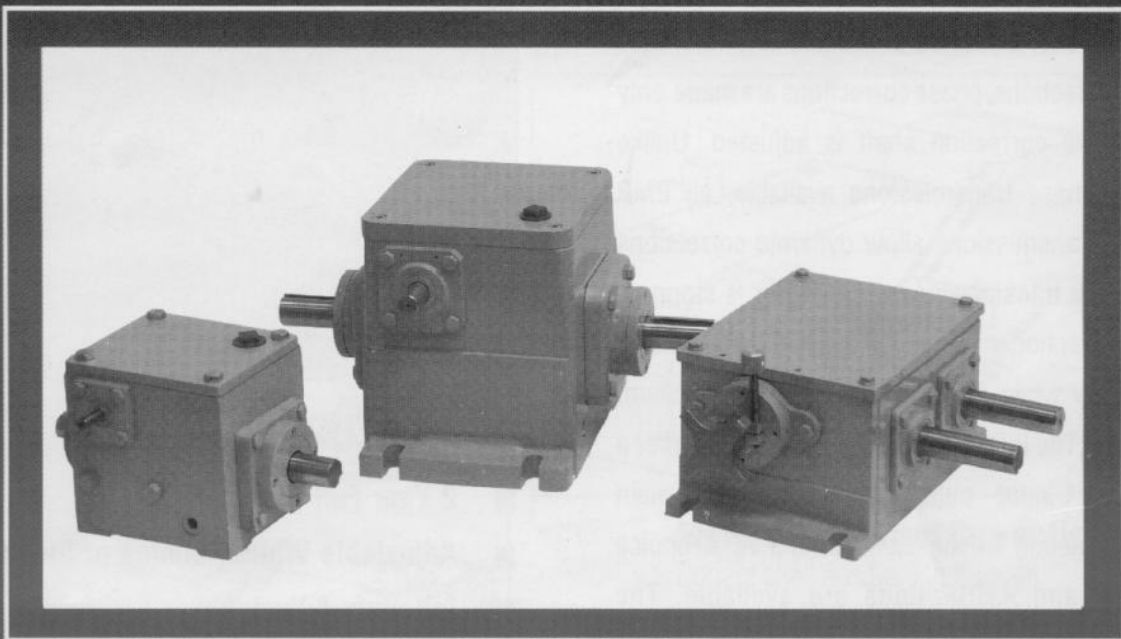# ILDT/PSD

## PHASE CORRECTING DIFFERENTIALS

### inline differentials / phase shifting differentials



**EMP**

## ELECTRONIC MACHINE PARTS, INC.

*Registration Control Products For Today and Tomorrow*

# EMP - A History For Providing Solutions

The EMP ILDT and PSD Transmissions are designed to provide a cost effective yet simple solution for dynamic phase positioning and product synchronization applications.

Used to advance or retard the timing of a mechanical operation, both the ILDT and PSD Transmissions are used primarily in conveyor drives, converting machinery and web cut-off applications. Designed to provide zero reference type corrections, phase corrections are made only when the correction shaft is adjusted. Unlike some phase transmissions available, all EMP phase transmissions allow dynamic corrections while the transmission is running or is stopped. The correction may be achieved manually or automatically when using an EMP Register System.

The ILDT Series of Transmissions offer a 1:2 or 2:1 input - output shaft ratio with the main shaft rotating in the same direction. A choice of 2.5 and 4.5HP units are available. The PSD-2 Transmission is a 1:1 input-output shaft ratio opposite rotation. Both the ILDT and PSD Transmissions have an in-line shaft arrangement which allows for easy installation. The PSD-3 has a 1:1 input-output shaft ratio with the main shaft's rotating in the same direction.

With low correction shaft torque requirements, all ILDT and PSD units are the solution to problems involving timing relationships of machine components. As a option the ILDT and PSD units are available with stainless steel shafting and a hard coated housing for use in the food industry.
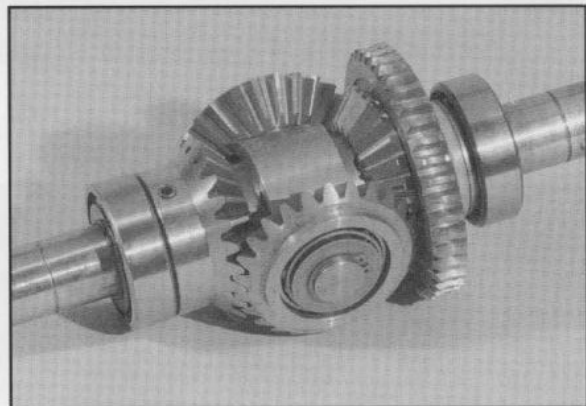
## FEATURES:

- 2 Year Full Warranty
- Adjustable While Running or Stopped
- Infinitely Adjustable
- Choice of Correction Ratios
- Manual Or Automatic Correction
- Choice of 1:1 or 2:1 Main Shaft Ratio
- Available in 2.5 or 4.5 HP Models
- Available in Metric Sizes
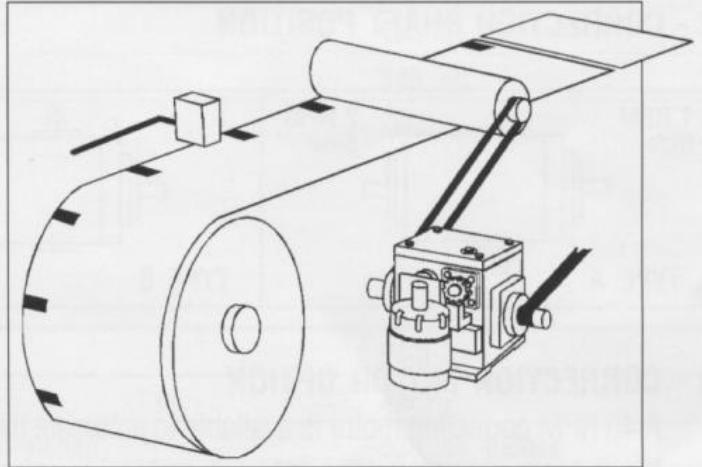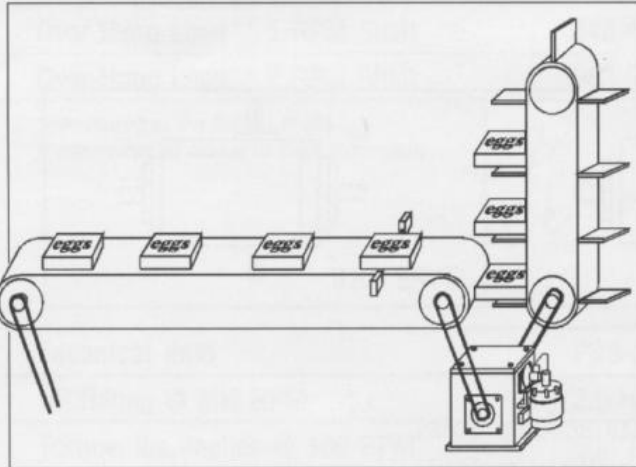- Available in Stainless Steel

### Manual Shaft Positioning

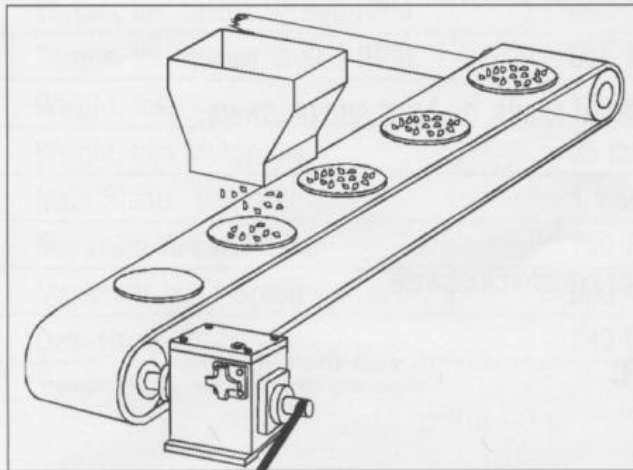Advance or retard timing of rotary machine components while machine running.
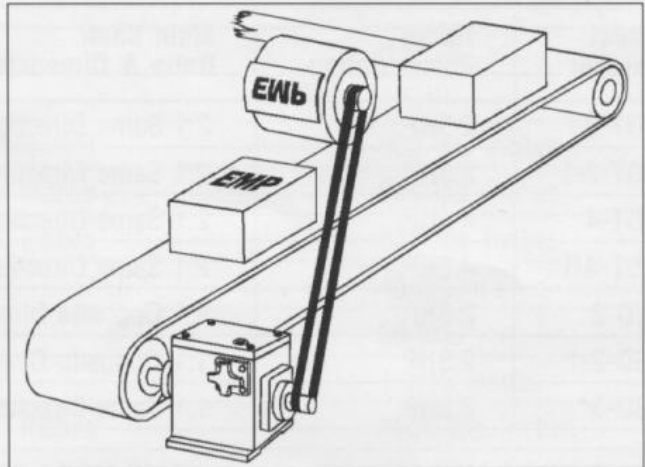
### Conveyor with Automatic

(or Manual) Phase Control.

### Motorized Control Correction

Correct shaft positioning through remote sensing of cut-off knifes, feeders, conveyors, etc.

### Product Timing

Advance or Retard Adjustment to the conveyor allows product toppings to be properly placed. This operation can be manual or automatically done.

**For Registration Control Applications,** Please contact EMP Sales for information. For other applications requiring variable speed control in addition to phase corrections, refer to the DDT catalog.

# ORDERING INFORMATION

**1- MODEL NUMBER -** The model number selected will determine the horsepower and correction ratio.

| Model Number | Horse Power Rating | Main Shaft Ratio & Dimensions | Correction Ratio | Required Turns of Correction Shaft to Rotate 2 RPM Shaft 360° |
|---|---|---|---|---|
| ILDT-2 | 2.5HP | 2:1 Same Direction | 20:1 | 20 |
| ILDT-2-1 | 2.5HP | 2:1 Same Direction | 40:1 | 40 |
| ILDT-4 | 4.5HP | 2:1 Same Direction | 20:1 | 20 |
| ILDT-4-1 | 4.5HP | 2:1 Same Direction | 40:1 | 40 |
| PSD-2 | 2.5HP | 1:1 Opposite Direction | 20:1 | 20 |
| PSD-2-1 | 2.5HP | 1:1 Opposite Direction | 40:1 | 40 |
| PSD-3* | 2.5HP | 1:1 Same Direction | 171:1 | - |

*See page 5 for ordering information

## 2 - CORRECTION SHAFT POSITION



TYPE A — 1 RPM Side / 2 RPM Side    TYPE B    TYPE A&B
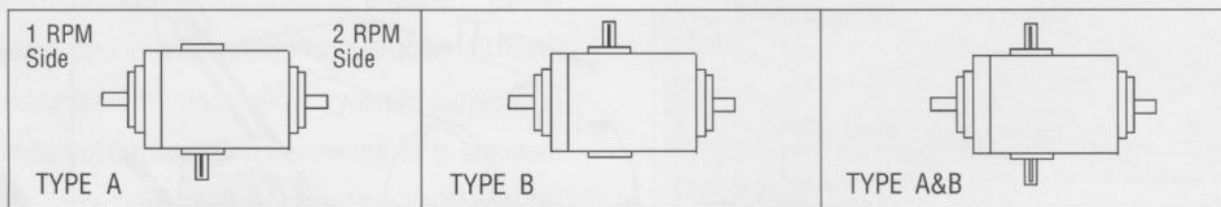
## 3 - CORRECTION MOTOR OPTION

A 40 RPM correction motor is available to automate the correction process.
If a motor is not ordered, a hand knob and locking clamp will be provided.

## 4 - STAINLESS STEEL - HARD-COATED OPTION

Both the ILDT-2 and ILDT-4 are available with Stainless Steel shafts, oil seals and hardware, along with a hard-coated case for extra protection.

## 5 - GENERAL INFORMATION

Input can be to either Main Shaft, and may be clockwise or counterclockwise.

## 6 - AN EXAMPLE OF AN 2.5 HP ILDT PART NUMBER:

ILDT-2   B   M   SS

- Stainless Steel Option
- Correction Motor
- B Correction Shaft Position
- 2.5 HP Unit, 20:1 Correction Ratio
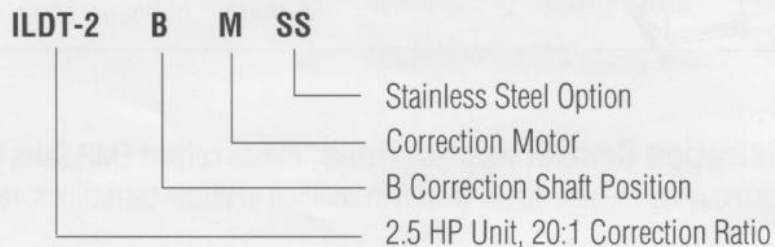
| Technical data | ILDT-2 | ILDT-4 |
|---|---|---|
| HP Rating @ 300 RPM | 2.5 HP | 4.5HP |
| Torque, lbs.-inches @ 100 RPM* | 339 lbs.-inches | 662 lbs.-inches |
| Torque, lbs.-inches @ 300 RPM* | 268 lbs.-inches | 504 lbs.-inches |
| Torque, lbs.-inches @ 600 RPM* | 204 lbs.-inches | 372 lbs.-inches |
| Weight, lbs. | 19 lbs. | 48 lbs. |
| Weight with Motor, lbs. | 25 lbs. | 60 lbs. |
| Main Shafts, Diameter | 1 inch | 1-3/16 inches |
| Maximum Static Torque | 780 lbs.-inches | 1568 lbs.-inches |
| Maximum Input Speed | 600 RPM-1 RPM Shaft | 600 RPM-1 RPM Shaft |
| Over Hung Load** 1 RPM Shaft | 340 lbs. | 435 lbs. |
| Over Hung Load** 2 RPM Shaft | 263 lbs. | 348 lbs. |

*(Measured at the 1 RPM shaft)
**(Measured at center of shaft extension)

| Technical data | PSD-2 | PSD-3 |
|---|---|---|
| HP Rating @ 300 RPM | 2.5 HP | 2.5 HP |
| Torque, lbs.-inches @ 100 RPM | 508 lbs.-inches | 528 lbs.-inches |
| Torque, lbs.-inches @ 300 RPM | 403 lbs.-inches | 420 lbs.-inches |
| Torque, lbs.-inches @ 600 RPM | 306 lbs.-inches | 324 lbs.-inches |
| Weight, lbs. | 19 lbs. | 34 lbs. |
| Weight with Motor, lbs. | 25 lbs. | - |
| Main Shafts, Diameter | 1 inch | 1 inch |
| Maximum Static Torque | 780 lbs.-inches | 805 lbs.-inches |
| Maximum Input Speed | 600 RPM | 600 RPM |
| Over Hung Load** | 340 lbs. | 755 lbs. |

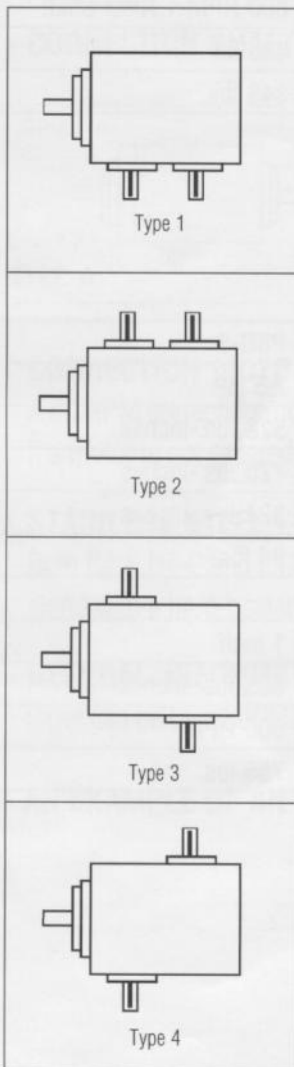**(Measured at center of shaft extension)

## 1 - PSD SHAFT TYPE

The PSD is a 1:1 Parallel Shaft Phase Differential. Available with the main shafts rotating in the same direction, the PSD-3 provides an alternative mounting option to the in-line phase differentials. The correction shaft to output shaft is 171:1, which translates to 171 turns of the correction shaft will rotate the output shaft 360$^0$. For motorized versions, please request T-2 transmission data.
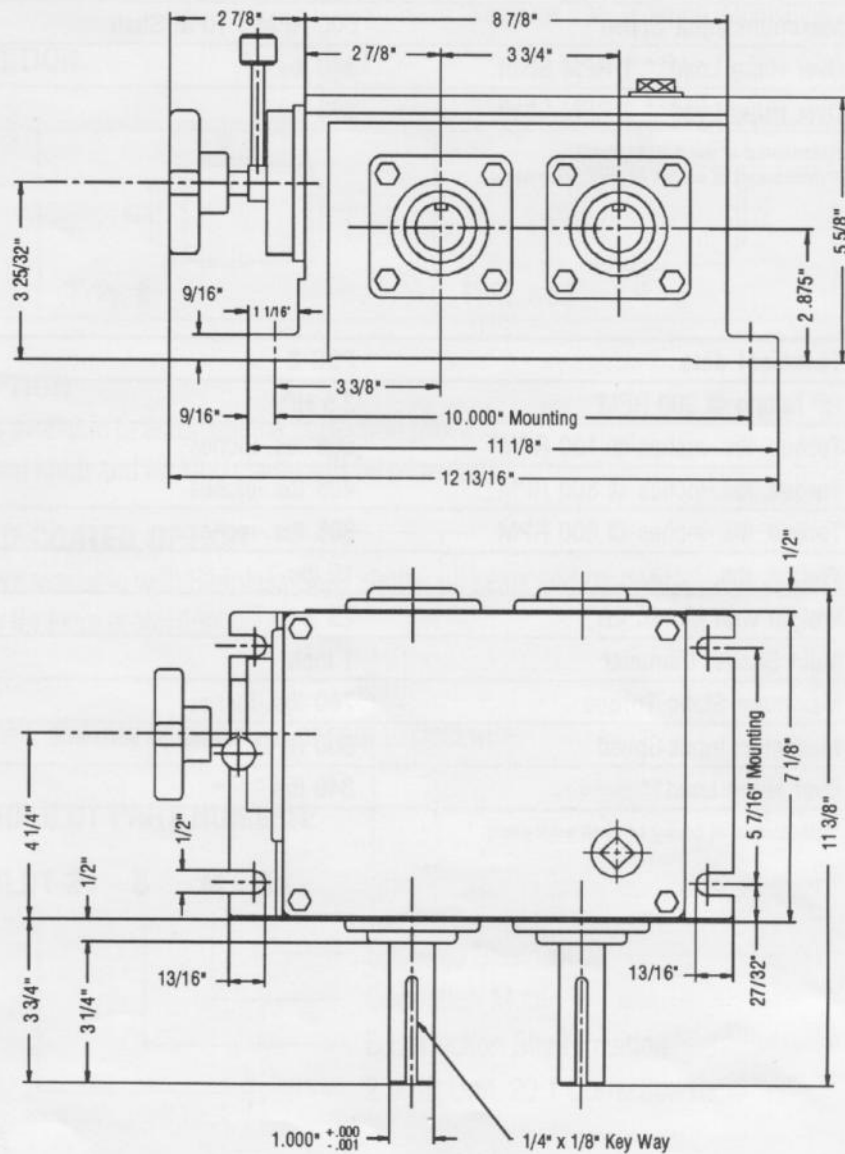
## 2 - GENERAL INFORMATION

Input can be either main shaft and may be clockwise or counterclockwise.

## 3 - MAIN SHAFT OPTIONS



Type 1
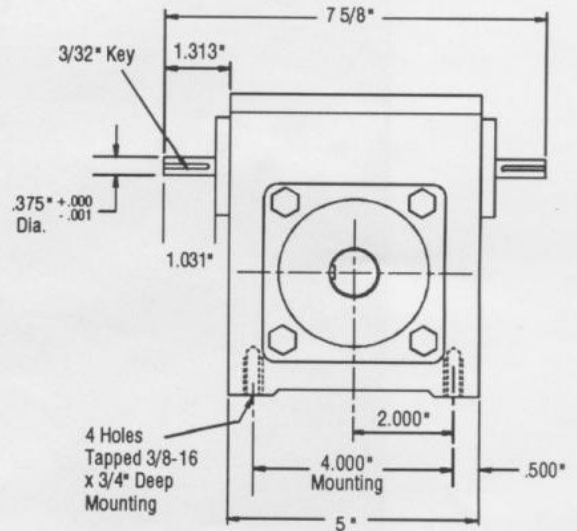
Type 2

Type 3

Type 4

## PSD-3 DIMENSIONS



2 7/8"  8 7/8"

2 7/8"  3 3/4"

3 25/32"

5 5/8"

2.875"

9/16"  1 1/16"

9/16"

3 3/8"

10.000" Mounting

11 1/8"

12 13/16"

1/2"

7 1/8"

5 7/16" Mounting

11 3/8"

4 1/4"

1/2"

1/2"

27/32"

3 3/4"

3 1/4"

13/16"

13/16"

1.000" $^{+.000}_{-.001}$

1/4" x 1/8" Key Way

5

## ILDT-2/PSD-2/PSD-2-2                    DIMENSIONS



**1 RPM Side** — 1.563"
**2 RPM Side**
1/4" Key
4.656"
2.500"
1.000" +.000/-.001
6.125"
.500"
5.000" Mounting
6"
1.500"  1.094"
11.188"

7 5/8"
3/32" Key    1.313"
.375" +.000/-.001 Dia.
1.031"
4 Holes Tapped 3/8-16 x 3/4" Deep Mounting
2.000"
4.000" Mounting
.500"
5"
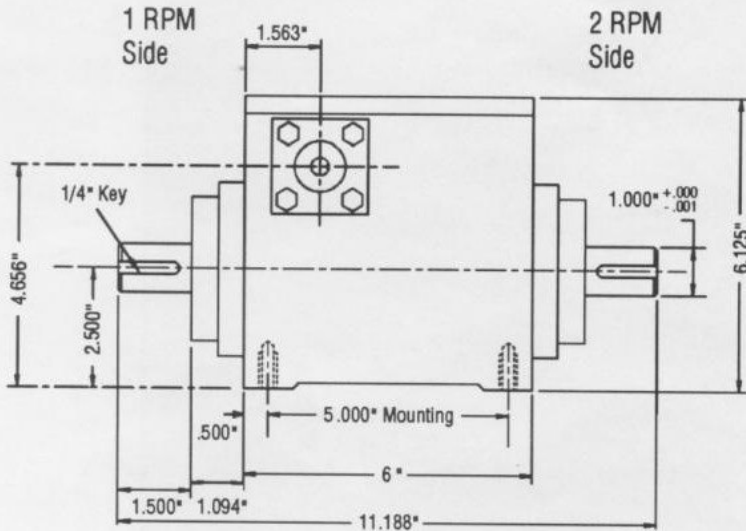
## ILDT-4/ILDT-4M DIMENSIONS                    DIMENSIONS



**1 RPM Side**
**2 RPM Side**
7 1/2"
1/4" Key
1.1875" +.000/-.001
9"
5/8" Slot
4.125"
1 13/16"
5.000" Mounting
1 3/8"
1 13/16"
2 1/2"
7 3/4"
2 1/2"
16 3/8"

1 3/8"    8 1/2"
.500" +.000/-.001
4 5/8"
3/16" x 3/32" Key Way
6 3/4"
.750" +.000/-.001
7/8"
4 5/8"
9 1/4" Mounting
10 5/8"
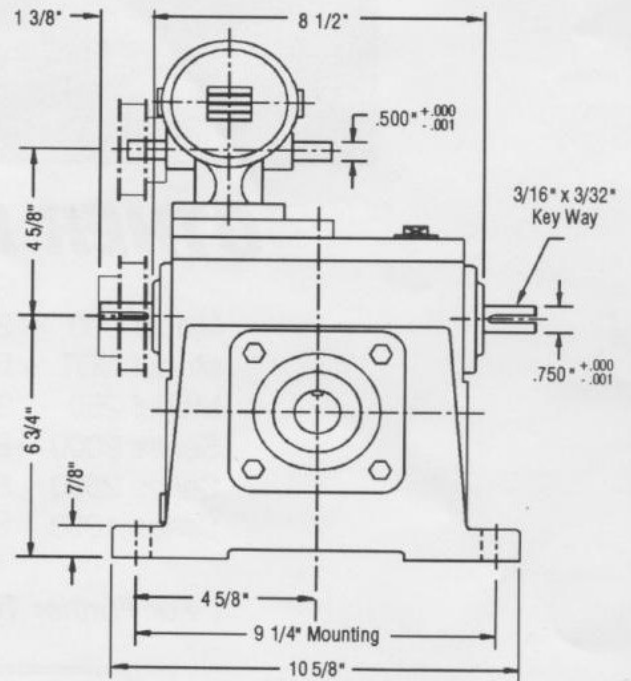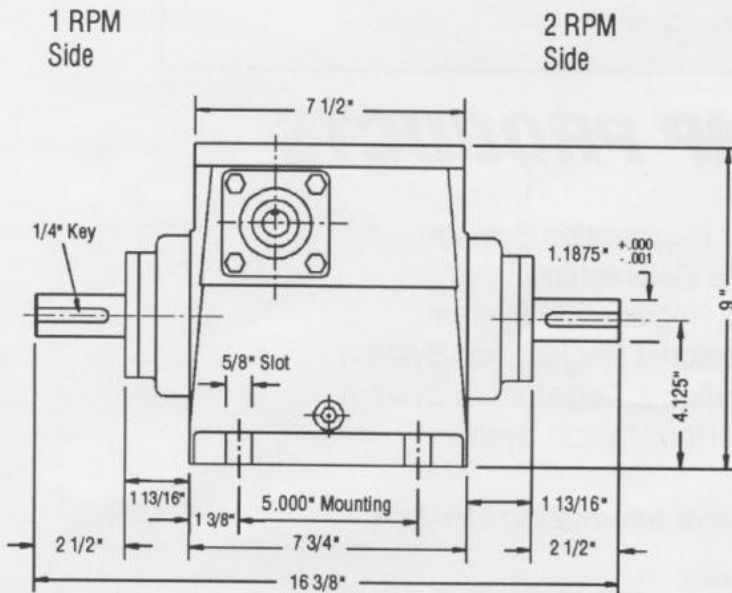
## EMP CAD DATA EXCHANGE

With EMP CAD you can easily import into your CAD design layout the complete design file of all EMP Differentials and Registration Control Systems. Just call us and ask for your FREE copy. Please specify required format, AutoCAD or DXF (Data Exchange) and what drive-size disk you need, 3.5" or 5.25".