

INSTALLATION, OPERATION, MAINTENANCE MANUAL



XenoPRESSURE

P/N: 90480068

Revision Date: 0302

XenoPRESSURE

PURPOSE	2
EQUIPMENT WARRANTY	3
INTRODUCTION TO XENOPRESSURE®	4
DEFINITION OF TERMS	4
GENERAL	4
OPERATION	4
WARNINGS & SAFETY INSTRUCTIONS	5
GENERAL	6
PREPARATION OF SITE	6
PARTS INVENTORY & IDENTIFICATION	6
RECEIVING & SITE PREPARATION	6
TYPICAL XENOPRESSURE® LOOSE PARTS	7
XENOPRESSURE® CONVEYORS	8
GENERAL	8
ACTUATION	8
LINE-SHAFT GUARDS	9
LINE-SHAFT TERMINATIONS	10
INSTALLATION	11
BED CONNECTIONS	11
CHARGE END CONNECTIONS	11
DISCHARGE END CONNECTIONS	11
SENSOR ROLLER HEIGHT ADJUSTMENT	11
DRIVE BELT BREAK-IN	11
VALVING FOR ROLLER SENSORS	12
SINGULATION RELEASE	12
SLUG RELEASE	12
INDEXING CONTROL	13
INDEXING CONTROL	13
INSTALLING THE INDEXING CONTROL	13
AIR SUPPLY REQUIREMENTS	14
GENERAL	14
AIR CONSUMPTION	14
PHOTOEYE ZONE CONTROL	15
CONNECTION PROCEDURE	15
ELECTRICAL	16
GENERAL	16
RUN ON DEMAND	16
CONVEYOR CONTROLS - SAFETY GUIDELINES	16
COMMISSIONING OF EQUIPMENT	17
GENERAL	17
PHOTOSENSOR ADJUSTMENT	17
PREVENTIVE MAINTENANCE	18
GENERAL	18
AIR SYSTEMS	18
TROUBLESHOOTING	19
TROUBLESHOOTING	20
TROUBLESHOOTING	21
TROUBLESHOOTING	22
TROUBLESHOOTING	23
REMEDY/REPAIR PROCEDURES	24
REMEDY/REPAIR PROCEDURES	25
REMEDY/REPAIR PROCEDURES	26
PARTS IDENTIFICATION	27
XP34 AND XP35B	28
XP44	29
XP45B	30
XP47 AND XP49B	31
XP55	32
CURVE WITH ZONE	33
REPLACEMENT PARTS IDENTIFICATION	33
MANUALLY CONTROLLED RELEASES	34
INDEXING KIT	35
SHUTOFF/FILTER/REGULATOR	35
REPLACEMENT PARTS IDENTIFICATION	36
MOTOR, REDUCER AND SPROCKET COMBINATIONS	37
MODELS XP34 XP35B, XP44, XP45B, XP47 AND XP49B	37
DRIVE COMPONENTS	37
DRIVE COMPONENTS	38
MOTOR, REDUCER AND SPROCKET COMBINATIONS	38
MODEL XP55B	38

PURPOSE

This manual is to be used along with the XenoROL® Installation, Operation, Maintenance Manual. Both manuals will be located in one of the loose parts boxes sent with the conveyor.

It is the intent of MHS Conveyor - Ermanco Inc., through this manual, to provide the necessary information to qualified person-nel for the installation, operation and maintenance of Ermanco XenoPRESSURE® conveyor.

This manual describes basic installation practices, assembly arrangements and general maintenance, including troubleshooting guide, service intervals and replacement parts identification.

If additional copies of this manual are needed or if you have any question concerning the conveyor, please contact the Ermanco Order Service Department at 231/798-4547.

MHS Conveyor
1300 E Mount Garfield Road
Norton Shores MI 49441-6097 USA
231.798.4547
Email: us-info@mhs-conveyor.com
Web Site: mhs-conveyor.com



EQUIPMENT WARRANTY

MHS Conveyor-ERMANCO warrants that the material and workmanship entering into its equipment is merchantable and will be furnished in accordance with the specifications stated.

MHS Conveyor-ERMANCO agrees to furnish the purchaser without charge any part proved defective within 2 years from date of shipment or before the equipment has forty-one hundred (4100) hours of running use, whichever period is shorter, provided the purchaser gives MHS Conveyor-ERMANCO immediate notice in writing and examination proves the claim that such materials or parts were defective when furnished. For drive components specific to XenoROL®, this warranty shall be extended to five years or ten thousand (10,000) hours of running use, whichever period is shorter, provided the conveyors are applied, installed and maintained in accordance with MHS Conveyor-ERMANCO published standards. Other than the above, there are no warranties, which extend beyond the description on the face hereof. Consequential damages of any sort are wholly excluded.

The liability of MHS Conveyor-ERMANCO will be limited to the replacement cost of any defective part. All freight and installation costs relative to any warranted part will be at the expense of the purchaser. Any liability of MHS Conveyor-ERMANCO under the warranties specified above is conditioned upon the equipment being installed, handled, operated, and maintained in accordance with the written instructions provided or approved in writing by MHS Conveyor-ERMANCO.

The warranties specified above do not cover, and MHS Conveyor-ERMANCO makes no warranties which extend to, damage to the equipment due to deterioration or wear occasioned by chemicals, abrasion, corrosion or erosion; Purchaser's misapplication, abuse, alteration, operation or maintenance; abnormal conditions of temperature or dirt; or operation of the equipment above rated capacities or in an otherwise improper manner.

All equipment and components not manufactured by MHS Conveyor-ERMANCO carries only such warranty as given by the manufacturer thereof, which warranty MHS Conveyor-ERMANCO will assign or otherwise make available to Purchaser without recourse to MHS Conveyor-ERMANCO, provided that such warranty is assignable or may be made available.

IMPORTANT

For service on motors, reduction units, electrical components, controls, air or hydraulic cylinders, contact the local authorized sales and service representative of respective manufacturer. If none is available in your locality, contact the MHS Conveyor-ERMANCO representative. MHS Conveyor-ERMANCO will not be responsible for units that have been tampered with or disassembled by anyone other than the authorized representative of the respective manufacturer.

Rev. January 31, 2003

THERE ARE NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, EXTENDING BEYOND THOSE SET FORTH IN THIS AGREEMENT.

INTRODUCTION TO XenoPRESSURE®

DEFINITION OF TERMS

1. Accumulation - Act of queuing, holding or backing up of product on a conveyor.
2. Zero Pressure Accumulation - The lack of force between products after accumulation. (Industry Standard)
3. XenoPRESSURE® Non-contact Accumulation - "Pure" zero pressure accumulation which guarantees that one product will not touch any other during accumulation, release, or any time. (Requires product to be inducted singularly and be at least 3" shorter than zone.)
4. Singulation Release - A method of individual zone release that spaces product approximately one zone length apart.
5. Slug Release - Simultaneous release of several products as air is exhausted from multiple zones.
6. Roller Sensor Zone Control - A sensing device actuated by transported product. Sensor roller is set higher than the carrier roller so that it is contacted by each product moving on the conveyor.
7. Photoeye Sensor Zone Control - 24 volt DC retroreflective or proximity photoeye sensor with solenoid valve for each zone.
8. Zone - A portion of conveyor activated by a sensor to stop and hold one product in queue. (XenoPRESSURE)
9. Zone Length - The distance between sensing devices.
10. XenoTRACTION® System - A line-shaft assembly which positively locks together all drive pulleys in a zone through interlocking spacers. This indirectly connects all rollers in that zone. When released, the full drive of all rollers is delivered to the product whether all rollers are contacted or not.
11. Clamp Assembly - Air operated device within the XenoTRACTION system that stops the rotation of the interlocked pulleys/spacers which stops all rollers in that zone.
11. XenoBRAKE - Pneumatically operated pad mounted below the conveyor rollers. Used in certain XenoPRESSURE models to stop the carrying rollers of a zone upon signal by a sensor.
12. Indexing Control - Maintains non-contact accumulation and functionality of gates, transfers, curves, etc. by not allowing accumulation in these areas.

GENERAL

XenoPRESSURE, non-contact zero pressure accumulation, provides product protection from damage during accumulation. XenoPRESSURE provides the standard features and components of line-shaft driven XenoROL® with highly reliable zone controls to provide accumulation anywhere in a line-shaft driven conveyor. XenoPRESSURE line-shaft-driven live roller conveyors includes several models within XR30, XR40, XR48 and XR50. The XR40 group, for example, contains two XenoPRESSURE models; XP44 and XP45B.

Pneumatic sensors are used for most applications with product weighing 3 lbs. or more per foot to achieve 1-1/2 lbs. actuation force on the sensor. Photosensors are offered for those products less than 3 lbs. per foot or with a bottom configuration which is incompatible with a pneumatic roller sensor.

MINIMAL COAST: Product is positively driven onto the sensor. It does not coast because of the zone's minimal lag time in stopping, once the sensor is depressed. Minimal coast combined with the pneumatic logic means one product per zone.

OPERATION

XP34, XP44, XP47

Upon signal from the zone sensor, a clamp assembly stops the rotation of one of the steel interlocking spacers within the zone. This stops the carrying rollers and product in that zone. The line-shaft continues to rotate inside the drive spools.

XP35B, XP45B, XP49B, XP55B

Upon signal from the zone sensor, a XenoBRAKE assembly raises against the underside of the carrying rollers stopping the carrying rollers and product in that zone. The line-shaft continues to rotate inside the drive spools.

SEQUENCE OF OPERATION: Accumulation begins when an external signal primes the first sensor (discharge end). External signals may originate from electrical controls, sensing devices, encoding stations, manually activated switches, etc. The first product stops which primes the sensor in the zone upstream. When a product depresses a sensor roller (primed from the previous zone), the pneumatic cylinder stops the carrier rollers within its zone. All rollers in the zone stop.

SINGULATION RELEASE: When a downstream sensor clears, the next zone releases. Accumulated products release progressively from each zone.

PRECAUTIONS:

ULTRAVIOLET RAYS of sunlight will weaken polyurethane drive belts.

OILY OR WET CONDITIONS impair frictional drive characteristics between spool and line-shaft.

CORROSIVE SUBSTANCES will adversely affect various components, voiding the warranty.

WARNINGS & SAFETY INSTRUCTIONS

Failure to follow the instructions, warnings and cautions throughout this booklet and the warning labels on the conveyor may result in injury to personnel or damage to the equipment.

Your XenoPRESSURE® line-shaft driven live roller conveyor is powered by a motor and can be stopped only by turning off electrical power to the motor. As with all powered machinery, the drive and driven sprockets, chains, line-shafts, universal joints and pneumatically actuated devices present a danger. We have installed or provided guards to prevent inadvertent contact with these components along with warning labels to identify the hazards. **After maintenance, REPLACE guards immediately. Keep ALL warning labels clean and clear of any obstructions.**

Warning labels need to stand out clearly to be effective. Never remove, deface or paint over WARNING or CAUTION labels. Any damaged label will be replaced by MHS Conveyor Corp. at no cost by contacting the Order Service Department.

It is very important to instruct personnel in proper conveyor use including the location and function of all controls. It is important to establish work procedures and access areas which do not require any part of a person to be under the conveyor. Require that caps or hair nets be worn and prohibit the wearing of loose clothing or jewelry when working at or near the conveyor.

Before performing maintenance on a conveyor, protect personnel from unexpected starts by shutting off electrical power and lockout the motor disconnect switch using proper lockout procedures. After lockout of the switch that supplies power to the unit, try the equipment to ensure it is inoperable and attach a "DANGER" tag to the lock. Make sure personnel are clear of the system and all guards replaced before starting the conveyor.

Maintain enough clearance on each side of the unit for safe adjustment and maintenance of components.

Provide crossovers or gates at sufficient intervals to eliminate the temptation to climb over or under any conveyor. Prohibit riding or walking on conveyor by anyone.

REMOVE ALL UNUSED COUPLER SPROCKETS. AT OPEN ENDS (TERMINATION) OF XenoPRESSURE CONVEYORS, ADD THE SET COLLAR PROVIDED TO THE END OF THE LINE-SHAFT AND INSTALL THE LINE-SHAFT END COVER. THE SET COLLAR AND ORANGE END COVER ARE FOUND IN THE LOOSE PARTS.

RECEIVING & SITE PREPARATION

GENERAL

XenoPRESSURE® line-shaft driven live roller conveyors are shipped as subassemblies. These subassemblies are packaged to guard against damage in shipment.

Examination immediately following unloading will show if any damage was caused during shipment. If damage is evident, claims to repair or replace components must be made against the carrier immediately. While unloading, a check must be made against the Bill of Lading, or the packing lists provided, to confirm full receipt of listed items.

CAUTION

TAKE CARE DURING THE REMOVAL OF EQUIPMENT FROM THE CARRIER. Remove small items and boxes first. Pull and lift only the skid, not on the frame, crossmember or any part of the equipment. Be sure the skid is free of other materials which may be on top or against the side of the skid to be removed.

PREPARATION OF SITE

After the conveyor is received, move it to the installation site or dry designated storage area as soon as possible. Clean up all packing material immediately before parts get lost in it. Loose parts should remain in the shipping boxes until needed.

Prior to starting assembly of the conveyor, carefully check the installation path to be sure there are no obstructions that will cause an interference. Check for access along the path needed to bring in conveyor sections and components closest to the point where they are needed. It is often necessary to give the area along the system path a general cleanup to improve installation efficiency, access and accuracy.

For ceiling-hung conveyor, header steel should be installed before the conveyor frame installation to minimize congestion.

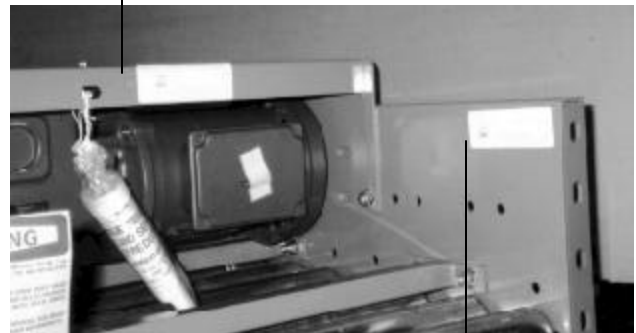
PARTS INVENTORY & IDENTIFICATION

Each subassembly is shipped completely assembled except typical loose parts which are listed on page 7. Drive assemblies are shipped mounted to the drive conveyor frame.

Segregate the conveyor subassemblies by types for inventory and ease of locating during installation.

An identification label is attached to the inside of one side channel close to one end of each conveyor bed and on all drive packages. (See below.) This label contains: job number, part number, order number, tag number (if specified), assembler's initials and date of manufacture. On supports, the tag is located on the bottom of a crossmember. On special devices, it is located on a convenient flat surface that is not offensive to the appearance of the equipment but is still accessible for viewing. These numbers can be cross-referenced against the packing list. The illustrations in this manual and the part number stickers will assist you with your inventory.

IT#: 40084360
DSC: DR,CTR 24XP44 3/4 HP 60 B
JOB: C003325 11/10/95 mt



Identification labels on bed and drive package

IT#: X9503463
DSC: BED 12XP44-3D- X 10'
JOB: C003325 11/10/95
TAG:
O-RINGS 90530082 90530013
90530004

Loose parts are boxed and shipped separately. You should have all conveyor sections and supports for a particular conveyor prior to starting installation. It is cost effective to identify and procure any missing parts before they are needed for assembly. Small items like nuts and bolts are weigh-counted and packaged by size and type.

TYPICAL XENOPRESSURE® LOOSE PARTS

Part Number	Item	Use	Illustration
41700910	LINE-SHAFT GUARD END COVER with Set Collar Kit	Cover End of Lineshaft at Termination of Conveyor	See WARNING page 10
90140001	SAFETY CAPS	Cover End of Line-shaft Keyway, 1" dia.	See WARNING page 10
90140014	Safety Collar	Cover End of Line-shaft Keyway, 1-7/16" dia.	Page 10
90314510	Line-shaft Guard, 10' straight	Guard Line-shaft, 1" dia.	Page 9
95000012	Line-shaft Guard, 10' straight	Guard Line-shaft, 1-7/16" dia.	See XenoROL® Manual
41701000	Attaching Bracket	Fasten Line-shaft Guard, 1" dia.	Page 9
95200001	Spring Steel Retainer	Fasten Line-shaft Guard, 1" dia.	Page 9
90040510	Plastic Attaching Bracket	Fasten Line-shaft Guard, 1-7/16" dia.	See XenoROL Manual
95200036	Plastic Wing Nut	Fasten Line-shaft Guard, 1-7/16" dia.	See XenoROL Manual
95000021	Hex Flange Screw	Fasten Line-shaft Guard	Page 9
95300036	Rubber Washer	Isolate Guard	Page 9
90480028	U-joint Cover Guard	Horizontal to Incline, Straight Beds	See XenoROL Manual
90140025	Coupler Chain	Line-shaft Coupling Bed to Bed, 1" dia.	See XenoROL Manual
90140028	Coupler Chain	Line-shaft Coupling Bed to Bed, 1-7/16" dia.	See XenoROL Manual
Varies by Size	Floor Support	Support Conveyor Frames	See XenoROL Manual
80400002	KBA Knee Brace	Brace Frame to Support Leg	See XenoROL Manual
80400003	KBB Knee Brace	Brace Frame to Support Leg	See XenoROL Manual
80400004	KBC Knee Brace	Brace Frame to Support Leg	See XenoROL Manual
80700001	Guard Rail Arm	Support Adjustable Channel G.R.	See XenoROL Manual
80700002	Guard Rail Clamps	Fasten Adjustable Channel G.R.	See XenoROL Manual
80700011	Guard Rail Splice Angle	Support Rail to Rail Joint	See XenoROL Manual
95000027	1/4-20 x 2 Hex HDBolts	Adjustable Channel G.R.	See XenoROL Manual
95200050	1/4-20 Nuts	Adjustable Channel G.R.	See XenoROL Manual
80700112	Spacer Channel	Ceiling Hanger	See XenoROL Manual
80700013	V Bracket	Ceiling Hanger	See XenoROL Manual
Varies by Length	Cross Pipe	Ceiling Hanger	See XenoROL Manual
80701011	Standhead Connector	Bed Joints	See XenoROL Manual
40700051	Butt Bolt Connectors	Bed Joints	See XenoROL Manual
	Special Connector Devices	Per Application	
	Electrical Components	Per Application	
	Special Device Parts	Per Application	
95000072	3/8-16 x 3/4 Hex HD Bolts	Butt Bolts, Braces, Supports	
95000074	3/8-16 x 3/4 Truss HD Bolts	Angle Guard Rail	
95200061	3/8-16 Nuts	Angle Guard Rail	
90530009	O-ring Drive Belts	Rollers on discharge end of beds 24" wide or more	
90530005	O-ring Drive Belts	Roller to roller belts at bed joints	
80701002	2" Angle Guard Rail	Straight conveyor	
Varies by width	Inside & Outside Angle G.R.	Curves	
Varies by width	Rollers for beds 24" wide or more*	Carrying rollers mounted in hex frame holes	

Notes:

* Rollers for 24" wide conveyor and wider are shipped as loose parts.

Components for pneumatic options, including solenoid valves, fittings, air lines and mounting brackets are shipped as loose parts.

XENOPRESSURE® CONVEYORS

GENERAL

XenoPRESSURE conveyors are offered in several models covering a wide range of applications. The "B" in model designation, XP45(B), indicates this conveyor uses a XenoBRAKE (brake) assembly to stop the zone rollers. Those without this "B" designation have interlocked spools and a clamp to stop this assembly, which then stops the rollers.

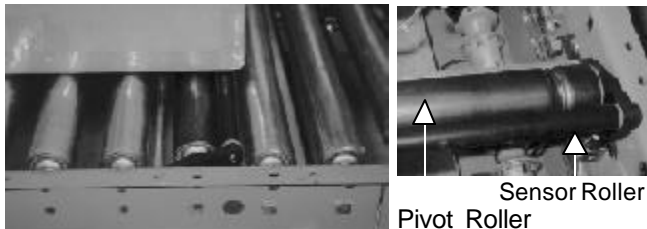
A complete summary of all XenoPRESSURE models is shown in the following chart. This chart shows what sensor may be used and the available means of stopping the zones (brake or clamp).

The primary means of identifying the model is on the label described on page 6.

XenoPRESSURE Summary						
Model	Roller Dia. x Axle Size	Drive Belts Available	Available Sensor		Zone Actuation	
			Roller	Photo	Brake	Clamp
XP34 (Std)	1-3/8" Dia. x 5/16" Hex	1/8" x 17-1/2"		•		•
XP35B (Std)	1-3/8" Dia. x 5/16" Hex	1/8" x 17-1/2"		•	•	
XP35B (IDR)	1-3/8" Dia. x 5/16" Hex	1/8" x 12-3/4" 5/32" x 11-7/8"		•	•	
XP44	2" Dia. x 7/16" Hex	3/16" x 13-1/2" 5/32" x 13-1/2"	•	•		•
XP45B	2" Dia. x 7/16" Hex	1/8" x 13-1/2"	•	•	•	
XP47	2" Dia. x 7/16" Hex	1/4" x 13-1/2"	•	•		•
XP49B	2" Dia. x 7/16" Hex	1/4" x 12-11/16"	•		•	
XP55B	2-1/2" Dia. x 7/16" Hex	1/4" x 17"	•		•	

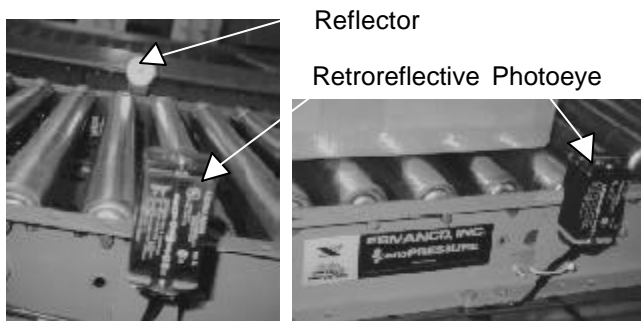
SENSORS

ROLLER SENSORS with pneumatic valving may be used with products which have a continuous bottom edge along the sides and weigh at least 3 lbs.



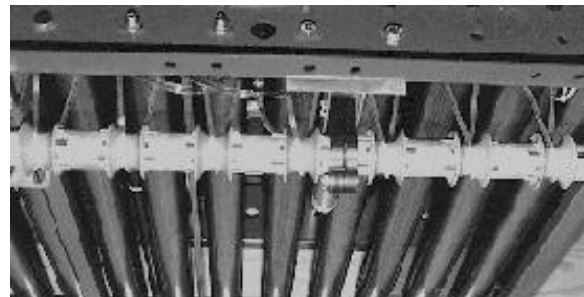
Roller sensor shown with product and without carrying rollers.

PHOTOSENSORS are available on most models. Photosensors are applied where roller sensors cannot be used or are unavailable.



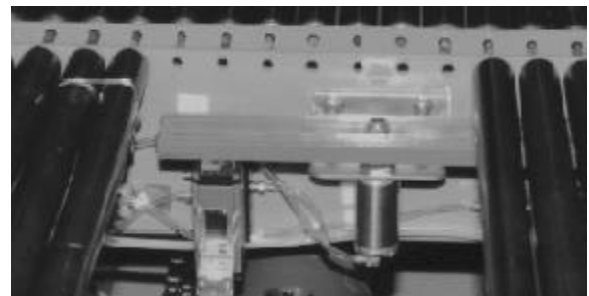
ACTUATION

CLAMPS stop zone rollers upon signal from a sensor. A clamp grips one of the interlocking spacers stopping all spools, drive belts and rollers in that zone assembly.



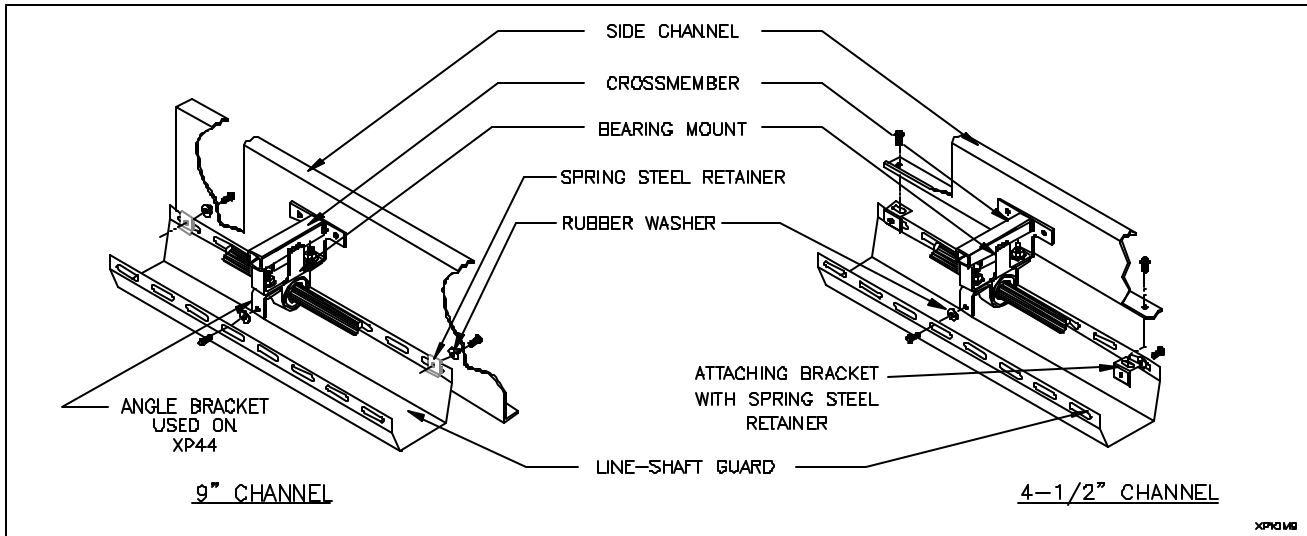
Zone of interlocked spools and spacers stopped with clamp assembly.

BRAKES are raised directly against the bottom of rollers. This stops the rollers and product while the line-shaft continues to rotate inside the drive spools in that zone.



Zone of individually driven rollers stopped with a XenoBRAKE. (Shown with some rollers removed.)

LINE-SHAFT GUARDS



Line-shaft guarding is installed at the factory on curves, transfers, merges, gates, jump chains and other accessories. During installation, only straight section guards need to be mounted to the underside of the conveyor frames.

The line-shaft guard for XenoPRESSURE® is very similar to XenoROL® XR40 and is tagged before shipping to distinguish it. The only difference is that XP44 guard connects to an angle bracket mounted with the line-shaft bearing bolt on the side opposite the side channel.

See drawing above. Install the straight line-shaft guard sections as follows:

1. Loosely bolt the slotted side of the attaching bracket to the bottom flange of the bed side channel approximately 30" from each end (on a 10' bed).
2. Slide the spring steel retainer over the hole in the attaching bracket.
3. Slide spring steel retainers over the hole in the bearing mount four places per 10' bed.
4. Bolt the line-shaft guard to the bearing mount retainers, then to the attaching bracket retainers.

Important: Place the rubber washers between the line-shaft guard and attaching brackets to isolate the guard. This reduces noise levels due to vibration.

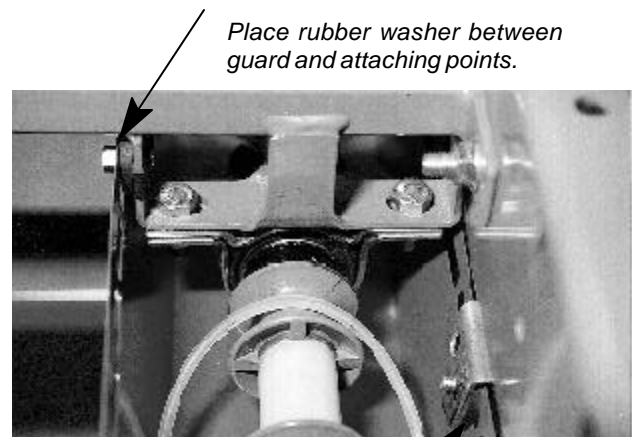
Guards for Inclined Straight Sections

Line-shaft conveyors are often inclined or declined through the use of constant velocity universal joints at the upper and lower transition points. The line-shaft guards at these points must be cut, overlapped and joined at installation to eliminate gaps. A U-joint top cover is provided in the loose parts to fit the top side of the line-shaft guard over the universal joint. This cover bridges across the top of the universal is field installed.

WARNING

Failure to properly install line-shaft guards per the instructions in this manual will expose personnel to serious injury.

Cutting a 10' line-shaft guard to match a specific length conveyor section can create razor sharp edges which could result in a severe laceration. A hand deburring tool or file should be used to remove any sharp edges before installing the guard.



Place rubber washer between guard and attaching points.

Place rubber washer between guard and bracket attached to frame side channel.

WARNING

Universal joints used in curves can be dangerous. The curve line-shaft guards and universal joint covers must always be in place when operating unit.

LINE-SHAFT TERMINATIONS

WARNING

Remove any coupler sprocket which is not coupled to an adjacent sprocket. These sprockets must be removed before the bed is installed. The white line-shaft safety caps must be installed in place of the sprockets to cover the end of the keyway.

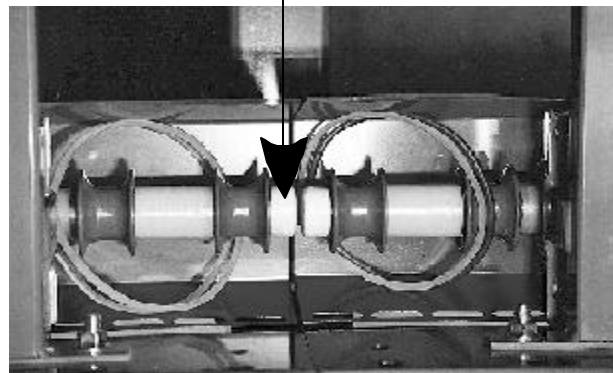


Never leave unused sprockets on line-shaft.

WARNING

Safety caps are required on ends of all adjoining line-shaft conveyor beds not coupled together.

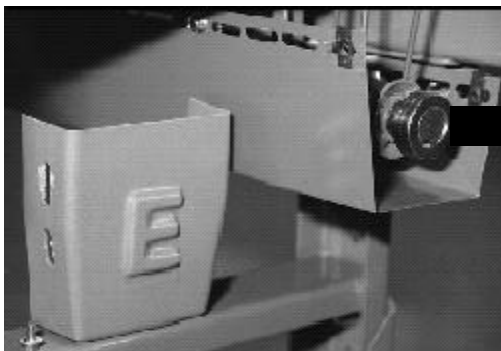
Safety caps in lieu of sprockets



At joint between adjacent drive units, remove sprockets and add white plastic safety caps located in plastic bag tied to drive.

WARNING

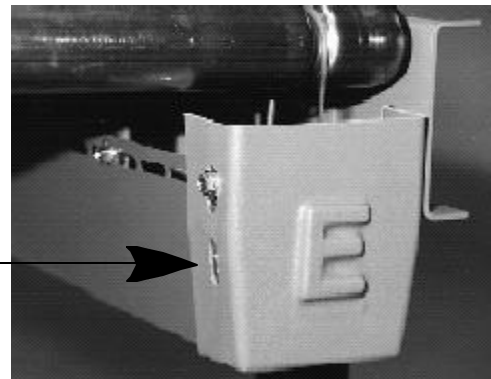
At the termination of the XenoROL® line-shaft driven conveyor(s), the open end of the line-shaft guard must be covered with the end cover kit provided in the loose parts. This kit includes instructions, mounting hardware and 1" bore set collar. The set collar replaces the unused coupler sprocket. This end cover must be used at all exposed ends including XenoROL terminations abutting other types of conveyor or machinery.



Shown with end cover removed.

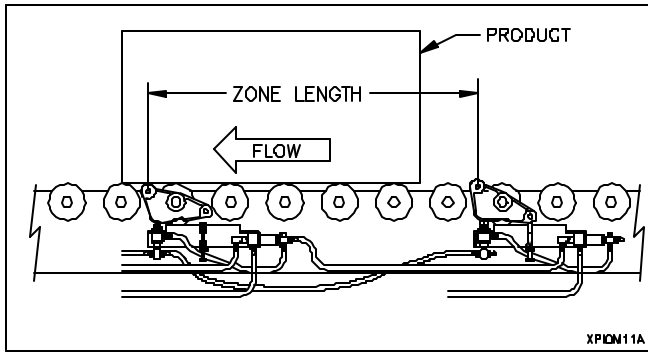
End Cover

Set Collar



Shown with end cover in place at all conveyor terminations.

INSTALLATION



BED CONNECTIONS

After the beds are installed, the pneumatic connections must be made. The illustration above shows two zones with two sensor roller assemblies and activator assemblies.

The air lines are connected between assemblies within the same bed at the factory. The installer must connect the air lines from one bed to the next bed.

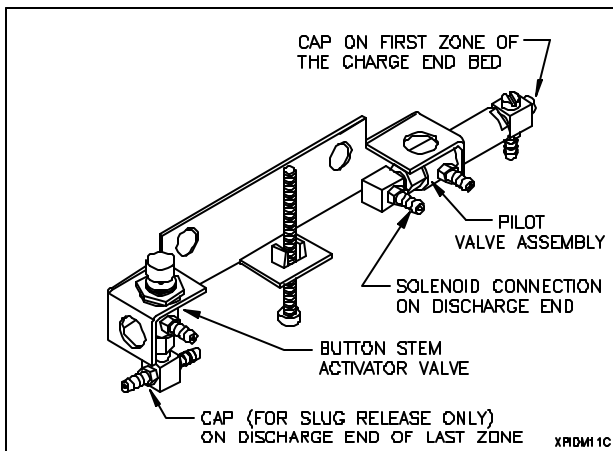
Connect the air lines between beds the same as the air lines connected between the two zones illustrated.

CHARGE END CONNECTIONS

The activator assembly on the first zone of the charge end bed must have air fittings capped per illustration below.

There are two common methods of capping valve ports.

1. Replace the fitting with a 10-32" cap screw.
2. Cut a 4" length of tubing. Bend the end of the air tubing and secure with a tie strap.



Activator assembly

DISCHARGE END CONNECTIONS

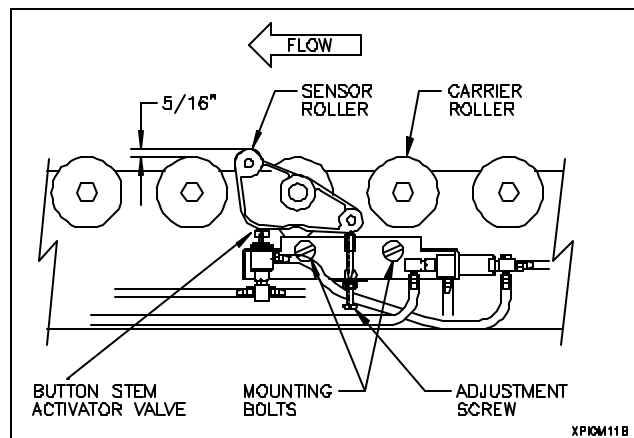
The activator valve on the conveyor discharge end has two lines that must be connected by the installer into the lower "tee" from the air supply (see Singulation Release illustration page 12).

The front port of the pilot valve assembly in the discharge zone is normally connected to a solenoid valve controlling product release. This valve also activates the upstream zone which causes that zone to stop when its sensor is depressed. When the discharge zone is clear, the upstream zone releases the next product to it.

SENSOR ROLLER HEIGHT ADJUSTMENT

Turn the adjustment screw to raise or lower the counter weight, which will lower or raise the sensor roller. The nominal height of the sensor roller should be 5/16" above the carrying surface. The final height of the sensor roller should be determined by testing with actual product. (See drawing below.)

When depressed by the product to carrier roller height, the sensor roller assembly should depress the button stem sufficiently to release air through the activator valving. The activator assembly can be raised slightly by loosening the two mounting bolts, adjusting the assembly and retightening the bolts.



DRIVE BELT BREAK-IN

The round drive belts are installed under tension with pre-determined initial tension. After a time of static and running conditions, there is an initial tension drop in the belt which levels off to a working point where it will remain the rest of its flex life. Drive capacities and horsepower requirements are based on this working level, not the initial temporary level. After 3 hours run time, 64% of the tension drop has occurred. However, it takes 24 hours to reach 88% and 98% after 48 hours.

Run all XP34, XP44 and XP47 XenoPRESSURE® conveyors 48 hours empty before applying air or running product. This will ensure motors are not overloaded under the higher initial belt tension. This run time is best accomplished during installation as soon as the drive motors are wired and during the commissioning phase.

VALVING FOR ROLLER SENSORS

SINGULATION RELEASE

Singulation release is the most commonly used release valving. A zone must be clear before the upstream zone releases. This gaps (spaces) product approximately one zone length apart. With this valving, "non-contact" of product is always maintained.

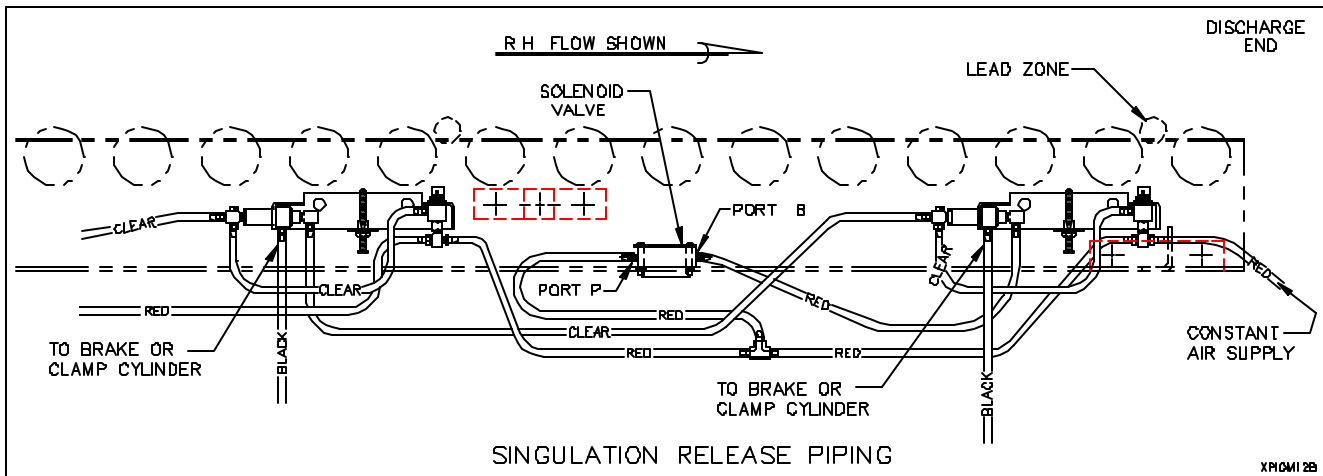
Note:

For long runs of accumulation, the air supply should be connected every 25 zones into the common (red) manifold line to ensure consistent air pressure.

Tubing Colors:

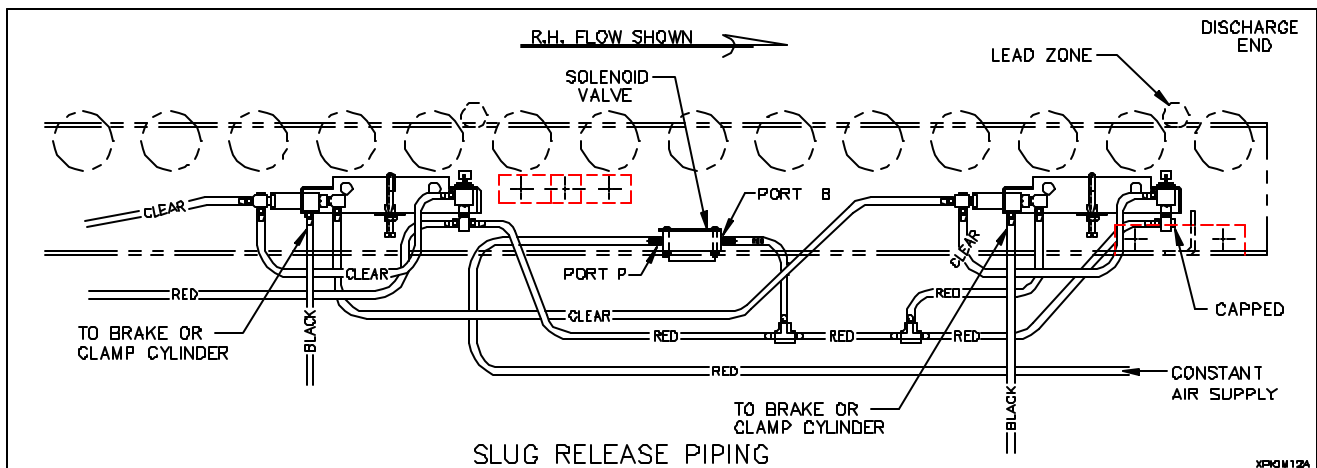
- Red - Supply line/air in
- White (Clear) - Zone to zone or valve to valve
- Black - Valve to device (cylinder, brake, etc.)

The common air line (red) may be connected to the air supply at both ends. Since the air supply is always connected to the discharge end, also connecting it to the charge end ensures quicker supply of air pressure to all activators. This method cannot be used if slug discharge is utilized.

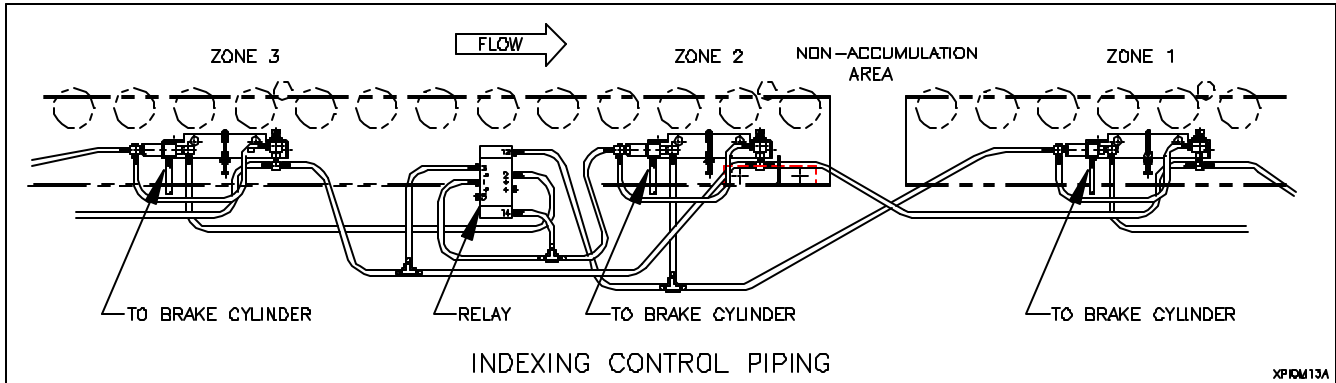


SLUG RELEASE

Slug release is a method of valving causing simultaneous release of products from XenoPRESSURE® conveyor. Releasing products simultaneously increases the conveyor's product throughput. This may be desirable to match the requirements of a downstream operation or device (ex. palletizer or sortation). The increased throughput may also be used to reduce the conveyor speed.



INDEXING CONTROL



INDEXING CONTROL

An indexing control kit is required to stop product from accumulating on equipment such as curves, powered gates and UBTs when they are installed within a XenoPRESSURE® conveyor. This kit includes the piping and relay to stop product prior to the accessory equipment, until the zone following the accessory is clear.

The pneumatic logic of the indexing control kit will not allow a product to discharge while another product is on the device or zone following the device. This maintains the non-contact feature of all XenoPRESSURE models.

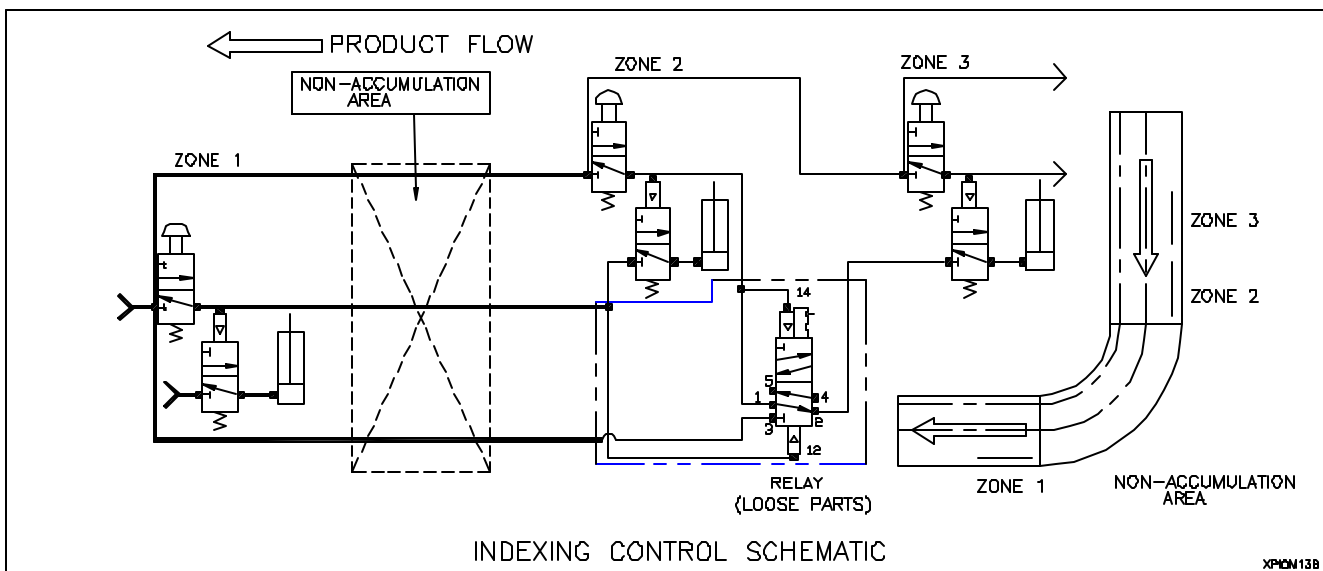
INSTALLING THE INDEXING CONTROL

Drill two 7/32" diameter holes, 3-1/8" apart and approximately 15" from the discharge end of the bed. Bolt the relay mounting brackets to the inside of the side channel on the same side as the activator assembly in the position shown above.

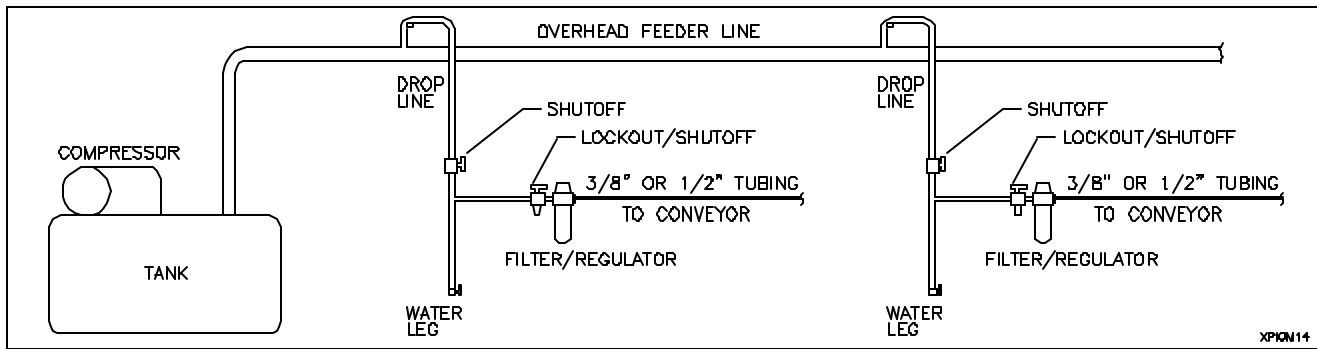
Before mounting the relay to the brackets, attach the air lines and fittings.

Note:

A consistent air supply of 60 PSI is required for zones with XenoBRAKES to function properly. The air must be clean and dry for the button stem activator valve to function consistently.



AIR SUPPLY REQUIREMENTS



GENERAL

Every conveyor system is unique with its own specific requirements. Therefore, the following is a general guide. Compressed air for conveyor systems is produced by air compressors. Air is pumped by the compressor into a storage tank and accumulated for future use. Pressure is usually about 100 PSI.

Main Feeder. Air velocity through the main feeder piping can be kept smooth with minimum losses using large diameter pipe with minimum bends and restrictions. The main feeder carries the compressed air overhead to all points of use. Standard weight black pipe or copper is suitable for plumbing the compressed air distribution system.

Air Drops: Ermanco recommends using 3/4" pipe on air drops for high flow and low pressure loss. The drop is terminated with a drain at the bottom. A tee located prior to the drain branches off the drop to the conveyor. This branch line must contain a lockout/shutoff, filter and regulator. A shutoff must also be located in the drop before the branch tee. OSHA Rule 29, CFR1910.147 requires energy sources (air drops) be turned off and capable of being locked or labeled with a warning tag.

Following the regulator, the 3/4" pipe is reduced to 1/2" diameter plastic tubing to solenoid valves and conveyor manifold air supply. 1/4" dia. plastic tubing is used from the solenoid valve to the XenoPRESSURE® discharge end. If other pneumatic devices such as transfers also use this supply line, increase the size to 3/8" diameter.

Note: XenoPRESSURE models do not require lubrication. Lubrication may affect the valving operation and cause sluggish or erratic operation. Some special devices with large air cylinders do require lubrication. These must be isolated with their own lubricator.

Important: If your air compressor uses a synthetic oil, a coalescing filter plus a regular filter of 5 micron is required before any air operated device. Synthetic oils will shrink the seals in pneumatic devices and valving.

AIR CONSUMPTION

Air is only consumed when product is moving. The highest air consumption is when several zones are releasing simultaneously along the conveyor.

Formulas to determine cubic feet per minute (CFM) air consumption (at 60 PSI) are as follows:

XP34, XP44, XP47

CFM = Products per minute conveyed X number of zones in conveyor X .005

XP35B and XP45B with zones 24" long or more

CFM = Product per minute conveyed X number of zones in conveyor X .0082

XP35B and XP45B with zones 24" long or less

CFM = Product per minute conveyed X number of zones in conveyor X .0056

XP49B and XP55B with zones 24" long or more

CFM = Product per minute conveyed X number of zones in conveyor X .011

XP49B and XP55B with zones 24" long or less

CFM = Product per minute conveyed X number of zones in conveyor X .0082

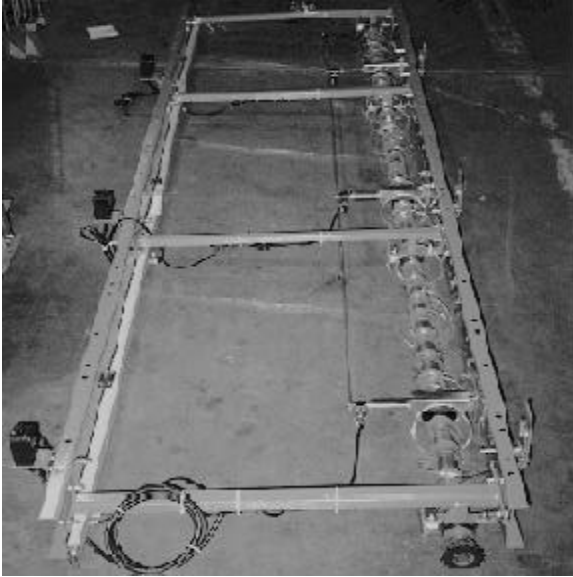
Compressor HP = Total CFM requirements ÷ 3.55

Air Tank Size = Approx. 1 gal. per required CFM

Air Pressure for XenoPRESSURE		
Model	Drive Belt Used	Minimum PSI
XP34 XP35B XP44	1/8 or 5/32 x 13-1/2	30 to 40
XP44 XP45B	3/16 x 13-1/2	35 to 50
XP47	1/4 x 13-1/2	60 to 70
XP49B	1/4 x 12-11/16	60 to 70
XP55B	1/4 x 17	60 to 80

Note: Do not use more pressure than required to quickly and positively stop all rollers. For long runs of conveyor, the air supply should be connected every 25 zones into the common (red) manifold line to ensure consistent air pressure to all zones.

PHOTOEYE ZONE CONTROL



XP34 (shown here) and XP35B are shipped preassembled. All beds are plumbed and wired to each zone.

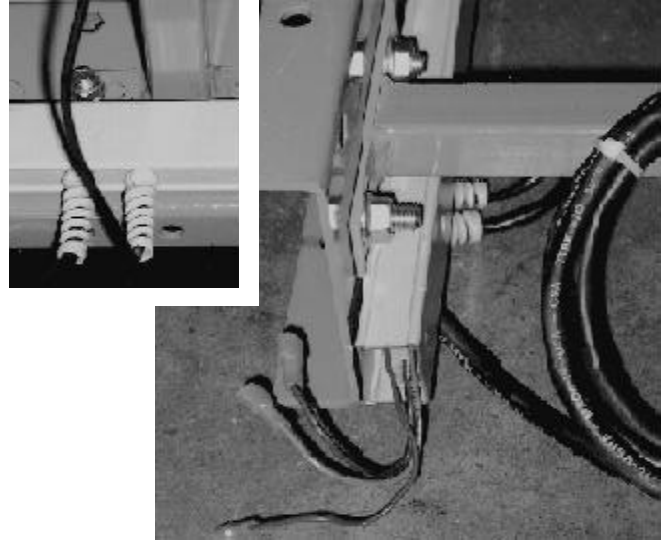
CONNECTION PROCEDURE

When the conveyor beds ship from Ermanco, photoeyes are wired and tied to the nearest crossmember for protection. The solenoids are mounted, plumbed and wired. The prewired channel itself is located on the inside of the side channel that is opposite the line-shaft.

Before removing the beds from their pallet, the ends of the prewired channel must be checked. There may be wires protruding from the ends of the prewired channel. If so, these wires should be folded over and pushed back into the channel before installing the beds.

Once the installation of the beds is complete, the connections between adjoining conveyor beds can be made. There will be three wires protruding from the end of each channel. These three wires are blue, brown and an odd color. Using a screwdriver, the pre-wired flexible channel cover should be lifted up from each end. The cover is malleable and does not need to be completely removed. After several inches of the wiring have been exposed, the connections can be made. The blue and brown wires are 24VDC power wires that provide power to the photoeyes and solenoids. The odd colored wire is the signal from one bed to the next. One set of wires will have female spade connectors, and the other set of wires will have male spade connectors. The two blue wires should be connected to each other; the two brown wires should be connected to each other; and the two odd colored wires should be connected to each other.

After the connections have been made, the wire channel cover can be snapped back into position. 24VDC power must be connected to the photoeye accumulation. As



The wireway is premounted and contains the wires for connection at each bed joint during installation. Connection from photoeyes and solenoid pigtails are made at the factory within the wire channel.

long as the blue and brown wires run uninterrupted from channel to channel, they need to be connected to a source of power in only one place. Usually a 24VDC power supply is used. This power supply must be able to provide enough power for the number of accumulation zones. Any group of zones must be fused at a maximum of 10 amp.

The number of zones multiplied by the power required for one zone equals the power required for all the photoeye accumulation on the job. Ermanco standard retroreflective photoeye accumulation requires 5 watts per zone. Ermanco standard diffuse photoeye accumulation requires 2 watts per zone. For example, if your system uses 25 diffuse zones, a 50 watt power supply is needed (25 zones) x (2 watts/zone) = 50 watts.

Notes:

- All prewired photoeye accumulation operates at 24 volts DC. Prewired photoeye accumulation cannot be made for 120 volts AC. Hardwired photoeye accumulation for 120 volts AC uses additional components.
- The power supply to provide 24 volts DC can be provided by Ermanco.
- Detailed electrical drawings are available from Ermanco which further describes photoeye accumulation.

ELECTRICAL

GENERAL

WARNING

All electrical controls must be installed, wired and connected by a licensed electrician only.

All motor controls and wiring must conform to the National Electrical Code as published by the National Fire Protection Association and approved by the American National Standards Institute, Inc. Since specific electrical codes vary from one area to another, be sure to check with the proper authorities before starting.

The electrical voltage of the motor will be stamped on the metal name plate. This voltage should be checked to see that it matches your available voltage. Many motors, both single phase and three phase, are dual voltage. Consult the wiring diagram on the motor for the proper connections. If a three phase motor on a single direction conveyor runs the wrong direction, two leads must be switched to reverse rotation.

WARNING

Do not connect the motor to any other voltage than stamped on its metal name plate.

Consult the wiring diagram on the inside cover of the starter and pushbutton for the proper electrical connections.

Note:

All controls equipment is covered by the original manufacturer's equipment warranty.

RUN ON DEMAND

If a conveyor has accumulated full and has not received a release signal for a predetermined time, the motor should be shutoff until the release signal is received.

Motor shutoff should be considered in the controls design when reviewing the conveyor layout for drive location. On long conveyors which may have several drives, place the shortest length at the discharge end. As each unit accumulates full with no release signal, progressively shut off the motors.

CONVEYOR CONTROLS - SAFETY GUIDELINES

The following are basic conveyor controls safety guidelines for common controls equipment.

WARNING

All safety devices, including wiring of electrical safety devices, shall be arranged to operate in a "fail safe" manner. That is, if power failure or failure of the device itself would occur, a hazardous condition must not result.

START-UP WARNING HORN - If all conveyor being started cannot be seen from the start pushbutton location, then an audible warning device is required. It could be a horn, buzzer or bell. It must be loud enough to be heard at any point on the conveyor being started. It should sound for a duration of five seconds after the start pushbutton is pushed, prior to the conveyor starting. Any auxiliary equipment such as vertical lifts, turntables, etc. must be included in the warning circuitry.

START PUSHBUTTON - Start pushbutton should be the flush type or guarded such that inadvertently leaning against them will not actuate them. They should be provided with a legend plate clearly defining which conveyors will be started.

STOP PUSHBUTTON - Stop pushbutton should be the extended type such that any contact with it is sufficient to stop the conveyor. They should have a legend plate defining which conveyors will be stopped.

EMERGENCY STOPS - All locations where an operator must work directly at the conveyor should be protected by an emergency stop. Operators should not have to leave their position to actuate the emergency stop.

High pedestrian areas should also be protected by emergency stop devices. Actuating an emergency stop must dropout the start circuit, requiring restarting the system using the start pushbutton provided.

Emergency stops can be of the pushbutton or cable operated switch type. The pushbutton type should be a red, mushroom head maintained pushbutton which requires resetting after it is actuated. Cable operated switches should trip by pulling the cable and require resetting at the switch.

WARNING

Before restarting a conveyor which has been stopped because of an emergency, an inspection of the conveyor must be made and the cause of the stoppage determined. The starting device must be locked out before any attempt is made to correct the cause of stoppage.

COMMISSIONING OF EQUIPMENT

GENERAL

Commissioning of the equipment can best be defined as the final adjustments and test of the installed equipment required for its proper operation. The need for commissioning is inherent, since the individual components of equipment are brought together at the installation site to operate as a system.

Mechanical and electrical commissioning is most often carried out simultaneously. Commissioning must simulate the actual operation of the system as close as possible to demonstrate its ability to perform reliably at the specified rate in the prescribed operational sequence.

During the Commissioning Phase, it is necessary to load the equipment with product to be conveyed, which provides the means of detecting those areas requiring adjustment. Personnel will be required to support operational functions and may serve as part of operator training and familiarity with the system. During the commissioning activity, special attention should be directed toward personnel safety. No unnecessary risks should be taken that would endanger the safety of any commissioning personnel. All personnel must familiarize themselves with all safety features of the system such as emergency stops and motor disconnects.

After commissioning, conduct operator training on all safety and operational aspects of the system. This must include systems start-up, location of emergency stops and familiarity with all operator controls.

Note: See Drive Belt Break-in, page 11.

PHOTOSENSOR ADJUSTMENT

The sensing switches used on this system will be one of two types: retroreflective photoeye or proximity switch.

Adjust photoeye types as follows:

1. Determine what size product the photoeye must sense.
2. Adjust for the worst case, usually smallest item, by loosening photoeye mounting nut and aligning while making sure photoeye has unobstructed view of reflector.
3. Move the product in and out of the field of detection to ensure that the photoeye energizes and de-energizes.
4. Readjust as required to achieve maximum performance and tighten mounting nut. If the photoeye cannot be adjusted, replace and adjust as required. When replacing the photoeye, be sure that the correct type is installed.

Adjust proximity switches as follows:

1. Loosen proximity switch mounting bolt and adjust sensing switch so that the product passes directly in front of the switch face at a distance of approximately 1/2".
2. Check that the proximity switch energizes and de-energizes as the product passes in front of the switch face.
3. Tighten the mounting bolt.

PREVENTIVE MAINTENANCE

GENERAL

Preventive maintenance will save expensive downtime, wasted energy costs and increase life of components. An accurate record keeping system will track component servicing history.

Periodic maintenance intervals may vary with load, speed, hours of operation, ambient temperature, humidity, etc. Intervals can be established by fairly frequent maintenance at first, then lengthen the intervals as justified by observation of need based on history. The following schedule is based on 5 days per week, 8 hours per day operation under normal conditions.

Daily

- Listen to everything for unusual noises or vibration.
- Visually inspect to see that conveyor sections are clear and free of debris.
- Check to see that all safety guards are in place.
- Check for loose bolts or parts.
- Listen for air leaks.

Weekly

- Check for proper PSI on air regulators.
- Check air filter bowls for accumulated water.

WARNING

- **Prohibit walking or riding on conveyor by anyone.**
- **Care should be taken when servicing any conveyor to prevent accidental injury. All moving parts are potentially dangerous.**

AIR SYSTEMS

The best preventive maintenance for any air operated device is clean air. Refer to filters in this section to ensure an adequate supply of clean air. Dirty air will make pneumatic devices sticky, and they will not operate properly.

FILTERS

To ensure the continued performance of filters:

Monitor bowl drain every week. To manually drain the bowl, first remove the hose. Carefully turn knurled drain valve counterclockwise until you hear air escaping. Let all accumulated liquid drain and close valve by turning clockwise. Reconnect hose.

Remove and replace clogged elements as required by filter condition indicator. Indicator is mounted on top of the filter housing.

WARNING

Do not perform maintenance on the conveyor until the start-up controls, including motor safety switches, are locked out and cannot be turned on by any person other than the one performing the maintenance. If more than one member of a crew is working on the conveyor, EACH CREW MEMBER MUST HAVE A LOCK ON THE POWER LOCK OUT. The air pressure must be turned off to the work area. All pneumatic devices must be de-energized to prevent accidental cycling of the device.

Check that loosened parts have been retightened and all guards reinstalled.

Make sure personnel are clear of all conveyor equipment before restarting the system.

LUBRICATION

It is not normally required that a lubricated air system be used; however, if lubrication is used due to very dry air, it should be a non-detergent, lightweight oil without an ester or ketone base. It must also be anti-foaming, compatible with Buna N rubber and have high film strength.

An important criterion is viscosity. If an oil is too heavy, it will not be atomized and carried downstream to the component requiring lubrication. We have found the following oils perform well:

MANUFACTURER	BRAND NAME
American Oil Company	Rykon No. 11 American Oil No. 15 (was Stanoil No. 15)
Gulf Oil Company	Harmony No. 43AW Harmony No. 44
Mobil Oil Company	D.T.E. Light
Non Fluid Oil Corporation	Air Lube 10w/NR
Shell Oil Company	Tellus No. 27
Sinclair Oil Company	Dura No. 150
Sun Oil Company	Sunvis No. 701 Sunvis No. 706
Texas Oil Company	Regal "A" R & O

CAUTION

If an internal (light oil) lubricator is to be used, EXTREME CARE must be taken NOT to over lubricate.

TROUBLESHOOTING

In order to minimize down time, it is normally not feasible to repair malfunctioning components while leaving the conveyor unusable. Most components listed in this section should be kept in maintenance stock for emergency replacement. The part may then be repaired using the following procedures to replace maintenance stock. Items which cannot be repaired or are questionable should be replaced immediately.

Components under warranty should not be repaired except in an emergency.

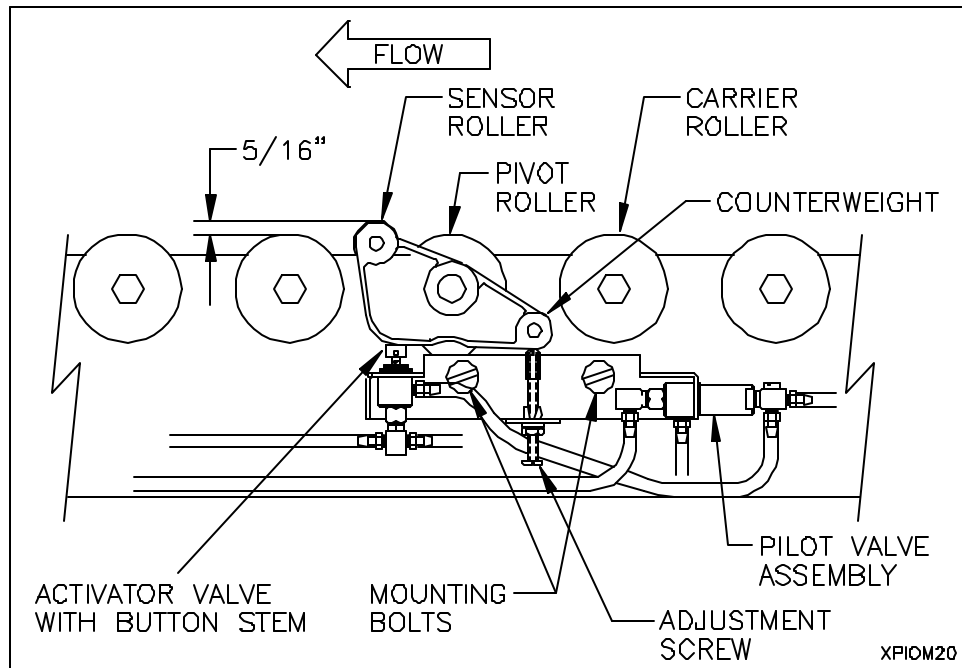
WARNING

Before disassembling a valve or other pneumatic component or removing it from the installation, shut off and exhaust the entire pneumatic circuit.

Shut off and lockout electrical supply.

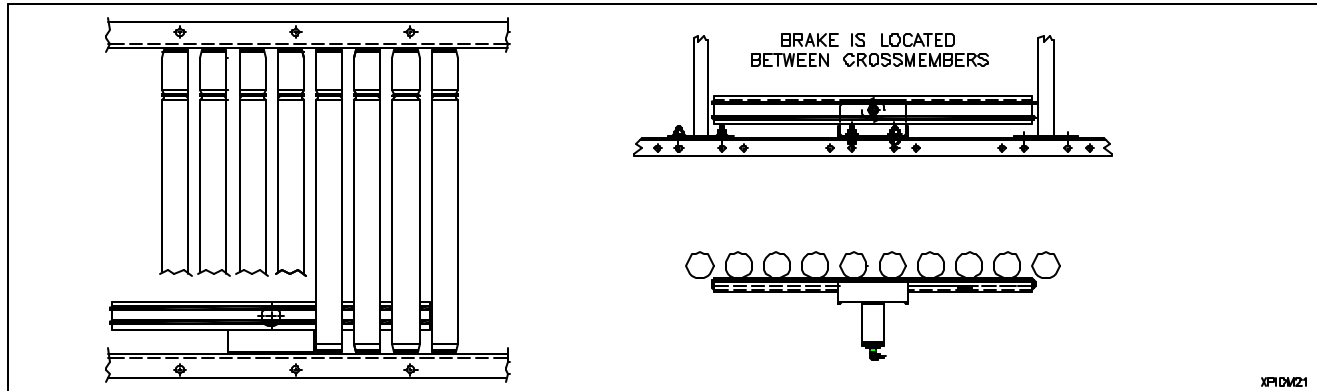
Problem		Probable Cause	Possible Remedy/Repair (Not in Order) Refer to Corresponding Lettered Paragraphs (Page 24-26)
SOLENOID VALVES			
1	Valve blows to exhaust	Inlet poppet not sealed Faulty valve-to-base gasket Faulty seals Damaged spool Cylinder leaks Inadequate air supply Water or oil contamination	A D B F H J T
2	Solenoid fails to actuate valve	Loose pilot cover or faulty solenoid Inadequate voltage at solenoid	G K
3	Air flow is normal only in actuated position	Broken return spring	E
4	Solenoid buzzes	Faulty solenoid Inadequate voltage at solenoid Varnish in direct operated spool valve	G K C
5	Solenoid burned out	Varnish in direct operated spool valve Incorrect voltage at solenoid	C K
6	Valve action is sluggish	Faulty seals on spool valve Varnish in spool valve Inadequate air supply Inadequate pilot or signal pressure Faulty silencer Water or oil contamination	B C J L P M

TROUBLESHOOTING



Problem		Probable Cause	Possible Remedy/Repair (Not in Order) Refer to Lettered Paragraphs (Page 24-26)
SENSOR ROLLER ASSEMBLY			
1	Activator valve with stem button not actuating	Varnish in valve causing sticking Sensor roller not depressing valve sufficiently Fitting threads on side port protruding into valve body Product not contacting sensor roller	C P Turn fitting out, partial turn until valve moves freely P
2	Pilot valve assembly not actuating	Varnish in valve Very dry air Water or oil contamination	C M N
3	Zone not releasing	Sensor assembly sticking on pivot Sensor height adjustment wrong Also see #1 and #2	Q P

TROUBLESHOOTING



Problem		Probable Cause	Possible Remedy/Repair (Not in Order) Refer to Lettered Paragraphs (Page 24-26)
XenoBRAKE			
1	Not dropping completely away from rollers	Brake located too high in frame	Loosen mounting bolts to finger tight. Actuate brake, retighten mounting bolts while actuated. This will align the brake assembly with the bottom surface of the rollers and bottom the mounting bolts in the frame holes. Also see J
2	Brake not stopping rollers	Alignment to the rollers Inadequate air pressure or supply Tubing pad worn or contacting rollers	See #1 above J Shift tubing approximately 1/2" on brake channel or replace tubing
3	XenoBRAKE hitting with excessive force against rollers	Excessive clearance Excessive air pressure	Brakes should be no more than 1/4" below bottom of rollers Reduce pressure to 60 PSI and observe operation
4	Sluggish response	Inadequate air supply or pressure	J

TROUBLESHOOTING



Problem		Probable Cause	Possible Remedy/Repair (Not in Order) Refer to Lettered Paragraphs (Page 24-26)
CLAMP ASSEMBLY			
1	Not stopping all rollers in zone	Low air pressure Spool damage	J R
2	Only a portion of the zone stops	Disengagement of spacers from spools Damage to spools	R R
3	Sluggish response	Inadequate air supply or pressure	J
LINE-SHAFT ZONE A SSEMBLY			
1	Spools showing damage	Excessive heat	S
2	Spools disengaged from spacers	Excessive end clearance	R

TROUBLESHOOTING



Problem		Probable Cause	Possible Remedy/Repair (Not in Order)
PHOTOEYE SENSOR			
1	Rollers in zone not stopping	<p>Retroreflective photoeye not properly aligned with target</p> <p>Air not coming through solenoid valve</p> <p>If air comes through solenoid valve to XenoBRAKE or clamp assembly but zone is still not stopping</p>	<p>Realign photo eye with retroreflective target so indicator light comes on</p> <p>See solenoid valves in this section (page 19)</p> <p>See XenoBRAKE clamp assembly (page 22) and line-shaft zone assembly (page 22) in this section</p>
2	Rollers in zone stopped with no product present	Retroreflective photoeye not properly aligned with target	Realign photo eye with retroreflective target so indicator light comes on
INDEXING CONTROL			
1	Upstream zone does not release	First sensor downstream was not activated and release indicating a clear position	<p>Activate first sensor downstream and release</p> <p>Replace valve assembly on downstream zone</p>

REMEDY/REPAIR PROCEDURES

A. Main Inlet Poppet Not Sealing

Foreign particles may be holding the poppet off its seat. Cycle the valve several times to see if the flow of air through the valve will flush the particles out. If not, it will be necessary to disassemble.

Also check the poppet seat(s) for dirt and damage. If there is damage to a seat, the entire valve body assembly must be replaced.

If there is no damage to poppet seat(s), clean thoroughly, lubricate lightly and reassemble.

B. Faulty Seals

The materials of which seals are made can be attacked by substances such as chlorinated hydrocarbons (trichloroethylene, for example) and some lubricating oils. This can produce swelling or shrinking of the seals and result in erratic valve action or blowing to exhaust. Swollen seals may cause in-line poppet valves to stick in a partially open position so that the valve blows from exhaust. Swollen seals on a spool valve can result in sluggish or erratic valve action or even failure of the spool to move at all.

C. Varnish Deposits in Valve

Varnish deposits can cause a valve to act sluggishly or even prevent movement of the valve element altogether, especially after a period of inactivity. A spool valve frozen in position by varnish can cause a direct acting solenoid to buzz and eventually lead to solenoid burnout.

D. Faulty Gaskets

A broken or scored web on a valve-to-base gasket can produce air leakage between ports. This can result in unwanted pressurizing of an outlet port or blowing from exhaust.

A leaking gasket can produce problems on valves with timed sequence adaptors. If the gasket between adaptor and valve body leaks, it can bleed off the air pressurizing the piston so that the timing is affected.

E. Broken Return Spring

A broken return spring on a spool valve can cause the spool to remain in an actuated position or to be only partially returned. In the latter case, several abnormal flow patterns may result depending on the valve configuration. If a spool valve has a normal flow pattern only in an actuated position, a broken return spring is the most likely cause of the trouble.

F. Damaged Spool

If a spool is badly scored or nicked, it can allow air to pass from one port to another. This can result in unwanted pressurizing of an outlet port or blowing from exhaust. The problem can be further aggravated by the spool cutting the resilient seals which increases the leakage. A damaged spool cannot be repaired but must be replaced.

G. Faulty Solenoid Operation

Verify that the supply voltage is correct.

With the electrical supply circuit to solenoid open, check the coil for electrical continuity with an ohmmeter, and replace the solenoid if the coil is open. In spool valves with direct solenoid control, varnish deposits may prevent spool motion. This will prevent full motion of the solenoid plunger and can cause solenoid burnout.

Solenoids operated in too high an ambient temperature are also subject to premature burnout. However, the most common cause of premature solenoid burnout is improper supply voltage.

If significant wear is apparent under "T" section, the air gap can be lost and the solenoid must be replaced.

H. Cylinder Leaks

Valves sometimes blow from exhaust because of leaky packings. Before looking for faults in the valves, check the cylinder for leaks. In the following steps take appropriate safety precautions because both the valve and the cylinder will be actuated.

1. Disconnect the air line to the end of the cylinder which is not under pressure. If air comes out of the open port, the cylinder packings are leaking and must be repaired. If there is no leakage, reconnect the air line.

2. Reverse the position of the valve and disconnect the other air line to the cylinder. Again check for air coming out of the cylinder port. If there is air coming out, the cylinder packings must be repaired.

REMEDY/REPAIR PROCEDURES

J. Inadequate Air Supply

An inadequate air supply causes an excessive pressure drop during valve actuation. Pilot air pressure may be great enough to begin movement of the valve element; but the pressure drop, resulting from the filling of the outlet volume, depletes the pilot air supply. This may result in chattering or oscillating of the main valve or may simply keep the main valve partially actuated so that it blows continually from exhaust.

If the pressure falls more than 10% during actuation of the valve, the air supply may be inadequate. Inspect the system for undersized supply lines, sharp bends in the piping, restrictive fittings, a clogged filter element, or a defective pressure regulator.

Air pressure for proper XenoBRAKE operation should be a minimum of 60 PSI. The air line size supplying solenoid valves should be 3/8" outside diameter. Between the solenoid valve and the zone it should be 1/4" outside diameter.

K. Incorrect Voltage at Solenoid

Before checking the electrical supply, shut off and exhaust the air supply at the valve. Attach a voltmeter to the electrical supply to the solenoid. Actuate the solenoid and read the voltage during actuation. If the voltage falls below the allowable operating range, the electrical supply is inadequate, even though the supply voltage might be correct without the electrical load.

A voltage that exceeds the allowable operating range can result in premature solenoid burnout or can cause impact damage resulting in a loss of air gap. See Faulty Solenoid Operation, Repair Procedure G.

L. Inadequate Pilot or Signal Pressure

Pilot or signal pressure below the minimum requirement can produce chattering, valve oscillation, or sluggish valve action. Check your valve specifications for minimum pilot or signal pressure requirements.

M. Lubrication

Some valves require lubrication to operate properly. Check the system lubricator to see that it is working as it should. Also check compatible lubricants. DO NOT LUBRICATE EXCESSIVELY. Excess oil can accumulate in low points of the system and restrict the flow of air. It can also form pools which will produce a dashpot effect and slow valve action. A visible oil fog exhausting from the valve is a sure sign of excess lubrication. A properly lubricated valve will produce only a slight discoloration on a piece of white paper when held close to the exhaust port for 3 or 4 cycles.

N. Water or Oil Contamination

Accumulation of water or oil has an especially bad effect on devices with small orifices such as timers. Accumulations in such a device can change the effective size of the timing orifice or even block it completely. The device must be disassembled, cleaned, lightly lubricated, and reassembled. It may be necessary to install a filter in the supply line to prevent recurrence of the problem.

Accumulations of water or oil can also occur at low points in pilot supply lines. This can result in pressure fluctuations that produce erratic timing. The best cure is to reroute the pilot supply lines to eliminate low points.

Water or oil can also accumulate at low points in a valve and hinder movement of the valve element, perhaps completely preventing its motion. This is especially true of a valve operating in a sub-freezing environment where accumulated water can turn to ice. It is important in such applications to ensure that the supply air is dry and that the air line filter is drained frequently.

If lubrication is required, do not lubricate excessively.

P. Sensor Roller Not Depressing Valve Sufficiently

Adjust the sensor roller height by turning the adjustment screw which will lower or raise the sensor roller. The normal height of the sensor roller should be 5/16" above the carrying surface. The final height of the sensor roller should be determined by testing with actual product.

A straight edge can be placed across the top of the rollers holding the sensor roller in the depressed position. In this position air should be heard rushing through the valve. The sensor roller should be able to be depressed below the straight edge a slight amount indicating some overtravel remains. If air did not pass through the valve when the sensor roller was depressed flush with the carrying rollers and there is more than 1/32" overtravel, adjust the sensor assembly up by loosening the mounting screws.

Carefully check the actual product to see if the leading edge is making sufficient contact with the sensor roller. If the leading edge of the product is high, additional travel may be required before the sensor roller is adequately depressed.

REMEDY/REPAIR PROCEDURES

Q. Sensor Roller Not Returning Easily to Up Position

If the sensor roller seems to be sticking, check the axle on each end of the pivot roller for foreign substances. The black plastic pivoting actuator assembly at each end of the pivot roller pivots on the extended 7/16" hex axle. A build-up in this area could cause sticking.

If the dimension inside the frame channels is undersized, it could bind the pivot roller assembly.

Make sure there is adequate clearance at all points of the assembly's movement.

R. Rollers Not Stopping in Zone

Make sure air is being received at the clamp cylinder in adequate volume and pressure. See Remedy J.

Determine if the interlocking spacer under the clamp is stopping. If the spacer is stopping and the spools continue to turn, the spool ribs are either damaged due to excessive heat or they are disengaged from the spacer due to excessive end clearance.

If a portion of the zone stops while the remainder continues to run, there are two possibilities. The first is disengagement of one or more spacers from the adjoining spool; and the other is spool damage. See Remedy S.

Damaged spools must be replaced. Also see Remedy S. Total movement of the spools and interlocking spacers as an assembly should not exceed 1/32" along the line-shaft. Excess movement may allow disengagement of a spacer from its adjoining spool allowing a portion of the zone to continue running. To adjust this movement, move the set screw collar on one end of the interlocked assembly until there is a maximum of 1/32" clearance.

S. Spools Showing Damage

Spool damage nearly always occurs as a result of excess heat. The principal cause of heat is excessive clamp time versus release (cooling) time. The second major contributor to excessive heat is speed. A third is belt tension. Another is misaligned clamps.

Excess clamp time versus release time must be avoided by not allowing the conveyor to run for extended periods of time when no product is moving on the system. See "Run on Demand" in electrical section on page 16. This may be done manually or through the controls. Conveyor speeds over what is necessary to meet throughput rates, increase heat generation between the shaft and spools; review throughput rates and required speeds, a reduction of 15FPM will result in meaningful temperature reduction.

If the drive belts were not adequately run for break-in prior to conveyor use, damage may have occurred at that time. Reference "Drive Belt Break-in" on page 11.

Misalignment of the clamp assembly can place extra loads on the interlock assembly and/or make it more difficult to stop the zone requiring additional air pressure. The clamp must be perpendicular to the side frame with the clamp pivot centered directly over the line-shaft.

PARTS IDENTIFICATION

This section is used to identify parts that may require replacement during the life of the conveyor.

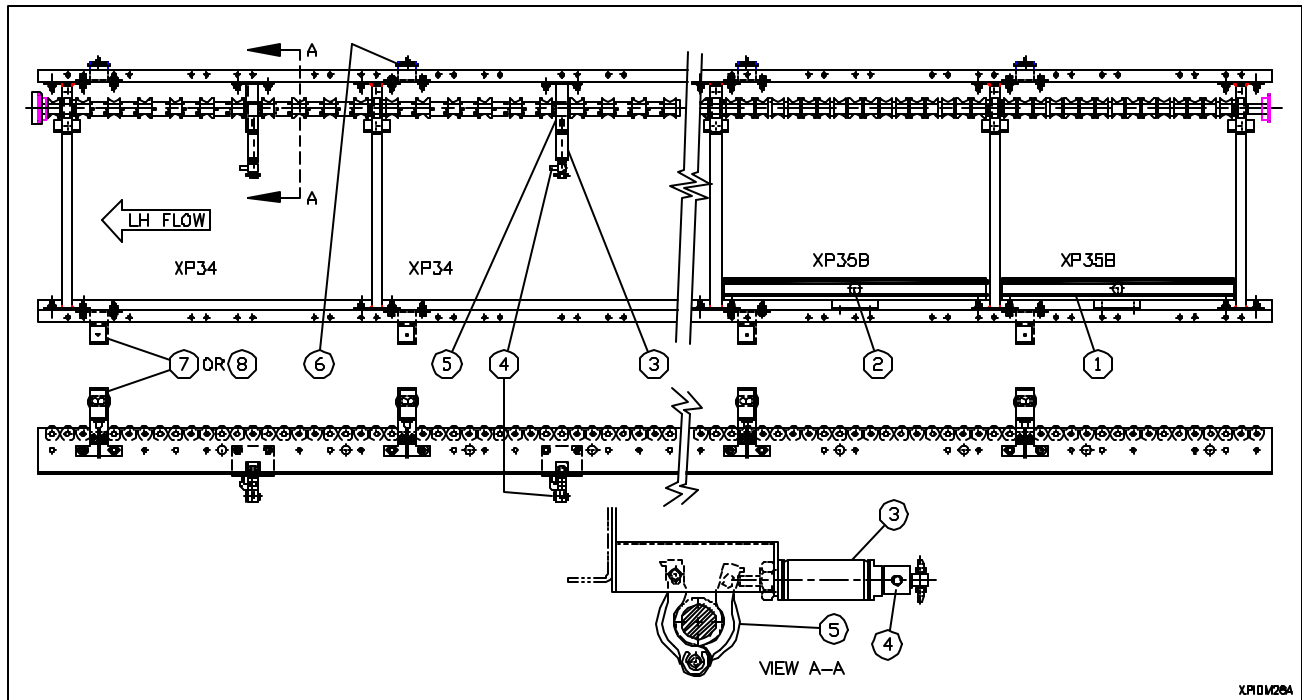
Parts which specifically pertain to XenoPRESSURE® are included with illustrations. Additional parts and assemblies are listed together in chart form as "Additional Replacement Parts". Drive components are identified for standard speed and horsepower combinations. Other parts common to XenoROL® and XenoPRESSURE (rollers, drive belts, frame channels, line-shafts) may be obtained from the appropriate XenoROL Installation, Operation, Maintenance Manual.

A "**Recommended Spare Parts List**" is published for all conveyor orders of \$10,000 or more. This spare parts list is sent to the purchaser approximately (2) weeks after the order is received. It includes part numbers, description, pricing and recommended quantities to be kept for maintenance.

If you are unable to locate this document (order under \$5,000) another may be obtained by contacting the MHS Conveyor LTS Order Service Department at 231/798-4547.

REPLACEMENT PARTS IDENTIFICATION

XP34 AND XP35B

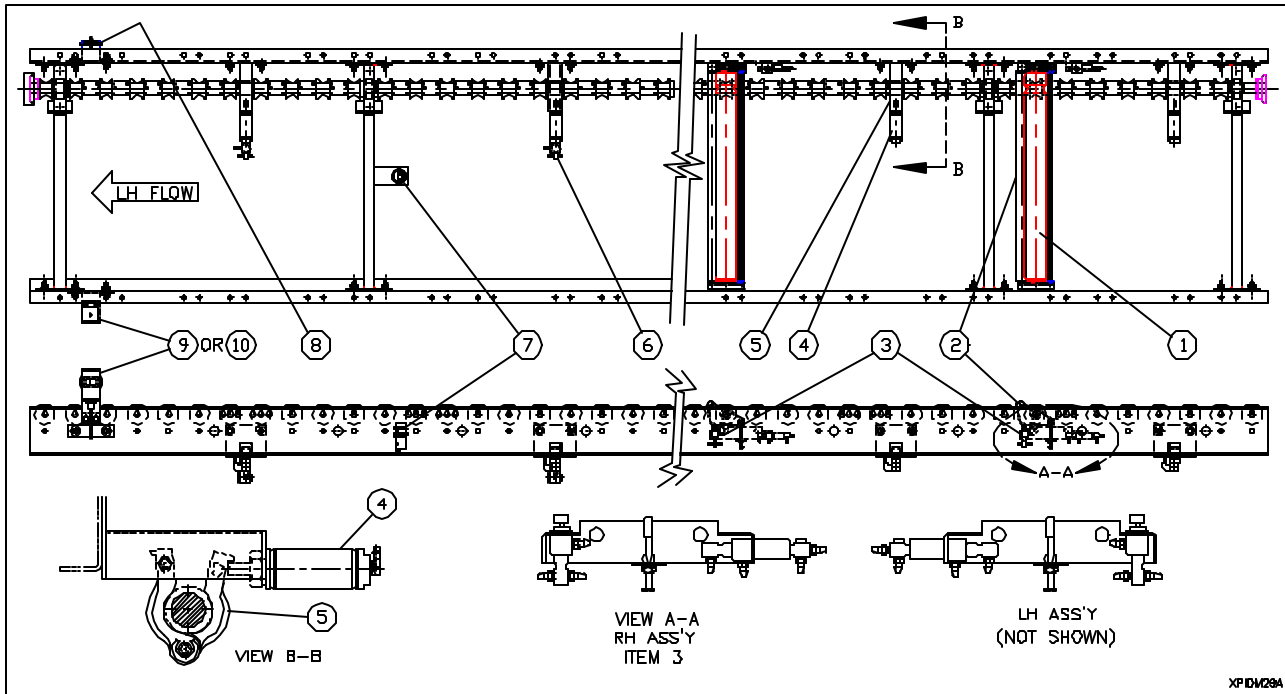


Item No.	Description	Part No.
1	Tubing, Brake	89000580
2	Cylinder, Brake	89000020
3	Cylinder, Clamp	89000024
4	Solenoid, Clamp Assembly	89000178
5	Shoe, Clamp Assembly	45401002
6	Reflector, Photoeye	*
7	Photoeye, Standard	*
8	Photoeye, Polarized	*
	Tubing, Air 1/4" O.D.	89000580

* Due to a variety of application and photoeye combinations, refer to the Spare Parts List provided with your order.

REPLACEMENT PARTS IDENTIFICATION

XP44

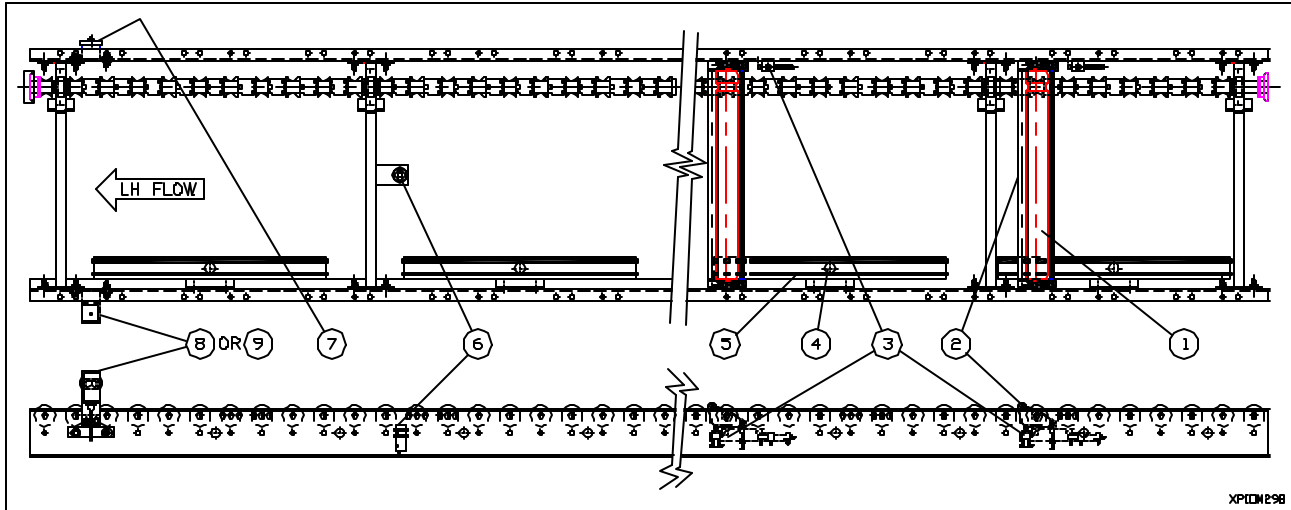


Item No.	Description	XP44 Part Numbers by Width					
		15-1/2"	18-1/2"	24-1/2"	30-1/2"	36-1/2"	42-1/2"
1	Roller, Pivot	45215201	45218201	45224201	45230201	45236201	45242201
2	Sensor, Assembly	45421500	45421800	45422400	45423000	45423601	45424201
3	Activator Valve Assy., R.H.	(Shown) 45400005					
	Activator Valve Assy., L.H.	45400000					
4	Cylinder, Clamp	89000024					
5	Shoe, Clamp Assembly	45401002					
6	Solenoid, Clamp Assembly	89000178					
7	Photoeye, Proximity	*					
8	Reflector, Photoeye	*					
9	Photoeye, Standard	*					
10	Photoeye, Polarized	*					
	Tubing, Air 1/4" O.D. (Clear)	89000580					

* Due to a variety of application and photoeye combinations, refer to the Spare Parts List provided with your order.

REPLACEMENT PARTS IDENTIFICATION

XP45B

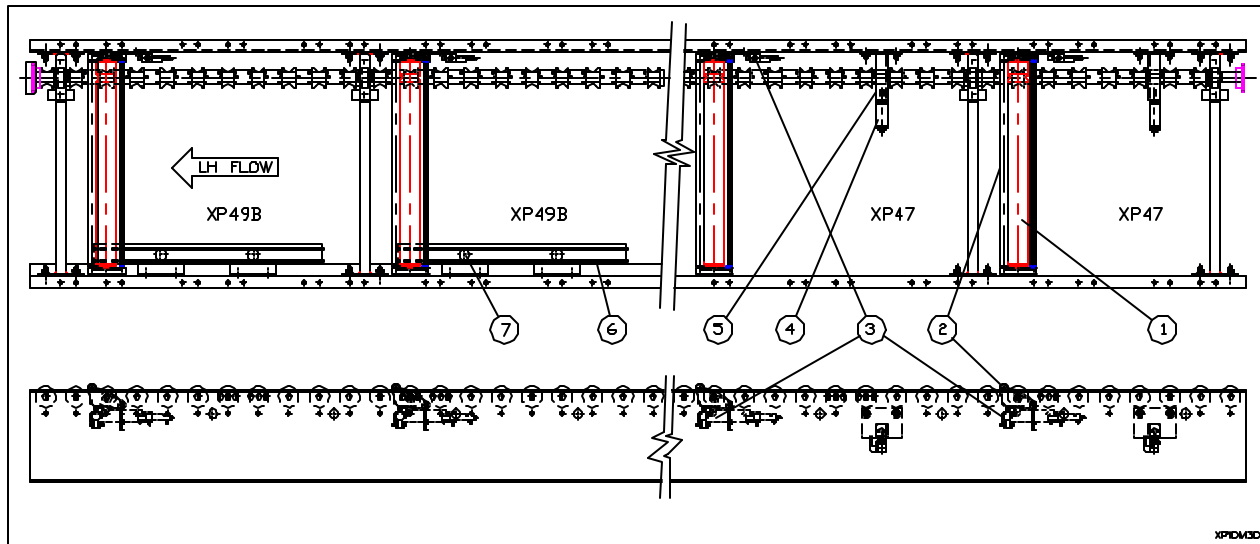


Item No.	Description	XP45B Part Numbers by Width					
		15-1/2"	18-1/2"	24-1/2"	30-1/2"	36-1/2"	42-1/2"
1	Roller, Pivot	45215201	45218201	45224201	45230201	45236201	45242201
2	Sensor, Assembly	45421500	45421800	45422400	45423000	45423601	45424201
3	Activator Valve Assy., R.H.	(Shown) 45400005					
	Activator Valve Assy., L.H.	45400000					
4	Cylinder, Brake	89000020					
5	Tubing, Brake	89000580					
6	Photoeye, Proximity	*					
7	Reflector, Photoeye	*					
8	Photoeye, Standard	*					
9	Photoeye, Polarized	*					
	Tubing, Air 1/4" O.D.	89000580					

* Due to a variety of application and photoeye combinations, refer to the Spare Parts List provided with your order.

REPLACEMENT PARTS IDENTIFICATION

XP47 AND XP49B

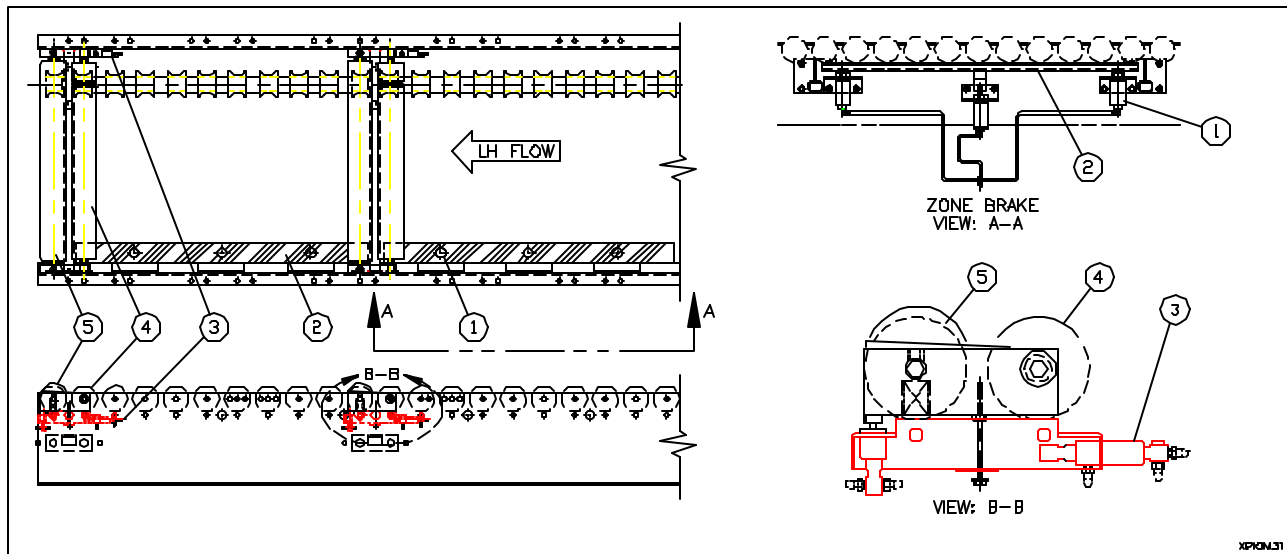


Item No.	Description	XP47 and XP49B Part Numbers by Width					
		15-1/2"	18-1/2"	24-1/2"	30-1/2"	36-1/2"	42-1/2"
1	Roller, Pivot	45215201	45218201	45224201	45230201	45236201	45242201
2	Sensor, Assembly	45421500	45421800	45422400	45423000	45423601	45424201
3	Activator Valve Assy., R.H.	(Shown) 45400005					
	Activator Valve Assy., L.H.	45400000					
4	Cylinder, Clamp	89000024					
5	Shoe, Clamp Assembly	45401002					
6	Tubing, Brake	89000580					
	Tubing, Air 1/4" O.D.	89000580					

* Due to a variety of application and photoeye combinations, refer to the Spare Parts List provided with your order.

REPLACEMENT PARTS IDENTIFICATION

XP55



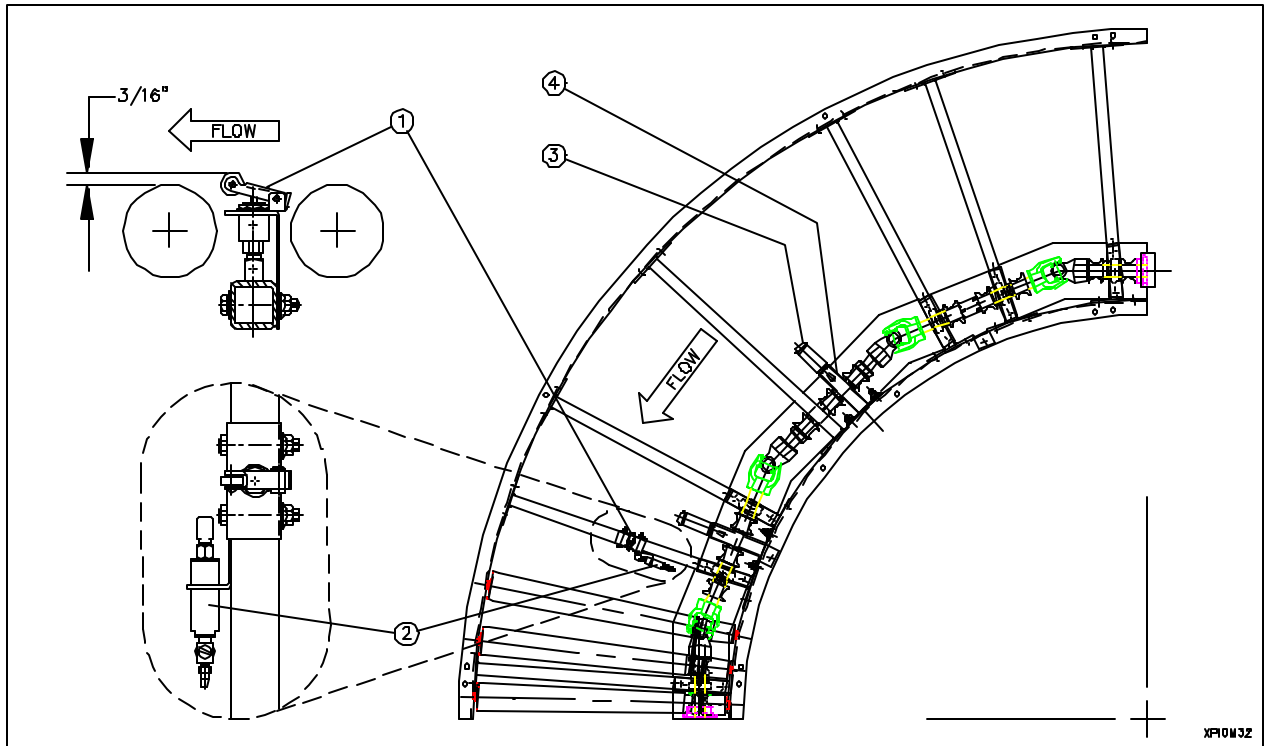
Item No.	Description	Part No.
1	Cylinder, Brake	**
2	Pad, Brake	**
3	Activator Valve Assembly, R.H.	(Shown) 45400005
	Activator Valve Assembly, L.H.	45400000
4	Roller, Pivot	**
5	Roller, Sensor	**
	Tubing, Air 1/4" O.D.	89000580

* Due to a variety of application and photoeye combinations, refer to the Spare Parts List provided with your order.

** Due to a variety of applications, refer to the Spare Parts List provided with your order or contact the Order Service Department.

REPLACEMENT PARTS IDENTIFICATION

CURVE WITH ZONE

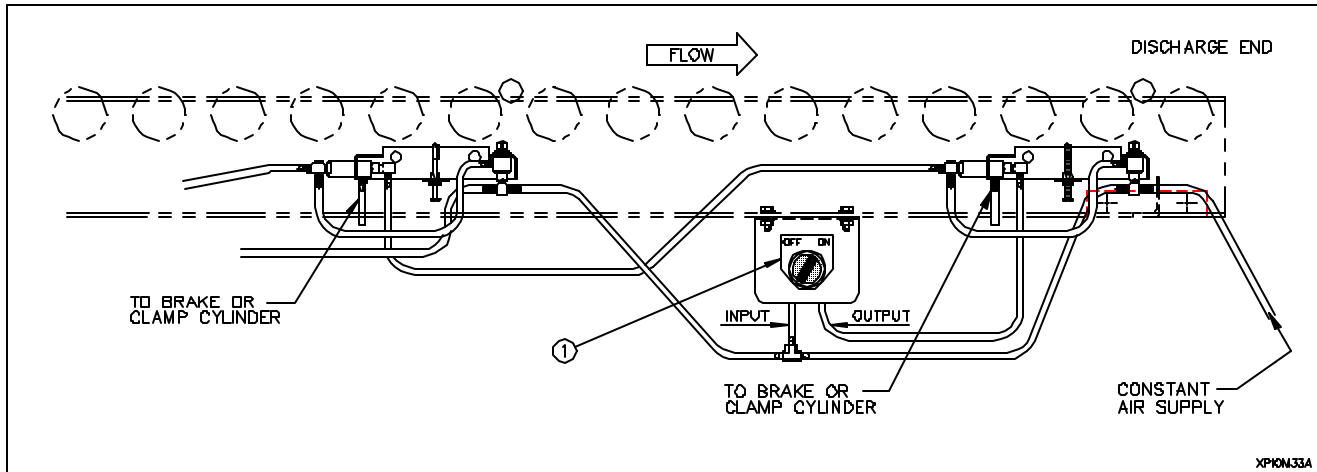


Item No.	Description	Part No.
1	Activator, R.H., Part A	45400020
	Activator, L.H., Part A	(Shown) 45400024
2	Pilot, R.H., Part B	45400022
	Pilot, L.H., Part B	(Shown) 45400026
3	Cylinder, Clamp	89000024
4	Shoe, Clamp Assembly	45401002
	Tubing, Air 1/4" O.D.	89000580

REPLACEMENT PARTS IDENTIFICATION

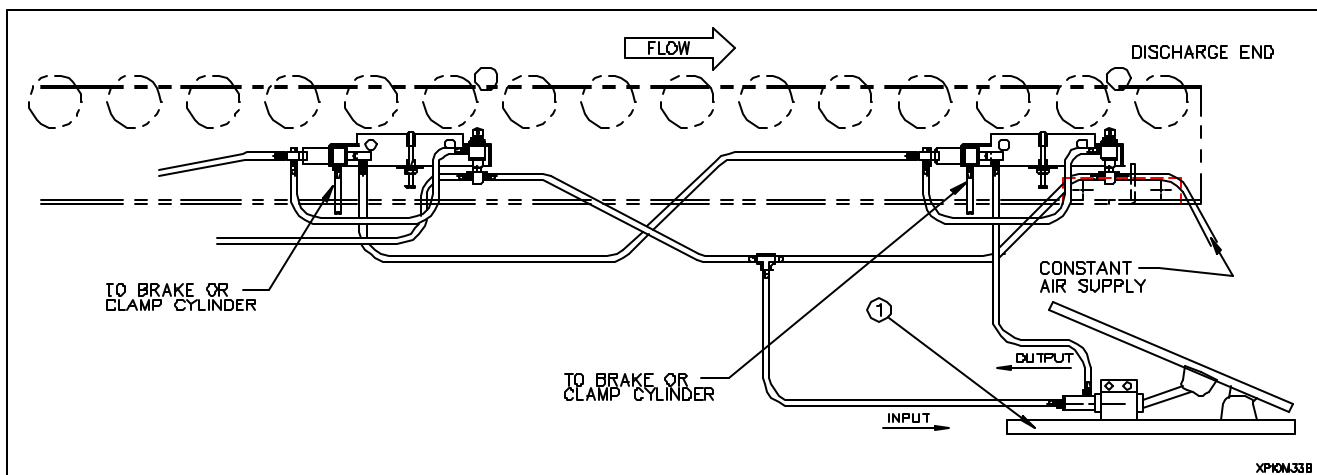
MANUALLY CONTROLLED RELEASES

Selector Valve, Manual Release



Item No.	Description	Part No.
1	Kit, Manual XP Release Including: Instructions, selector switch, valve, legend plate, mounting bracket, fittings and extra air tubing	98900012

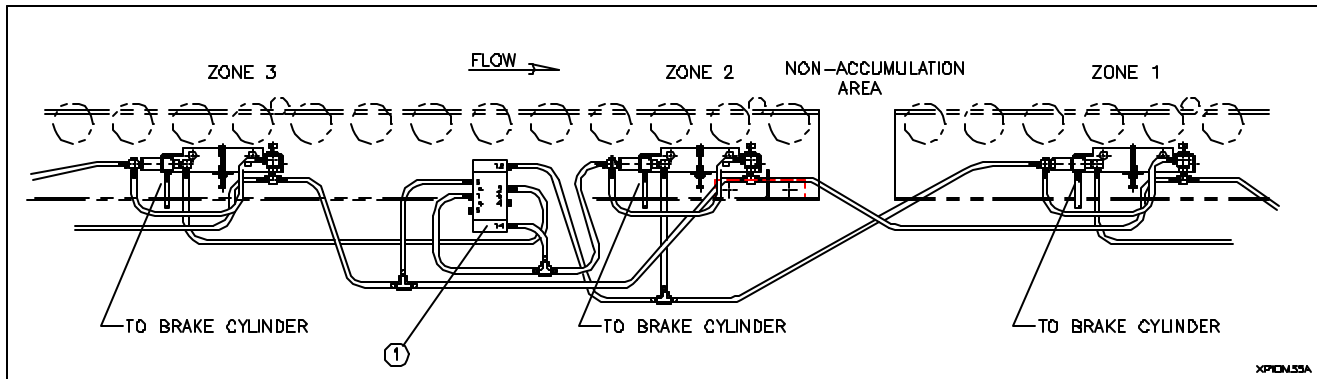
Foot Pedal Valve, Manual Release



Item No.	Description	Part No.
1	Kit, Foot Pedal Including: Foot pedal, valve, fittings and tubing	98900001

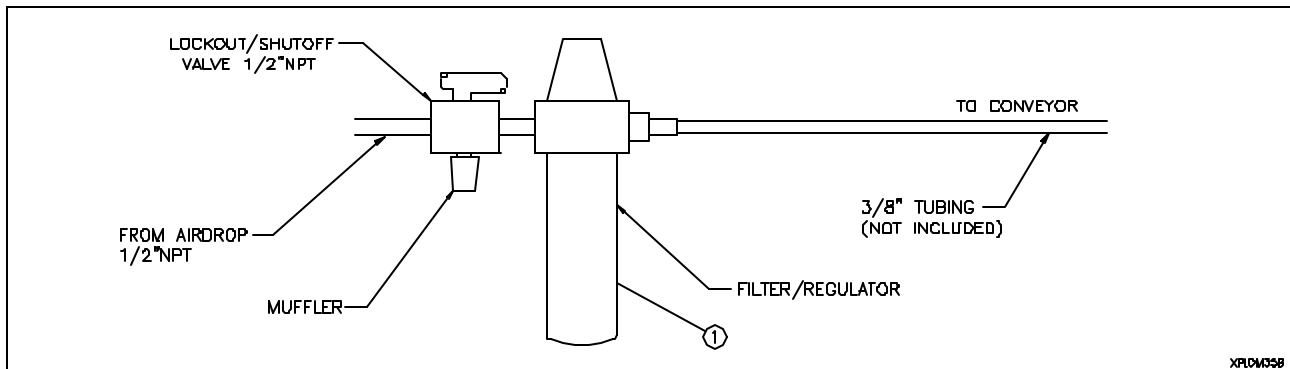
REPLACEMENT PARTS IDENTIFICATION

INDEXING KIT



INDEXING KIT		
Item No	Description	Part No.
1	Kit, XP45 Indexing Control Including: Instructions, relay valve, mounting bracket, fittings and tubing	94510000

SHUTOFF/FILTER/REGULATOR



SHUTOFF/FILTER/REGULATOR		
Item No.	Description	Part No.
1	Kit, Filter/Regulator Including: Instructions, lock out valve, muffler, air filter/regulator and fittings	98900006

REPLACEMENT PARTS IDENTIFICATION

Item	Model						
	XP34	XP35B	XP44	XP45B	XP47	XP49B	XP55B
Sensor Roller Assembly Including: (1) 7/8" dia. roller, (2) brackets and (1) counterweight							
15-1/2" OAW, 13" BF Plastic	--	--		45421500			--
18-1/2" OAW, 16" BF Plastic	--	--		45421800			--
24-1/2" OAW, 22" BF Plastic	--	--		45422400			--
30-1/2" OAW, 28" BF Plastic	--	--		45423000			--
36-1/2" OAW, 34" BF Aluminum	--	--		45423601			--
42-1/2" OAW, 40" BF Aluminium	--	--		45424201			--
Pivot Roller Assembly 15-1/2" OAW, 13" BF	--	--		45215201			--
18-1/2" OAW, 16" BF	--	--		45218201			--
24-1/2" OAW, 22" BF	--	--		45224201			--
30-1/2" OAW, 28" BF	--	--		45230201			--
36-1/2" OAW, 34" BF	--	--		45236201			--
42-1/2" OAW, 40" BF	--	--		45242201			--
Line-shaft Assembly including: with line-shaft, bearings, spacers, spools, coupler sprockets (for 3" roller centers)	Specify model, bed length, zone lengths, drive or intermediate bed, and driven sprocket size if if drive bed. Contact the Distributor Services Department for cost and delivery.						
Spools Drive, Standard	90801200	90801200	90801200	90801200	90801200	90801200	90801210
Speedup	--	90801202	--	90801202	--	90801202	--
Split Standard	--	90801201	--	90801201	--	90801201	--
Split Speedup	--	90801203	--	90801203	--	90801203	--
Lineshaft Spacers Regular (3" centers)	--	90800176	--	90800176	--	90800176	9800181
Steel Interlocking (3" centers)	90800044	--	90800176	--	90800044	--	--
Brake Clamp Assembly Including: Mounting Bracket, Brake Shoe Replacement Kit with: (2) shoes, torsion spring, clevis pin and (2) nylon washers Air Cylinder	45401000	--	45401000	--	45401000	--	--
Air Piping 1/4" O.D. Clear	89000580						
Red	89000581						
Black	89000582						
Line-shaft Bearings	90050103						90050201
Line-shaft Coupler Sprockets	90800505						90800534
Chain	90140025						90140028
Drive Belt Repair Kit Including: carrying case, cut length chart, heating iron and 25' of drive belt cord (specify dia.)	99940002						
Quick Replacement Belts ncluding: "S" Hook (for straights) 3/16" dia. x 13-1/2"	--	--	90530035	--	--	--	--

DRIVE COMPONENTS

MOTOR, REDUCER AND SPROCKET COMBINATIONS MODELS XP34 XP35B, XP44, XP45B, XP47 AND XP49B

The following chart shows various combinations of motor horsepower, reducer size and ration, and sprockets to achieve various speeds. This chart can be used as a reference to determine what combination a given conveyor unit should have. It can then be used for ordering replacement parts or when changes are required to the existing speed. Order sprockets by the 5 digit number stamped on the hub and diameter of the sprocket bore.

Motor HP	FPM	Reducer Frame/Size Ratio	Drive Sprocket		Driven Sprocket	
			Size	Bore	Size	Bore
1/2, 3/4	20	56/262-30	5016	1-1/8"	5018	1"
1/21, 3/4	25	56/175-20	5015	7/8"	5020	1"
1/2, 3/4, 1	30	56/175-20	5016	7/8"	5018	1"
1/2, 3/4, 1	35	56/175-15	5014	7/8"	5018	1"
1/2, 3/4, 1	40	56/175-15	5016	7/8"	5018	1"
1/2, 3/4, 1 1-1/2	45	56/175-15 56/262-15	5018	7/8" 1-1/8"	5018	1"
1/2, 3/4, 1 1-1/2	50	56/175-10 140/262-10	5014	7/8" 1-1/8"	5018	1"
1/2, 3/4, 1 1-1/2	55	56/175-10	5015	7/8" 1-1/8"	5018	1"
1/2, 3/4, 1 1-1/2 2	60	56/175-10 56/175-10 140/262-10	5016	7/8" 7/8" 1-1/8"	5018	1"
1/2, 3/4, 1 1-1/2 2	65	56/175-10 56/175-10 140/262-10	5017	7/8" 7/8" 1-1/8"	5018	1"
1/2, 3/4, 1 1-1/2 2	70	56/175-10 56/175-10 140/262-10	5019	7/8" 7/8" 1-1/8"	5018	1"
1/2, 3/4, 1 1-1/2 2	75	56/175-10 56/175-10 140/262-10	5020	7/8" 7/8" 1-1/8"	5018	1"
1/2, 3/4, 1 1-1/2 2	80	56/175-10 56/175-10 140/262-10	5018	7/8" 7/8" 1-1/8"	5015	1"
1/2, 3/4, 1 1-1/2 2	85	56/175-10 56/175-10 140/262-10	5019	7/8" 7/8" 1-1/8"	5015	1"
1/2, 3/4, 1 1-1/2 2	90	56/175-5	5012	7/8"	5018	1"
1/2, 3/4, 1 1-1/2 2	95	56/175-5	5014	7/8"	5020	1"
1/2, 3/4, 1 1-1/2 2	100	56/175-5	5015	7/8"	5020	1"
1/2, 3/4, 1 1-1/2 2	105	56/175-5	5014	7/8"	5018	1"
1/2, 3/4, 1 1-1/2 2	110	56/175-5	5016	7/8"	5020	1"
1/2, 3/4, 1 1-1/2 2	115	56/175-5	5016	7/8"	5019	1"
1/2, 3/4, 1 1-1/2 2	120	56/175-5	5016	7/8"	5018	1"

Note: For other speeds use the following formula: $FPM = .387 \times \text{Reducer Output RPM} \times \frac{\text{Drive Sprocket}}{\text{Driven Sprocket}}$

DRIVE COMPONENTS

MOTOR, REDUCER AND SPROCKET COMBINATIONS MODEL XP55B

The following chart shows various combinations of motor horsepower, reducer size and ratio, and sprockets to achieve various speeds on XR50. This chart can be used as a reference to determine what combination a given conveyor unit should have. It can then be used for ordering replacement parts or when changes are required to the existing speed.

HP	FPM	REDUCER FRAME/ SIZE-RATIO	SPROCKET REDUCER	SPROCKET L/S
1/2	20	56/175-40	6D18-7/8	6D20-1 7/16
3/4, 1		56/262-40	6D18-1 1/8	6D20-1 7/16
1 1/2		56/350-40	6D12-1 1/2	6D14-1 7/16
1/2	25	56/175-30	6D18-7/8	6D20-1 7/16
3/4		56/200-30	6D18-1	6D20-1 7/16
1		56/262-30	6D16-1 1/8	6D20-1 7/16
1 1/2		56/350-30	6D16-1 1/2	6D20-1 7/16
1/2	30	56/175-30	6D20-7/8	6D20-1 7/16
3/4		56/200-30	6D20-1	6D20-1 7/16
1		56/262-30	6D20-1 1/8	6D20-1 7/16
1 1/2		56/350-30	6D20-1 1/2	6D20-1 7/16
1/2, 3/4, 1	35	56/175-20	6D18-7/8	6D20-1 7/16
1 1/2		56/262-20	6D18-1 1/8	6D20-1 7/16
1/2, 3/4, 1	40	56/175-20	6D18-7/8	6D20-1 7/16
1 1/2		56/262-20	6D18-1 1/8	6D20-1 7/16
1/2, 3/4, 1	45	56/175-20	6D20-7/8	6D20-1 7/16
1 1/2		56/262-20	6D20-1 1/8	6D20-1 7/16
2		140/350-20	6D14-1 1/2	6D14-1 7/16
1/2, 3/4, 1	50	56/175-15	6D18-7/8	6D20-1 7/16
1 1/2, 2		56/262-15	6D16-1 1/8	6D20-1 7/16
1/2, 3/4, 1	55	56/175-15	6D18-7/8	6D20-1 7/16
1 1/2, 2		56/262-15	6D18-1 1/8	6D20-1 7/16
1/2, 3/4, 1	60	56/175-15	6D20-7/8	6D20-1 7/16
1 1/2, 2		56/262-15	6D20-1 1/8	6D20-1 7/16
3		180/350-15	6D14-1 1/2	6D14-1 7/16
1/2, 3/4, 1	65	56/175-10	6D14-7/8	6D20-1 7/16
1 1/2		56/200-10	6D14-1	6D20-1 7/16
2		140/262-10	6D14-1 1/8	6D20-1 7/16
3		180/262-10	6D14-1 1/8	6D20-1 7/16
1/2, 3/4, 1	70	56/175-10	6D15-7/8	6D20-1 7/16
1 1/2		56/200-10	6D15-1	6D20-1 7/16
2		140/262-10	6D15-1 1/8	6D20-1 7/16
3		180/262-10	6D15-1 1/8	6D20-1 7/16
1/2, 3/4, 1	75	56/175-10	6D18-7/8	6D20-1 7/16
1 1/2		56/200-10	6D18-1	6D20-1 7/16
2		140/262-10	6D16-1 1/8	6D20-1 7/16
3		180/262-10	6D16-1 1/8	6D20-1 7/16
1/2, 3/4, 1	80	56/175-10	6D18-7/8	6D20-1 7/16
1 1/2		56/200-10	6D18-1	6D20-1 7/16
2		140/262-10	6D18-1 1/8	6D20-1 7/16
3		180/262-10	6D18-1 1/8	6D20-1 7/16
1/2, 3/4, 1	85	56/175-10	6D19-7/8	6D20-1 7/16
1 1/2		56/200-10	6D19-1	6D20-1 7/16
2		140/262-10	6D19-1 1/8	6D20-1 7/16
3		180/262-10	6D19-1 1/8	6D20-1 7/16
1/2, 3/4, 1	90	56/175-10	6D20-7/8	6D20-1 7/16
1 1/2		56/200-10	6D20-1	6D20-1 7/16
2		140/262-10	6D20-1 1/8	6D20-1 7/16
3		180/262-10	6D20-1 1/8	6D20-1 7/16
1/2, 3/4, 1	95	56/175-5	6D10-7/8	6D20-1 7/16
1 1/2, 2		56/175-5	6D10-7/8	6D20-1 7/16
3		180/262-5	6D10-1 1/8	6D20-1 7/16
1/2, 3/4, 1	100	56/175-5	6D11-7/8	6D20-1 7/16
1 1/2, 2		56/175-5	6D11-7/8	6D20-1 7/16
3		180/262-5	6D11-1 1/8	6D20-1 7/16
1/2, 3/4, 1	105	56/175-5	6D11-7/8	6D20-1 7/16
1 1/2, 2		56/175-5	6D11-7/8	6D20-1 7/16
3		180/262-5	6D11-1 1/8	6D20-1 7/16
1/2, 3/4, 1	110	56/175-5	6D12-7/8	6D20-1 7/16
1 1/2, 2		56/175-5	6D12-7/8	6D20-1 7/16
3		180/262-5	6D12-1 1/8	6D20-1 7/16
1/2, 3/4, 1	115	56/175-5	6D12-7/8	6D20-1 7/16
1 1/2, 2		56/175-5	6D12-7/8	6D20-1 7/16
3		180/262-5	6D12-1 1/8	6D20-1 7/16
1/2, 3/4, 1	120	56/175-5	6D13-7/8	6D20-1 7/16
1 1/2, 2		56/175-5	6D13-7/8	6D20-1 7/16
3		180/262-5	6D13-1 1/8	6D20-1 7/16

EH5005A

Note: For other speeds use the following formula:
$$\text{FPM} = .526 \times \text{Reducer Output RPM} \times \frac{\text{Drive Sprocket}}{\text{Driven Sprocket}}$$