

# TFC-520 ROLLER COMPACTOR



## INSTALLATION - MAINTENANCE INSTRUCTIONS



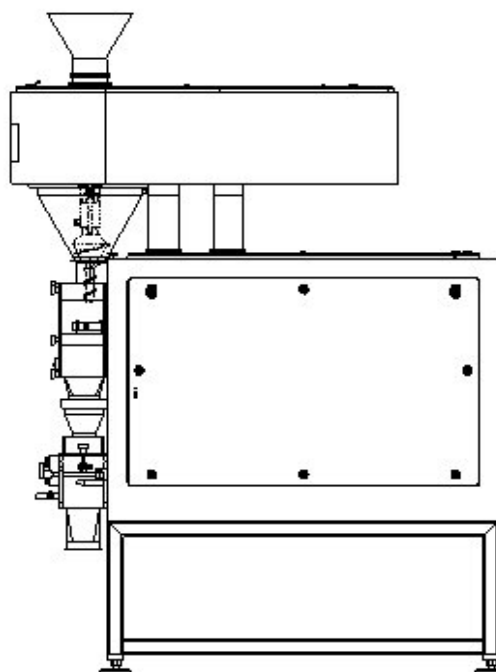
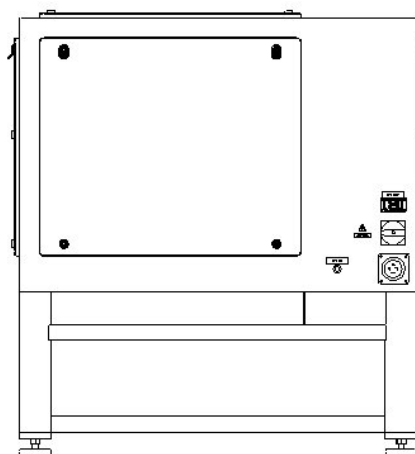
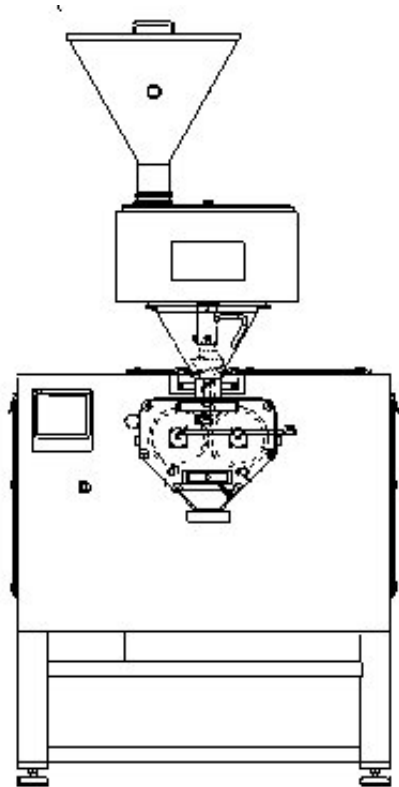
YOUR GLOBAL EQUIPMENT AND PROCESSING SOLUTION

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## INTRODUCTION

The Vector Roller Compactor is a compacting machine designed to produce a dry compacted granulation. Powder is charged into a hopper where a screw feeder pre-compacts, de-aerates and feeds the powder into a gap between two cantilevered compacting rolls. The compacting rolls process the powder into a compacted sheet that is then fed into a knife mill.



## GENERAL INFORMATION

To assure successful operation of this machine, the material presented in this publication must be thoroughly read and understood BEFORE proceeding.

Our goal is to provide you with the most complete and accurate information as possible to help you operate and maintain your machine. The examples and diagrams are included solely for illustrative purposes. Should you find any errors, please be sure to contact us so we may continue to improve the quality of our publications.

Throughout this manual, you will find warnings, cautions and notes. These items are to make you aware of safety considerations.



Warnings - Indicate a potentially hazardous situation with specific procedures or policies that should be followed to avoid serious injury or death.



Cautions - Indicate a potentially hazardous situation with specific procedures or policies that should be followed to avoid minor or moderate injury to personnel OR damage to equipment.



Notes - Indicate specific information that will benefit the reader in the use and care of the machine.

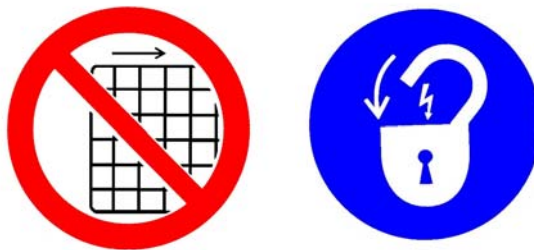
## **GENERAL INFORMATION**

### **LABELS**

Following is a listing of the various labels used on the Roller Compactor. Please become familiar with each label and its meaning.

### **DO NOT OPERATE WITH GUARDS OR COVERS REMOVED**

### **LOCK OUT ELECTRICAL POWER**



This combination of labels will be found on all the removable covers on the machine.

The first label informs the operator and service personnel that the covers or guards are NOT to be removed during operation of the equipment.

The second label tells personnel that when the guards or covers are removed for servicing, that electrical power should be locked out to avoid injury.

### **ELECTRICAL SHOCK HAZARD**

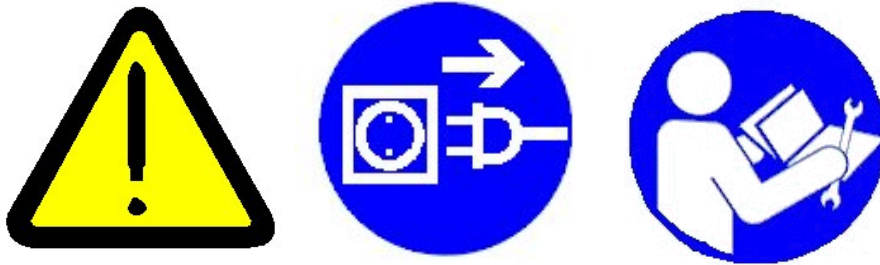


This label cautions the operator to be aware of the hazard of electric shock. The hazard exists when the guards or covers are removed from the machine or the doors to electrical panels are opened. The operator should take extreme care to avoid the hazard of electric shock, usually by removing the power supply from the area or taking extra precautions for safety.

## **GENERAL INFORMATION**

### **LABELS (Continued)**

**DISCONNECT POWER SUPPLY  
BEFORE SERVICING CONSULT SERVICE MANUAL**



The first label cautions the operator to pay attention.

The second label tells the operator to disconnect the power supply.

The third label tells the operator to consult the service manual before performing any service or maintenance on this machine.

## **SPECIFICATIONS**

Knife Mill Motor .....	3 HP 3600 RPM
Knife Mill Variable Rotational Speed .....	360 - 3600 RPM
Mill Perforated Plates or .....	Assorted sizes from .020" -.093" (0.5 - 2.3 mm)
Rasping Plates .....	Assorted sizes from .046 - .079 mm
Roll Motor .....	7.5 HP 1800 RPM
Roll Variable Speed .....	3 - 24 RPM
Roll Gap .....	.02" - .25"
	(0.5mm - 6.0mm)
Rolls - Cantilevered, variable roll gap .....	"S" type (serrated profile)
.....	"DP" type (smooth with die & punch profile)
.....	"DPS" type (serrated with die & punch profile)
Compacting Roll Force-Maximum .....	15 tons (13608 kg)
Screw Motor .....	3 HP 1800 RPM
Screw Variable Speed .....	5 - 41 RPM
Screw .....	Vertical tapered-to-straight
Hopper Volume .....	0.424 cu. ft. (12 liters)
Max. Rated Capacity .....	(220 lbs/hr) (100 kg/hr)*
Approx. Weight .....	2200 lbs. (998 Kg)
Overall Dimensions .....	See Spec Drawing

\*NOTE: Capacity will vary depending on the bulk density of material. Capacities shown are based on tests using lactose with a compacted bulk density of 0.85gr/cm<sup>3</sup>.

## **SYSTEM DESCRIPTION**

The Roller Compactor consists of the following assemblies:

Feed Screw/Hopper Assembly

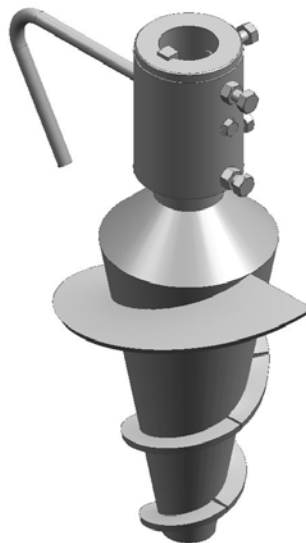
Roll Assembly

Control Cabinet/Operator Interface

### **FEED SCREW/HOPPER ASSEMBLY**

The feed screw/hopper assembly consists of an twelve (12) liter hopper, a feed screw, a screw motor and a stainless steel scraper. Product is placed into the hopper. The screw motor rotates the feed screw and scraper in the hopper, moving the product through the bottom of the hopper into the top seal of the roll assembly. The feed screw is used for the processing of both high and low density powders.

The vertical tapered feed screw rotates to feed material into the roll assembly at a uniform rate. The speed of the feed screw can be adjusted as needed.



**Figure 1. Feed Screw**



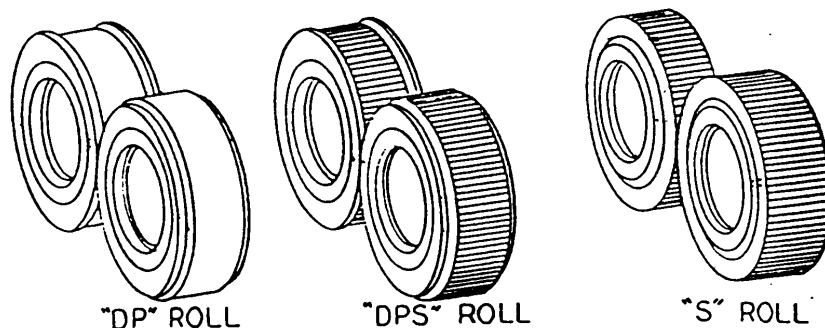
## SYSTEM DESCRIPTION

### ROLL ASSEMBLY

After product has left the hopper, it enters the top seal of the roll assembly. The top seal and side seals surround the pressure rolls keeping the product contained.

The Roll Assembly, located inside the machine cabinet consists of two pressure rolls supported by four (4) roll bearings. The right roll is adjustable. Under each roll is an under scraper. These scraper blades ride against the face of each pressure roll, cleaning product residue from the rolls.

Three (3) different sets of pressure rolls are available to adapt the equipment to the product being compacted: DP, DPS and S rolls.



**Figure 2. Pressure Rolls**

The DP and DPS pressure rolls are designed to provide a uniform distribution of force to the powder, creating a consistent ribbon of product. The machined profile on the sides of the rolls minimizes leakage, un-compacted powder and undersized product production.

## **SYSTEM DESCRIPTION**

### **ROLL ASSEMBLY (Continued)**

The "DP" pressure rolls should be used with materials that are cohesive or compress easily. The smooth surface minimizes any product from building up on rolls.

The "DPS" pressure rolls should be used with materials that are inherently lubricous or do not compress easily and are not fed through the rolls easily. The roll surfaces are grooved to prevent material slippage.

The "S" pressure rolls can be used on materials with characteristics similar to those described for the "DPS" rolls. The "S" rolls do not have the machined profile the other rolls have. The complete roller surface is used for compacting, increasing throughput.

### **CONTROL CABINET / OPERATOR INTERFACE PANEL**

The Control Cabinet contains the controllers and relays necessary for the operation of the roller compactor.

The operator controls most of the functions of the roller compactor from the Operator Interface Panel. Instructions for the operator controls are explained in detail in the Operator Interface section of this manual.

## **SYSTEM DESCRIPTION**

### **MILL**

The Mill is used for further processing of the compacted sheet. Comprised of a variable speed drive, a sixteen blade rotor and multiple sizes of perforated plates (or a rasping rotor and multiple sizes of perforated “rasping” plates), the mill processes the compacted sheet into the desired granules. The size of the granule is dependent on the rotation speed of the mill, perforated plate size, and product composition.

### **PROCESS VARIABLE PRINTING OPTION**

Process variable printing provides a permanent printed record of the data displays on the monitor. This option includes a printer and all necessary cabling for interfacing with the roller compactor.

### **VACUUM DE-AERATION**

The de-aeration system aids in the removal of entrained air in the uncompressed powder as it moves through the compaction zone. Compressed air moving through an eductor past a de-aeration port creates a vacuum at the port in the side seal to remove air from the powder.

### **HOPPER FUNNEL**

A Hopper Funnel is used to assist powder transfer from the customer-supplied powder feed system to the TFC-520 screw hopper. Removable for cleaning.

## INITIAL SET-UP

### SHIPMENT CHECK

Upon arrival of the shipment check for any shortages or damage. Any spare screws, rolls, scrapers or perforated plates are shipped in separate cartons.

### INSTALLATION

If applicable, remove roller compactor from transport base and set in prepared installation location. The machine should be set on a level surface.

### ELECTRICITY



#### **WARNING!**

**Electrical installation of this equipment must be in accordance with all state and local electrical codes as well as in compliance with the National Electric Code (NEC™). Failure to install this equipment properly could result in damage to equipment, property and loss of life.**

Please check the serial number nameplate and/or specific project electrical drawings for voltage/amperage requirements.

The customer is responsible for supplying and installing the primary power cable from the machine plug for connection to the facility main power supply. Vector recommends a 12-foot (3.5m) length of Type SO cord (8awg).

## **INITIAL SET-UP**

### **MAIN AIR**

Main air supplies air to the pneumatic controls and other controls on the machine. A 3/8" T quick connection on the rear of the unit is provided for connection to the customers' main air supply.

90 PSIG @ 2 SCFM( 6 BAR @ 57 LPM)

### **WATER SUPPLY- OPTIONAL**

The compacting rolls are cooled by a water circulation system.

The customer makes the water supply connections at the rotary joints on the compacting rolls. On and OFF valves are provided for controlling the water supply to the rolls.

Maximum Water Pressure	50 PSI (3.4 BAR)
Average Water Usage	7 - 12 GPM (75.7 - 113.55 L/Min)
Average Water Temperature	40 - 60°F (4 - 16°C)

### **PRINTER - OPTIONAL**

If the process variable printing option was purchased, the printer should be placed near the rear of the unit for connection. Cabling is provided and should be plugged into the top data port on the rear of the unit. This connection should be made prior to power initialization of the machine.

Please refer to the TFC-520 specification drawing for more detail.

## **INITIAL SETUP**

### **WASH PORTS - OPTIONAL**

When optional wash ports have been purchased, the customer supplies the wash hoses and spray guns and connects to the 1-1/2" tri-clamp connections located in various positions on the TFC-520 Roller Compactor. Wash ports can be found on either side of the pressure rolls, on the side of the hopper and on the sides of the knife mill (if purchased).

## NITROGEN CHARGED ACCUMULATOR

The hydraulic system comes equipped with a bladder accumulator to dampen any pulsation of pressure applied to the pressure rolls during operation. The accumulator is charged with N<sup>2</sup> gas (nitrogen).



### CAUTION!

**Operating this equipment with the accumulator shut off, without a nitrogen charge, or below the nitrogen charge pressure, will cause large fluctuations in the pressure roll force. These fluctuations will result in comparable variations in the compaction of powder, and could affect the quality of the compaction.**

## ADJUSTING CHARGE PRESSURE

Usually, nitrogen losses on the accumulator are very low. However, a regular check of the gas pressure is recommended. The charge pressure for the TFC-520 Roller Compactor should read 550 PSI (+/- 25PSI). If the pressure readings DO NOT fall within this range, the charge pressure should be adjusted.



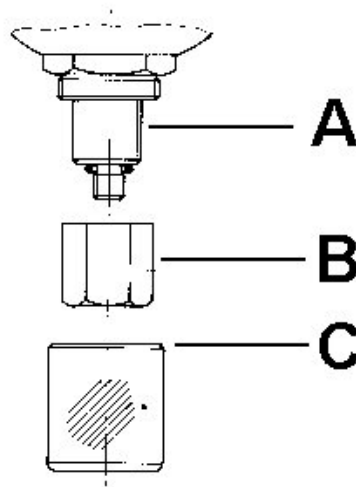
### WARNING!

**Use extreme care when handling pressurized tanks during charging of the accumulator. Ensure that all connections are properly made between nitrogen supply and accumulator tanks. Safety glasses should be worn when charging accumulator!**

The pre-charge pressure as shown on the accumulator body, must be set after every new installation or repair and then checked at least once during the following week. If no nitrogen loss is detected, a further check should be made after approximately four months. If after this period no change in the pressure is found, a yearly check should be sufficient.

**NITROGEN CHARGED ACCUMULATOR****ADJUSTING CHARGE PRESSURE (Continued)****PREPARATION FOR CHARGING/TESTING**

Prior to each testing, charging or topping-up of nitrogen, the accumulator has to be separated from the pressurized system by means of the shut-off valve AND the fluid has to be released.



**Figure 8. Nitrogen Charged Bladder  
Accumulator**

1. The protective cap (A) and cap screw (B) have to be unscrewed. DO NOT remove the o-ring (C).
2. Screw the charging and testing unit onto the accumulator gas valve. Turn the charging unit to a position where the gauge can be easily read.
3. Open the valve by screwing in the spindle on the charging unit. After the pointer of the gauge begins to deflect, unscrew the spindle by a further full turn. The gauge now shows the charging pressure in the accumulator. The charge pressure for the TF-520 Roller Compactor should read 550 PSI (+/- 25PSI). If the pressure readings DO NOT fall within this range, the charge pressure should be adjusted.



## NITROGEN CHARGED ACCUMULATOR

### ADJUSTING CHARGE PRESSURE (Continued)

An alternate method of checking the bladder accumulator nitrogen charge pressure is as follows:

1. Pump up the pressure roll hydraulic system to full pressure as indicated on the pressure roll gauge.
2. Slowly bleed off the hydraulic pressure and watch the pressure roll gauge closely.

The pressure roll gauge needle should fall back slowly until the nitrogen charge pressure is reached. At that point, the needle will drop rapidly to zero. The point where the needle drops rapidly is the nitrogen charge pressure.

If the needle continues to zero without speeding up, then the accumulator has lost its charge and will not function properly. This situation is remedied by charging the accumulator. Instructions for the charging of the accumulator can be found in this text.

3. If you are trying to compact below 110% of the nitrogen charge level indicated, it is as if you have no accumulator. Vector suggests that the nitrogen charge be a maximum of 90% of the minimum hydraulic pressure being used. Bleeding the nitrogen back to this lower level will ensure that the system will operate properly.

## NITROGEN CHARGED ACCUMULATOR

### ADJUSTING CHARGE PRESSURE (Continued)

4. If you are using this equipment for more than one product, bleeding the accumulator nitrogen charge below the factory recommended charge pressure will have a limited impact on compaction accuracy, at the higher compaction forces. If this causes a problem in product quality at higher compaction forces, it may be necessary to charge and discharge the accumulator to accommodate this wider range of operating force. In most cases the variation of compaction force will be a minimal factor - <1% of total compaction force.

### CAUTION!



**DO NOT operate this equipment below 110% of the bladder accumulator charge pressure. Operation below this point can result in wide fluctuations in product quality.**

Example:

550 PSI Actual Nitrogen Charge Pressure

$550 \times 110\% = 605 \text{ PSI}$

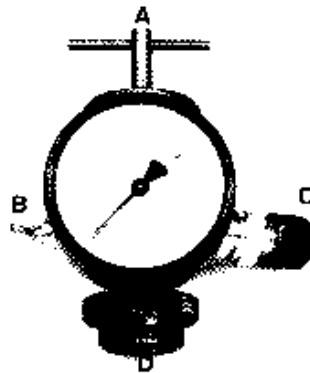
605 PSI is the suggested minimum hydraulic operating pressure for proper operation of the equipment if the nitrogen charge pressure equals 550 PSI.

## NITROGEN CHARGED ACCUMULATOR

The following procedure should be followed when charging the accumulator:

### CHARGING PROCEDURE

Please refer to Figure 9



**Figure 9. Accumulator Charging  
and Test Unit**

1. Open the hydraulic return valve at the base of the pump to reduce the hydraulic pressure to zero.
2. Remove the valve guard and cap on the top of the accumulator.
3. Turn handle "A" on the gas charging assembly counterclockwise until it is fully open or up.
4. Connect the gas charging assembly to the valve stem on the accumulator.
5. Remove cover and valve cap on gas charging assembly.
6. Turn handle "B" clockwise until it is fully closed.
7. Connect the hose to the gas charging assembly and the Nitrogen gas supply tank.

## NITROGEN CHARGED ACCUMULATOR

### CHARGING PROCEDURE (Continued)

1. Turn handle "A" on the gas charging assembly clockwise until it stops.

### CAUTION!



**DO NOT force the handle of the gas charging assembly as it is opening the valve stem on the accumulator. Forcing the handle can cause damage to the accumulator tank.**

2. Slowly open the valve on the Nitrogen supply tank and read the pressure on the gauge attached to the gas charging assembly. Pressure reading should range between 525 - 575 PSI (36.2 - 39.7 Bar).
3. When the required pressure has been achieved close the valve on the Nitrogen supply tank and wait three (3) minutes. Read pressure again.
4. If pressure is too high, open "B" to release excess gas. When pressure is correct close handle "B".
5. If pressure is too low, open valve on Nitrogen and charge again. When pressure is correct turn handle "A" counterclockwise until it is fully open. Open "B" again to release gas in charging assembly line.
6. Remove the gas charging assembly from the Nitrogen supply tank and accumulator.
7. Replace valve guard and cap on top of the accumulator.

The accumulator is now charged.

## **HYDRAULIC SYSTEM**

### **HYDRAULIC INTENSIFIER PUMP**

The TASQ Series Pump is designed to be virtually maintenance free as long as the air supply and hydraulic oil are contaminant free. However, it is recommended that the air cycling valve spool and seals be greased every six months or annually, depending on usage. For detailed instructions on pump maintenance, please reference the manufacturer's vendor information included in this manual.

### **RESERVOIR FILLING AND DRAINING**

It is recommended that a light grade hydraulic oil be used. (I.e. Mobile DTE 24®, Shell Tellus 32®, or equivalent) Consult the manufacturer if your application requires other than light viscosity petroleum based fluids recommended above.

1. Make sure Roll Pressure is OFF.
2. Remove vent/filler cap.
3. Pour clean oil through a strainer into reservoir until full as indicated in the upper bulls-eye.
4. Replace vent/filler cap.
5. Top off the reservoir after the system has been bled.

The reservoir may be drained via the "B" cylinder port.

### **START-UP AND BLEEDING THE SYSTEM**

Once the above requirements are met and the reservoir is full, make sure the air regulator is completely turned out counterclockwise (CCW) before connecting the air supply. Slowly turn in the air regulator clockwise (CW) until the pump just begins to reciprocate. Alternately extend and retract the cylinders, bleeding the lines at the stroked end of each cylinder.

The Hydraulic System layout is detailed on the Piping and Instrumentation Drawing.

## **MAINTENANCE**

Regularly scheduled maintenance will play a big part in the continued optimum performance of this unit. Maintenance schedules vary dependant on the type of product being processed and the frequency of use. It is ultimately the customers responsibility to set up and enforce maintenance schedules.

**NOTE: Vector recommends the use of closed-style wrenches- where possible-to remove hardware.**

### **SEALS AND SCRAPER**

1. Check top seal, side seal and bottom scraper frequently. Replace if worn or damaged.

### **MISCELLANEOUS**

1. Check V-seals on screw shafts once per month. Replace if worn or damaged.
2. Check all lubricants once per month. Refer to the Lubrication Chart.

### **WATER COOLING SYSTEM**

The water cooling system is an available option provided to cool the compacting rolls. When performing maintenance on the compacting rolls it may be necessary to remove the water cooling system to disassemble the rolls.

### **WATER COOLING DISASSEMBLY**

**Refer to Water Cooled Roll Assembly Drawing**

1. Turn off the water.
2. Disconnect coolant hoses at the quick connects.
3. Remove front cover.

## MAINTENANCE

### WATER COOLING DISASSEMBLY

4. Unscrew the unions from the shafts. If desired, the operator may disconnect the hoses between the unions.

#### NOTE



**Looking at the front of the machine, the left-hand rotary union has left-handed threads and should be rotated clockwise to loosen. The right-hand rotary union has right-handed threads and should be rotated counterclockwise to loosen.**

In some cases, to be determined by the customer, the water cooling system is not needed. Remove the system from the unit as above and then replace the washer that has the center hole with the washer without the center hole.

## MAINTENANCE

### SCREW FEEDER DISASSEMBLY

#### Refer to Screw Feeder Assembly Drawing

1. Remove the front cover.
2. Remove the three (3) threaded knobs from the hopper. Two other knobs are located just behind the hopper base, securing the hopper to the roll frame.
3. Raise the screw housing.
4. Once the screw is raised to its' topmost position, insert the Stop Collar Assembly around the powered hydraulic cylinder rod.



#### **WARNING!!**

**Refusal to place the Stop Collar Assembly around the hydraulic cylinder rod poses a serious threat to the safety of personnel. This Stop Collar Assembly is used to hold the screw housing in the UP position in the event of hydraulic failure.**

**If the Stop Collar Assembly is NOT in position and hydraulic failure occurs, crushing of hands and other body parts can occur.**

5. Raise the hopper out of the top seal and remove from the machine. Removing the hopper exposes the screw.
6. While supporting the screw, loosen the two (2) sets of bolts holding the screw to the screw coupling.



## MAINTENANCE

### SCREW FEEDER DISASSEMBLY (Continued)



#### WARNING!!

**The screw is HEAVY! The screw weighs approximately 30 pounds. Precautions should be taken to ensure that personnel are not injured during this removal.**

**Precautions should include but are not limited to the use of lifting straps or using two people to accomplish the removal of the screw.**

**Support of the screw while removing the bolts from the screw coupling will take the bind off the bolts and make for easier removal.**

7. Slowly lower the screw out of the coupling and remove.
8. Loosen the remaining hardware holding the coupling to the reducer drive shaft and remove the coupling and the v-seal.

### SCREW FEEDER REASSEMBLY



#### NOTE

**Reassembly with Rolls in Closed Position.**

1. Replace coupling and the v-seal.
2. Secure the (2) sets of bolts to the coupling.
3. Replace the screw.
4. Lower the hopper back into the top seal. Insert the two (2) bottom knobs. DO NOT tighten these knobs yet - keep them loose. Tightening these knobs now will cause a misalignment of the screw.
5. Lower the screw housing.

## **MAINTENANCE**

### **SCREW FEEDER REASSEMBLY (Continued)**

6. Secure the top three (3) threaded knobs to the hopper and screw housing. Make sure these are tightened. Do not over tighten.
7. NOW the bottom knobs should be tightened.
8. Install the front cover.

### **SEAL AND SCRAPER DISASSEMBLY**

#### **Refer to Seal and Scraper Assembly Drawing**

1. Remove front cover.
2. Raise screw.
3. Lift out the top seal with the side seals attached. If seals are too tight, run rolls in reverse to cause the seals to lift away from the rolls.
4. The side seals will now slide out of the groove in the top seal.
5. The top scrapers may be unbolted from the top seal.
6. The lower scrapers are located in the outlet area of the roll assembly. Remove the (4) bolts securing the scraper supports to the frame and remove the scraper support with back up bars and scrapers.
7. Loosen the bolts that clamp the scrapers in place and remove scrapers.

### **SEAL AND SCRAPER REASSEMBLY**

1. Insert lower scraper onto scraper support.
2. Place scraper back up bar on side of scraper and secure with (2) bolts.
3. Loosely fasten the scraper assemblies into the outlet area of the roll assembly.
4. Push the lower scraper assemblies up until the plastic scrapers contact the bottom of the roll surface and lock in place with (2) bolts each.
5. Loosely fasten the top scrapers to the top seal.
6. To provide the proper clearance between the top scrapers and the roll surface, place a .020 shim between the scraper and the roll. Be sure to use the shim on BOTH top scrapers.

## MAINTENANCE

### SEAL AND SCRAPER REASSEMBLY (Continued)

7. Tighten the two bolts securing the top scrapers to the top seal.
8. Insert side seals into groove in top seal (plastic seals must be facing each other).

#### NOTE



**Reassembly with Rolls in Closed Position.**

9. Position top seal, with side seals, on top of rolls. Side seals should drop down on either side of rolls. If seals do not drop into place, run rolls forward to pull seals into place.

#### NOTE



**When using type DP or DPS rolls, the top seal will fit in one orientation only.**

10. Replace front cover and latch into place.

## **MAINTENANCE**

### **PRESSURE ROLLS DISASSEMBLY**

#### **Refer to Roll Assembly Drawing**

Tools required to remove pressure rolls:

7/16, 1/2 and 9/16 wrenches and rubber mallet

1. Remove front cover.
2. Remove Screw Feeder Assembly. (Refer to Screw Feed Disassembly)
3. Remove seals and scrapers. (Refer to Seal and Scraper Disassembly)
4. Disconnect water cooling system (if applicable). (Refer to Water Cooling Disassembly)
5. Increase roll gap to maximum value.
6. Remove four (4) bolts from both washers and remove washers from rolls.
7. Rolls may now be slipped off shafts. Be sure to note which roll is on which shaft for reassembly in the proper position.

### **PRESSURE ROLLS REASSEMBLY**

1. Increase roll gap to maximum value.
2. Apply a thin layer of FDA approved grease to both shafts to prevent rolls from sticking.
3. Slide rolls onto the appropriate shafts.
4. Replace washers by replacing the four (4) bolts to each roll.
5. Reinstall Water Cooling System (If applicable). (Refer to Water Cooling Reassembly)
6. Replace seals and scrapers. (Refer to Seal and Scraper Reassembly)
7. Replace Screw Feeder Assembly. (Refer to Screw Feed Reassembly)
8. Replace front cover and latch into place.
9. Connect coolant supply and drain hoses.

## MAINTENANCE

### MILL DISASSEMBLY

#### Refer to Mill Assembly Drawing

The Mill Assembly consists of either knife mill blades or a rasping bar. The instructions include both options.



#### WARNING!

**The mill assembly contains sharp components. Extra precautions should be taken to avoid injury. During disassembly, the operator should handle components by blunt edges ONLY.**

1. Remove the top cover of the mill housing, by loosening the hand knobs and lifting the housing up.
2. Remove the top cover gasket.
3. Loosen the outer hand knobs securing the front bearing housing and pull the bearing housing away from unit. The drive shaft assembly for the mill will be attached to the bearing housing.

#### NOTE



**Support knife mill blade assembly or rasping bar to prevent from binding on front bearing shaft.**

4. Remove knife blade assembly (or rasping bar).
5. Remove perforated plate (or rasping plates).
6. Loosen knife mill housing hand knobs and remove housing from machine frame.

## **MAINTENANCE**

### **MILL REASSEMBLY**

1. Replace mill housing to machine frame and tighten hand knobs.
2. Replace perforated plate (or rasping plate).
3. Insert the knife blade assembly (or rasping bar) to the front bearing housing.
4. Replace the front bearing assembly to front of unit and tighten outer hand knobs.
4. Re-install top cover gasket.
5. Replace top cover to mill housing and tighten knobs.

## LUBRICATION CHART

The following parts should be inspected and serviced. Refer to the manufacturer's maintenance and lubrication recommendations included in this manual for more detailed information.

		SUGGESTED LUBRICANTS
Screw Assembly Reducer	Speed Reduction	Refer to the manufacturer's Maintenance information.
Roll Assembly Reducer	Speed Reduction	Refer to the manufacturer's Maintenance information.
Gears	May be applied for corrosion protection if desired	Lubriplate 1200 Multipurpose Grease
Couplings	Once a year	Lubriplate 1200 Multipurpose Grease

Pressure Roll Surfaces and Shaft Sleeves should be lightly coated with a silicon or mineral oil type lubricant prior to reassembly.

Most of the mechanical components are either painted or electroless nickel-plated to provide corrosion resistance. Some mechanical component are not painted, if desired the operator may apply a coating of light oil to these components to protect from corrosion.



### CAUTION!

**Do not lubricate the drive belts.**

## CLEANING



### WARNING!

**Always disconnect electrical supply before attempting to clean this unit. Failure to do so may result in injury to personnel.**

1. Allow machine to cool to ambient temperature.
2. Brush or vacuum excess material from the surface of the unit.
3. Refer to Water Cooling System, Screw Feeder, Seal and Scraper, Pressure Rolls, and Mill Disassembly instructions described earlier to disassembly the various machine components.
4. Wash all parts with the appropriate cleaner.
5. Rinse with fresh water and dry.
6. Wipe down the exterior of the machine, including the compaction rolls, using the appropriate cleaner.



### WARNING!

**Avoid getting water on or near the controls. Damage to the machine and injury to personnel can occur if controls are wet when machine is plugged in.**

7. Dry the exterior of the machine.
8. When all parts are completely dry, reassemble the machine by referring to the reassembly instructions.



**SURFACE AREA CALCULATIONS**

<b>ROLLER COMPACTOR SURFACE AREA CALCULATIONS</b>		
<b>TFC-520</b>	<b>in<sup>2</sup></b>	<b>cm<sup>2</sup></b>
Screw Drive Housing	292	1883.867
Screw Components	242	1561.287
Screw Hopper	433	2793.543
Rolls	562	3625.799
Roll Seals	297	1916.125
Front Cover Assembly	641	4135.476
Knife Mill Assembly	858	5535.473

**SYSTEM CALIBRATION**

Listed below are the sensors and controlling devices that required calibration every three to six months. These devices require specialized test equipment, knowledge of Allen-Bradley ® PLC Family of programable logic controllers and familiarity of the process. Vector service personnel are qualified to perform calibration of the equipment.

DESIGNATOR	DESCRIPTION
IPT6200	Hydraulic Pressure Compaction Roll I/P Transducer
PS2900	Main Air Pressure Switch
PT6200	Compaction Roll Pressure Transmitter
SC1400	Screw Speed Controller
SC6200	Roll Speed Controller
SC6600	Granulator Speed Controller
ZT6200	Roll Gap Position Transmitter

**ROLL GAP CALIBRATION**

The roll gap is a factory preset tolerance that should only require realignment if the roll gap LVDT sensor has been moved or replaced. To bring the roll gap measurement back into tolerance, use the following procedure:

1. Power up the machine.
2. Access the Machine Setup Screen in the Operator Interface.
3. Follow the instructions displayed on the screen. Refer to the operation instructions for more detailed information on the calibration of the roll gap.