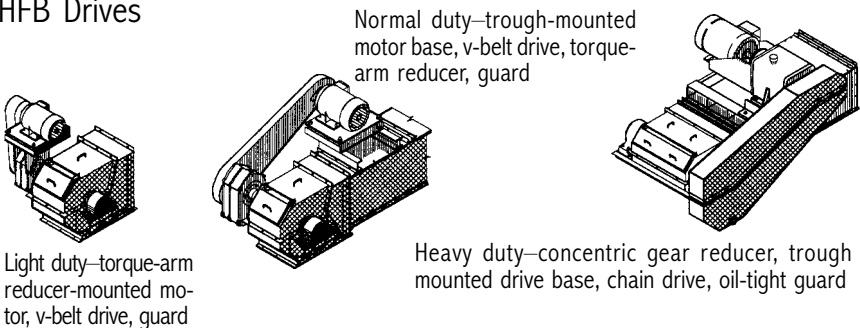
Tighten T-U slides *away* from center of conveyor, using equal number of turns of adjustment bolts A on opposite sides. This should remove most slack from chain. Re-measure and repeat if necessary. Mark this point on both sides of conveyor as minimum take-up point for reference when making further adjustments.

If take-ups do not have sufficient travel to remove slack, return them to minimum take-up point. Remove necessary number of chain pitches from chain(s) and re-tension.

DO NOT tighten chain too taut, as this will result in excessive wear and vibration, particularly on conveyors with bend sections.

11. Check head shaft alignment. It must be perpendicular to conveyor centerline. Measure both sides of head, from shaft to flanged trough end. If adjustment is required, loosen pillow block bearing mounting bolts. This allows $\approx \frac{1}{16}$ " movement so that both sides may be made equal, then re-tighten bolts.

HFB Drives



12. Installing Drive:

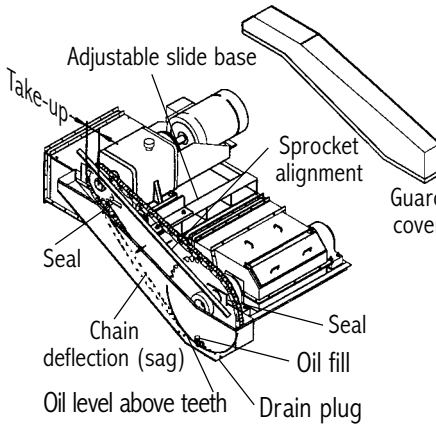
A. Concentric Gear Reducer With Roller Chain

Mount reducer to drive base. If equipped with adjustable base, reducer should be positioned as close to the headshaft as allowed by the base. Reducer output shaft should be parallel and level with conveyor headshaft. Disassemble oil-tight chain casing and install shaft seals onto conveyor headshaft and reducer shafts.

Install roller chain drive sprockets in line with each other. Install bottom half of chain casing, taking care that shaft seals are seated in receiving tracks or slots. Install motor and high-speed coupling as detailed in coupling installation instructions.

Check sprocket alignment by laying a straight edge along sprocket plates, just above hubs. Adjust sprockets if necessary so straight edge is flat the full length along both sprocket plates. Install roller chain over sprockets and join ends with connecting links. Adjust drive chain tension to provide a maximum of $1\frac{1}{2}$ " sag on bottom run when top run is stretched tight. "Rule of thumb" for allowable sag: 2% of sprocket centers. Sag should be checked midway between sprockets.

Fill reducer, high-speed coupling, and oil-tight chain case with lubrication specified in manufacturers instructions for each piece of equipment. Close top half of chain casing and apply oil resistant silicon to all seams in oil-tight guard. Do not overfill. See Pre-Start Checklist.



line through reducer hollow shaft and reducer tie rod attachment. Torque arm may be mounted 30° to either side of the line without affecting performance or service life.

Fill reducer with lubricant. Bolt motor mounting base to reducer, conveyor trough, or support structure. Install motor on mounting base. Mount rear half of V-belt guard. Field fabricate and install attachment brackets. Mount V-belt and belts. Tighten belts using adjustment screws on motor mount. Install and secure front half of V-belt guard.

Most torque-arm reducers are to be mounted vertically. Units that must be installed in another orientation often require a breather or modification kits. Direct inquiries to your supplier. See Pre-Start Checklist.

C. Pre-Start Checklist:

1. Fill reducer, if furnished by Essmueller, with lubricant prescribed in manufacturer's documentation shipped with equipment. It is shipped dry.
2. Fill high-speed coupling, if furnished by Essmueller, with lubricant prescribed in documentation shipped with equipment; it is shipped dry.
3. Fill chain casing with lubricant. Chain should touch only the surface of oil at lowest point inside guard.

Chain casing Lubricant

TEMPERATURE		Recommended
Fahrenheit	Celsius	Lubricant
20°F...40°F	7°C... -4°C	SAE 20
40°F...100°F	-4°C...38°C	SAE 30
100°F...120°F	38°C...49°C	SAE 40
120°F...140°F	49°C...60°C	SAE 50

4. Check all conveyor chain connecting pins to insure they are driven into the sidebars correctly, and that "T"-head cotters have been *bent over*.

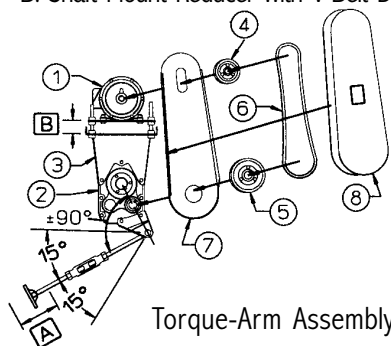
5. Check that chain and flights are property installed.

6. Check that interior trough joints are flush and smooth with no excess caulking.

7. Check that all flange bolts, drive mounting bolts, anchor bolts, etc. are tight.

8. Check to be sure all tools, shipping, and assembly devices, etc. have been removed from inside conveyor.

B. Shaft Mount Reducer With V-Belt Drive



Adjustments

- [A] Torque-arm
- [B] Belt tension

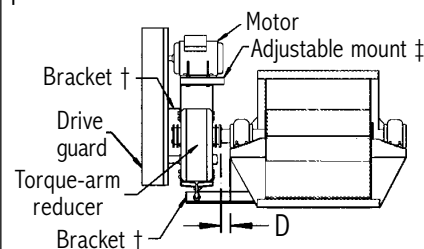
Motor/Reducer

- (1) Electric motor
- (2) Torque-arm reducer
- (3) Motor mount

Sheaves

- (4) Driver sheave with bushing
- (5) Driven sheave with bushing
- (6) Belts

Mount reducer on conveyor headshaft and tighten setscrews or tapered bushing bolts. Fabricate and mount torque-arm mounting bracket to conveyor or support structure.



Minimum reducer clearance for bolt access

Reducer	D	Reducer	D
TXT-115	$1\frac{1}{4}$	TXT-615	$1\frac{13}{16}$
TXT-215	$1\frac{1}{4}$	TXT-715	$2\frac{1}{16}$
TXT-315	$1\frac{1}{2}$	TXT-815	$2\frac{1}{16}$
TXT-415	$1\frac{3}{4}$	TXT-915	$2\frac{7}{16}$
TXT-515	$1\frac{13}{16}$	TXT1015	$2\frac{7}{16}$

Dodge "TXT" series reducers are standard. Other brands by request.

† By others, except when Essmueller mounts drive

‡ Adjustable "T-A" mount shown. "Tall" mount is available for extra clearance

Torque arm should be located at an approximate 90° from an imaginary

9. Check to be sure all guards, inspection doors, etc. are property in place and secured. Never operate conveyor with covers or guards missing or moving components exposed.

10. Check to be sure all set screws in head sprocket and tail sprockets are tight and sprockets are centered.

11. Check that 0-motion or slow-down sensors, slack chain detectors, and end relief doors, are installed, wired, and on-line (options).

12. Check that slack chain detection device (option) arms are properly located and device is wired and operational. Upper edge should be angled downward 10° - 15° from horizontal.

D. Start-Up:

1. Carefully jog conveyor. Make sure motor is turning the right way! Run conveyor through one complete cycle and observe closely for proper operation. Be prepared to STOP conveyor drive if unusual noise, stoppage, or obvious irregularity occurs. Lock-out power to drive and check for bent flights. Check chain tension at first intermediate section behind head. If chain is loose, adjust screw take-ups. If everything is satisfactory, bolt trough covers except one in front of first inlet near tail and one connecting head section. The conveyor is now *ready for start-up*.

2. Start conveyor and run with no load. Carefully observe chain between head sprocket and return rails where cover was left off the conveyor. Do not reach into conveyor. Chain should sag slightly. If it appears to be sagging too much, adjust screw take-ups until excess sag disappears. REPLACE COVERS. Allow conveyor to operate three or four hours with no load, occasionally checking chain action as detailed previously. Adjust screw take-ups as required.

3. The conveyor may now be operated under load. Immediately upon placing conveyor in operation under load, check chain action and re-adjust take-ups if necessary. Observe flow of material in trough. Be sure that it is clearing the underside of the chain return support shafts. If material touches the shafts, the feed must be restricted. Check chain action frequently during the first *week* of operation and adjust take-ups as necessary. Replace covers each time conveyor is put back into operation.

4. When conveyor is first started under load, carried material may be slightly sluggish near edges of trough. This may be due to scale on the steel trough, creating additional friction. Carried material will polish the inside of troughs quickly and eliminate excess friction. Thus, the material will soon move *en-masse* freely.

E. Maintenance:

1. Head and tail shaft bearings should be checked approximately every 250 hours of operation and lubricated as required.

2. Gear reducer oil level should be checked every 150 hours of operation (more often if leakage is observed). Oil should be changed in accordance with manufacturer's rec-

ommendations (consult manual shipped with the equipment).

3. Check oil level in chain casing (if so equipped) every 150 hours of operation. Check and adjust drive chain tension at this time.

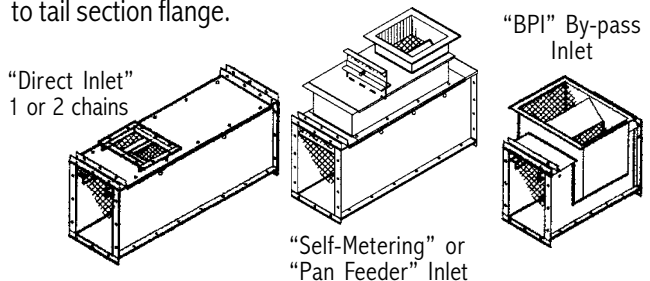
4. Check conveyor chain frequently for sag while under load, and adjust as necessary. The user should establish a schedule for checking chain tension in accordance with his application and usage. After initial chain break-in, Essmueller suggests checking at least once a day until adjustment pattern has been established.

5. Check internal conveyor sprockets for proper location every 250 hours of operation. Check and tighten set screws if required. Check tooth profile for excessive wear. Worn teeth may cause chain failure.

Conveyor Inlets

When field mounting inlets, several general rules apply:

1. Beginning of opening should never be closer than 9" to tail section flange.



2. If possible, avoid locating inlets on or above bend sections. If it is necessary to do so, consult Essmueller.

3a. "Direct inlet," is standard and allows full, or choke loading of trough. Locate at tail or intermediate section.

3b. BPI "by-pass" inlet limits volume of material admitted into carrying-run of conveyor. Shipped as separate unit.

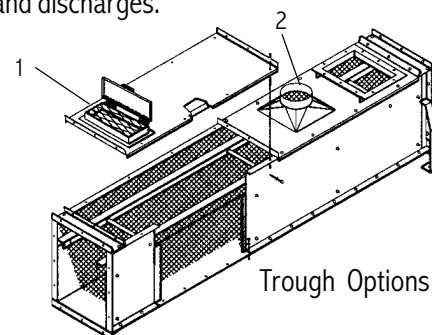
3c. "Self-Metering" or "Pan Feeder" inlet admits material of premeasured capacity into the trough. An adjustable plate "fine-tunes" flow by restricting material as required. External clearance must allow for a raised inlet "bonnet" above the trough cover. Designed for specific applications.

Safety Options

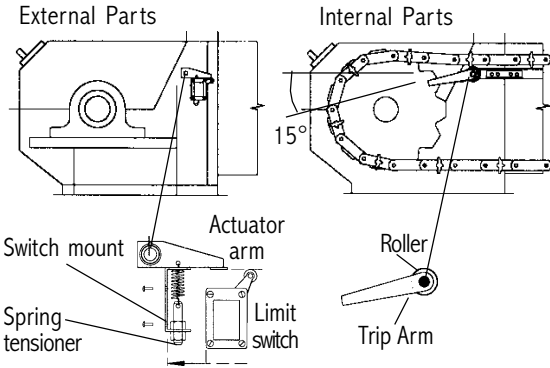
Intermediate trough

1. Inspection door—hinged, with gasket, grating, and handle. Optional limit switch. Near inlets, bends, head.

2. Dust-removal vacuum duct—locate near dusting points: inlets and discharges.



SAFETY Should Be Our Main Concern

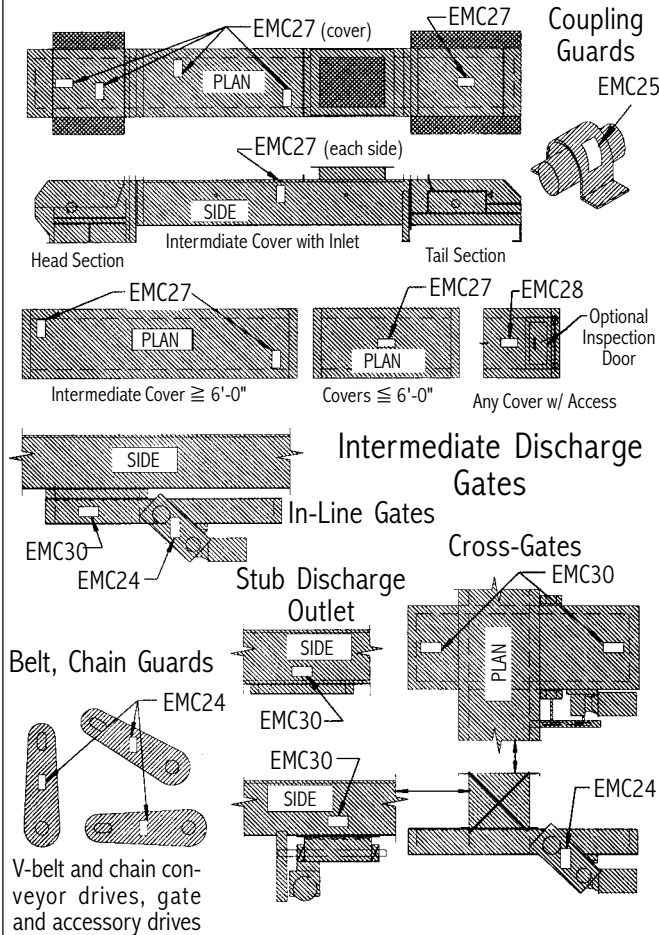


Slack Chain Detector

Activates if chain sags below allowable deflection level, or separates and begins to “wrap” head sprocket.

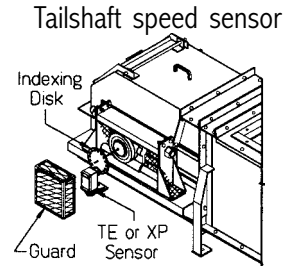
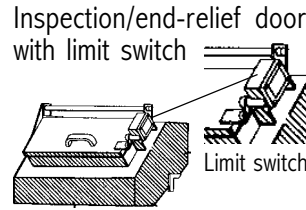
WARNING LABELS FOR HFB CONVEYORS

Safety signs confirm to guidelines of Equipment Manufacturers Council of American Feed Industry Association (AFIA).

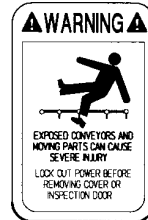


EMC30 Discharge and slide gates. Sides—each side for best vision. All covers—for best vision.

Head/Tail Inspection Door Optional limit switch activates when material fills head due to plugging. Optional tail or intermediate inspection door switches signal unauthorized or accidental opening.

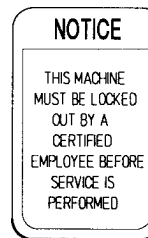


0-speed switch activates if tail shaft stops while head shaft is still running. Adjustable-point speed switch triggers when tail shaft slows below preset percent of headshaft speed.



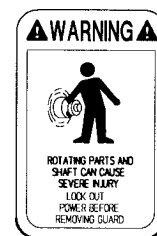
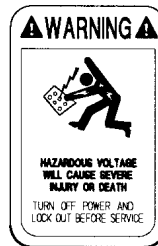
EMC27—Hinged access doors, relief lids. Adjacent to door if possible, else on door. On conveyor discharge. Trough—both sides conveyor near center each section. Removable access panels, lids, covers—centered if less than 8'-0", diagonally across ends if longer.

EMC28—Near inspection doors, untransitioned discharges, or points where material and/or dust may be inadvertently ejected during operation of equipment.



EMC402—At all points where personnel may gain access to moving components or other dangers.

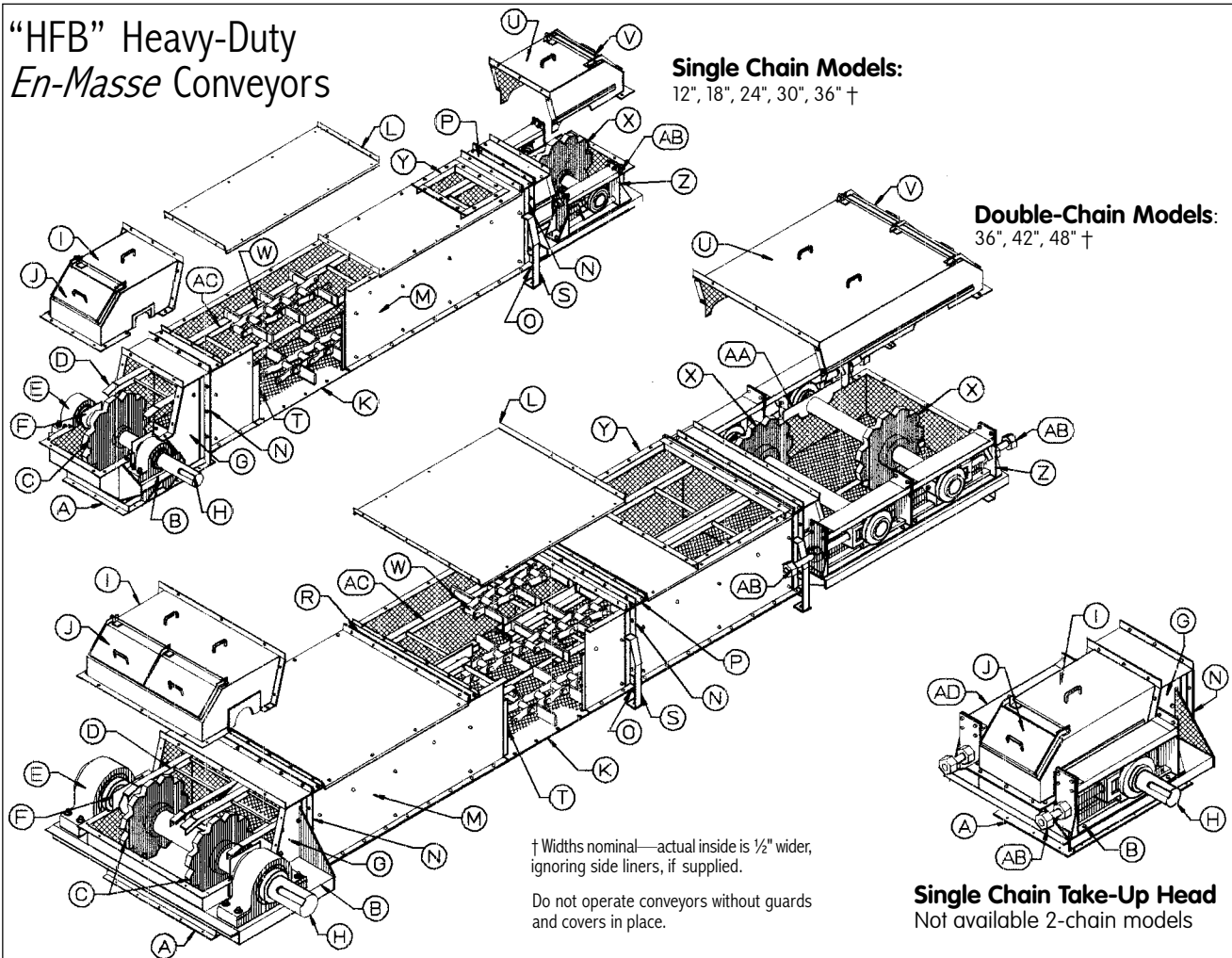
EMC24 On belt or chain guard face near fastener or top. Guards larger than 3'-0" or in more than one section—each end on top or on each piece. Gear reducers, gate drive reducers.



EMC11—Near all electrical components to which workers have access during normal operation or maintenance procedures—junction boxes, terminal covers, etc.

EMC25—Concentric gear “Scoop-mount” reducer coupling guards, near fastener or top. Large or sectional guards may require more than one sign—locate each end and on top or on each piece.

"HFB" Heavy-Duty En-Masse Conveyors



Single Chain Models:
12", 18", 24", 30", 36" †

Double-Chain Models:
36", 42", 48" †

Single Chain Take-Up Head
Not available 2-chain models

† Widths nominal—actual inside is 1/2" wider, ignoring side liners, if supplied.
Do not operate conveyors without guards and covers in place.

Features and Options

Items in **SMALL CAPS** are **OPTIONS**

All HFB bearings are tapered roller types. Tail take-up bearings are top-pull in available sizes, or center-pull for larger shafts. Head T-U bearings are center-pull in available sizes, with slide-base for larger sizes. Pillow-Block bearings are "Dodge" Type "E"-Xtra to ø7". Split-housing and other series and brands are optional.

- (A) Angle-flanged discharge outlet
- (B) Structural steel bearing mounts
- (C) Flame-cut split head sprocket, keyed, with set screws. **Optional:** HARDENED RIM AND SHEAR-PIN SPROCKETS
- (D) Head section chain return rails, structural angle with #7ga (3/16") ARS wear strips.
- (E) Tapered-roller headshaft bearings, "Dodge" "E-Xtra" are standard. **Options:** OTHER DODGE MODELS, BRANDS AND SPLIT BEARINGS.
- (F) UHMW headshaft seals
- (G) #7ga head casing with structural steel frame members
- (H) #1045 HRS shafting, keyed for sprocket(s) and drive. (IF CUSTOMER FURNISHES DRIVE, SPECIFY REQUIRED EXTENSION, KEY SIZE, AND DRIVE-END DIAMETER)
- (I) Removable head section cover, 10ga, flanged, bolted, with handles and inspection/relief door.
- (J) Hinged, gasketed inspection/end relief door with

- handle and protective grate. (**OPTIONAL LIMIT SWITCH FOR OVERFLOW SENSING OR "Lock-Out" INDICATION, TE/XP**)
- (K) Bolted intermediate trough bottom #10ga (1/8"). ARS is standard. (**OPTIONAL ARS, 3/16" TO 1/2"**)
- (L) Bolted, gasketed intermediate covers with angled end flanges for ease of removal. #10ga is std. (**Options:** THICKER COVERS, "C"-CLAMPS OR "DeStaCo" COVER CLAMPS, INSPECTION DOOR, DUST COLLECTION VACUUM PORT.)
- (M) Formed intermediate trough sides, #10ga. (FOR LONG SERVICE LIFE WITH ABRASIVE MATERIALS OR HIGH CAPACITY, ARS SIDE WEAR LINERS ARE RECOMMENDED. SEE "T")
- (N) Trough vertical corner angle
- (O) Trough bottom cross angle
- (P) Trough upper cross channel, angled on cover side for access, #7ga.
- (R) Cover divider/stiffener channel with angled flanges
- (S) Standard support foot assembly—(2) per trough section
- (T) **Option:** BOLTED MATERIAL-DEPTH ARS SIDE WEAR LINERS, #10GA TO 3/8" PLATE. COUNTERSUNK AND FLAT-HEAD BOLTED INSIDE TROUGH.
- (U) Removable tail section cover, flanged, gasketed, bolted, with handle and inspection door
- (V) Hinged, gasketed, grated inspection door with handle. **Option:** LIMIT SWITCH FOR "Lock-Out" PROTECTION, TE OR XP
- (W) Welded all-steel "Engineered" chain with bar or angle attachments and UHMWPE flights. ROLLER-BUSHED AND STAINLESS STEEL CHAINS AVAILABLE FOR MANY SIZES.
- (X) Flame-cut split tail sprocket with set screws.

- OPTIONAL HARDENED RIM SPROCKETS ARE AVAILABLE.**
- (Y) Angle-flanged inlet(s). **SPECIAL WIDTHS, SPECIAL LENGTHS, SELF-METERING, AND HOPPER INLETS ARE AVAILABLE.**
- (Z) Take-up assembly; tapered roller bearings—top-pull to ø4", larger sizes center pull. Double-chain models use tandem tail shafts for independent tensioning of chains.
- (AA) UHMW tail shaft seals.
- (AB) Take-up tensioning screw
- (AC) Structural angle chain return rails with ARS wear plate
- (AD) Head take-up assembly with tapered roller bearings; center-pull in available sizes with sliding base adjustment for larger shafts.
- Other Options**
- COMPLETE DRIVE PACKAGES, TE OR XP MOTORS, INCLUDING "HIGH-EFFICIENCY" MODELS.
- V-BELT GUARDS (ENCLOSED OR VENTED), AND OIL-TIGHT CHAIN GUARDS
- INTERMEDIATE DISCHARGE GATES; PNEUMATIC, ELECTRIC (TE/XP), HYDRAULIC, OR MANUAL CONTROL
- SPECIAL INTERMEDIATE TROUGH INLETS
- BEND SECTIONS FOR INCLINE CONVEYORS; INCLINED (STANDARD) OR INVERTED (INCLINE TO HORIZONTAL)
- "BINDICATOR" PLUG SENSORS (OFTEN USED IN CHUTE BELOW DISCHARGE OUTLETS)
- O-MOTION OR DUAL SET-POINT (SLOWDOWN) SENSORS
- INTERMEDIATE SECTION COVER INSPECTION DOORS
- DUST EVACUATION CONNECTIONS
- ADJUSTABLE DRIVE OR MOTOR MOUNTS
- BEARING HEAT SENSORS

USER'S WORKSHEET

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FORM WF-HFB297

This worksheet is provided for use by the user or operator. It may be used to record pertinent information about ESSMUELLER equipment in this order. The form is for your records. It may be helpful when you contact Essmuller with problems, repair, replacement, or future orders.

MODEL/SERIES: (✓) or complete applicable spaces:

Serial Number _____ Order Number _____ Purchased From _____ Date/Year Purchased _____ Conveyor Model/Size _____ Net Capacity _____

BPH CFH TPH

TYPE CONVEYOR:

"HFB" "HHF" FPM _____ DRIVE _____
 En-Masse Inclined RPM _____ LH- RH-
 Horsepower Head Shaft Tail Shaft Head
 ø _____ ø _____ Tail

ATTITUDE:

Horizontal Straight-Incline Horiz+Incline Horiz+Incline +2 Bends

CHAIN:

WH78 WH124 WH106 WH132 WH150
 WR78 WR124 WR106 WR132 WH150XHD

FLITES

std. full spaced 1/2 | 2/3 spaced steel flites back-up flites angle att.

CONFIGURATION

- 1. Fixed Head + Take-up Tail (standard)
- 2. Take-up Head + Contoured tail
- 3. Reversing (1 Take-up Head + 1 Fixed Head, 2 End Discharges)
- 4. Reversing (1 Take-up Tail + 1 Fixed Tail, Intermed. Discharge(s) Only)

INLETS:

direct metering by-pass control

LGTH(S) AND LOC FROM HEAD:

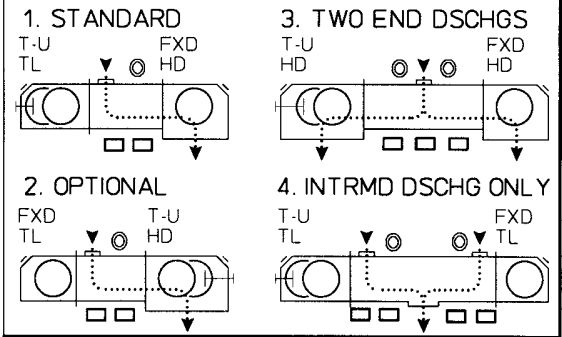
DISCHARGE OUTLETS:

stub discharge cross gate in-line gate manual gate TE elect gate EP elect gate pneum gate

LOC FROM HEAD:

CONVEYOR CONFIGURATIONS

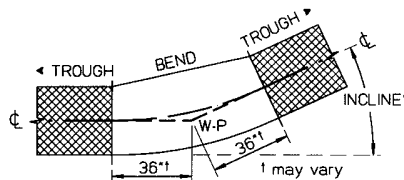
○-optional inlets
 □-optional outlets



DRIVE SIDE:

L.H. (FAR)
 R.H. (NEAR)

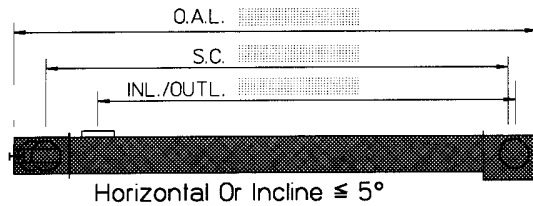
USE THESE SKETCHES to show numbers and locations of inlets, discharges, structures, and other information about your conveyor. Add notes and known dimensions. Show walls, hoppers, etc.



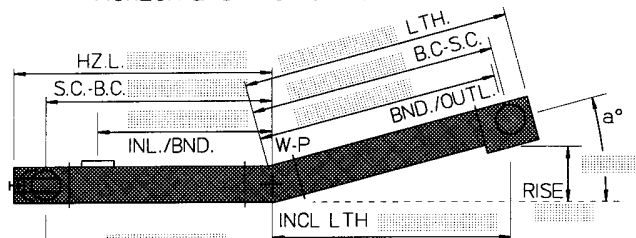
Typical Bend Section Layout

IF 36° CENTERS CANNOT BE HELD CONTACT ESSMUELLER

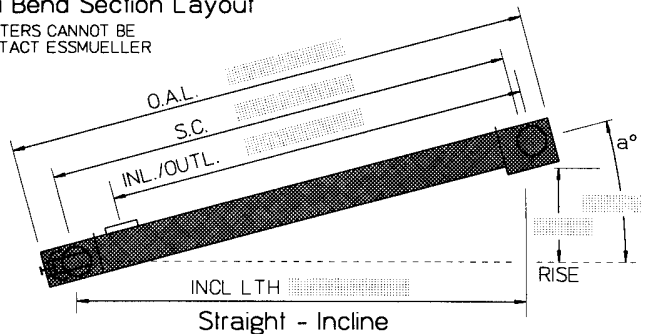
Engineering Charges Will Be Assessed For Conveyors Requiring Special Configurations



Horizontal Or Incline ≤ 5°



Horizontal - Bend - Incline



Straight - Incline

Helpful Formulas For Conveyor Lengths

$$L = \sqrt{X^2 + Y^2}$$

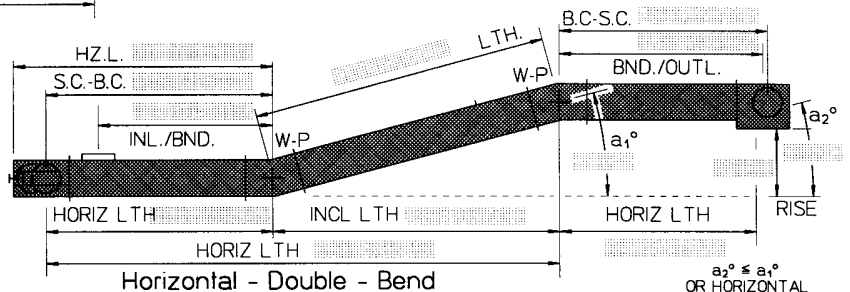
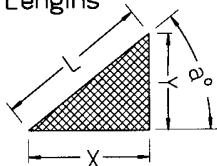
$$a^\circ = \text{ARCTAN}(Y \div X)$$

$$X = L \times \text{COS}(a^\circ)$$

$$Y = L \times \text{SIN}(a^\circ)$$

$$= X \times \text{TAN}(a^\circ)$$

$$= \sqrt{L^2 - X^2}$$



Horizontal - Double - Bend

OR LESSER INCLINE

$a_2 \leq a_1$
 OR HORIZONTAL

Affiliated With, Member or Subscribing to Policies of:



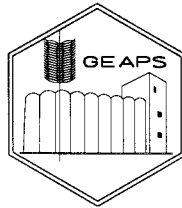
American Feed Industry Association



AFIA Equipment Manufacturers Council



The National Association of Manufacturers of the United States of America



Grain Elevator And Processing Society



NFPA[®]

National Fire Protection Association



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