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Encoder Instructions

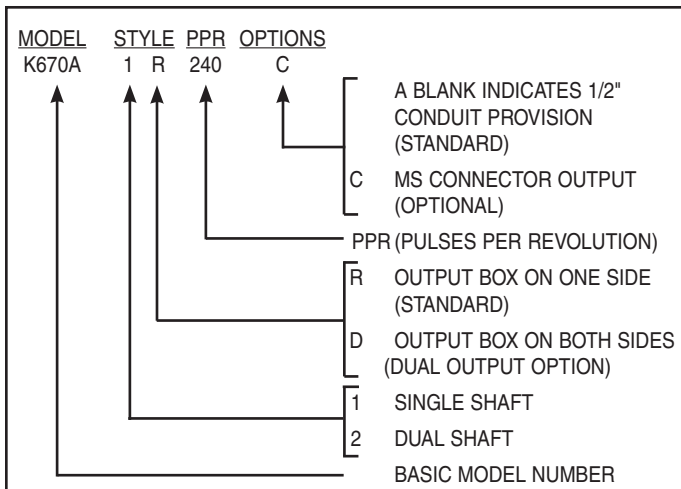
K670A
 INACTIVE DESIGN
 Replaced by Model **M628A**

DESCRIPTION

The K670A is a mill-duty reluctance-type rotary pulse generator for use with Avtron digital measurement systems.

This unit requires no external operating power. A magnetic transducer generates a signal pulse each time a tooth of a rotating steel gear passes its magnetic tip. Coupling the pulse generator to a machine shaft then produces an output frequency directly proportional to the rotational speed of the shaft.

Various K670A options and how they are indicated in the K670A part number are shown below:



REPAIR OR REPLACEMENT

Service or repair of Avtron pulse generators requires special alignment, test equipment, and trained personnel. It is recommended that broken or otherwise inoperative pulse generators be returned to Avtron for repair. Units not under the original equipment warranty will be restored for a nominal charge on a short turnaround basis.

INSTALLATION

The pulse generator should be driven by a positive drive rather than a friction or V-belt drive. The following means of driving the pulse generator may be used when installed in accordance with the coupling manufacturer's recommendations: Direct Coupling, Timing Belt and

Pulleys, Chain and Sprockets, Gears. With a direct drive, use a flexible coupling and align the shafts as accurately as possible. The pulse generator should not be subjected to any axial thrust. Overhung loads should also be minimized. Installations using timing belts and pulleys should have just enough belt tension to insure proper engagement of teeth. Excessive tension will shorten belt and bearing life.

CAUTION

Do not force or drive the coupling onto the shaft, or damage to the bearings may result. The coupling should slide easily on the shaft. Remove nicks or rust if necessary. Consider driving shaft endplay when positioning coupling.

Electrical connections to the K670A are by either conduit connection or plug-in MS type connector. The output box cover may be removed and the box rotated in 180° allowing a selection of two different entry positions. Reinstall all gaskets when changing box positions. It is recommended (and national or electrical codes may require) that the interconnecting cable be run in conduit, even though the cable includes its own electrostatic shield. The conduit will protect the cable against damage and extend service life and reliability.

It is recommended that two conductor shielded cables be used for interconnection of the Pulse Generator with the associated equipment. Refer to system drawings for specific cable requirements where applicable. Physical properties of cable such as abrasion, temperature, tensile strength, solvents, etc., are dictated by the specific applications. General electrical requirements are: stranded copper, 22 thru 16 gauge; braid or foil shield with drain wire, 0.05 MF maximum total mutual or direct capacitance; outer shield insulator, 1,000 ft. maximum.

SERVICE INSTRUCTIONS

A. Transducer Replacement and Adjustment

1. Remove the conduit box from the side of the pulse generator. Unsolder the transducer leads from the interconnecting cable and loosen the screw on the loop clamp holding the leads. Loosen the set screw on the adapter around the transducer and remove the transducer.

2. The transducer should be replaced if its chisel-shaped tip has been damaged.
3. Remove the top cover plate from the pulse generator to provide access for a feeler gage. Insert the replacement transducer into the adapter.

CAUTION

Do not allow the transducer tip to strike the rotor.

4. Insert a 0.004 inch feeler gage between the rotor and the tip of the transducer. Gently holding the transducer against the feeler gage, rotate the transducer until its marker line is along the shaft centerline of the pulse generator (transducer chisel tip edge line in line with the rotor teeth). From this position, rotate at an angle to coincide with the number of teeth as follows:

Up to 100 teeth incl. — 45°

160 to 240 teeth — 15°

Above 240 teeth — 0°

Tighten the set screws holding the transducer. Do not overtighten! Carefully remove the feeler gage.

5. Feed the transducer leads through the loop clamp and tighten the clamp screw.

6. Connect the transducer leads to the interconnecting cable using crimp-type connections or rosin-core solder, and insulate the connections.

B. Inspection and Replacement of Bearing and Rotor Wheel

1. To remove the rotor assembly from the pulse generator:

CAUTION

To avoid damage to the transducer or rotor teeth, remove transducer before proceeding. (See part A for transducer removal.)

- a. Remove screws and backplate from pulse generator.
- b. Pull synthetic rubber slinger off front end of shaft, exposing three cap screws; then remove cap screws and bearing end plate. Remove the snap ring on the bearing O.D.
- c. Remove the pulse generator rear cover plate.
- d. Remove rotor assembly by pushing on the outer race of the bearing, taking care to protect rotor teeth.

CAUTION

Do not press on shaft in this step.

K670A SPECIFICATIONS:

OUTPUT WAVEFORM	SINE WAVE
OUTPUT FREQUENCY	50 HZ TO 12 KHZ
OUTPUT LEVEL.....	0.5 V P-P MIN. TO 10 V P-P MAX. (TYPICAL) INTO 2.2 K SERIES AND 0.01 MFD SHUNT LOAD
OUTPUT IMPEDANCE.....	600 OHMS
OUTPUT CONNECTIONS	8 INCH LEADS, CONDUIT ENTRY (MS CONNECTOR OPTIONAL)
PULSES PER REVOLUTION.....	60, 100, 160, 240, 320, 360 (STANDARD)
OPERATING SPEED.....	50-5000 RPM
OPERATING TEMP RANGE	-20° TO +85° C
STARTING TORQUE.....	3 OZ.-IN.
SHAFT INERTIA.....	0.38 OZ.-IN.-SEC ²
ACCELERATION, MAXIMUM.....	5000 RPM/SEC
SHAFT LOADING, MAXIMUM	15 LBS. AXIAL, 45 LBS. RADIAL
COUPLING RECOMMENDED	ZERO BACKLASH, THOMAS MINIATURE FLEXIBLE OR EQUIVALENT. WHERE AXIAL ENDPLAY EXCEEDS +/-0.020", USE THOMAS CCX OR EQUIVALENT.
SHAFT EXTENSION	SINGLE (STANDARD), DUAL (OPTIONAL)
WEIGHT	13.5 LBS. SINGLE OUTPUT 14.5 LBS. DUAL OUTPUT

NOTE: AVTRON STANDARD WARRANTY APPLIES. COPIES AVAILABLE UPON REQUEST.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

2. Inspection

- The pulse generator bearing is permanently lubricated. Inspection and replacement schedule should be the same as for other sealed bearing equipment in use at the same location.
- The bearing should be replaced when worn or rough, or upon excessive loss of grease.
- The rotor wheel should be replaced if the teeth are severely nicked or gouged.
- Avtron recommends that the entire rotor assembly (consisting of shaft, bearing, and rotor) be removed and returned to the factory if any repairs are necessary.

3. Rotor Repair

- Do not remove the rotor from the shaft if only bearings are being replaced. The rotor was factory surface ground as an assembly.

If the rotor teeth are damaged and need to be relaced:

Avtron recommends that the entire rotor assembly (consisting of shaft and bearing assembly, and rotor) be removed and returned to the factory.

Runout measured at toothed edge of the rotor must not exceed 0.0005 inches T.I.R. If it is not within limits or rotor teeth are damaged, the teeth must be ground (with the rotor assembled to the shaft and bearing held stationary). The ground surface should have a 63 micro finish.

Rotors, especially 240 tooth and larger, that have been previously surface ground may require replacing due to excessive tooth loss.

CAUTION

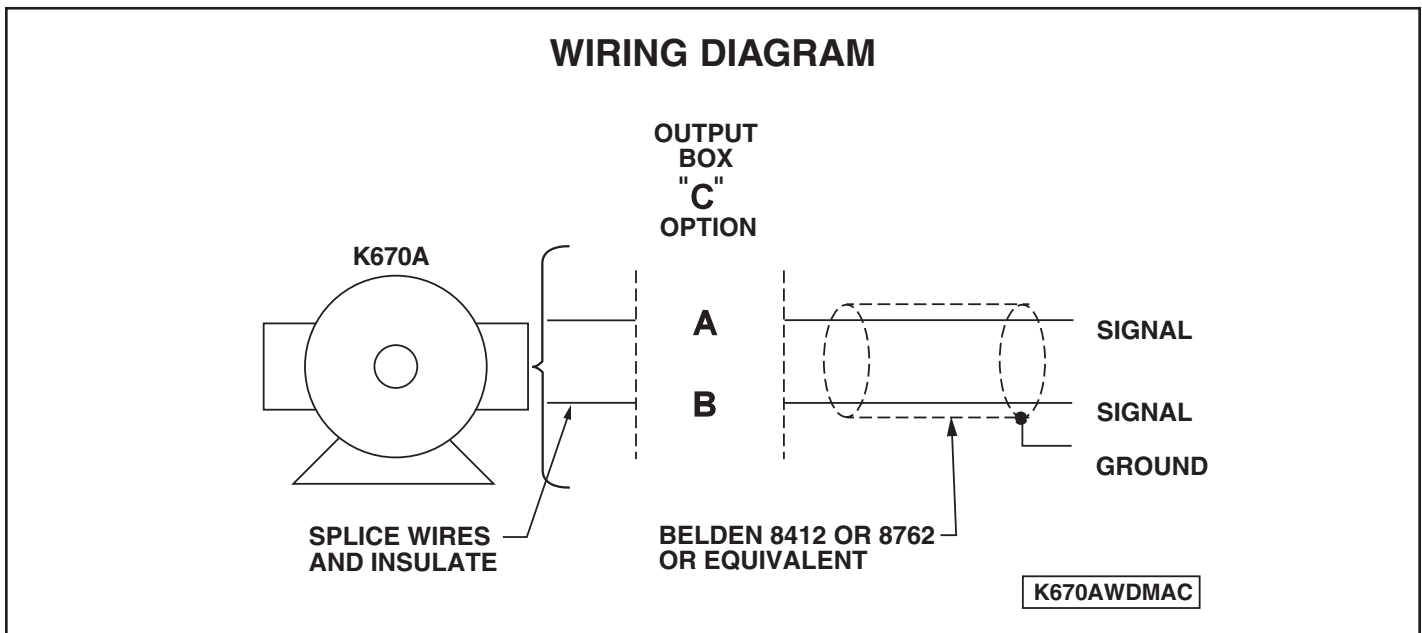
Do not press on outer race of bearing when installing new bearings.

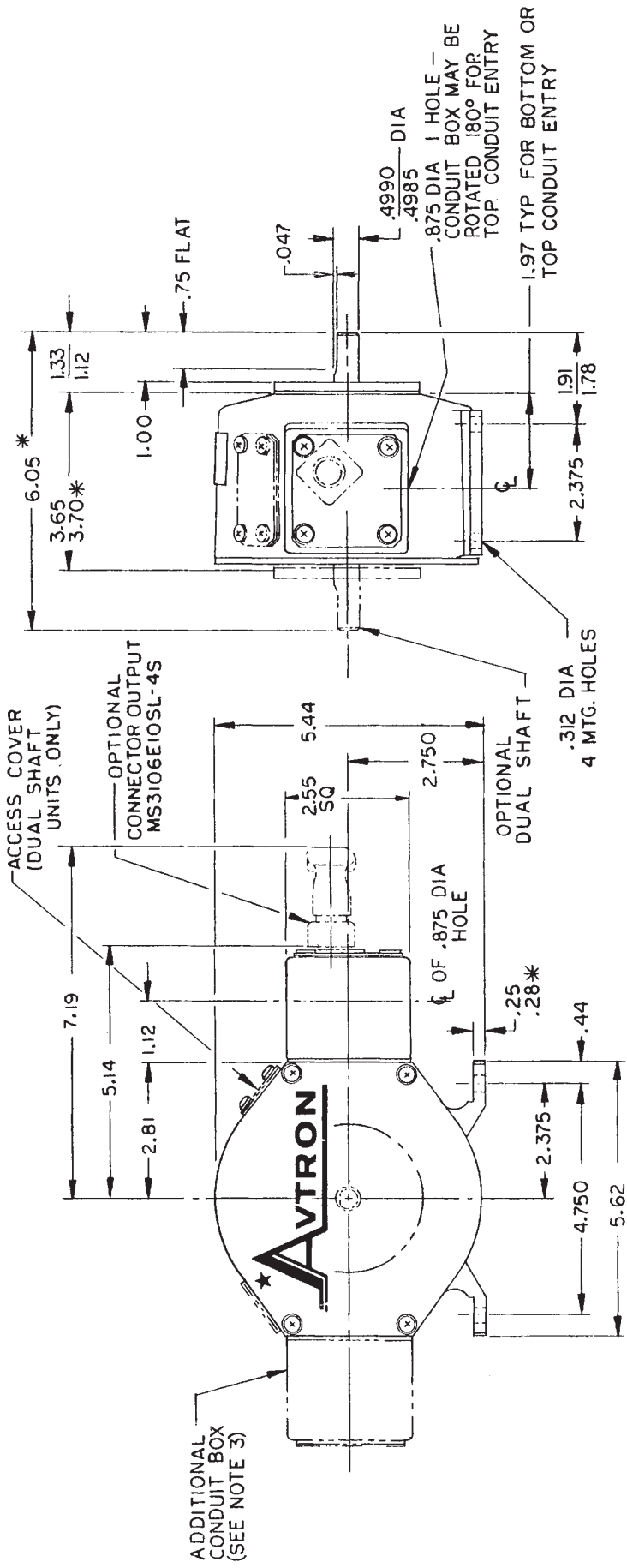
4. Rotor Installation

- With transducer removed, slide the rotor assembly into the housing. Reinstall the snap ring on the bearing O.D.
- Install the bearing end plate using the three cap screws.
- Place the loading spring into the rear cover plate and install the rear cover. The shaft should rotate freely. Install the rubber slingers.
- Refer to part "A" for transducer installation.

PART NO.	DESCRIPTION
B20713	SHAFT, SINGLE
B20714	SHAFT, DUAL
B16008	BEARING WITH SNAP RING, HOUSING
403325	BEARING, END COVER
403012	SPRING, LOAD
*	ROTOR
A5227	SLINGER, SYNTHETIC RUBBER
B9535	TRANSDUCER (MAGNETIC PICKUP)
A8145	GASKET, CONDUIT BOX
A9948	GASKET, CONDUIT BOX COVER

* ORDER ROTOR BY SUPPLYING PULSE GENERATOR PART NUMBER.





4 - * INDICATES DIMENSION APPLIES TO DUAL SHAFT UNITS.

3 - CONDUIT BOXES BOTH SIDES FOR DUAL OUTPUT UNITS.

2 - ALL DIMENSIONS ARE APPROX.

1 - WEIGHT: SINGLE OUTPUT: 7.5 LBS
 DUAL OUTPUT: 8.5 LBS

NOTES:



INDUSTRIAL AUTOMATION, INC.

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