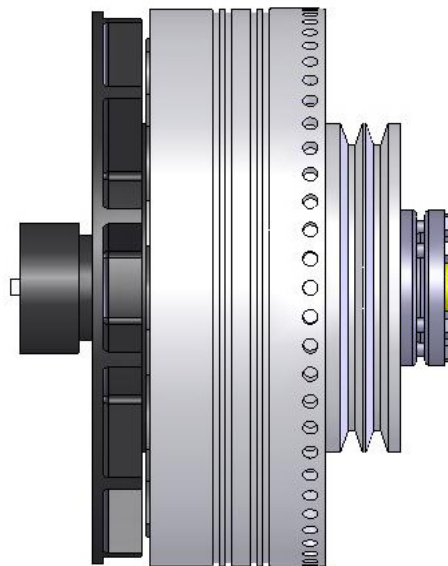


Easy-PAYBACK®

Magnetic-Coupled Variable Speed Belt Drive

*“The preferred choice in shaft-mounted
drive technology.”*



Installation, Operation & Maintenance Instructions

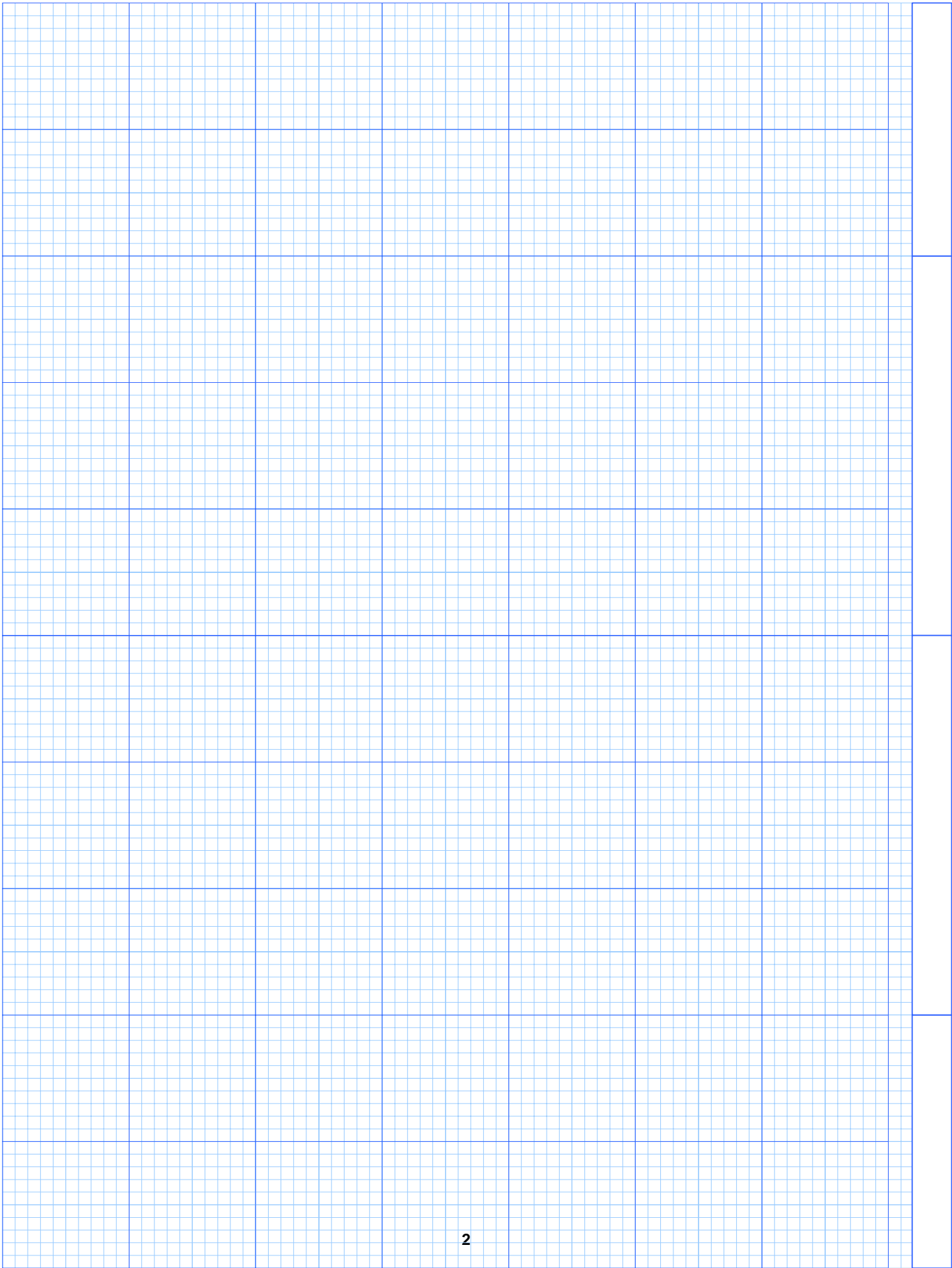


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IMPORTANT

ONLY QUALIFIED PERSONNEL SHOULD PERFORM INSTALLATION AND SERVICE OF THIS PRODUCT.

This PAYBACK® variable speed drive has been certified by Coyote Electronics, Inc. to be constructed with the highest quality components, has been operated under load, and has passed Q.C. and in-house testing. Observe all applicable national and local electrical codes and safety precautions for rotating equipment, including those stated below.

- READ ALL INSTALLATION INSTRUCTIONS THOROUGHLY BEFORE BEGINNING INSTALLATION OF THE DRIVE.
- OBSERVE ALL SAFETY PRECAUTIONS FOR THIS VARIABLE SPEED DRIVE AS YOU WOULD FOR ALL MOTORS AND OTHER ROTATING EQUIPMENT.
- **CAUTION!** WHEN INSTALLING OR REMOVING THE PAYBACK DRIVE, BE AWARE OF THE DRIVE'S WEIGHT (REFER TO THE SECTION TITLED "EASY PAYBACK® TECHNICAL DATA" IN THIS MANUAL TO DETERMINE THE WEIGHT OF THE SPECIFIC DRIVE MODEL). USE PROPER LIFTING EQUIPMENT AND PROCEDURES TO AVOID INJURY.
- IF THIS UNIT IS TO BE USED OUTDOORS, THE PROTECTIVE COVER SHOULD ALSO BE RAIN PROOF. THE COVER SHOULD BE CONSTRUCTED TO PROTECT BOTH THE DRIVE AND MOTOR.
- IF YOU HAVE ANY QUESTIONS CONCERNING THE INSTALLATION, OPERATION OR SAFETY PRECAUTIONS CONCERNING THIS PRODUCT, CALL THE FACTORY BEFORE USING THE PRODUCT.

817.485.3336 or Toll Free: 888.557.7873

**DRIVE SIZES IN THIS MANUAL ARE GENERALLY APPLICABLE FOR
VARIABLE TORQUE LOADS.**

**FOR SIZING CONSTANT TORQUE LOADS, IT IS STRONGLY ADVISABLE TO
CONTACT FACTORY FOR ASSISTANCE TO ENSURE SATISFACTORY
OPERATION OF THE DRIVE.**

**TO AID IN PROPER SIZING OF YOUR DRIVE, IT IS RECOMMENDED THAT YOU
COMPLETE AND FAX THE SITE SURVEY FORM AT THE END OF THIS MANUAL.**

CAUTION

**TO PREVENT INJURY, ALWAYS BE SURE PROTECTIVE COVER IS
INSTALLED BEFORE STARTING MOTOR.**

FORWARD

This reference manual provides the necessary user information for the referenced product(s) manufactured or distributed by Coyote Electronics, Inc. for the user to install and operate the product properly.

Notice:

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Reference Manual V1.4b – DOC # OM-000-001-00-RE MANUAL, EPB REFERENCE, ENGLISH

BASIC PRINCIPLE OF OPERATION

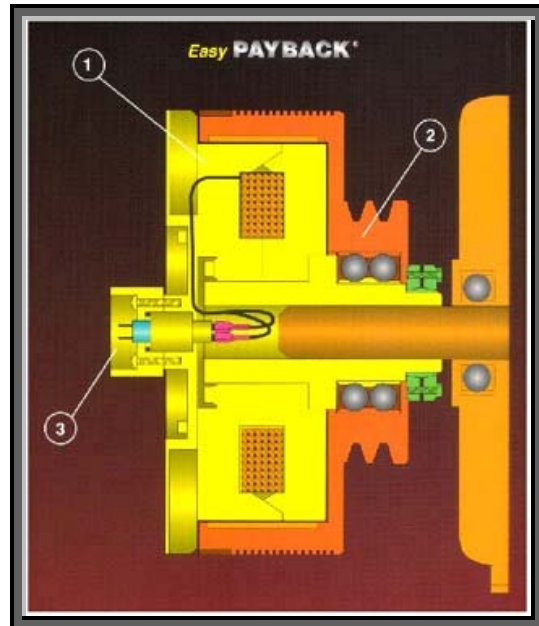
Shown below is a cutaway view of the Easy-PAYBACK® magnetic-coupled drive mounted on the shaft of an AC motor.

All of Coyote's patented drives are designed with a single air gap to minimize losses and maximize performance. The inner drum surface on every **PAYBACK** drive is copper lined improving the overall efficiency of the drive. This is an important energy saving advantage over drives that do not incorporate this copper technology.

The electromagnet (1) is affixed to the motor's shaft with a shaft-locking device so that it runs continuously at motor speed.

The armature / pulley portion (2) connects to the driven load. The electromagnet (1) and armature (2) are separated by ball bearings, which maintain a constant air gap between the two elements.

When current is applied to the coil of the electromagnet via the brushless rotary coupling (3), a polarized field is produced, magnetically coupling both components and causing the output portion to turn in the same direction as the motor. Output speed or torque is dependent on the strength of the magnetic field, which is controlled by varying the amount of current applied to the electromagnet.



EASY-PAYBACK® DRIVE

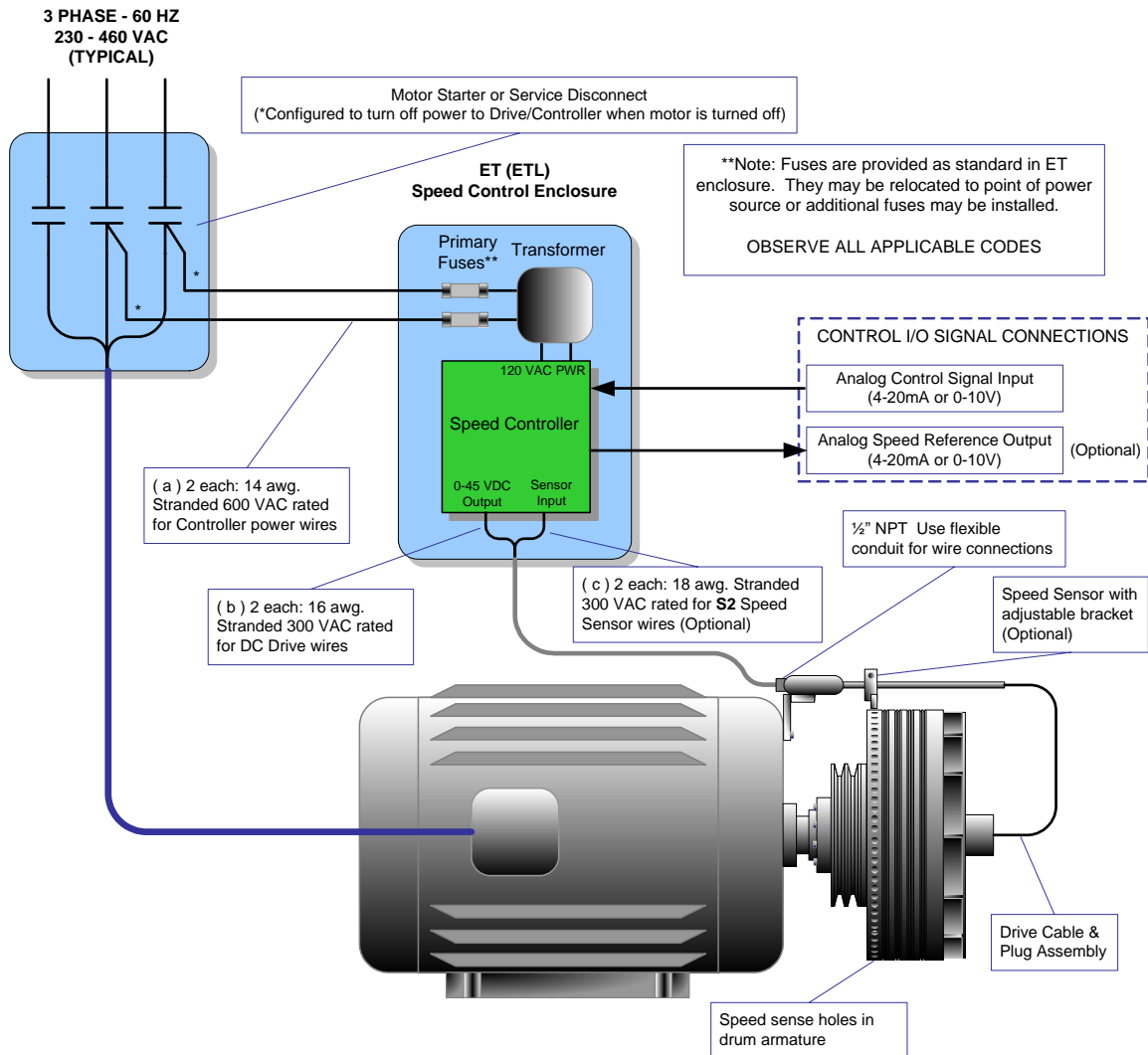
This proven patented design, which places the output sheaves and bearings close to the motor face and directly over the shaft, allows for maximum belt tensioning without causing stress to the motor's shaft and bearings.

SYSTEM WIRING LAYOUT W/CABLE SUPPORT ASSEMBLY

The motor bracket-mounted cable support assembly allows for cable support and a convenient wire termination point for the two dc wire connections from the drive to the controller. It also provides support for the optional **S2** two-wire speed sensor and sensor bracket.

For field installation retrofit, the angle bracket and cable support assembly attaches easily to the motor with one of the four motor bolts on the front face of the motor. Be sure to inspect the bolt before installing to make sure there are enough threads to support the bracket. Replace with a longer bolt if necessary.

Once installed, the belts may be tensioned without disconnecting the wires since the cable assembly will move along with the motor as belt tension adjustments are made. For belt replacement, the cable can be easily unplugged and the belts replaced.



1. Use flexible seal-tite steel conduit for running the wires from the junction box to the speed controller enclosure. Keep all High Voltage Power Wires separate from any Control or Signal wires. Observe all applicable electrical & safety codes, and all local code requirements. For OUTDOOR applications, use the enclosure manufacturers' recommended conduit fittings deemed suitable for such situations.
2. Use UL/CSA Listed stranded wire only! **Recommended wire sizes:**
 - a. 14 awg. Stranded @ 600 VAC rating for the two single phase line input power wires to the ET controller control transformer (primary fuses).
 - b. 16 awg. Stranded @ 300 VAC rating for the two DC wires from the controller to the drive that will be joined in the motor mounted junction box to the factory supplied drive plug-in cable shown on the "Drive Cutaway" page.
 - c. 18 awg. Stranded @ 300 VAC rating for the two **S2** speed sensor wires, if used.
3. Allow adequate clearance at the front end of the drive to insure that the cable can plug into the rotary electrical coupling without contacting any rotating components of the drive system. (Typically 1-1/2" minimum clearance).

INSTALLATION

Drive (read “Safety First” section on next page before working on equipment)

1. **IMPORTANT!** Be sure that the motor shaft conforms to the NEMA standard tolerances. (If the motor shaft is undersized, non-uniform in diameter across the length, or has excessive run-out, this can be problematic to the performance, installation or removal of the drive). See “**Motor Shaft Tolerance Table**” in this manual.
2. Inspect the inside bore of the drive and the motor shaft to be sure they are clean and smooth. Remove any scratches or burrs with sandpaper if necessary so that all surfaces are smooth.
3. Once both surfaces are very clean, spray white lithium grease on both the inside of the drive bore and onto the entire motor shaft. (The objective here is to provide a light film onto the mating surfaces. This will help prevent galling or scratching the motor shaft when positioning the drive on the motor shaft). Carefully wipe off any excess grease on the motor shaft area where the shrink disc will be tightening the drive hub to the motor shaft.
4. Place the shrink-disc on the drive hub with the bolts facing towards the motor. **(NEVER TIGHTEN THE SHRINK-DISC LOCKING BOLTS BEFORE MOUNTING ON THE MOTOR, SINCE THE HUB BORE OF THE DRIVE CAN BE PERMANENTLY CONTRACTED, THUS PREVENTING THE DRIVE FROM FITTING PROPERLY ON THE MOTOR SHAFT).**
5. Lift the drive via the eyebolt and align the Hub Location Mark (Orange Dot) with the center of the motor's shaft keyway slot. Guide the drive onto the motor shaft while keeping the hub mark in alignment with the keyway slot to insure best balance. With the drive properly prepared, the drive should slide onto the shaft smoothly.
DO NOT FORCE THE DRIVE ON THE MOTOR SHAFT AND NEVER HAMMER ON THE DRIVE OR ALUMINUM FAN.
6. If the fit seems tight or if there is difficulty sliding the drive on the motor shaft, repeat steps 2 through 5.
7. Mount the drive all of the way on the motor shaft, as close to the motor face as possible for optimal balance and to minimize overhung load. With the shrink-disc positioned all the way onto the drive hub, tighten the shrink-disc bolts per the following instructions:
 - A. Alternately hand-tighten the shrink-disc locking bolts, making sure that the two collars of the shrink-disc are maintained in an even (parallel) position.
 - B. Now tighten all of the bolts one after another with an open-end metric wrench in sequence by approximately ½ turns even if at the beginning some of the bolts require very little effort. Use an 8MM wrench for drive frame sizes Pup and Jr, a 10MM wrench for drive frame sizes 1, 2, 3 & 4, a 13MM for drive frame sizes 5, 6 & 7, and a 17MM wrench for drive frame sizes 8 & 9.
 - C. Continue tightening until all of the bolts on the shrink-disc are tight. Since in this application, use of a torque wrench is not practical, Coyote recommends that all shrink-disc bolts be tightened very thoroughly before starting the motor. This is always required to prevent any possibility of slippage between the motor shaft and the drive hub, which could cause galling of the shaft or hub, making removal of the drive from the motor shaft difficult.
8. Once the drive is mounted correctly, align the driven pulley to precisely line up with the drive's sheaves.
9. Install the belts. Be sure to remove the lift eyebolt (if used) from the drum.

Electrical Cable Connections

1. Attach the motor mounted CSA (Cable Support Arm assembly) to the motor.
2. Connect the supplied cable with the **female** plug terminals to the RPCU-2 (rotary power coupling unit) **male** plug terminals. Feed the cable through the pipe of the CSA assembly and make the wire connections to the wires from the controller in the CSA junction box. The purpose of the CSA assembly is for holding the cable wires securely, preventing any rotation of the wires and at the same time not causing any undue pressure on the rotary power coupling. The terminal cable wires may be routed and secured to the rotary power coupling from any direction as long as it does not interfere or come into contact with any of the drive system's rotating parts.
3. Additionally, the optional speed sensor and plastic clamp (if used) can be installed on the same CSA ½" pipe and aligned with the holes/notches on the drum outer diameter. (Follow the appropriate speed sensor mounting instructions and wire connections). The cable can now “float” with the motor to accommodate belt tensioning or belt replacement without damaging the wires or affecting the gap distance between the speed sensor and the speed sensing holes on the drum.
4. The belt guards should be made to clear the drive by 3 to 4 inches with adequate provision for air flow. Additionally, all guards should be constructed with a solid top to prevent any debris from falling onto the drive.
***For safety, the belt guards should always be installed before turning on the motor.**

SAFETY FIRST

WHEN SERVICING, INSTALLING, OR REMOVING THE DRIVE:

- **ALL SERVICE SHOULD BE PERFORMED BY QUALIFIED PERSONNEL.**
- **ALWAYS TURN OFF (LOCKOUT/TAG-OUT) ALL POWER TO THE MOTOR AND CONTROLS.**
- **BE AWARE OF THE DRIVE'S WEIGHT AND USE PROPER LIFTING EQUIPMENT AND PROCEDURES TO AVOID INJURY. (REFER TO THE SECTION TITLED "EASY PAYBACK® TECHNICAL DATA" IN THIS MANUAL TO DETERMINE THE WEIGHT OF THE SPECIFIC DRIVE MODEL).**
- **OBSERVE ALL SAFETY PRECAUTIONS FOR THIS VARIABLE SPEED DRIVE AS YOU WOULD FOR ALL MOTORS AND OTHER ROTATING EQUIPMENT.**

DRIVE REMOVAL

Drive (read “Safety First” section on previous page before working on equipment)

Alternately loosen each shrink-disc locking bolt by ½ turn at a time until all three elements of the shrink disc are loose on the hub and the drive can be removed from the motor shaft. It is not necessary to remove the locking bolts completely.

Slide the drive off of the motor shaft. In most instances, the drive will easily separate from the motor shaft. However, **in the event the drive is seized on the motor shaft even after the shrink-disc is loose on the hub, Coyote recommends the following method for correct removal:**

1. Unplug the cable wires to the rotary coupling located on the center of the fan.
2. Remove the main fan mounting bolts (6 each).
3. Carefully remove the fan from the drive and then unplug the internal wires that connect the drive coil to the rotary electrical coupling. (Set the Fan aside).
4. After the fan is removed from the drive, the drive's hub mounting bolts will be accessible and you can see the end of the motor shaft down the center of the drive hub bore.
5. Remove two of the hub mounting bolts, install a BAR PULLER** using the same bolts or longer bolts if necessary to secure the puller to the hub. **CAUTION!!! If longer bolts are required, be sure to first carefully check that the longer bolts DO NOT BOTTOM OUT AGAINST THE BEARING on the inside of the drive to avoid damage of the bearing shields.** (The bolts selected to use with the puller should be just long enough to adequately thread into the hub the same distance as the original bolts).
6. Adjust the center adjustment bolt of the puller against the end of the motor shaft until the drive is removed from the motor. (You may also insert a short steel spacer into the hub opening that is slightly smaller in diameter of the hub bore / motor shaft diameter to prevent wear on the end of the motor shaft face when pushing off with the puller bolt. This is recommended if removal is more difficult than normal).

** (Alternatively, a custom puller plate can be fabricated with a welded nut and adjustment bolt instead of using a bar type puller. Coyote recommends using a grade 8 nut and bolt as a minimum requirement).

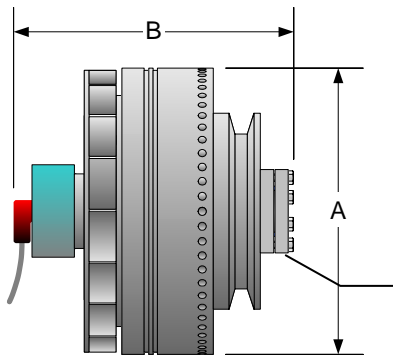
DO NOT use a puller type that wraps around the drum, and DO NOT apply excess pressure to, or strike the drive drum as the drum can be distorted. Only attach the puller to the center hub or the spider assembly and push off against the end of the motor shaft after completely loosening the shrink disc.

EASY PAYBACK® TECHNICAL DATA (PUP AND JR)

Easy PAYBACK® Brushless v-belt style, shaft-mounted variable speed drives

For use with 4 Pole, 60 Hz, 1750 RPM Motors.

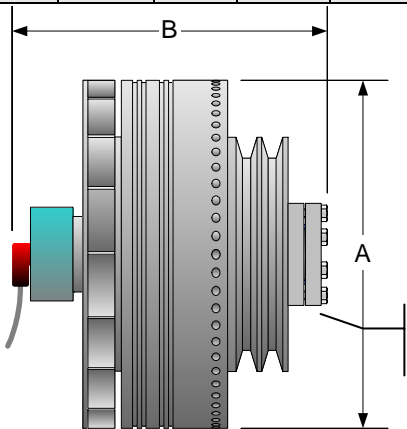
| Motor HP | Output Speed Range (RPM) | Motor Frame | Motor Shaft Dia. | Number of Belts & (Type) | PUP DRIVE MODEL SELECTION | | | | | | | |
|----------|--------------------------|-------------|------------------|--------------------------|------------------------------|-----------|----------------|-----------|----------------|-----------|----------------|-----------|
| | | | | | PUP-1A42* | | PUP-1A40 | | PUP-1A38 | | PUP-1A36* | |
| 1/3 | 0-1700 | 56, 56H | 0.625 (5/8") | 1 (A, AX) | 4.45 | 4.20 | 4.25 | 4.00 | 4.05 | 3.80 | 3.85 | 3.60 |
| 1/2 | 0-1650 | | | | OUTSIDE (O.D.) | DATUM "A" | OUTSIDE (O.D.) | DATUM "A" | OUTSIDE (O.D.) | DATUM "A" | OUTSIDE (O.D.) | DATUM "A" |
| 3/4 | 0-1600 | | | | PUP DRIVE PULLEY DIAMETERS** | | | | | | | |



| Model Size | A | B | Weight (lbs.) |
|------------|------|------|---------------|
| PUP-1A** | 6.50 | 6.10 | 19.5 |

"Size 24 shrink disc assembly"
(6 ea.) 8mm locking bolts.

| Motor HP | Output Speed Range (RPM) | Motor Frame | Motor Shaft Dia. | Number of Belts & (Type) | JR DRIVE MODEL SELECTION | | | | | | | |
|----------|--------------------------|-------------|------------------|--------------------------|-----------------------------|-----------|----------------|-----------|----------------|-----------|----------------|-----------|
| | | | | | JR-2A50* | | JR-2A48 | | JR-2A46 | | JR-2A44* | |
| 1 | 0-1700 | 143T | 0.875 (7/8") | 2 (A, AX) | 5.25 | 5.00 | 5.05 | 4.80 | 4.85 | 4.60 | 4.65 | 4.40 |
| 1-1/2 | 0-1650 | 145T | | | OUTSIDE (O.D.) | DATUM "A" | OUTSIDE (O.D.) | DATUM "A" | OUTSIDE (O.D.) | DATUM "A" | OUTSIDE (O.D.) | DATUM "A" |
| 2 | 0-1600 | | | | JR DRIVE PULLEY DIAMETERS** | | | | | | | |



| Model Size | A | B | Weight (lbs.) |
|------------|------|------|---------------|
| JR-2A** | 7.80 | 6.90 | 29.5 |

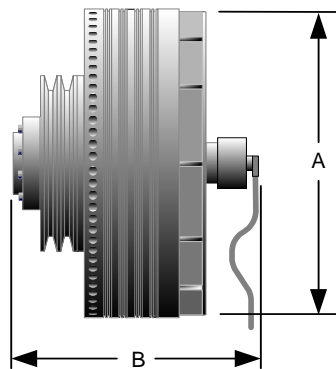
"Size 30 shrink disc assembly"
(7 ea.) 8mm locking bolts.

* Normally stocked sizes. ** Contact factory for custom drive pulley sizes.

Data subject to change without notice.

EASY PAYBACK® TECHNICAL DATA

| AC Motor Data (4 Pole, 60 Hz, 1750 RPM) | | | | Easy-PAYBACK® Brushless v-belt style, shaft-mounted variable speed drive. PAYBACK® RELIABILITY...™ PURE & SIMPLE™™ | | |
|--|------------------------|----------------------|----------------------|---|--------------------------|--------------------|
| MOTOR HP | MOTOR FRAME ODP (TEFC) | MOTOR SHAFT DIAMETER | PAYBACK® Drive Model | Output Speed Range (RPM) | Number of Belts & (Type) | Pulley OD (Inches) |
| 3 | 182T | 1.125 | EASY-1 | 0-1700 | 2 (3VX) | 5.30 |
| 5 | 184T | | | 0-1600 | | |
| 7.5 | 213T | 1.375 | EASY-2 | 0-1700 | 2 (3VX) | 6.00 |
| 10 | 215T | | | 0-1600 | | |
| 15 | 254T | 1.625 | EASY-3 | 0-1700 | 2 (5VX) | 7.10 |
| 20 | 256T | | | 0-1600 | | |
| 25 | 284T | 1.875 | EASY-4 | 0-1700 | 3 (5VX) | 8.00 |
| 30 | 286T | | | 0-1650 | | |
| 40 | 324T | 2.125 | EASY-5 | 0-1700 | 3 (5VX) | 9.00 |
| 50 | 326T | | | 0-1650 | | |
| 60 | 364T | 2.375 | EASY-6 | 0-1700 | 4 (5VX) | 9.25 |
| 75 | 365T | | | 0-1650 | | |
| 100 | 404T (405T) | 2.875 (**3.375) | EASY-7 | 0-1700 | 5 (5VX) | 11.30 |
| 125 | 405T (444T**) | | | 0-1650 | | |
| 150 | 444T | 3.375 | EASY-8 | 0-1700 | 6 (5VX) | 13.20 |
| | (445T) | | | | | |
| 200 | 445T | 3.375 | EASY-9 | 0-1700 | 6 (5VX) | 13.20 |
| | (447T) | | | | | |

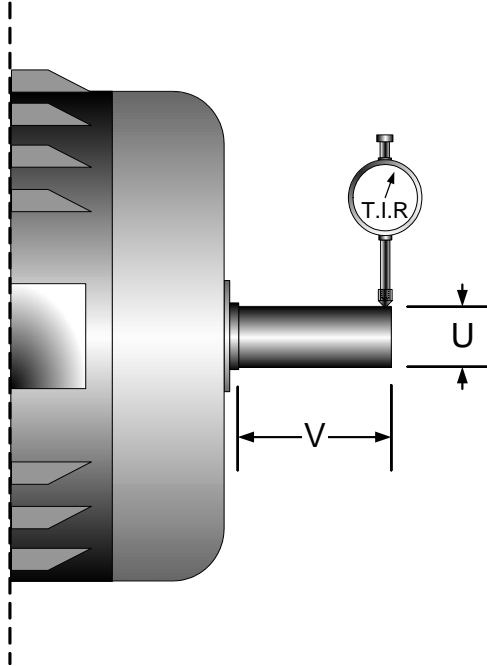


| DATA SUBJECT TO CHANGE WITHOUT NOTICE. | | | |
|--|-------|-------|---------------|
| Model Size | A | B | Weight (lbs.) |
| Easy-1 | 9.00 | 7.50 | 43 |
| Easy-2 | 10.50 | 8.25 | 69 |
| Easy-3 | 12.30 | 9.50 | 113 |
| Easy-4 | 14.00 | 10.50 | 176 |
| Easy-5 | 16.30 | 11.50 | 266 |
| Easy-6 | 17.30 | 12.50 | 315 |
| Easy-7 | 21.00 | 15.00 | 564 |
| Easy-8 | 24.00 | 16.00 | 698 |
| Easy-9 | 26.00 | 17.00 | 937 |

MOTOR SHAFT TOLERANCE TABLE (NEMA T)

Coyote's PAYBACK® variable speed drives are designed to be used with any typical 4-pole, 50 or 60HZ NEMA T frame motor.

Before installing the drive however, always verify that the motor meets the standard shaft diameter and T.I.R. (total indicator reading) tolerances of (MG1-4.9.7) in the chart below.



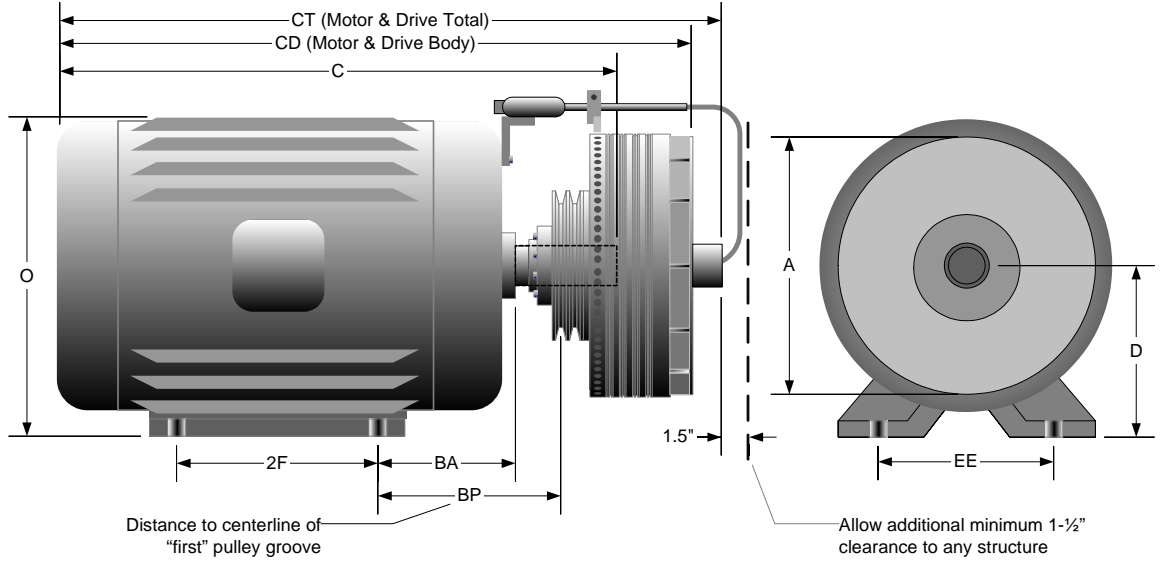
ALL DIMENSIONS IN INCHES

| MOTOR FRAME | SHAFT LENGTH (Typical) V | SHAFT DIAMETER TOLERANCE U | T.I.R. (Total Indicator Reading) Shaft Runout Tolerance |
|----------------|--------------------------------|----------------------------------|---|
| 182T/184T | 2.750 | <u>1.1250</u> 1.1245 | (.002) +-.0010 |
| 213T/215T | 3.375 | <u>1.3750</u> 1.3745 | (.002) +-.0010 |
| 254T/256T | 4.000 | <u>1.6250</u> 1.6240 | (.002) +-.0010 |
| 284T/286T | 4.625 | <u>1.8750</u> 1.8740 | (.003) +-.0015 |
| 324T/326T | 5.250 | <u>2.1250</u> 2.1240 | (.003) +-.0015 |
| 364T/365T | 5.875 | <u>2.3750</u> 2.3740 | (.003) +-.0015 |
| 404T/405T | 7.250 | <u>2.8750</u> 2.8740 | (.003) +-.0015 |
| 444T/445T/447T | 8.500 | <u>3.3750</u> 3.3740 | (.003) +-.0015 |

NOTE: For new applications, drive may be purchased complete with new motor. See *Easy PAYBACK® Motor & Drive "COMBO" Dimensions.*

EASY PAYBACK® MOTOR & DRIVE “COMBO” DIMENSIONS

**TEFC (Cast Iron) Nema-T Frame Epact-2 High Efficiency Motor
with Easy-PAYBACK® Magnetic-Coupled Adjustable Speed Drive**



| Sized for 1750 RPM (4 Pole) TEFC ONLY | | | | | | | | | | All Dimensions are in "INCHES" | | | |
|---------------------------------------|------|------------|-------|------|------|------|------|------|------|--------------------------------|------|-------|----------------------------|
| COMBO Model | | TEFC Frame | 2F | C | CD | CT | BA | BP | O | A | EE | D | # Grooves (STYLE) Diameter |
| Drive | (HP) | | | | | | | | | | | | |
| EASY-1 | M3 | 182T | 4.50 | 15.6 | 19.0 | 21.0 | 2.75 | 4.0 | 9.1 | 9.0 | 7.5 | 4.50 | 2(3V) |
| | M5 | 184T | 5.50 | 16.8 | 20.2 | 22.2 | | | | | | | 5.30" |
| EASY-2 | M7.5 | 213T | 5.50 | 17.7 | 21.0 | 23.0 | 3.50 | 5.0 | 10.9 | 10.5 | 8.5 | 5.25 | 2(3V) |
| | M10 | 215T | 7.00 | 19.2 | 22.5 | 24.5 | | | | | | | 6.00" |
| EASY-3 | M15 | 254T | 8.25 | 22.0 | 25.5 | 27.5 | 4.25 | 5.7 | 13.2 | 12.3 | 10.0 | 6.25 | 2(5V) |
| | M20 | 256T | 10.00 | 29.8 | 27.3 | 29.3 | | | | | | | 7.10" |
| EASY-4 | M25 | 284T | 9.50 | 28.8 | 32.4 | 34.4 | 4.75 | 5.7 | 14.6 | 14.0 | 11.0 | 7.00 | 3(5V) |
| | M30 | 286T | 11.00 | 28.8 | 32.4 | 34.4 | | | | | | | 8.00" |
| EASY-5 | M40 | 324T | 10.50 | 29.9 | 34.5 | 36.5 | 5.25 | 7.0 | 16.0 | 16.3 | 12.5 | 8.00 | 3(5V) |
| | M50 | 326T | 12.00 | 31.1 | 35.7 | 37.7 | | | | | | | 9.00" |
| EASY-6 | M60 | 364T | 11.25 | 32.2 | 37.0 | 39.0 | 5.88 | 7.2 | 18.2 | 17.3 | 14.0 | 9.00 | 4(5V) |
| | M75 | 365T | 12.25 | 33.6 | 38.4 | 40.4 | | | | | | | 9.25" |
| EASY-7 | M100 | 405T | 13.75 | 39.8 | 45.7 | 47.7 | 6.62 | 9.1 | 19.9 | 21.0 | 16.0 | 10.00 | 5(5V) |
| | M125 | 444T | 14.50 | 46.2 | 50.9 | 52.9 | 7.50 | 10.0 | 22.1 | | | | 18.0 |
| EASY-8 | M150 | 445T | 16.50 | 48.6 | 54.3 | 56.3 | 7.50 | 9.3 | 22.1 | 24.0 | 18.0 | 11.00 | 6(5V) |
| | | | | | | | | | | | | | |
| EASY-9 | M200 | 447T | 20.00 | 49.1 | 55.8 | 57.8 | 7.50 | 9.3 | 23.0 | 26.0 | 18.0 | 11.0 | 6(5V) |
| | | | | | | | | | | | | | |

PULLEY SELECTION

IMPORTANT: *The new driven pulley should always be sized large enough so that when the system is operating at its absolute maximum required rpm, the PAYBACK® Drive should also be operating at its maximum speed.*

By correctly sizing the driven pulley in this manner, the system will be more efficient.

Selecting too small of a driven pulley will waste energy.

Always take an amp reading of the existing motor at full load and continue to monitor the motor amps after the retrofit.

With the proper sized pulley, the system will never exceed the full load amp rating of the motor (including service factor), even in full speed lock-up mode.

See Manual Lock-Up Instructions for Full Speed Bypass.

Selecting the belts & driven pulley to match the PAYBACK® Drive's sheaves is easy.

Step 1: First, measure the existing driven shaft diameter for the new bushing replacement. Next, measure the center-to-center distance between the existing motor shaft and driven shaft. Observe the belt take-up adjustment on the motor base and ALLOW for a midrange take-up measurement to start with for calculating the new belt sizes.

Step 2: Determine the RATIO of the existing motor pulley and driven pulley by dividing the (DRIVEN) pulley diameter by the motor pulley diameter.

$$\frac{\text{(DRIVEN) Pulley DIAMETER}}{\text{Motor Pulley DIAMETER}} = \text{(WORKING RATIO)}$$

Step 3: Multiply the new PAYBACK® Drive's pulley diameter by the working ratio to determine the calculated new (DRIVEN) pulley diameter.

$$\text{PAYBACK® Pulley DIA.} \times \text{(WORKING RATIO)} = \text{*Calculated DRIVEN Pulley DIA}$$

Step 4: Select the nearest size pulley from a sheaves selection book, matched with the correct bushing to fit the DRIVEN shaft. *Always try the LARGER sheave first whenever possible. Using the new selected DRIVEN pulley diameter in conjunction with the new drive pulley diameter and the center-to-center measurement, size the new belts from a belt selection guide. Use notched "VX" style belts for best efficiency.

If you need assistance in correctly sizing your pulley and belts, or have any other questions about your application, please contact us at:

Phone: 817.485.3336 or toll free at: 888.557.7873

Fax: 817.485.9437

E-mail: info@payback.com

EASY PAYBACK® ORDERING INFORMATION

IMPORTANT: Always verify motor frame and shaft sizes.

Easy PAYBACK® Drive Selection

To select the correct size drive, simply locate the horsepower and frame size of you're AC motor in the "Technical Data" chart on the previous page.

■ *EXAMPLE: A 50 HP motor with a 326T frame would require an Easy-5 PAYBACK® Drive.*

If your particular requirements are not listed, please contact the factory.

Pulley Selection

For optimum efficiency, the driven pulley should be selected so that when the system is at the maximum designed speed (RPM), the PAYBACK® Drive is also operating as closely as possible to its maximum output speed.

■ *The driven pulley should always be sized large enough so the motor does not exceed its full load amp rating when the system is at the maximum operating load/RPM.*

CONSULT FACTORY FOR AVAILABLE ALTERNATIVE PULLEY STYLES AND DIAMETERS

Belt Selection

For maximum belt efficiency, use notched (VX) style V-Belts.

RPCU-2 INSTALLATION

After verifying that the controller is supplying adjustable DC voltage to the RPCU-2 (Rotary Power Coupling Unit) drive terminals, but the drive is not engaging (turning), or varying the load rpm correctly, then replace the RPCU-2.

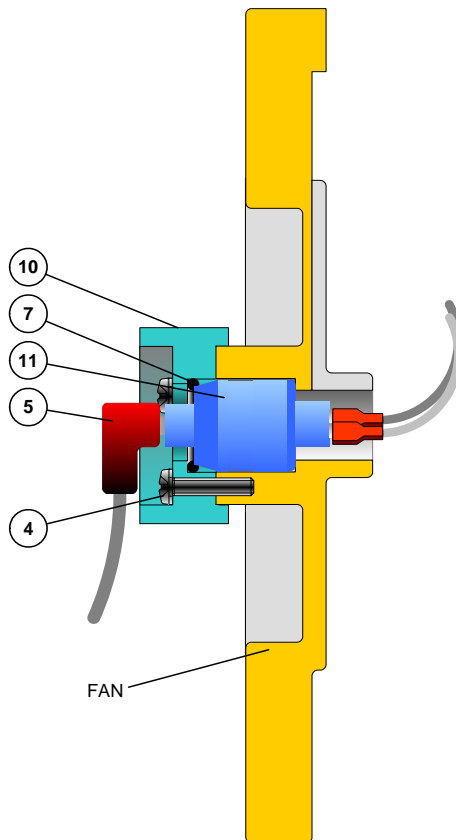
Replacement time: 5 minutes, typical.

Tools required: Phillips Screw Driver, Needle-Nose Pliers.

1. **SAFETY FIRST!** Be sure to TURN OFF ALL POWER to the motor and drive unit.
2. Disconnect the drive power cable (5) from the RPCU-2 (11) on the Drive.
3. Carefully unscrew the three Phillips screws (4a) with lock-washers (4b), while holding the end-cap assembly in place.
4. Remove the end-cap (10), note the rubber O-Ring washer (7) in place against the RPCU-2 (11).
5. Gently pull out the RPCU-2 (11) to the full extension and disconnect (un-plug) the inner terminals with the Needle-Nose pliers.
6. Connect the new RPCU-2 (11) to the inner terminals on the fixed (NON-BEARING) side of the coupler.
7. Put the RPCU-2 (11) back in place, re-assemble with end-cap (10) and O-Ring washer (7) against the RPCU-2 (11), insert and tighten the three Phillips screws (4a) with lock-washers (4b).
8. Connect the drive power cable (5) to the bearing side of the new RPCU-2 on the drive, being careful not to bend or twist the prongs.

BEFORE STARTING MOTOR, CHECK TO BE SURE RPCU-2 IS CORRECTLY INSTALLED. YOU SHOULD BE ABLE TO HOLD THE POWER CORD STATIONARY WHILE ROTATING THE FAN BY HAND. VERIFY THAT THE CORD DOES NOT RUB ANY ROTATING SURFACE OF THE DRIVE.

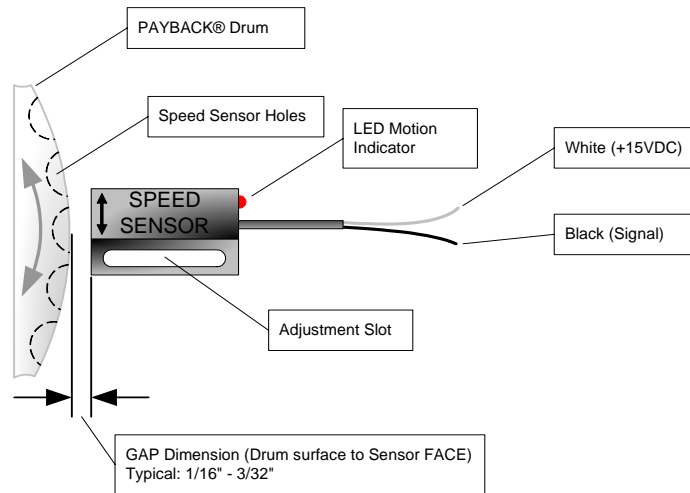
9. Turn power on and start up system. Any questions, call Service Department toll free at 1.888.557.7873.



| Item | Description | QTY |
|------|--------------------|-----|
| 5 | DRIVE POWER CABLE | 1 |
| 4a | PBX-BOLT 10-24X7/8 | 3 |
| 4b | PBX-LWASHER-10 | 3 |
| 7 | PBX-O-RING | 1 |
| 10 | PBX-ENDCAP-2 | 1 |
| 11 | PBX-RPCU-2 | 1 |

SPEED SENSOR ORIENTATION & INSTALLATION

To be installed by trained, qualified service personnel only. Always observe all safety precautions regarding rotating machinery and all applicable electrical codes.



1: The Coyote 2-wire Speed Sensor **MUST BE ORIENTED** as shown above with respect to the direction of travel of the rotating speed sensor holes to be detected on the drum.

■ *Mounting the sensor in any plane other than as shown above will cause erratic operation.*

2: Always adjust the gap between the drum surface and sensor face to the maximum safe operating distance, typically $1/16'' - 3/32''$ inch.

Note: *Setting the gap too close may not allow for the natural expansion of the drum when operating normally and may damage the sensor.*

MANUAL LOCKUP INSTRUCTIONS

For Emergency Full-Speed By-Pass

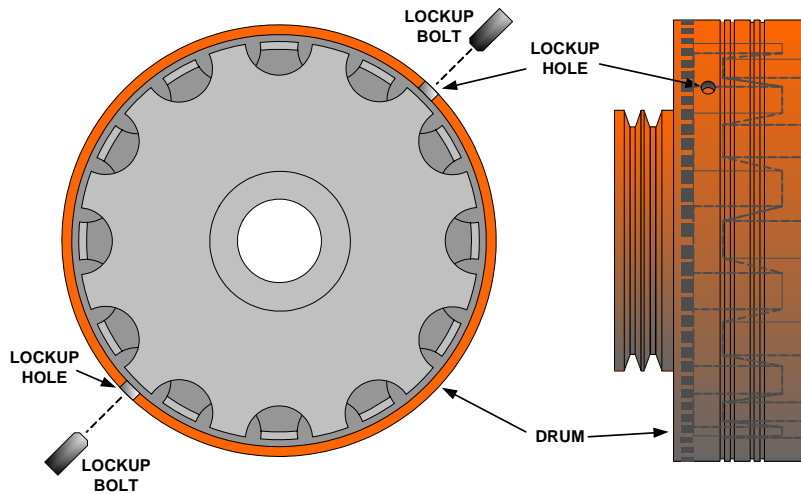
WARNING

BEFORE BEGINNING THE MANUAL LOCKUP PROCEDURE, ALWAYS REMOVE POWER FROM BOTH THE CONTROL AND MOTOR WHEN INSTALLING OR REMOVING LOCKUP BOLTS, AND/OR WHEN SERVICING THE DRIVE. ALWAYS LOCK OUT THE POWER TO THE MOTOR TO PREVENT ACCIDENTAL STARTUP WHILE PERFORMING THIS PROCEDURE.

1. Select the appropriate size lockup bolt for your drive from the chart below.

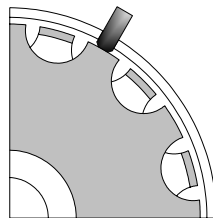
| DRIVE MODEL SIZE | (QTY EA) LOCKUP BOLT SIZE |
|------------------|-----------------------------|
| SIZE 1, 2, 3 | (2 EA) 3/8 x 3/4L x 16TPI |
| SIZE 4, 5, 6 | (2 EA) 1/2 x 1L x 13TPI |
| SIZE 7, 8, 9 | (4 EA) 3/4 x 1-1/2L x 10TPI |

2. Locate the threaded lockup holes on opposite sides of the drum's circumference.

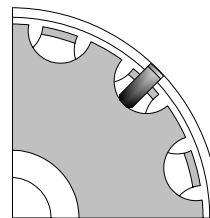


3. Screw the lockup bolts into the holes and **ALTERNATELY HAND TIGHTEN** until they each make contact with the finger peaks of the inner portion of the drive as shown below.

IMPORTANT: If your drive incorporates the speed sensor option, be sure that the lockup bolts do not interfere or come in contact with the speed sensor. The speed sensor can be temporarily pivoted out of the way and securely repositioned on the support arm to assure adequate clearance from the rotating lockup bolts. After the lockup bolts are removed, the speed sensor gap can be properly re-adjusted. Follow the "Speed Sensor Orientation and Installation" instructions in this manual.



CORRECT ALIGNMENT



INCORRECT ALIGNMENT

4. **NOW TIGHTEN LOCKUP BOLTS SECURELY** with a wrench, and then you may restore power to the motor. The drive will now run at motor speed.

MAINTENANCE GUIDE

PAYBACK® patented drives are less complex and contain fewer critical parts, as compared to all other VSD technologies, thereby minimizing routine maintenance requirements.

Lubrication

Drives:

All PAYBACK® variable speed drives use high quality, permanently lubricated-for-life ball bearings. There is no need for re-lubrication. Ultra long bearing life expectancy is attributed to the unique patented design.

Motors:

LINCOLN models (1 – 200 HP) 1800 RPM, ODP & TEFC, PREMIUM EFFICIENCY

56 through 145T Permanently lubricated ball bearings. No re-lubrication necessary

182T through 449T Recommended Greases (Lithium based NLGI No. 2 consistency):

Chevron SRI #2

Shell-Alvania #2

Mobile-Movilux #2

Re-lubrication Period

Based on 1750 RPM, 24hrs per day (Severe) Duty:

Lubricate every 4 months (1 oz.)

Based on 1750 RPM, 8hrs per day (Standard) Duty:

Lubricate every 12 months (1 oz.)

DO NOT OVER GREASE

Excessive lubrication can cause premature bearing failure.

All Other Motor Brands:

Refer to the specific motor manufacturer's recommended lubrication instructions.

Field Replaceable Coupler (See RPCU-2 Installation Instructions):

The RPCU-2 (Rotary Power Coupling Unit) is a simple, field replaceable plug-in cartridge that is an economical alternative to conventional solid brushes and slip rings for transferring the low power current output of the stationary dc controller to the PAYBACK® Drive's rotating coil.

Typical life expectancy (varying conditions) – Replacement Period

Based on 1750 RPM, 24hrs per day Duty: (2 – 4 Years)

Based on 1750 RPM, 8hrs per day Duty: (5 – 6 Years)

START UP PROCEDURE

“Easy-PAYBACK®” Magnetic Coupled Variable Speed Drives with “ET” series Speed Controls

Before starting, check and make sure the two emergency bypass lock-up bolts located on the outside diameter of the drive’s drum have been removed from the drive. **See manual lockup instructions.**

The controls may or may not be installed on the equipment when it arrives at the job site. Please read the following instructions and verify that all of the following steps are completed for the initial field set up.

“ET” Control Enclosure Installation:

Mount the “ET” PAYBACK® control enclosure in close proximity to the motor starter or motor service disconnect (whichever is the final device feeding power to the motor). Optionally, at customer preference, the controller can also be remotely mounted a distance away from the equipment. The controller typically is to be connected to two of the high voltage power wires going to the motor to insure that when the motor is switched off, all power to the controller and drive is also turned off. (The purpose for the transformer in the “ET” controller enclosure is to conveniently provide isolated, 115 VAC single phase power to the controller circuitry when the motor is running.)

The panel with associated components may be easily removed from the enclosure by removing the four panel mounting screws and unplugging TB1 and TB2 plug terminals from the speed controller circuit board. This will allow you to drill the necessary holes for the wires to be connected from the power source, drive and control signal without damage to the controller components. (See appropriate controller connection diagram for terminal connections.) Be sure to comply with all local electrical codes and observe safe wiring practices.

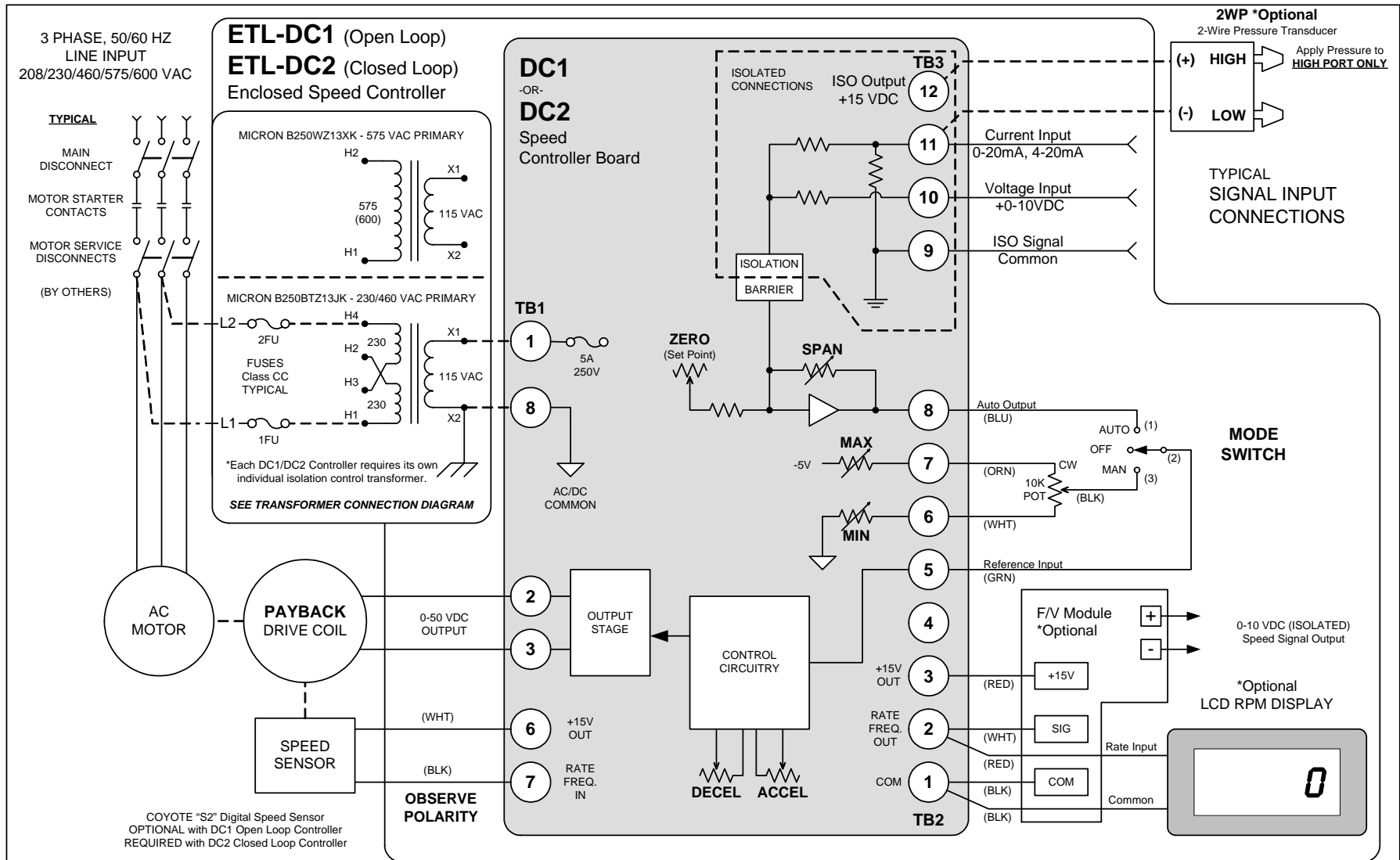
The minimum wire requirements are as follows:

The two high voltage power wires that will connect to the line input fuse block assembly in the control enclosure should be at least 14 gauge/stranded/600 volt insulation rating. (A 2-conductor stranded, 300 volt rated, cable and plug assembly is provided by Coyote for connecting to the drive end for powering the drive’s DC coil.) See also: PAYBACK® Drive System Wiring Layout Diagram and all relevant electrical drawings.

Attention Electrician/Installer, Before Applying Power:

1. Turn OFF ALL POWER to the “ET” enclosure.
2. Turn the “Man-Off-Auto” switch on the front enclosure cover to the “OFF” position.
3. Open the “ET” control enclosure and check the control transformer primary jumpers in the “ET” enclosure to verify that they are correct for your specific line voltage. Re-jumper correctly, if required.
4. UN-PLUG the TB1 power plug to the speed controller circuit board.
5. Turn the motor on briefly to verify correct rotation of the motor. Correct motor phase wiring if necessary.
6. With an ac voltmeter, check across the unplugged TB1 plug, terminals 1 and 8 to verify that there is 115 VAC when the POWER IS TURNED ON to the control transformer. (The Speed controller circuit voltage input power requirement is 115 VAC +/- 10% typ.)
7. If you DO NOT read 115 VAC across terminals 1 and 8 of the TB1 plug, then repeat steps 1 – 6. If you DO read 115 VAC across terminals 1 and 8 of the TB1 Plug, turn power OFF and then re-install plug TB1 to the controller board.

The PAYBACK® drive system is now ready for manual operation. The system is now ready for check out under remote control conditions. Refer to relevant calibration procedures and complete the WARRANTY registration form.



NOTES

*The control power transformer is configured to assure that single phase 115 VAC power to the controller is available ONLY when the motor is running. **EACH DC1 or DC2 CONTROLLER MUST BE CONNECTED TO ITS OWN INDIVIDUAL POWER ISOLATION TRANSFORMER FOR PROPER OPERATION. DO NOT CONNECT ADDITIONAL CONTROLLERS TO THE SAME TRANSFORMER. KEEP ALL HIGH VOLTAGE WIRES SEPARATE FROM OTHER WIRES.**
 ***The optional remote mounted pressure sensor, if used, should always be located on the duct a reasonable distance from the blower to avoid turbulence error.
 The tubing length to the sensor should be kept as short as possible to reduce the possibility of response delays which could contribute to system "hunting".
DO NOT RUN POWER WIRES AND SIGNAL WIRES IN THE SAME CONDUIT...KEEP SEPARATE. OBSERVE ALL ELECTRICAL AND SAFETY CODES.

DC1/DC2 variable speed controller with isolated input conditioning circuitry that accepts and follows a standard voltage or current signal, or optionally, the signal from a Coyote 2WP (Two-wire pressure transducer) for stand alone applications to maintain a constant static pressure set point.
 See applicable: SIGNAL FOLLOWING or PRESSURE SET POINT MODE calibration instructions
 Designed and manufactured in the U.S.A.

**COYOTE
ELECTRONICS, INC.**

4701 Old Denton Road
Fort Worth, Texas 76117
www.payback.com

Phone: 817.485.3336
Fax: 817.485.9437

ETL-DC1/DC2 UNIVERSAL

DC1/DC2 Speed Controller with 115 VAC control transformer and optional LCD display, F/V Feedback & Pressure Sensor

| | | | |
|---------------|---------|--------------------------------|----------|
| SIZE A | FSCM NO | DWG NO BD-000-001-10 | REV D |
| SCALE NONE | | SHEET 1 OF 4 | |

SIGNAL FOLLOWING MODE SETUP PROCEDURE

The following adjustments apply to DC1/DC2 SIGNAL FOLLOWING applications only!

For Stand-Alone PRESSURE SET POINT adjustment procedure: See “DC1/DC2 Pressure Set Point Mode Setup Procedure”.

Your DC1/DC2 controller has been pre-calibrated for your convenience and some of the settings may be factory sealed to prevent accidental adjustments in the field. Some minor adjustments may be necessary to accommodate your particular application. **VERY IMPORTANT!** We recommend that you monitor the motor current with a clamp-on amp meter while making these adjustments.

IN ALL CORRECTLY SIZED APPLICATIONS, YOU SHOULD ALWAYS BE ABLE TO OPERATE THROUGHOUT THE ENTIRE SPEED RANGE WITHOUT EXCEEDING THE MAXIMUM FULL LOAD AMPS OF THE MOTOR. THIS ALSO APPLIES WHEN IN FULL SPEED LOCKUP MODE.

TO ENSURE THAT YOUR APPLICATION ALWAYS OPERATES AT MAXIMUM EFFICIENCY:

The driven sheaves should always be sized large enough so that when the system is at its maximum required operating RPM/CFM, etc., the PAYBACK® drive is also operating as closely as possible to its maximum obtainable output speed.

Note that the circuit board potentiometers are the 20-turn type allowing for precise control settings.

I. MANUAL MODE ADJUSTMENTS (Be sure to monitor motor current as described above)

1. Turn the 3-way selector switch to the **MANUAL** position.
2. Set the operator speed control knob full counterclockwise (minimum on dial).
3. Adjust the **MIN pot** on the DC1/DC2 circuit board **for desired minimum speed**.
(USUALLY FACTORY PRESET FOR ZERO OUTPUT, with LED indicator ON.)
4. Now slowly turn the operator speed control knob up to full clockwise (maximum on dial).
5. Adjust the **MAX pot** on the DC1/DC2 circuit board **for maximum desired speed**. OBSERVE actual RPM reading on the meter, if supplied.

To avoid dead band at the top end of the speed range DO NOT OVER-ADJUST THIS SETTING.

Note: The LCD speed meter has been factory pre-calibrated. When a speed meter is not supplied, we recommend using a hand held optical tachometer to monitor the output speed of the drive.

The drive may now be manually operated throughout the entire speed range with the actual speed indicated by the speed meter.

6. It may be necessary to repeat steps 2 through 5 to fine-tune the final adjustments.
7. For smooth acceleration (Soft-Start) during initial startup, turn the **ACCEL pot** clockwise to lengthen the ramp of acceleration.

This feature virtually eliminates belt squealing during startup of the drive and is typically factory adjusted, although some situations may require further adjustment.

Note: The **DECEL pot** has been factory set for minimum (full counter clockwise).

II. AUTO MODE ADJUSTMENTS (Be sure to monitor motor current as described above)

1. Turn the 3-way selector switch to the AUTO position.
2. With the external input signal at minimum, i.e.: 4ma for 4-20ma input, adjust for desired **minimum** speed with the **ZERO pot** on the DC1/DC2 circuit board.
3. With the external input signal at maximum, i.e.: 20ma for 4-20ma input, adjust for desired **maximum** speed with the **SPAN pot** on the DC1/DC2 circuit board.

To avoid dead band at the top end of the speed range DO NOT OVER-ADJUST THIS SETTING.

Check to make sure minimum adjustment is still correct. Fine tune until desired span is reached.

IF FOR ANY REASON, YOUR DRIVE FAILS TO OPERATE PROPERLY AFTER YOU HAVE PERFORMED THE ABOVE PROCEDURES, PLEASE CALL THE FACTORY FOR FURTHER INSTRUCTIONS AT **817.485.3336**.

PRESSURE SET POINT MODE SETUP PROCEDURE

The following adjustments apply to DC1/DC2 PRESSURE SET POINT applications only!

For SIGNAL FOLLOWING adjustment procedure: See “DC1/DC2 Signal Following Mode Setup Procedure”.

Your DC1/DC2 controller has been pre-calibrated for your convenience and some of the settings may be factory sealed to prevent accidental adjustments in the field. Some minor adjustments may be necessary to accommodate your particular application. **VERY IMPORTANT!** We recommend that you monitor the motor current with a clamp-on amp meter while making these adjustments.

IN ALL CORRECTLY SIZED APPLICATIONS, YOU SHOULD ALWAYS BE ABLE TO OPERATE THROUGHOUT THE ENTIRE SPEED RANGE WITHOUT EXCEEDING THE MAXIMUM FULL LOAD AMPS OF THE MOTOR. THIS ALSO APPLIES WHEN IN FULL SPEED LOCKUP MODE.

TO ENSURE THAT YOUR APPLICATION ALWAYS OPERATES AT MAXIMUM EFFICIENCY:

The driven sheaves should always be sized large enough so that when the system is at its maximum required operating RPM/CFM, etc., the PAYBACK® drive is also operating as closely as possible to its maximum obtainable output speed.

Note that the circuit board potentiometers are the 20-turn type allowing for precise control settings.

I. MANUAL MODE ADJUSTMENTS (Be sure to monitor motor current as described above)

1. Turn the 3-way selector switch to the **MANUAL** position.
2. Set the operator speed control knob full counterclockwise (minimum on dial).
3. Adjust the **MIN pot** on the DC1/DC2 circuit board **for desired minimum speed**.
(USUALLY FACTORY PRESET FOR ZERO OUTPUT, with LED indicator ON.)
4. Now slowly turn the operator speed control knob up to full clockwise (maximum on dial).
5. Adjust the **MAX pot** on the DC1/DC2 circuit board **for maximum desired speed**. OBSERVE actual RPM reading on the meter, if supplied.

To avoid dead band at the top end of the speed range DO NOT OVER-ADJUST THIS SETTING.

Note: The LCD speed meter has been factory pre-calibrated. When a speed meter is not supplied, we recommend using a hand held optical tachometer to monitor the output speed of the drive.

The drive may now be manually operated throughout the entire speed range with the actual speed indicated by the speed meter.

6. It may be necessary to repeat steps 2 through 5 to fine-tune the final adjustments.
7. For smooth acceleration (Soft-Start) during initial startup, turn the **ACCEL pot** clockwise to lengthen the ramp of acceleration.

This feature virtually eliminates belt squealing during startup of the drive and is typically factory adjusted, although some situations may require further adjustment.

Note: The **DECEL pot** has been factory set for minimum (full counter clockwise).

II. AUTO MODE ADJUSTMENTS (Be sure to monitor motor current as described above)

PRESSURE SENSOR SIGNAL USED AS A SET POINT SPEED CONTROL

1. Turn the 3-way selector switch to the **AUTO** position.
2. Adjust for the desired pressure set point via the **ZERO pot**, located on the DC1/DC2 board.

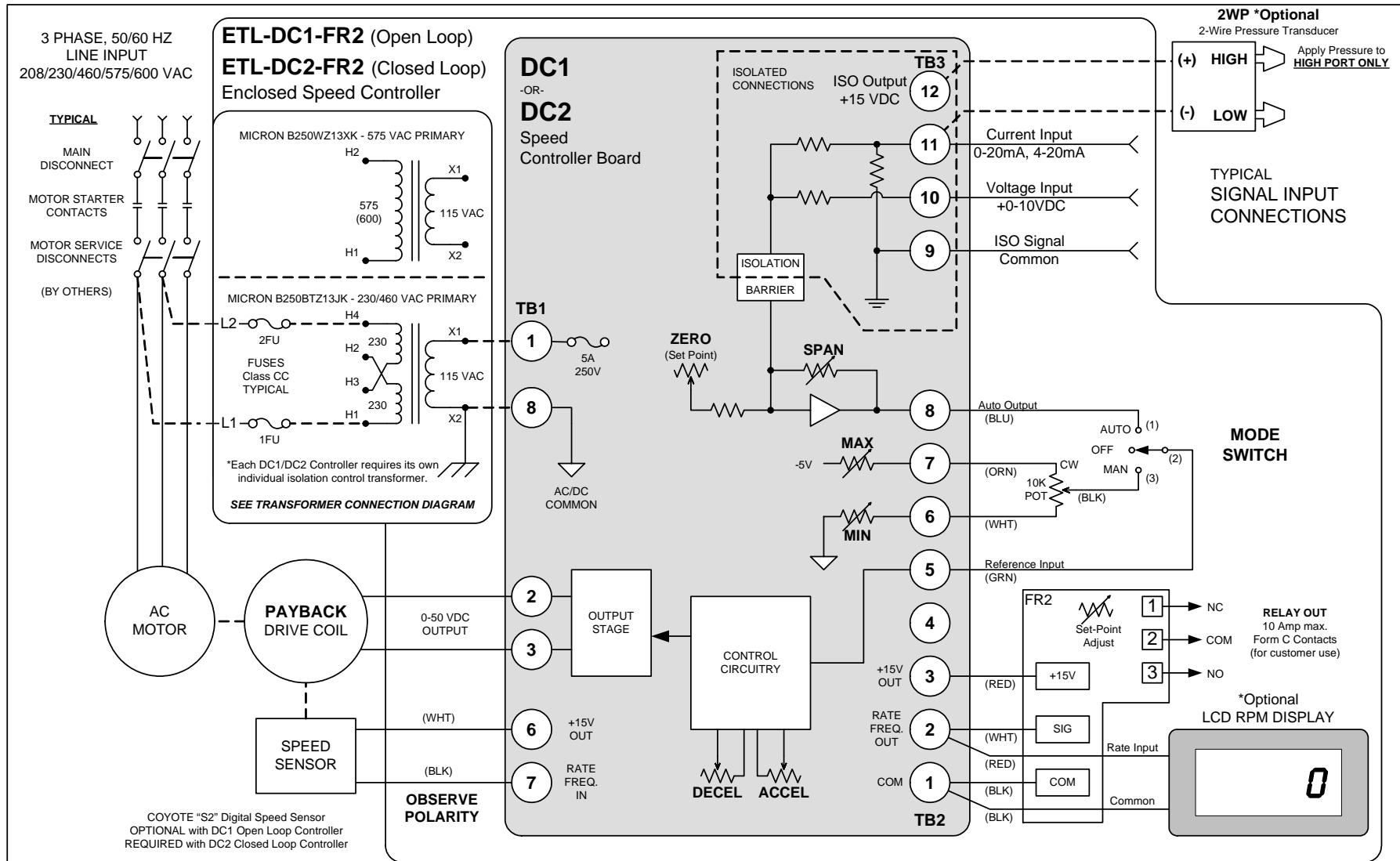
Note that the **SPAN** potentiometer which is also located on the DC1/DC2 circuit board is factory set, typically 4 to 5 turns from maximum clockwise allowing for higher gain conditioning of the pressure transmitter input signal for proper set point mode operation.

III. 2WP PRESSURE SENSOR/TRANSMITTER

*Your 2WP Pressure Sensor/Transmitter has been factory calibrated to specifications determined at the time the drive system was ordered. NO FIELD ADJUSTMENTS ARE REQUIRED.

IF FOR ANY REASON, YOUR DRIVE FAILS TO OPERATE PROPERLY AFTER YOU HAVE PERFORMED THE ABOVE PROCEDURES, PLEASE CALL THE FACTORY FOR FURTHER INSTRUCTIONS AT **817.485.3336**.

SUPPLEMENTAL SECTION



NOTES

*The control power transformer is configured to assure that single phase 115 VAC power to the controller is available ONLY when the motor is running. **EACH DC1 or DC2 CONTROLLER MUST BE CONNECTED TO ITS OWN INDIVIDUAL POWER ISOLATION TRANSFORMER FOR PROPER OPERATION. DO NOT CONNECT ADDITIONAL CONTROLLERS TO THE SAME TRANSFORMER. KEEP ALL HIGH VOLTAGE WIRES SEPARATE FROM OTHER WIRES.**

***The optional remote mounted pressure sensor, if used, should always be located on the duct a reasonable distance from the blower to avoid turbulence error. The tubing length to the sensor should be kept as short as possible to reduce the possibility of response delays which could contribute to system "hunting". **DO NOT RUN POWER WIRES AND SIGNAL WIRES IN THE SAME CONDUIT...KEEP SEPARATE. OBSERVE ALL ELECTRICAL AND SAFETY CODES.**

DC1/DC2 variable speed controller with isolated input conditioning circuitry that accepts and follows a standard voltage or current signal, or optionally, the signal from a Coyote 2WP (Two-wire pressure transducer) for stand alone applications to maintain a constant static pressure set point.
See applicable: **SIGNAL FOLLOWING** or **PRESSURE SET POINT MODE** calibration instructions
Designed and manufactured in the U.S.A.

COYOTE ELECTRONICS, INC.
4701 Old Denton Road
Fort Worth, Texas 76117
www.payback.com

Phone: 817.485.3336
Fax: 817.485.9437

| | | | |
|---|---------|--------------------------------|----------|
| ETL-DC1/DC2-FR2 | | | |
| DC1/DC2 Speed Controller with 115 VAC control transformer, optional LCD display, and Frequency Adjustable set-point relay | | | |
| SIZE A | FSCM NO | DWG NO BD-000-011-10 | REV C |
| SCALE NONE | | SHEET 1 OF 1 | |

FR2 RELAY MODULE ADJUSTMENT PROCEDURE

(Speed Set-Point Operated Contact)

Note: The speed controller must be calibrated prior to adjusting the FR2 threshold relay module.

MONITOR THE DRIVE RPM AND THE MOTOR AMPS WHILE PERFORMING THESE ADJUSTMENTS. All adjustment potentiometers on the DC1/DC2 board and the FR2 set-point module are the 20-turn type. Please follow the adjustment procedures in this manual, or calibrate as follows with the motor turned on:

I. MANUAL MODE (Sets the operating range of the door mounted manual speed potentiometer).

1. Select the MANUAL MODE on the MODE SELECTOR SWITCH located on the enclosure door.
2. Turn the Man Speed Knob on the enclosure door all the way down (counterclockwise to lowest setting).
3. Adjust the MIN SPEED pot on the DC1/DC2 circuit board down (counterclockwise) until the Status LED just turns ON, which indicates that the dc voltage is turned off to the drive coil.
4. Now turn the Man Speed Knob on the enclosure door all the way up (full clockwise to maximum setting).
5. Adjust MAX SPEED pot on the DC1/DC2 circuit board until the drive/equipment just reaches maximum speed. (This is also the same point the motor amps will be at maximum). Do not over adjust, as this will only add additional current to the clutch and create a dead band at the top of the speed range.
6. Repeat steps 1 thru 5 to fine tune if necessary.

II. AUTO MODE (Applies to typical Signal Following Adjustment Mode Only)

Verify signal type supplied to the controller on the TB3 isolated signal terminals. (0-10vdc, 4-20ma, etc).

The auto mode functions similarly to the manual mode adjustments, except the AUTO (SPAN and ZERO) potentiometers are used to set the operating control range of the input signal to the drive.

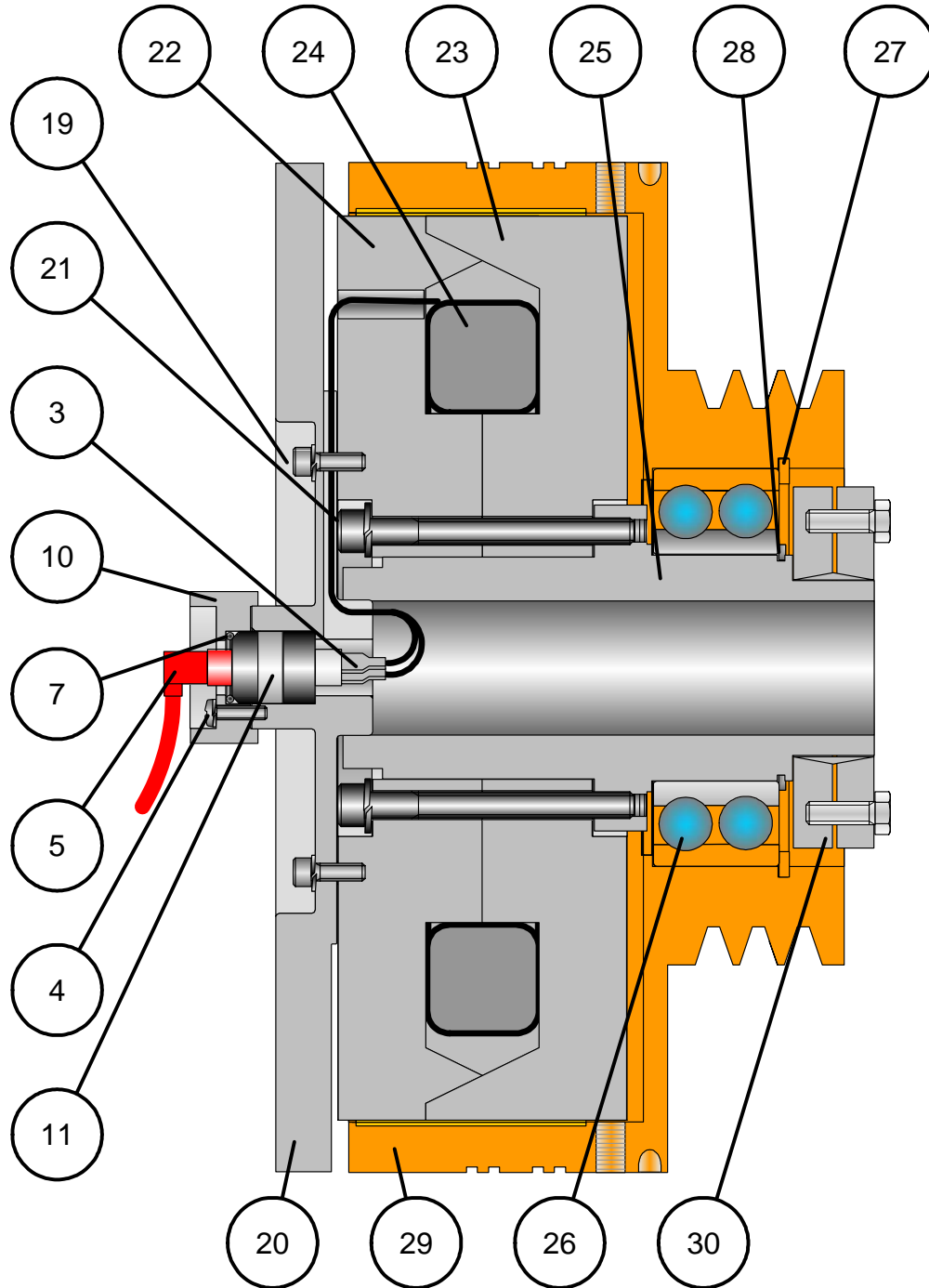
1. Select the AUTO MODE on the MODE SELECTOR SWITCH located on the enclosure door.
2. With minimum signal input at the TB3 signal terminals (i.e. 4 ma for 4/20ma, 0vdc for 0-10vdc, etc), adjust the ZERO pot until the Status LED just turns ON, which indicates the dc voltage is turned off to the drive coil. Turning the zero pot too far in either direction will cause the LED to go off again. Be sure to set this initial adjustment accurately with the LED ON and dc voltage OFF to the drive.
3. Now apply your maximum input signal, (i.e. 20 ma for 4/20ma, or 10vdc for 0-10vdc, etc).
4. Adjust the SPAN pot on the DC1/DC2 board until the drive/equipment just reaches maximum speed. (This is also the same point the motor amps will be at maximum). Do not over adjust, as this will only add additional current to the clutch and create a dead band at the top of the speed range.
5. Repeat steps 1 thru 4 to fine tune if necessary.

III. FR2 RELAY MODULE ADJUSTMENT (Auxiliary Module that has an adjustment pot that can be set to operate at any point throughout the speed range of the drive system).

Verify all connections to the module and check that the speed sensor is connected and is working properly. The speed sensor has an integrally mounted LED that will illuminate on each alternate cycle of sensing the passing holes on the drive drum. (There are 60 holes per each drive).

1. First, determine at what speed point you would like for FR2 Relay contact to activate.
2. Select MAN MODE on the MODE SELECTOR SWITCH.
3. Adjust the Man Speed KNOB on the enclosure door until the system is operating at the exact speed where you want the FR2 relay to energize.
4. Adjust the FR2 set-point adjust pot until the FR2 LED just turns on. The relay will remain energized at this speed point and higher. When the drive is slowed down below this speed, the relay will deactivate, and then reactivate again every time the speed passes above the set-point.

EASY PAYBACK® DRIVE CUTAWAY



EASY PAYBACK® DRIVE PARTS LIST

| ITEM # | BIN# | PART# | QTY | APPLICATION / DESCRIPTION |
|--------|------|---|-----|--|
| 3 | | TERMINALS (Straight) | 2 | 2 WIRE CONNECTIONS FOR RPCU-2/PAYBACK COIL (INSIDE TERMINALS) |
| 4a | | PBX-BOLT 10-24 X 7/8 PHILLIPS PAN HD | 3 | #10 HOLDING BOLT FOR ENDCAP ASSY. |
| 4b | | PBX-LWASHER-10 | 3 | #10 LOCKWASHERS FOR ENDCAP ASSY. |
| 5 | | DRIVE POWER CABLE | 1 | 2 WIRE CABLE W/RIGHT-ANGLE TERMINALS |
| 7 | | PBX-O-RING | 1 | RPCU-2 O-RING |
| 10 | | PBX-ENDCAP-2 | 1 | ENDCAP FOR RPCU-2 |
| 11 | | PBX-RPCU-2 | 1 | ROTARY POWER COUPLING UNIT |
| 19a | | PB(*)-BOLT-FAN | 6 | MOUNTING BOLTS FOR FAN ASSY |
| 19b | | PB(*)-LWASHER-FAN | 6 | LOCKWASHERS FOR FAN ASSY |
| 20 | | PB(*)-FAN | 1 | ALUMINUM FAN |
| 21a | | PB(*)-BOLT-SPIDER | 6 | MOUNTING BOLTS FOR SPIDER ASSY |
| 21b | | PB(*)-LWASHER-SPIDER | 6 | LOCKWASHERS FOR SPIDER ASSY |
| 22 | | PB(*)-SPIDER-A | 1 | SPIDER (A) – FAN-SIDE |
| 23 | | PB(*)-SPIDER-B | 1 | SPIDER (B) – SHEAVE-SIDE |
| 24 | | PB(*)-COIL | 1 | DRIVE COIL |
| 25 | | PB(*)-HUB-(Specify bore size) | 1 | MAIN SUPPORT HUB |
| 26 | | PB(*)-BEARING | 1 | MAIN DRIVE BEARING |
| 27 | | PB(*)-INT SNAPRING | 1 | INTERNAL SNAP RING FOR DRIVE BEARING |
| 28 | | PB(*)-EXT SNAPRING | 1 | EXTERNAL SNAP RING FOR DRIVE BEARING |
| 29 | | PB(*)-DRUM | 1 | DRUM AND PULLEY ASSY |
| 30 | | PB(*)-SHRINKDISC | 1 | SHRINKDISC ASSY |

Notes:

(X) – Indicates parts used on all models

(*) – Specific model # i.e.: PB(1), PB(2), PB(3), etc.

For ordering information and spare parts, call: 817.485.3336

WARRANTY REGISTRATION FORM

FOR FACTORY WARRANTY TO BE VALID, INSTALLER MUST COMPLETE THIS FORM.

Please make copies of this blank form. Fill out the required data for each system.

FAX COMPLETED FORM to Coyote Electronics, Inc. 817-427-4395 or 817-485-9437

INSTALLATION DATE _____ PERFORMED BY _____

PHONE _____ FAX _____

JOB/SITE NAME _____

ADDRESS _____

APPLICATION / TYPE OF EQUIPMENT (Be specific) _____

EQUIPMENT DESIGNATION, UNIT #, I.D. # _____

PAYBACK DRIVE MODEL # _____ DRIVE SERIAL # _____

DRIVE PULLEY DIA. _____ DRIVEN EQUIP. PULLEY DIA. _____

MOTOR NAMEPLATE DATA

HP/KW _____ RPM _____ FRAME # _____

ODP TEFC OTHER _____

50HZ 60HZ 1-PHASE 3-PHASE

FULL LOAD AMPS _____ @ AC VOLTS _____

**RECORD ALL DATA WITH SYSTEM OPERATING AT MAXIMUM
(100% FULL LOAD / RPM CONDITION)
VERIFY THAT THE DC CONTROLLER VOLTAGE TO THE DRIVE
IS SET TO MAXIMUM (APPROXIMATELY 50VDC)**

ACTUAL MEASURED DATA @ FULL LOAD RPM

LINE AC VOLTS _____ MOTOR AC AMPS _____

DRIVE RPM _____ DRIVEN LOAD RPM _____

@ CONTROLLER DC VOLTAGE OUTPUT TO PAYBACK DRIVE COIL _____ VDC

WARNING: The installation and use of Coyote Electronics, Inc.'s products should be in accordance with the provisions of the U.S. National Electrical Code and/or other local codes or industry standards that are pertinent to the particular end use. Installation or use not in accordance with these codes and standards could be hazardous to personnel and/or equipment.

Coyote Electronics, Inc. • 4701 Old Denton Road • Fort Worth, TX. 76117 • Phone: 817-485-3336

NAME PHONE FAX

- ❖ Please make copies of this blank form. Fill out as much information as possible.
- ❖ Use one (1) form per motor.
- ❖ Email all pertinent jpeg digital pictures to: eng@payback.com
- ❖ If applicable, submit a detailed sketch of the equipment layout, clearance dimensions and all other pertinent information including belt guard requirements.
- ❖ Fax completed form to CEI at: (817) 485-9437

MOTOR NAMEPLATE DATA

HP SF
 KW PF

ODP TEFC OTHER

FRAME

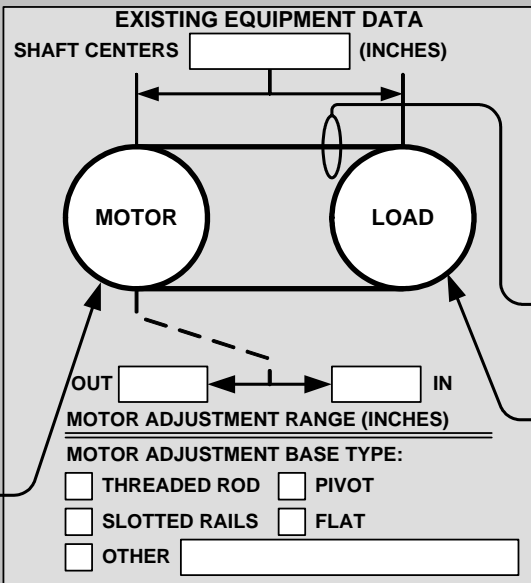
50HZ 1-PHASE
 60HZ 3-PHASE

1-SPEED RPM
 2-SPEED HI RPM
 LO RPM

FL AMPS
 @ AC VOLTS

MOTOR PULLEY

DIA.
 MODEL #



DOC # TR-000-001-01-RF

BELT(S)

MODEL #
 QTY OF BELTS

DRIVEN PULLEY

DIA.
 MODEL #
 BUSHING #
 SHAFT DIA.

EQUIPMENT DESCRIPTION

EQUIPMENT DESIGNATION, UNIT #, I.D. #

APPLICATION/TYPE OF EQUIPMENT (BE SPECIFIC)

AMBIENT OPERATING TEMPERATURE FOR:

| | (MIN) | (MAX) | INDOORS | OUTDOORS |
|---------------|-------------------------|-------------------------|--------------------------|--------------------------|
| MOTOR & DRIVE | <input type="text"/> °F | <input type="text"/> °F | <input type="checkbox"/> | <input type="checkbox"/> |
| CONTROLLER | <input type="text"/> °F | <input type="text"/> °F | <input type="checkbox"/> | <input type="checkbox"/> |

DESIGN OPERATING RPM @ DESIGN BHP/BKW

MEASURED DATA @ FULL LOAD RPM (IF AVAILABLE):

LINE AC VOLTS AC AMPS DRIVEN LOAD RPM

SPEED CONTROLLER REQUIREMENTS

DISTANCE - MOTOR/DRIVE TO CONTROLLER LOCATION (FEET)

SIGNAL FOLLOWING TYPE: 0-10V DC 4-20 mA OTHER

SPEED/RPM METER OPTION (LCD DISPLAY & SPEED SENSOR)

PRESSURE SENSOR: SETPOINT/RANGE (SPECIFY)

ISOLATED SPEED FEEDBACK SIGNAL FOR 0-1800 RPM (SPECIFY) 0-10V DC 4-20 mA

OTHER

NOTES:

