



TITAN CONVEYORS
735 INDUSTRIAL LOOP ROAD
NEW LONDON WI 54961
920-982-6600
800-558-3616 OUTSIDE WI
920-982-7750 FAX
E-MAIL: sales@titanconveyors.com
Website: www.titanconveyors.com

**MODEL ZPA
ZERO PRESSURE ACCUMULATION CONVEYOR**

**INSTALLATION, MAINTENANCE AND
PARTS MANUAL**

For additional copies of this manual, please visit our website at
www.titanconveyors.com.

Go to Info Center, Select the Maintenance Manual tab
and select the manual for your model conveyor.

<http://www.titanconveyors.com/info-center#823236-maintenance-manuals>

SERIAL NO.



(A) Seller warrants that the material in and the workmanship on the equipment manufactured by TITAN will be free from defects at time of shipment. If during the first year from the date of shipment, the Buyer establishes to the seller's satisfaction that any part or parts manufactured by TITAN were defective at the time of shipment, TITAN will, at its own expense, repair or replace (but not install) replacement parts. For a time purpose of this warranty, one year will constitute 2080 hours of operation based on an 8 hour day. Sellers liability under this warranty is limited to replacement parts only and the seller will make no allowance for corrective work done unless agreed to by the seller in writing. Charges for correction of defects by others will not be acceptable, unless so authorized in writing, prior to the work being performed, by an officer of the company. Damage caused by deterioration due to extraordinary wear and tear (including, but not in limitation, use said equipment to handle products of a size, weight and shape or at speeds or methods which differ from information originally provided), chemical action, wear caused by the presence of abrasive materials or by improper maintenance or lubrication or improper storage prior to installation, shall not constitute defects. Failure to install equipment properly shall not constitute defects. Warranty does not cover consumable items. Warranty does not cover belt tracking or adjustment at installation or periodic adjustment that may be required during normal operation. Refer to the maintenance manual for belt tracking instructions.

(B) Seller has made no representation, warranties, or guarantees, expressed or implied, not expressly set forth on above paragraph. Seller shall not be liable hereunder for any consequential damages included but not in limitation, damages which may arise from loss of anticipated profits or production or from increased cost of operation or spoilage of material.

(C) The components used in manufacture of said equipment which were manufactured by others will carry such manufacturers' customary warranty, which seller will obtain for buyer upon request.

(D) No representative of TITAN has been conferred with any authority to waive, alter, vary or add to the terms of warranty state herein, without prior authorization in writing executed by an officer of the company.

(E) The foregoing is in lieu of any and all other warranties, expressed or implied, or those extending beyond the description of the product.

TITAN ZPA ACCUMULATOR MANUAL

Table of Contents

| | | |
|---------|---|--|
| Page 2 | ..... | Warranty |
| Page 3 | Table of Contents/Return Goods Authorization Policy | |
| Page 4 | ..... | Safety/Safety Decals |
| Page 5 | ..... | Introduction |
| | | I. Receiving |
| | | II. Installation |
| | | Support Assembly |
| Page 6 | ..... | Frame Assembly |
| Page 7 | ..... | Component Checklist |
| Page 8 | ..... | III. Maintenance |
| | | Motors |
| Page 9 | ..... | Reducers |
| Page 11 | ..... | Bearings |
| | | Chains and Sprockets |
| | | Zone Set-up and Adjustment |
| Page 12 | ..... | How ZPA Accumulation Works |
| Page 13 | ..... | ZPA Bow Apart Drawing |
| Page 14 | ..... | ZPA Clutch Assembly & Chain Guard Blow Apart Drawing |
| Page 15 | ..... | ZPA Drive Assembly Blow Apart Drawing |
| Page 16 | ..... | ZPA Wiring Diagram |

Return Goods Authorization Policy

Titan Conveyors has a **RETURN GOODS AUTHORIZATION** Procedure for **all** returned items. With this procedure, we are able to streamline our process and expedite your return.

This will require you to call a Titan salesperson prior to your sending back the item to get a RGA number and receive instructions on how to return the item. Other information needed at this time would be your original purchase order number, Titan serial number, job number or invoice number. This will give our salesperson the pertinent information needed for tracking your part or component. After receiving your RGA number, you will have ten working days to return the item to us for processing. All returned goods must have this RGA number clearly marked on the outside of the box or crate and all paperwork pertaining to the return. Any return without a RGA number, will be refused and returned to you at your cost. Anytime you want to inquire about your return, please reference the Titan RGA number.

Safety

The Safety alert symbol is used with the signal words

 **DANGER**,  **WARNING** and  **CAUTION** to alert you to safety messages.

They are used in safety decals on the unit and with proper operation and procedures in this manual. They alert you to the existence and relative degree of hazards.

Understand the safety message. It contains important information about personal safety on or near the conveyor.



POTENTIALLY HAZARDOUS SITUATION which if not avoided, could result in death or serious injury.



POTENTIALLY HAZARDOUS SITUATION which if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.



POTENTIALLY DESTRUCTIVE SITUATION which if not avoided, may result in damage or reduce the longevity of the equipment.

Safety Decals

ALWAYS replace missing or damaged Safety Decals.

Operational Safety



Keep Hands, feet, hair and loose clothing **away** when conveyor is running



NEVER climb, sit, walk or ride on conveyor



ALWAYS lock out power before servicing to avoid electrical shock.



ALWAYS keep hair and loose clothing away.



ALWAYS keep hands away from conveyor while moving.



Never run conveyor without guards in place.

INTRODUCTION

The management and employees of Titan Conveyors thank you for specifying Titan equipment. This manual will give you the basic information to install and maintain your equipment. If special circumstances or questions come up call Titan at 920-982-6600.

I. RECEIVING

Upon delivery of your Titan conveyor, check the packing slip or bill of lading accompanying the unit. If any components are missing, contact Titan IMMEDIATELY with a description of the missing components along with the conveyor serial number(s). The serial number is found on the serial plate normally positioned by the drive.

Check the unit(s) over carefully upon arrival for damage. If you find any damage note it on the bill of lading. **YOU MUST** also file a claim **IMMEDIATELY** with the carrier.

II. INSTALLATION



WEAR SAFETY GLASSES, SAFETY SHOES, AND GLOVES.

HAVE AREA AROUND INSTALLATION SITE CLEARED OF DEBRIS.

LOCKOUT POWER TO CONVEYOR(S) UNTIL START-UP.

LOOK OUT FOR SHARP EDGES WHILE HANDLING CONVEYOR COMPONENTS.

BE CAREFUL IN AND AROUND THE CONVEYOR(S) DURING INSTALLATION.
ALSO, BE AWARE OF OTHERS IN THE AREA.

ONLY ALLOW QUALIFIED PERSONNEL TO ASSEMBLE AND INSTALL CONVEYORS.

SUPPORT ASSEMBLY

Standard heavy duty supports are shipped assembled. See FIGURE 1 for component breakdown.



IT IS THE CUSTOMERS RESPONSIBILITY TO LAG THE SUPPORTS TO THE FLOOR AFTER THE FOLLOWING INSTALLATION PROCEDURES HAVE BEEN MET.

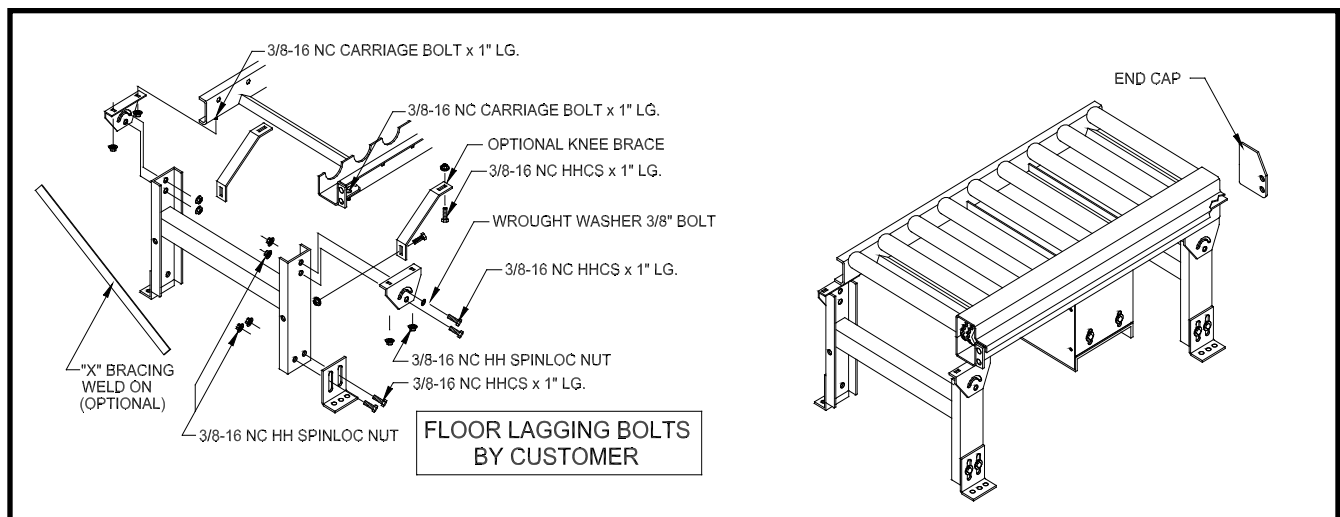


FIGURE 1

Titan Zero Pressure Accumulators have been assembled and test run at the factory so very little adjustment is necessary after the units have been field assembled. The following information will help with initial installation or possible part replacement.

FRAME ASSEMBLY

1. To start with, along side the area where the conveyor is to be installed, layout the frame sections in their proper position according to the ordered description or refer to your copy of the approval drawing. If the frame placement has not been shown Titan recommends that the drive section be placed approximately in the center of the overall conveyor length. This is especially important for conveyors over 30 foot in length.

NOTE: IF SEVERAL SECTIONS OF FRAME ARE TO BE JOINED IN A PARTICULAR SEQUENCE, THEY WILL BE FACTORY MATCHED MARKED. SEE FIGURE 2.

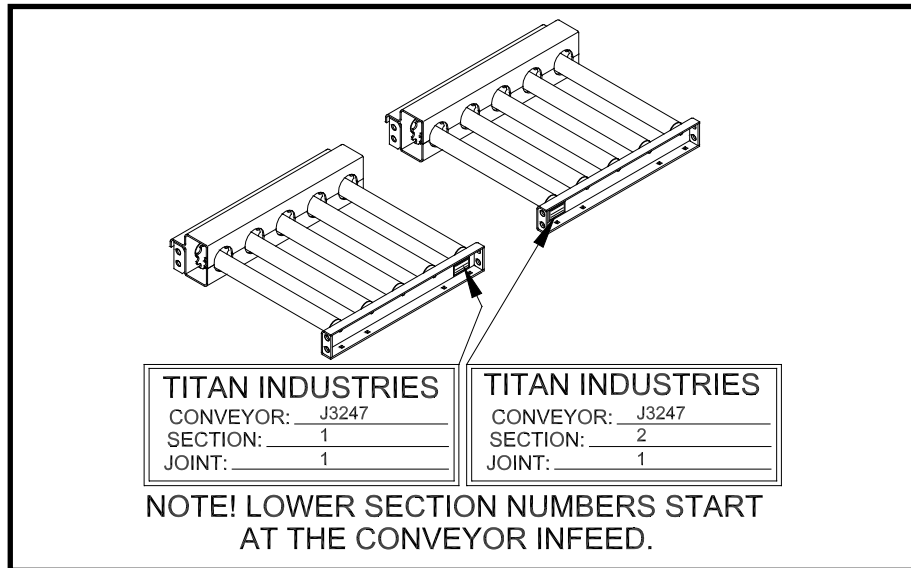


FIGURE 2

2. Layout a line on the floor to represent the centerline of the conveyor. As frame sections are bolted together make sure they remain centered on the line.
3. Bolt together conveyor frames finger tight. Square frames and make sure all frames line up with adjacent sections before securing all bolts. The frames must be level for proper operation. Adjust the supports as necessary for leveling.
4. Take off conveyor chain guards and with strands of chain provided, connect the end rollers from one frame section to another. See FIGURE 3.

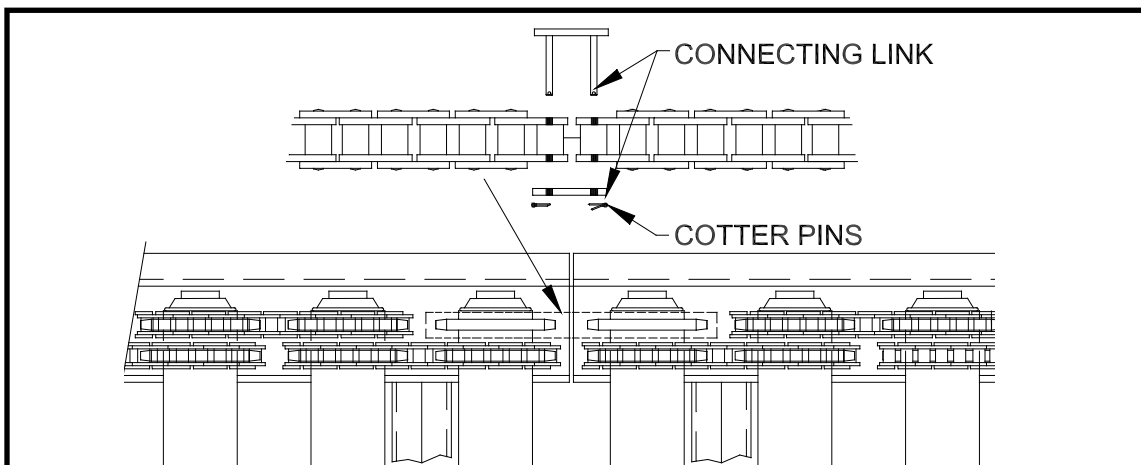


FIGURE 3



WARNING REPLACE CHAIN GUARDS AFTER CHAIN CONNECTION IS COMPLETE.

5. Remove the zone guard and reassemble the zone chains, which were disconnected for shipping (They will have been packaged to the section that they were disconnected from). Use the information in FIGURE 4 shown below to adjust the chain tension blocks. **DO NOT OVERTIGHTEN.** This will cause premature wear of all drive components and require additional horsepower to operate the conveyor.

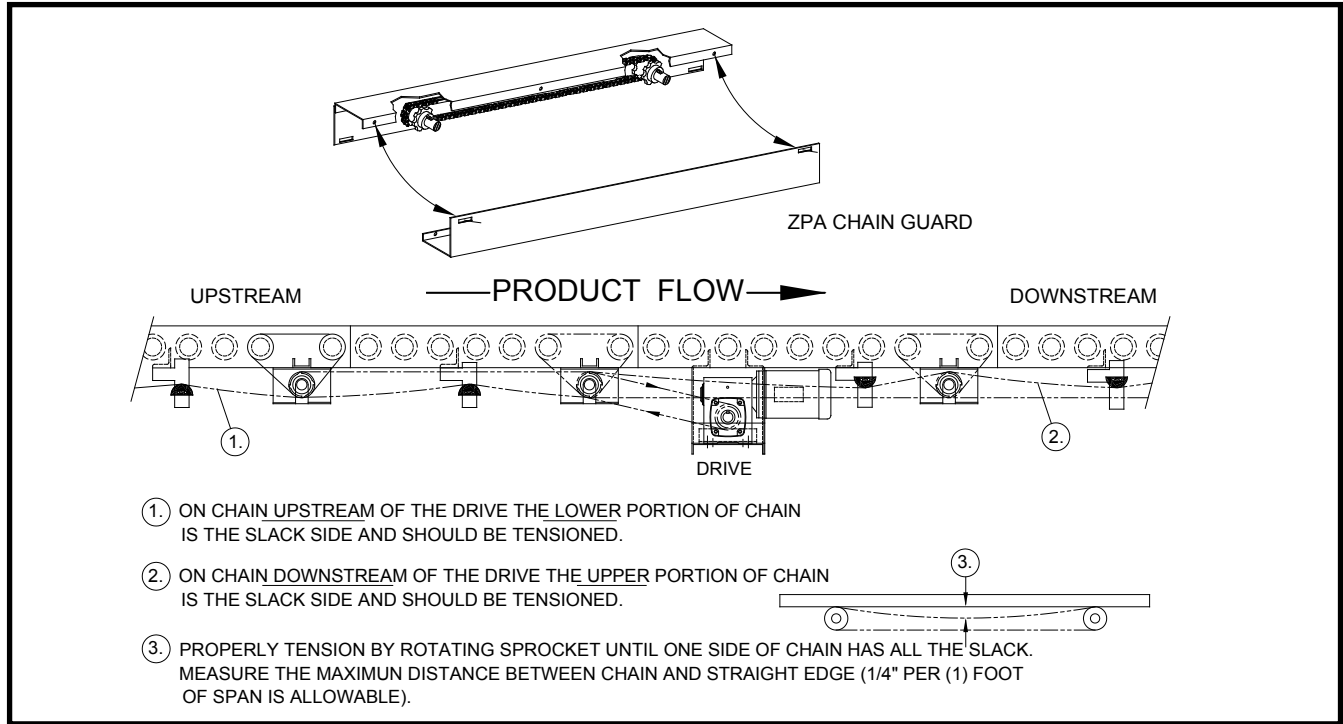


FIGURE 4



WARNING YOU MUST REPLACE ALL ZONE CHAIN GUARDS BEFORE RUNNING THE CONVEYOR.

COMPONENT CHECKLIST

Prior to start up use the following list to double check the conveyor components.

- ✓ **MOTOR** Have a qualified electrician ensure the motor is wired correctly for your power source. Check that motor is securely fastened to the reducer or motorbase.
- ✓ **REDUCER** Check that the proper amount of oil is in the reducer.* **Make sure a vent plug is installed on the reducer.*** (A solid plug is usually installed for shipping.)
- ✓ **BEARINGS** Double check that bearings are fastened securely. Be sure that locking collars are tightened and set screws are screwed in firmly to the shaft.
- ✓ **GENERAL** Check that sprockets with chain and/or sheaves with V-belt are aligned and properly tensioned.*

- Once installation of the conveyor and all of its adjusting elements have been completed, you are ready to run the conveyor empty. Start the conveyor and observe its' operation. Make sure that rollers are not rubbing against the chain guard(s). If you hear any of the chain loops snapping, it could be due to weld or weld spatter in the chain path. In that event, **LOCK OUT THE CONVEYOR**, disconnect the chain loop, clean off the welding spatter, reconnect the chain and run.

III. MAINTENANCE

MOTORS

- CLEANING** - All motors should be kept free of dirt and grease accumulations. Open motors should be periodically vacuumed to remove dust and dirt from the windings.
- VENTILATION** - For best results motors should be operated in an area where adequate ventilation is available.
- TEMPERATURE** - Most of today's smooth body T.E.N.V. and T.E.F.C. motors run hot to the touch. As long as maximum ambient temperatures are not exceeded, and more importantly, ampere draw is within the allowable range, there should be no need to worry. (Both of these limits are found on the motor nameplate.)
- LUBRICATION** - Most electric motors are lubricated for life and under normal conditions require no more lubrication. Under severe conditions where additional lubrication is required, use the following chart as a guide.



NOTE: The following chart is based on motors with grease lubricated bearings, running at speeds of 1750 R.P.M. or less, and operating within a ambient temperature range of between 0 degrees F. to 120 degrees F.

| CONDITION | LUBRICATING FREQUENCY |
|---|-----------------------|
| Normal 8 hr. day Light Loads | 2 to 3 years |
| Heavy 24 hr. Day Heavy Loads Dirty Conditions | 1 Year |
| Extreme Shock Loads High Temperatures | 3 to 6 Months |

Typical lubricants that can be used:

Chevron Oil Co. - SRI #2
 Shell Oil Co. - Alvania #2, Dolium R
 Texaco Inc. - Premium RB

Gulf Refining Co. - Precision #2 or #3
 Mobile Oil Co. - Mobilux Grease #2
 Sinclair Refining Co. - A.F. #2

REDUCERS

The following reducer information is concerned primarily with wormgear reducers. If your conveyor is equipped with another type, refer to the manufacturer's recommendations for installation and maintenance sent along at time of shipment.

1. **ASSEMBLE / DISASSEMBLE MOTOR TO REDUCER** - Because many of today's motor keyways are cut with a sidemill cutter, the following assembly instructions should be followed to insure a trouble-free fit between motor and reducer. First, place the key into the reducer keyway. Second, line up the motor keyseat with the key and push the motor shaft into the reducer bore. Third, finish assembly by bolting the motor to the reducer flange. This insures that the key does not slide back in the motor keyseat. See FIGURE 5.

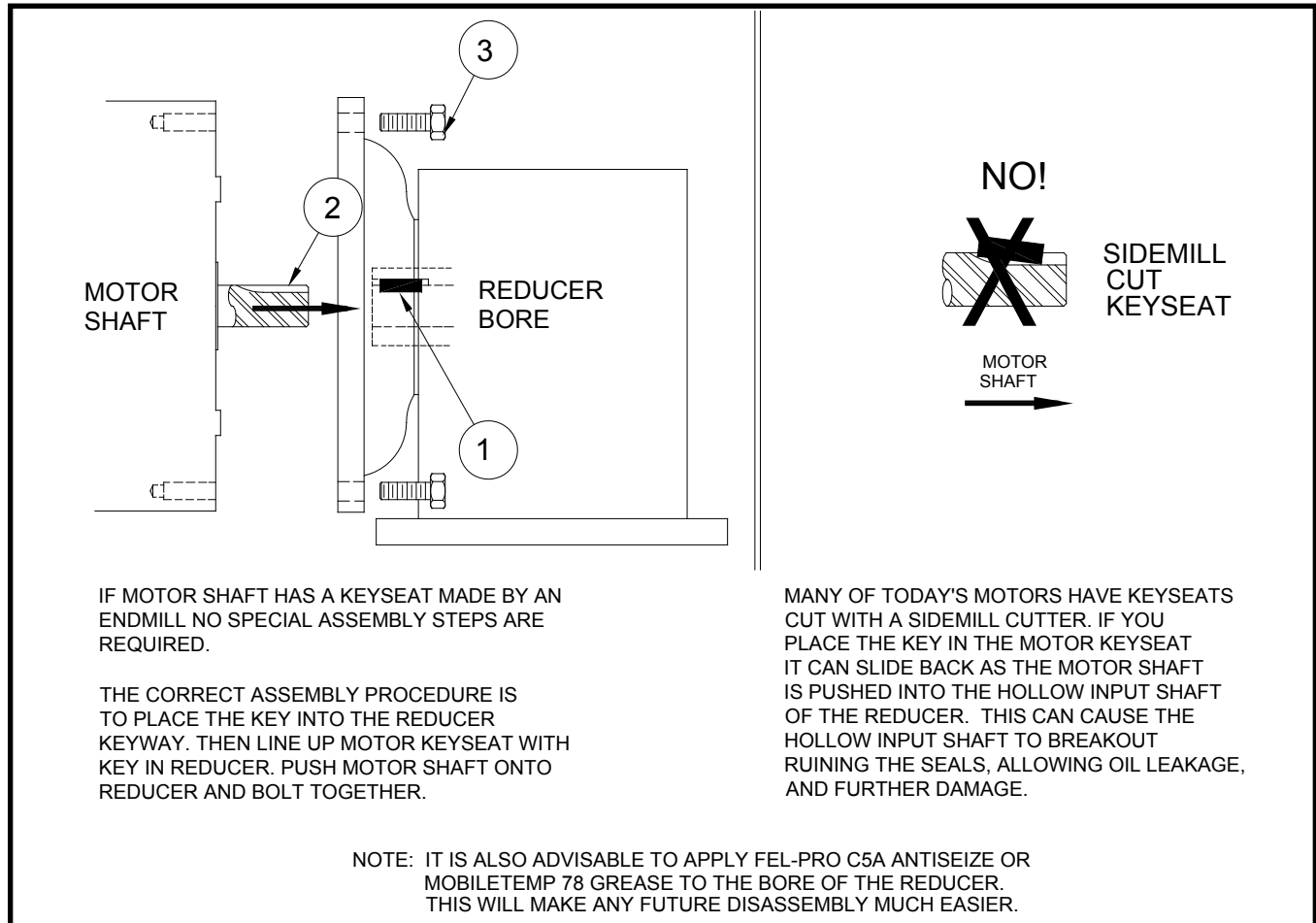
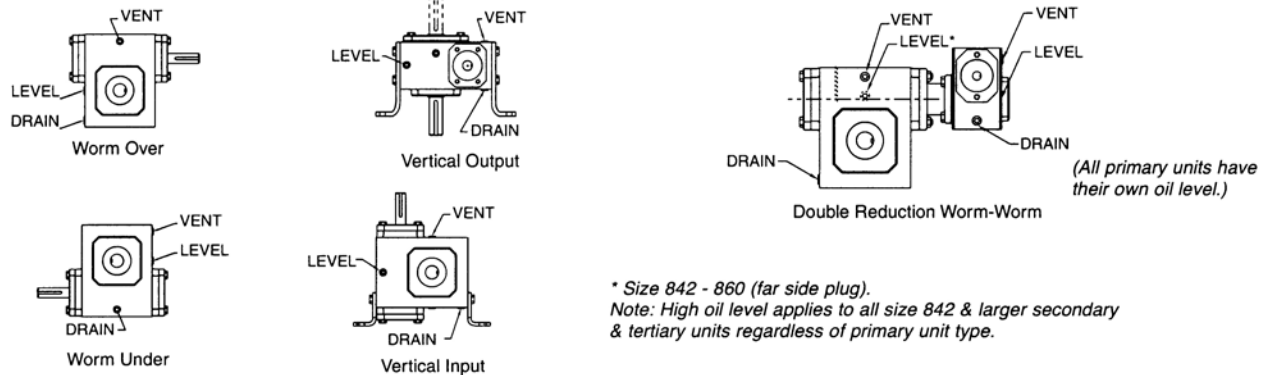


FIGURE 5

2. **VENTILATION** - During normal operation gear reducers build up heat and pressure that **MUST** be vented to protect the seals and gears. If not installed at Titan, a brass vent plug contained in a small plastic bag, will be put in a box or larger bag along with fasteners sent loose for use during field installation. Remove the top most drain plug (refer to FIGURE 6 for the position of your reducer) and install the vent plug securely in place.

Standard Gear Reducer Mounting Positions & Vent Plug, Level and Drain Locations



Oil Capacities (ounces) - Standard Units

| Mounting Position | UNIT SIZE | | | | | | | | | | | | | |
|-------------------|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|--------|-------|
| | 813 | 815 | 818 | 821 | 824 | 826 | 830 | 832 | 842 | 852 | 860 | 870* | 880* | 8100* |
| 1 - Worm Over | 4 | 12 | 12 | 20 | 24 | 40 | 56 | 72 | 112 | 188 | 312 | 35 | 48 | 72 |
| 2 - Worm Under | 8 | 16 | 20 | 28 | 40 | 60 | 84 | 108 | 152 | 304 | 328 | 32-3/4 | 51-1/4 | 80 |

* Shipped Dry

16 Oz. = 1 pint
2 pints = 1 quart
4 quarts = 1 gallon
1 gallon = 128 oz. = 231 Cu. in.

FIGURE 6

- CLEANING** - After approximately two to three weeks of operation the reducer **MUST** be drained, flushed out, and refilled to the proper level with fresh oil. (This is done to remove brass particles caused during the normal wear-in period of the worm gear.) Afterwards, the oil should be changed in your reducer every 2500 hours or every 6 months, whichever ever occurs first.



Where high temperatures and/or dirty atmosphere exists more frequent changes may be necessary. Periodically check reducer to ensure that the proper level of oil is in the reducer. Too little oil will cause accelerated wear on the gears. Too much oil can cause overheating, seal deterioration, and leakage.

- LUBRICATION** - The precision - made gears and bearings in our reducers require high-grade lubricants of the proper viscosity to maintain trouble- free performance. All standard reducers ordered from the factory are filled with ISO viscosity grade **Mobil Glygoyle 460 polyalkalene glycol (PAG)** lubricant. If oil needs to be added or changed, **ONLY** compatible polyglycol lubricants should be used. Contact the factory for more information.
- TEMPERATURE** - Most Titan units are supplied with worm gear reducers. These units may run at temperatures between 100 degrees to 200 degrees F. (Higher temperatures are especially common during start up). There is **NO NEED TO WORRY** unless temperatures exceed 200 degrees F.
- GENERAL MAINTENANCE** - Regular inspection to insure the reducer bolts and screws are tight, correct alignment of shaft and/or coupling, no major oil leaks, no excessive heating and no unusual vibration or noise will insure maximum life and performance of the reducer.

BEARINGS

1. **LUBRICATION** - Bearings used on Titan conveyors are normally pre-lubed for life. If customer requested re-lube bearings are provided, the use of a #2 consistency lithium based grease is advised.

Greasing frequency should be as many times as necessary to maintain a small film of grease leaking at the seals. This will protect against foreign materials entering the bearing. The following list is provided to aid you in acquiring the proper grease or an equivalent.

| NORMAL DUTY | HEAVY DUTY |
|----------------------|-----------------------|
| Texaco - Multifak #2 | Sun - Prestige 742EP |
| Mobile - Mobilux #2 | Exxon - Lidok #2EP |
| Amoco - Lithium MP | Arco - Litholene HEP2 |
| Shell - Alvania #2 | Shell - Alvania #2EP |

2. **REPLACEMENT** - If replacement of bearings become necessary remember to clean off the shaft, file smooth any grooves or set screw marks, and oil the shaft before slipping on the new bearing.



IF BEARING DOES NOT SLIDE ON EASILY, USE A SOFT METAL BAR TO TAP AGAINST THE INNER RACE TO ASSEMBLE.

3. **GENERAL** - Set up a weekly check on all bearings to ensure they remain tightly bolted down, set screws remain fastened securely, and are properly lubricated.

CHAIN & SPROCKETS

For longest chain life a constant film of oil is recommended. We recommend a good quality non-detergent petroleum base oil. Use the chart below.



SHUT OFF CONVEYOR BEFORE REMOVING GUARDS TO APPLY OIL.

| TEMPERATURE | RECOMMENDED OIL VISCOSITY |
|-----------------------------|---------------------------|
| 20 degrees - 40 degrees F | SAE 20 |
| 40 degrees - 100 degrees F | SAE 30 |
| 100 degrees - 120 degrees F | SAE 40 |
| 120 degrees - 140 degrees F | SAE 50 |

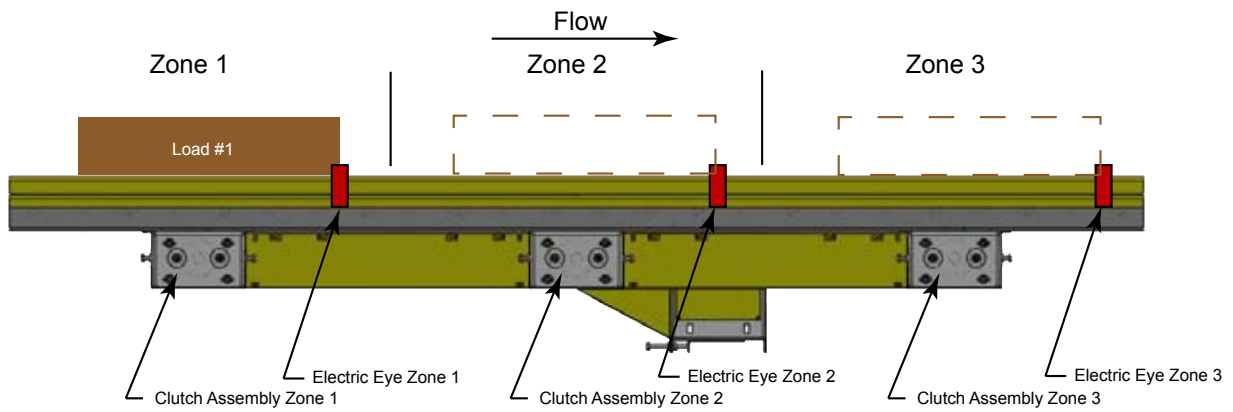


REMEMBER - ALL GUARDS AND BOTTOM PANS, IF PROVIDED, MUST BE REPLACED BEFORE RUNNING CONVEYOR. TITAN INDUSTRIES IS NOT RESPONSIBLE FOR INJURIES CAUSED BY NOT COMPLYING WITH SAFETY INSTRUCTIONS.

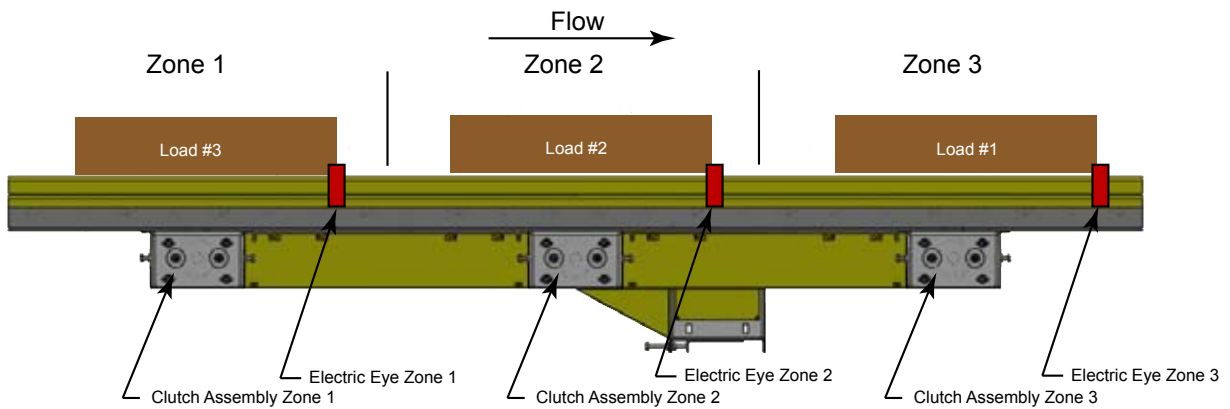
IV. ZONE SETUP AND ADJUSTMENT

If adjustment of a zone is required during set-up or after part replacement refer to the separate Manuals for Zone Interface Module and ZoneControl™ Power Supply.

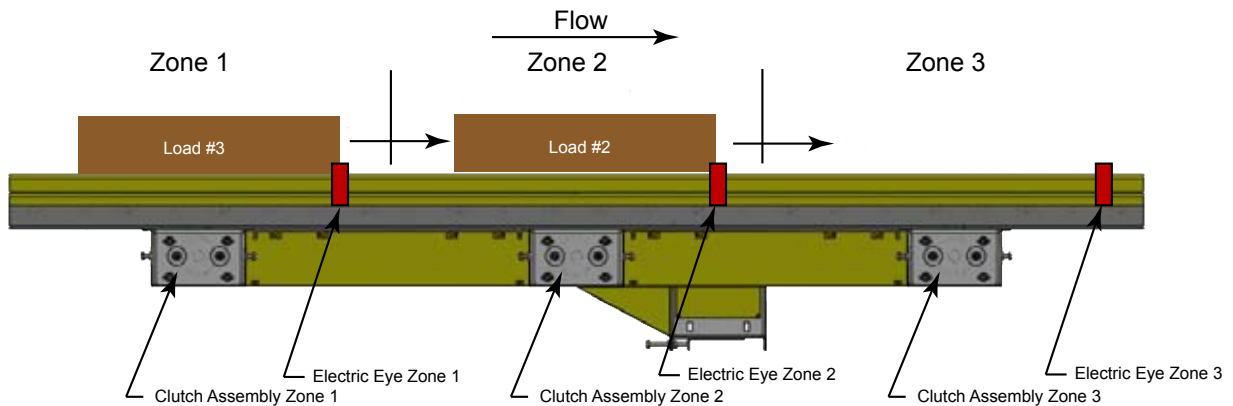
How the Zero Pressure Accumulation Conveyor Works



When Load #1 moves to Zone 1 it will continue through Zone 2 to Zone 3 if there are no other loads in the way.



As Load #1 moves through empty Zone 2 and into zone 3, Loads #2 and #3 will move into Zones 2 and Zone 3.

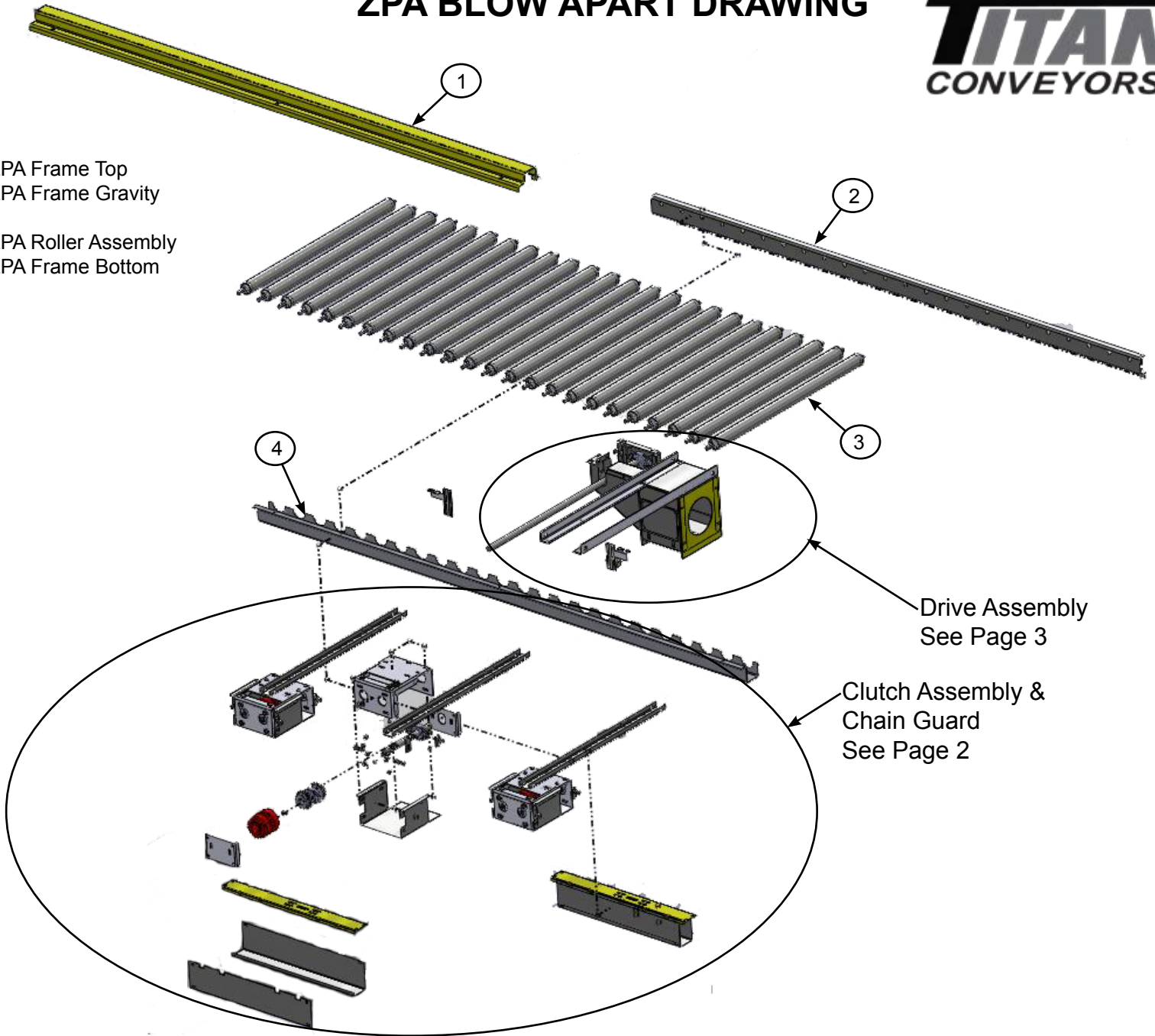


As Load #1 is emptied from Zone 3 Loads #2 and #3 will move forward so that Load #2 will occupy Zone 3 and Load #3 will move to Zone 2 and Load #4 will move into Zone 1.

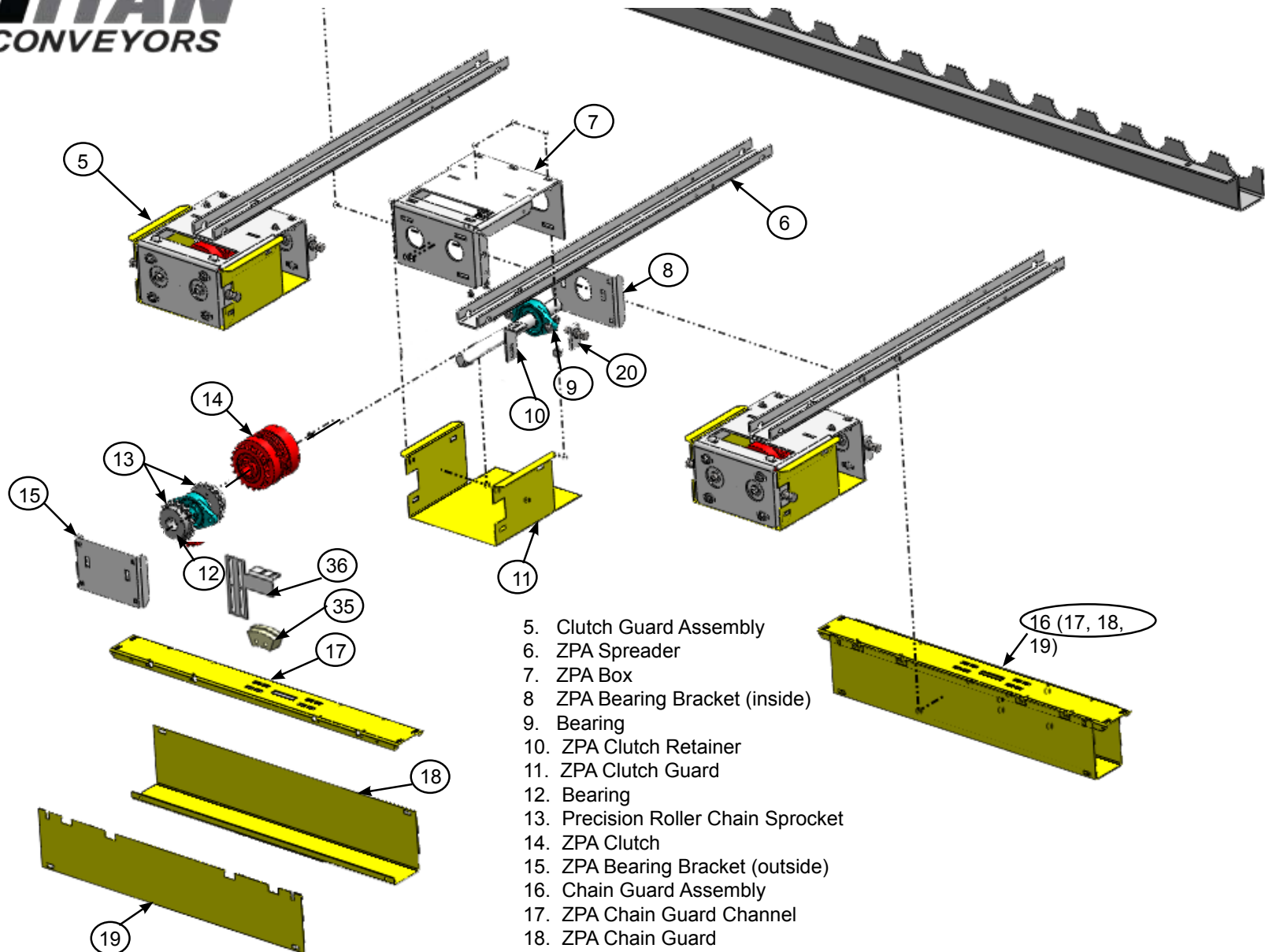
ZPA BLOW APART DRAWING



- 1. ZPA Frame Top
- 2. ZPA Frame Gravity Side
- 3. ZPA Roller Assembly
- 4. ZPA Frame Bottom

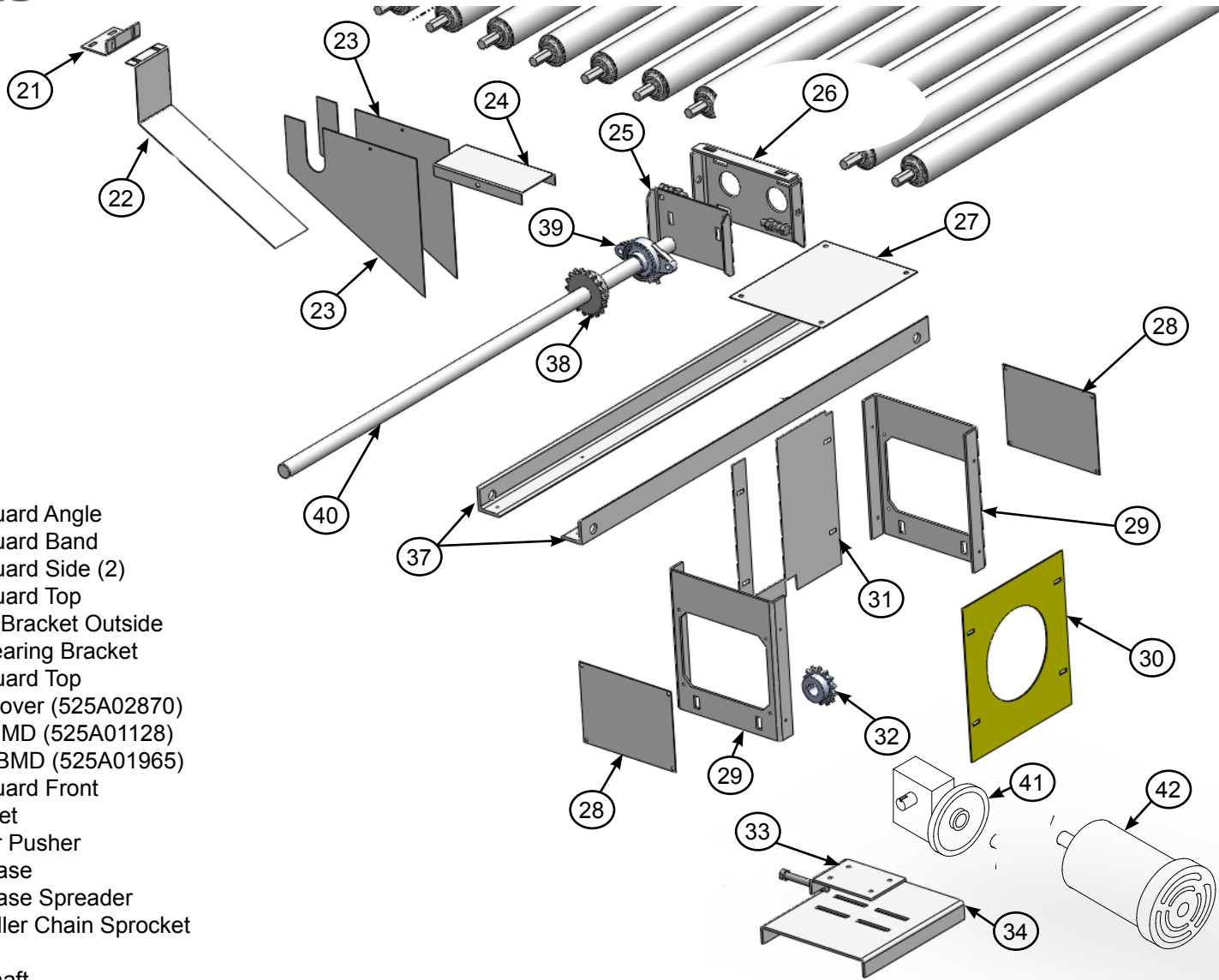


ZPA CLUTCH ASSEMBLY & CHAIN GUARD



- 5. Clutch Guard Assembly
- 6. ZPA Spreader
- 7. ZPA Box
- 8. ZPA Bearing Bracket (inside)
- 9. Bearing
- 10. ZPA Clutch Retainer
- 11. ZPA Clutch Guard
- 12. Bearing
- 13. Precision Roller Chain Sprocket
- 14. ZPA Clutch
- 15. ZPA Bearing Bracket (outside)
- 16. Chain Guard Assembly
- 17. ZPA Chain Guard Channel
- 18. ZPA Chain Guard
- 19. ZPA Chain Guard Front
- 20. Pusher Tab (104A02042)
- 35. ZPA Chain Tensioner
- 36. ZPA Take-up Bracket

ZPA DRIVE ASSEMBLY



- 21. ZPA Drive Guard Angle
- 22. ZPA Drive Guard Band
- 23. ZPA Drive Guard Side (2)
- 24. ZPA Drive Guard Top
- 25. ZPA Bearing Bracket Outside
- 26. ZPA Drive Bearing Bracket
- 27. ZPA Drive Guard Top
- 28. BMD Plate Cover (525A02870)
- 29. Drive Plate BMD (525A01128)
- 30. Guard Back BMD (525A01965)
- 31. ZPA Drive Guard Front
- 32. Drive Sprocket
- 33. ZPA Reducer Pusher
- 34. ZPA Motor Base
- 37. ZPA Motor Base Spreader
- 38. Precision Roller Chain Sprocket
- 39. Bearing
- 40. ZPA Drive Shaft
- 42. Reducer
- 43. Motor

ZPA WIRING DETAIL

Photoelectric Proximity Switch with individual feed Operating Instructions

Safety Specifications

- Read the operating instructions before starting operation.
- Connection, assembly, and settings only by competent technicians.
- Protect the device against moisture and soiling when operating.
- No safety component in accordance with EU machine guidelines.

Proper Use

The WTR 1 is an opto-electronic sensor with a logic device and an optional valve unit or valve connection option. It is used for contactless detection of objects on conveyor belts and for controlling backup spots.

Starting Operation

1 Connect and secure cable receptacle tension-free. The following apply for connection in B: brn=brown, blu=blue, blk=black, wht=white; FR = conveyor direction. Connect WTR to operating voltage (see type label). Power supply for additional WTR: Connect the cable receptacle of the first device with the equipment plug of the respective next WTR. The cable receptacle of the last WTR (n) is not connected to anything. Mount the WTR with the mounting holes between the rollers at the suitable bracket below the conveyor level (e.g., SICK mounting bracket). Pay attention to the scanning distance (A), conveyor direction, angle of dispersion (5 α) and the distance to conveyed products (B)/blind area.

Starting operation of valve:

Connect the valve to the compressed air, and loop the compressed air tubes as in a closed-loop system. Close the compressed air outlet of the last valve (WTR (n)). Connect the work pipe to the cylinder; apply compressed air.

2 Check application conditions such as scanning distance, size and reflectance of object to be detected as well as of background, and compare with characteristic in diagram. (x=scanning distance, y=transition range between set scanning distance and reliable background suppression (z) in % of scanning distance, Ro=reflectance of object, Rh=reflectance of background). Reflectance: 6%=black, 18%=gray, 90%=white (based on standard white to DIN 5033).

3 Adjustment of light reception: Set scanning distance to max. Position object. Position light spot on object. Signal strength indicator should light up. If it does not light up, readjust and/or clean WTR and/or check application conditions. Setting scanning distance: Remove object, signal strength indicator should go out. If does not go out, turn switch towards min. until it goes out. Set switch to min. Position object. Turn switch towards max. until signal strength indicator lights up.

4 Logical operating method: For systems that convey using air: Valve closed currentless (N.C.).

Single feed: Conveyed product runs through the complete feeder area and is only stopped at WTR (n). If two neighboring backup spots are occupied, the conveyed product is stopped: A gap is created between the conveyed products. Status of WTR (n): No conveyed product in beam / no light reception / output operational, valve with current and open for air / air flows into the cylinder and the rollers are braked. Status of WTR (n): Conveyed product in beam. -> Status of WTR (n-1): Conveyed product in beam / light reception / output operational. Valve currentless and blocks air / cylinder is deaerated and the rollers are braked. The conveyed product is stopped.

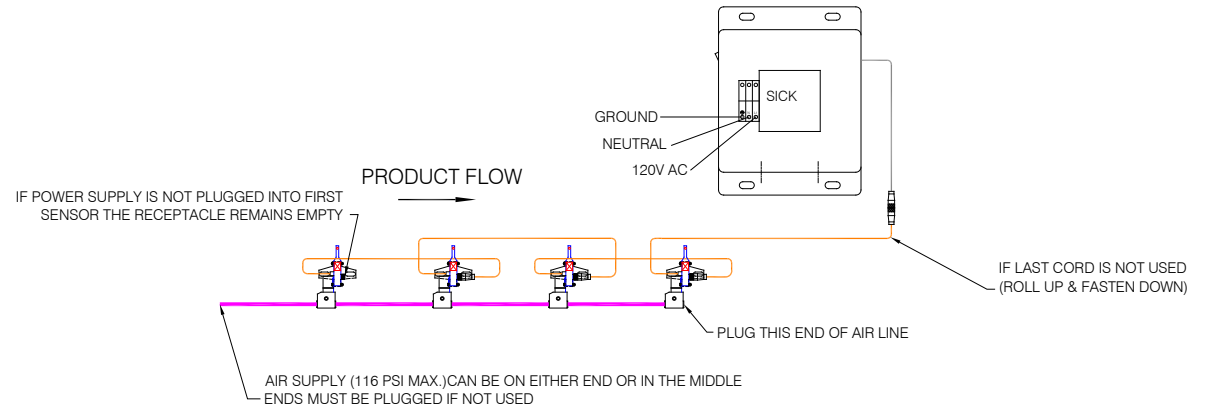
Options

The WTR 1-P431 devices have a contamination control (alar alarm m) m), that indicates when the optimum light reception is no longer guaranteed (e.g., due to soiling or adjustment problems). The LED signal strength indicator then blinks.

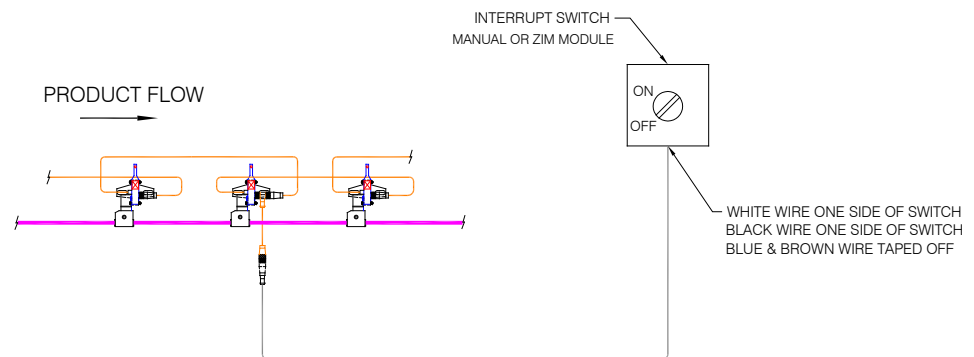
Maintenance

SICK photoelectric switches do not require any maintenance. We recommend that you clean the optical interfaces and check the screw connections and plug-in connections at regular intervals.

NOTE: POWER SUPPLY CAN BE PLUGGED INTO EITHER END OR BETWEEN ANY TWO SENSORS WITH A TEE CONNECTOR



NOTE: WHEN INTERRUPT SWITCH IS "ON" CONVEYOR WILL RUN NORMALLY. WHEN INTERRUPT IS "OFF" THE SENSOR REMAINS BLOCKED (EVERYTHING UPSTREAM WILL REMAIN STOPPED) UNTIL IT IS OVERRIDDEN BY TURNING THE SWITCH TO "ON". INTERRUPT CAN BE PLUGGED INTO ANY SENSOR.



TITAN CONVEYORS
735 INDUSTRIAL LOOP ROAD
NEW LONDON WI 54961
920-982-6600
800-558-3616 OUTSIDE WI
920-982-7750 FAX
E-MAIL: sales@titanconveyors.com
Website: www.titanconveyors.com

**Contact Your Distributor or Titan Directly
for Further Information on Other Titan Conveyor Products**

- ***Slider Bed Conveyors***
- ***Floor to Floor Belt Conveyors***
- ***Parts Conveyors***
- ***Gravity Roller Conveyors***
- ***Line Shaft Conveyors***
- ***Chain Driven Live Roller Conveyors***
- ***Belt Driven Live Roller Conveyors***
- ***Zone Accumulation & Special Applications***
- ***Hinged Steel Belt Conveyors***
- ***Slat Conveyors***
- ***Wire Mesh Conveyors***
- ***Multi-Strand Conveyors***
- ***Solid Waste Belt Conveyors***
- ***Bulk Handling Conveyors***
- ***Special Projects***