

Compumotor

Specifications for IC Encoder

Compumotor Division
Parker Hannifin Corporation
p/n 88-010434-01 B



IC Encoder Specifications
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Description

The IC encoder is a linear incremental encoder. Performance and construction of the IC is based on the rotary incremental encoder and rack and pinion technology. The rotary encoder has a pinion gear for its shaft that is aligned to a rack assembly. All components are encased within a cylinder-type enclosure. The enclosure of the IC is usually mounted stationary, while the shaft of the IC is normally mounted to the moving load.

The shaft of the IC is connected to the encoder pinion head. Linear motion of the pinion head along the rack results when the shaft is depressed or extended. This causes the pinion to rotate, forcing the shaft of the rotary encoder to rotate as well. The IC encoder has a 10-tooth pinion gear aligned with bearings to a 20-tooth rack. Thus, the rotary encoder rotates twice per inch. Incremental quadrature pulses are generated by the movement of the shaft.

The construction of the IC encoder simplifies mounting by using only four set screws for proper aligning. The IC construction protects against fluid splashing and contaminants. The fully sealed endplates and extrusion prevent contaminants from entering the unit.

Electrical Specifications

1. Power Requirement: +5VDC \pm 5%, @200mA.
2. Output: TTL-compatible complimentary outputs capable of sinking 16 mA of current (A, A, B, B, Z, Z).
3. Reference Signal: 0.250" (\pm 0.01") from the end of the shaft. The repeatability is equal to 0.001". This signal is derived from a reflective assembly shining on a strip. If the reference is on, the signal is 0.3V maximum (after the photo-sensor amplifier). If the reference is off, the level is 3.6V minimum. The distance (d) between the reflective assembly and the strip is $0.050" < d < 0.100"$.
4. The B channel leads the A channel when depressing the shaft inward.
5. Quadrature specification: 90 (\pm 40 electrical degrees).

Mechanical

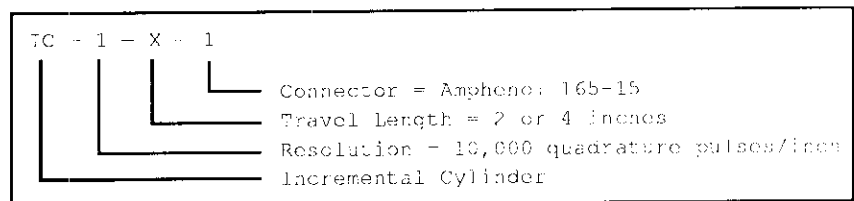
1. Resolution: 2,500 lines or cycles per inch (This translates to 10,000 quadrature counts per inch)
2. Accuracy: \pm 0.001"
3. Maximum speed: 20 ips
4. Maximum acceleration: 75 ips²
5. Weight: 3.5 lbs.
6. Movable mass: 0.0383 oz-sec /in.

7. Sealing system: Standard splash resistance via gaskets and an O-ring cord.
8. Length of travel: 2" or 4"
9. Output connector is an Amphenol 165-15
10. Maximum allowable side loading with the probe in extended position is 5 lbs.
11. Operating force: 35 lbs. maximum with shaft fully depressed

Environmental Specifications

1. Operating temperature range: 0°C to 60°C.
2. Storage temperature range: -25°C to 85°C.

Ordering Specifications



Sealing Procedure

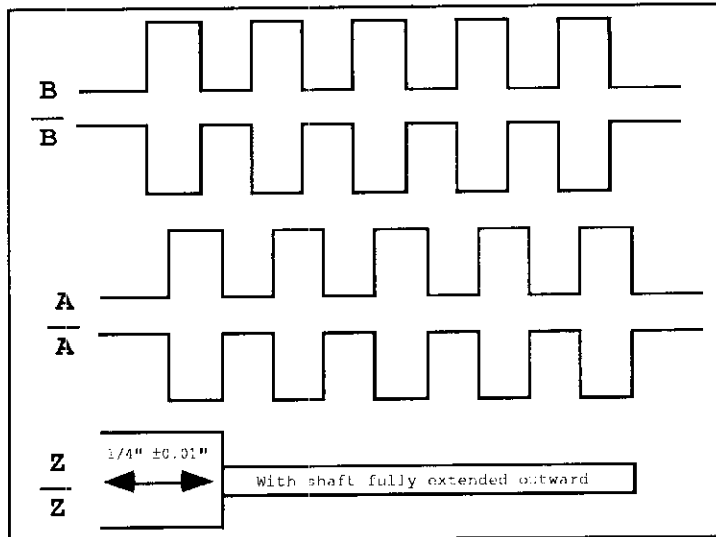
The two extrusion halves must be compressed prior to tightening the screw in the end plates. Follow this procedure when sealing the assembly.

1. Verify the rubber cords are not damaged, and are properly installed in the duct channels.
2. Align the two extrusion halves. Ensure that the ends are flush.
3. Clamp the two halves together, thus compressing the cord. Verify that the ends of the extrusion are still flush.
4. Install the shaft end plate first. Verify that the end plate gasket is not damaged, and is properly installed in the recess. Manually tighten the shaft end plate by alternately turning each of the four screws.
5. Before tightening the shaft end plate, install the connector end plate. Verify that the connectors are installed properly and tie wrapped. Verify that the gasket is not damaged and is properly installed in the recess. Hand tighten the end plate by alternately turning each of the four screws. Verify that the gaskets are not pinched prior to final tightening.
6. Tighten each of the eight screws to 2 in.lb. using an alternating cross pattern.
7. Tighten the eight screws to 4 in.lb. using an alternating cross pattern. Verify that the two gaskets are not pinched and the actuating shaft is capable of smooth motion.

Leveling Instructions

Use the four #8-32 screws in the end plates to align the encoder. Place a level on the top extrusion to adjust pitch and roll alignment. One complete turn of a screw at any one corner will raise the corner 0.031".

Timing & Pin-Out Specification For Amphenol 165-15 Connector



Timing Diagram Specification with Shaft Depressed Inward

Channel/Function	Amphenol 9 Pin
A	A
\overline{A}	K
B	B
\overline{B}	E
Z	C
\overline{Z}	J
+5VDC	H
Ground	D
Shield	F

Pin-Out Specification

