



## PERMA DRUM INSTRUCTIONS

Figure 1



TYPE PC PERMA DRUM



TYPE FC PERMA DRUM

### DESCRIPTION

The Perma Drum is a self-cleaning permanent magnet type magnetic separator. It's designed to protect processing machinery against damage from tramp iron, and to protect processed materials against ferrous metal impurities.

The Perma Drum operates with a motor driven stainless steel shell that revolves around a stationary internal magnet assembly. Material to be separated is fed against the shell. Magnetics in the feed are attracted to the shell, and held against it until reaching a discharge location. Here the separated magnetics are automatically released.

This type separator is manufactured in 2 models. One, the Type PC, includes the magnetic drum, but not a housing or drive motor. The other model is the Type FC. It does include a housing and a drive motor with the magnetic drum.

### IMPORTANT

This installation bulletin has 2 sections. Section 1 covers the Type PC only. Section 2 covers the Type FC only. Read Section 1 before installing a Type PC. Read Sections 1 and 2 before installing a Type FC.

### OPERATING TEMPERATURE

- Operating temperature for ceramic magnets is -40°F through 250°F (-40°C through 120°C).
- Operating temperature for rare earth magnets is 176°F (80°C) or less.

NOTE: Extreme temperatures may affect the performance of the magnet. Refer to Bulletin 1214T.

### SECTION 1

#### MOUNTING - TYPE PC

Check all packaged material for shortage of parts and possible damage. Report shortages or damage to the delivering carrier. Use care in uncrating to avoid damage.

The Type PC is shipped fully assembled and ready for mounting. Mount it by supporting it on the drive side (the keyway in shaft side) with a pillow block bearing, and on the opposite side with a shaft clamp.

The pillow block bearing allows the drive side shaft to turn, and the drum shell to revolve around the stationary internal magnet assembly. The shaft clamp holds the internal magnet assembly in place. A pillow block bearing and a shaft clamp are optional items available from Dings.

#### ADJUSTMENT OF MAGNETIC ARC – TYPE PC

After the drum is mounted, adjust the position of the magnetic arc, as shown in Figure 2. This is done by adjusting the location of the internal magnet assembly, using a steel rod to turn the shaft. Insert the rod into the hole that's in the shaft extension on the non-drive side. Move the rod to rotate the magnet assembly upward until you can feel the magnetism in the strongest part of the magnetic arc at the 3 o'clock position. Then, hold the rod in place and tighten the shaft clamp.

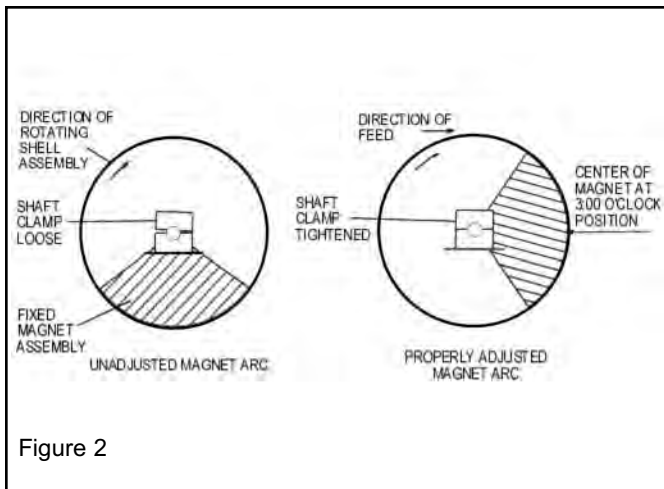


Figure 2

### FEED CHUTE – TYPE PC

The drum should be fed at the 12 o'clock position. Feed material will be carried through the magnetic arc by the rotating shell. Nonmagnetic material in the feed will fall away from the shell in a normal trajectory. Magnetic objects in the feed will be attracted against the shell, and held in place until carried past the influence of the magnetic field (past the magnetic arc).

Figure 3 shows the arrangement of feed and the separating actions. It also shows that a typical installation needs a feed chute, a feed leveler and a splitter plate. These items must be provided for, and installed by the user of a Type PC Drum.

Make a feed chute out of nonmagnetic metal. It should be the same width as the drum shell. Locate it where shown in Figure 3. Keep the lower edge close to the shell. The gap should be as small as possible.

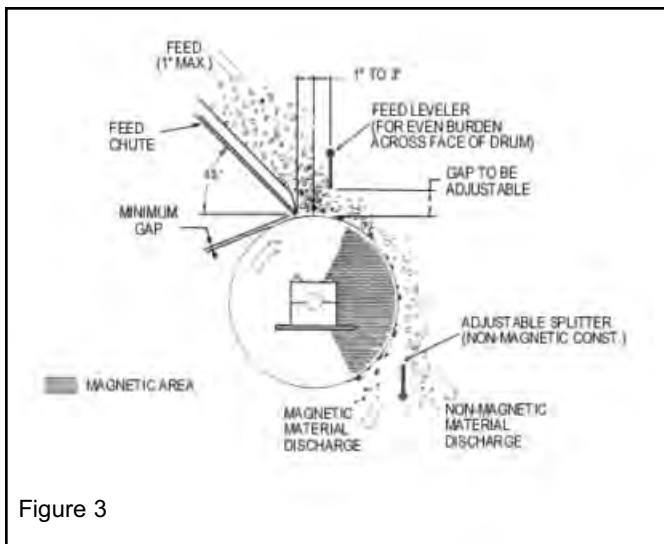


Figure 3

### FEED LEVELER – TYPE PC

An adjustable feed leveler plate is needed to regulate the depth of feed material passing over the drum. It will keep the feed rate consistent. It should be made from nonmagnetic metal, and be the same width as the drum shell. Locate it where shown in Figure 3. Install it so that the gap between its edge and the shell can be adjusted, and locked at a desired setting.

The leveler will keep the flow of feed at a uniform depth across the shell for good separating performance. Do not set the leveler gap greater than necessary for best efficiency. Magnetics are more easily separated from a thin burden than from a thick burden. Do not operate with a gap that is so narrow it causes plugging.

Density of the feed material can affect the gap setting. The gap is usually narrower on dense, compact material than on light, loosely packed material. Find the best setting from trial settings when material is being fed to the drum.

### SPLITTER PLATE – TYPE PC

An adjustable splitter plate is needed to keep the nonmagnetic and magnetic products separated when these products are discharged off the drum. This plate should be made from nonmagnetic metal, and be the same width as the drum shell. Locate it where shown in Figure 3.

Install it so that the splitting edge can be moved towards and away from the shell. The closer this edge is to the drum, the cleaner the magnetic product will be (less nonmagnetic material in the magnetic product). However, in some applications, this can mean some loss of magnetic product with nonmagnetic product. The opposite can happen when the splitting edge is moved away from the drum. The correct setting will depend upon whether a clean magnetic or a clean nonmagnetic product is desired. In some applications, some amount of contamination of one product into the other cannot be avoided. Find the best setting from trial settings when material is being fed to the drum.

### ARRANGEMENT OF DRIVE – TYPE PC

The Type PC can be driven by several means - by pulley (sheave) and V-belt, by sprocket and chain, or by direct drive off a motor/reducer with a coupling connecting the drive and drum shaft.

Recommended drum speeds are:

12" dia. drum - 48 to 64 RPM

18" dia. drum - 31 to 42 RPM

24" dia. drum - 24 to 32 RPM

All speeds above convert to a peripheral drum speed of 150 to 200 FPM. Speeds exceeding this range may result in poor separating performance.

### MAINTENANCE – TYPE PC

Two cartridge bearings should be lubricated periodically, using fittings provided. Use a lithium base grease conforming to NLGI Grade #2. A schedule of lubrication can be in accordance with a schedule for other equipment in the area.

Watch for excessive wear on the drum shell. Replace it when wear becomes excessive. If your feed material is highly abrasive, consider a replaceable stainless steel wear cover, available from the Dings Company.

## ORDERING PARTS

Replacement parts can be ordered by mail, or by phoning a local Dings representative or the Dings factory. All parts are shipped from the factory. Please provide a serial number from the nameplate on the Perma Drum whenever possible.

You can call the factory in Milwaukee, Wisconsin at 414-672-7830 between 8:00 AM and 4:30 PM Central Standard Time Monday through Friday. Tell our operator that you want to speak to someone about parts for a Perma Drum.

## CAUTION

The Type FC Perma Drum is powered by an electric motor. The drum shell inside the housing is a revolving member, driven by the motor. Be careful. Switch off the drive motor before adjusting any part. A motor lockout system should be used during any servicing – during any adjustments or settings, and during any maintenance.

## INSTALLATION – TYPE FC

The Type FC Perma Drum is shipped fully assembled, ready for installation and motor hook up. Install it in a level position. The magnetic arc was positioned at the factory. If a change in adjustment is necessary, see discussion about this in Section 1.

## WIRING – TYPE FC

The motor is either 1/3, 3/4, 1 or 1 1/2 HP depending on size of the Type FC. A standard motor operates on 230/460 volt 3 phase 60 Hz, and has a TEFC enclosure, except the 1/3 HP which is TENV.

Follow the connection diagram on the motor nameplate. Be sure to provide overload protection. After motor is connected to a power supply, jog it on and off to see if the drum shell rotates in the correct direction. The top of shell should move away from the feed chute. If the direction is wrong, reverse any 2 wire connections.

## FEED LEVELER – TYPE FC

The feed leveler described in Section 1 is a standard item included in the Type FC, as shown in Figure 4. Two mounting locations are provided for it.

Before the feed leveler can be adjusted, you will have to get access to it. First, unbolt the top plate on the housing. Then loosen the 2 pivot point bolts, set the desired gap between leveler plate and drum shell, and tighten the pivot bolts. Finally, bolt the top plate back.

Do not use the space ahead of the feed leveler as a hopper. If this space becomes packed with feed material, the feed leveler gap may plug closed.

In an unusual application where the widest gap setting cannot accommodate the feed material because of lump size, remove the leveler. Operate without it.

## SPLITTER PLATE – TYPE FC

The splitter plate described in Section 1 is a standard item included in the Type FC, as shown in Figure 4. Two mounting locations are provided for it.

Before the splitter can be adjusted or relocated, remove the inspection door on the front of the housing – the side towards which the drum rotates. To change the splitter setting, loosen 2 nuts, adjust setting, and tighten nuts. To change splitter location, lift it off the mounting bolts and move it to the alternate mounting bolts.

## MAINTENANCE – TYPE FC

Two cartridge bearings should be lubricated periodically as described in Section 1, using fittings provided.

The cartridge bearings are accessible through ports in 2 sides of the housing, just above the shaft. Remove plates that cover these ports, and jog motion of drum until grease fittings come into view. After greasing, put plates back over ports.

A 4 bolt flange bearing, located on the drive side of the housing, should also be lubricated with the same grease and at the same time as the cartridge bearings.

Change oil in the motor gearcase after the first week of operation, and then every 6 months. Check level with hole near centerline of gearcase. Fill with a gear oil that's suitable for worm gearing. A motor maintenance booklet was attached to the motor prior to shipment. If it's missing on arrival of shipment, ask for a copy.

Watch for excessive wear on the drum shell as discussed in Section 1.

Watch for excessive wear on the 2" wide flexible belting material riveted to the end of the feed chute. Replace when necessary.

Clean the Type FC periodically with an air hose.

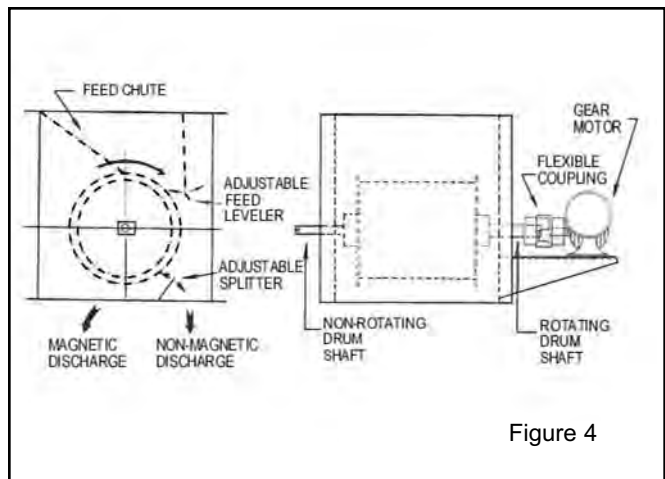


Figure 4



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