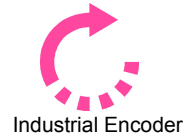




TCA Industrial Controls
Manufacturers' Representatives
P.O. Box 10125 • Pleasanton, CA 94588-0125
Phone (925) 426-0073 • Fax (925) 426-0094
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Encoders for Hoist Vector Drives

AC & DC drives for hoist applications are becoming very popular. If there is no mechanical load brake in the hoist, certain safety issues must be addressed. Since the motor is used to hold the load, it is very important that the drive has more motor information than just motor amps. Using motor speed feedback along with motor current gives the drive a true indication of what the motor is doing. The most common AC drive used for this application is a closed loop, flux vector drive.

To give the motor speed feedback to the drive requires an optical encoder. It is a simple device that sends pulses back to the drive indicating both speed and direction. The most common encoders are 1024 pulses per revolution, with quadrature (A & B channels -- to derive direction), and include complements (opposing channels that goes low when its counterpart goes high – for increased noise immunity). The best location to mount the encoder is on the motor shaft. Generally a stub shaft is mounted on the back of the motor shaft to add an encoder.

Electrical noise induced through the encoder wire is a common problem that can cause the drive to not operate properly. To eliminate this problem, you must use shielded wire with twisted pairs. Ground the shield at the drive side only. The encoder cable assembly should be uninterrupted between the drive and encoder without any splices or junctions. Avoid using terminal blocks and cable segments – this is areas where noise can enter the wire. Where festooning is required, special shielded festoon cable is available or piggyback the standard encoder cable to the existing festoon.

TCA represents **Industrial Encoder Corp** (IEC). An ideal and well accepted encoder has been their IH740 Series. It is a hollow shafted encoder and is very simple to install. All that is required is a stub shaft to mount it and something to keep it from turning.

The IH740 series has a variety of different shaft sizes it will accept. IEC stocks in kit subassemblies the following sizes -- 1/4", 1/2", 5/8", and 12 mm shafts. We recommend the standard 9 pin sub-D connector and a mating cable assembly.

Here are some reasons to consider Industrial Encoder:

- High quality industrial duty
- Worldwide product support
- **5-Year warranty** – standard
- CE approved products
- Casing sealed from environment
- 100% short circuit and reverse polarity protected

Recommended:

IH740-AE07R63-1024-S051, incremental hollow shaft encoder, for 5/8" shaft (5/8" is max for IH740), with quadrature with complements output, 1024 ppr, push pull line driver output, 9-pin Sub-D cable connector, with mounting tether. Mating cable assembly are standard 15 feet, but lengths up to 100 feet are available. Call us for current pricing.

The following pages include a data sheet, drawing, and pictures of the encoder with the attached tether. Other encoder sizes and styles are available. Please give us a call if we can be of assistance 925-426-0073.

Thank you,

TCA



Industrial Encoder Corporation

Manufacturers of Incremental & Absolute Encoders
Member of GESgroup

Industrial Encoder Corporation
7-320 Vansickle Road
St. Catharines, Ontario L2R 6P7
Tel: 888-277-6205 Fax: 905-984-5017
Email: iecsales@iec.on.ca
On Line: www.globalencoder.com

Hollow Shaft Encoder Mounting Instructions using a shoulder bolt & Tether

Note: Motor shaft must be larger than the Encoder Bore for this type of installation.

1. Drill and tap a 3/8" UNC hole in the center of the motor shaft. Ensure that the hole is exactly centered in motor shaft or damage to encoder will result from excessive vibration.
2. Apply a thread locker (Loctite® or similar) to shoulder bolt threads and hole in motor shaft.
3. Insert the shoulder bolt through the encoder shaft (see Figure 1). Ensure that setscrew side of encoder is facing and in contact with the motor shaft. The encoder housing **MUST NOT** come into contact with any rotating or moving parts.
4. Secure the supplied tether to a convenient **NON ROTATING** part of the motor frame with the supplied Tether Bolt. (3/8" UNC x 1.75")

THE ENCODER HAS A BUILT IN SUSPENSION SYSTEM THAT REQUIRES FREE AXIAL MOVEMENT. USE SUPPLIED TETHER KIT.

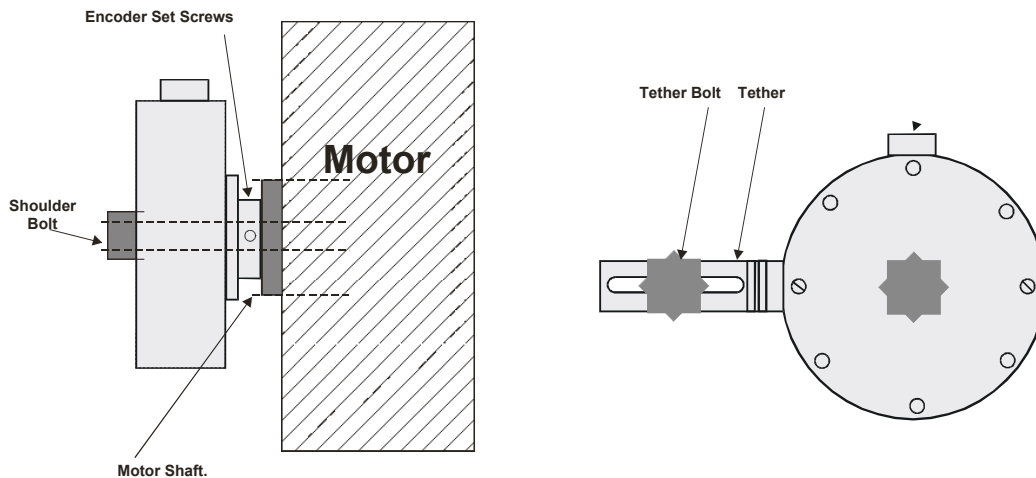
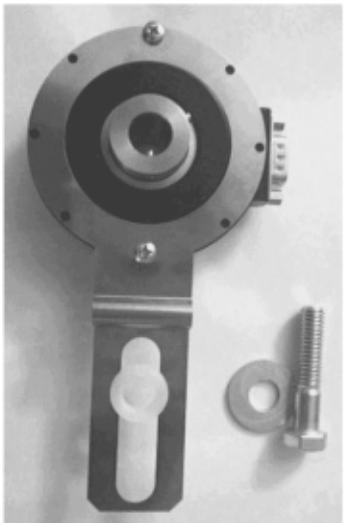
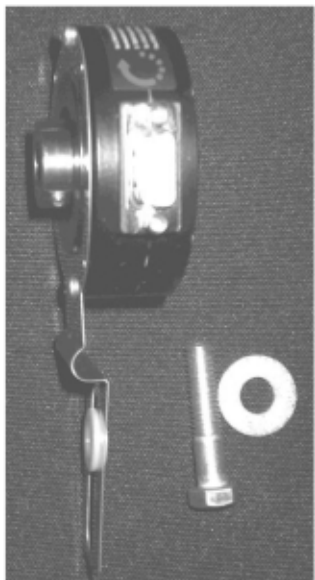
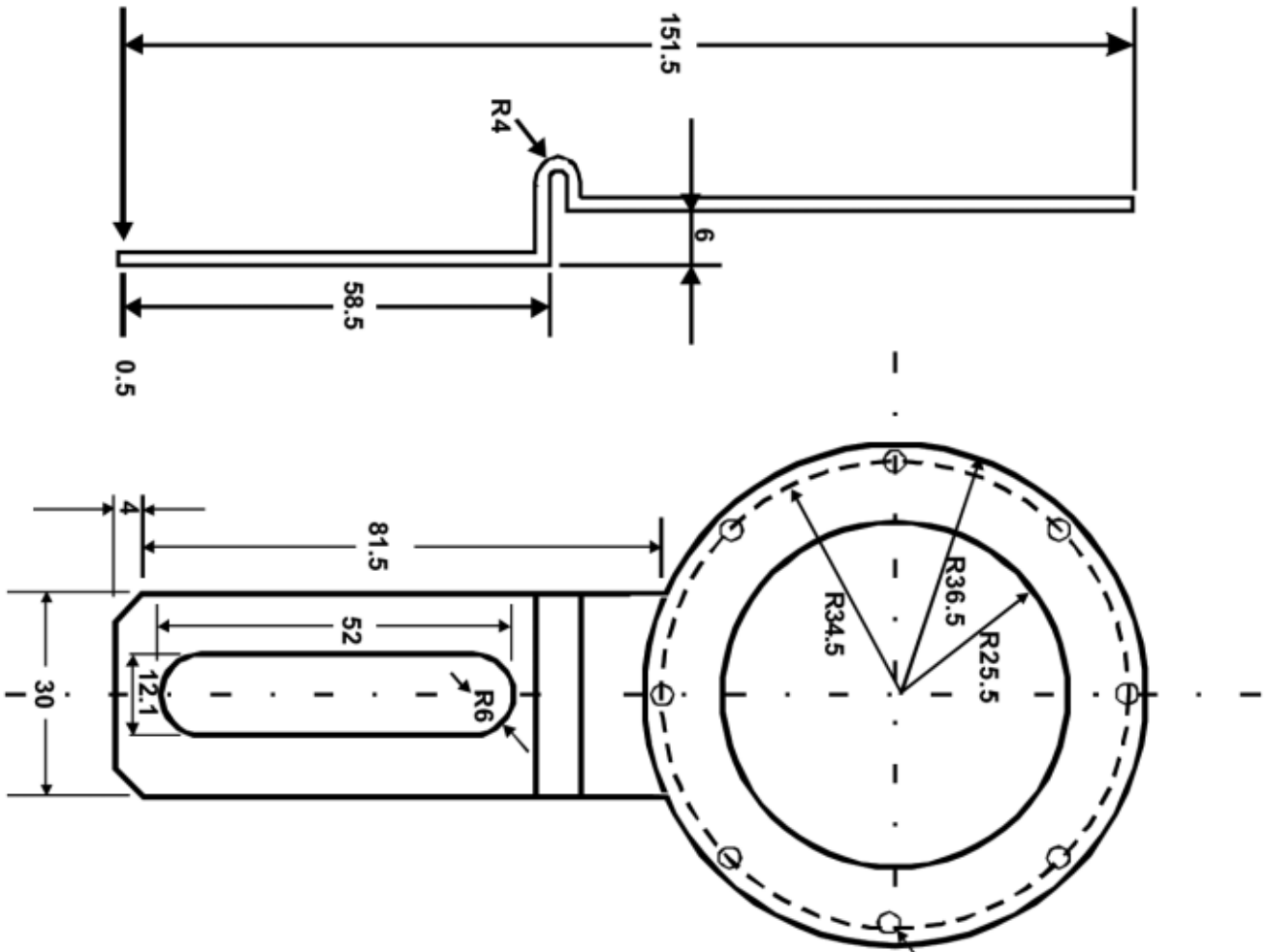


Figure 1

Wiring:

Electrical noise induced through the encoder wire is a common problem that can cause the drive to not operate properly. To eliminate this problem, you must use shielded wire. Ground the shield at the drive side only. The encoder cable assembly should be uninterrupted between the drive and encoder without any splices or junctions. Avoid using terminal blocks and cable segments – this is areas where noise can enter the wire. Where festooning is required, special shielded festoon cable is available or piggyback the standard encoder cable to the existing festoon.



Industrial Encoder Corp.
 7-320 Vansickle Road
 St. Catharines, ON L2R6P7

Drawing Number:
DS740-01

Drawing Subject:
IH740 Spring Steel Tether

Scale:
1:1

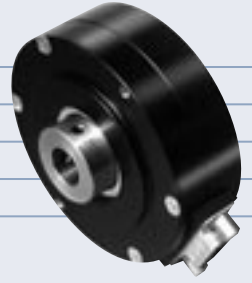
Date:
 June 29, 1998

Drawing By:
 Karl-Heinz Weber

IH 740

INCREMENTAL HOLLOW SHAFT ENCODER

- Heavy Duty Construction
- Shaft Mounted
- Range of shaft bores (6 – 18 mm)
- 25000 PPR Maximum
- 4.75 to 30 Volts, RS 422 Compatible
- 300 kHz Maximum Frequency



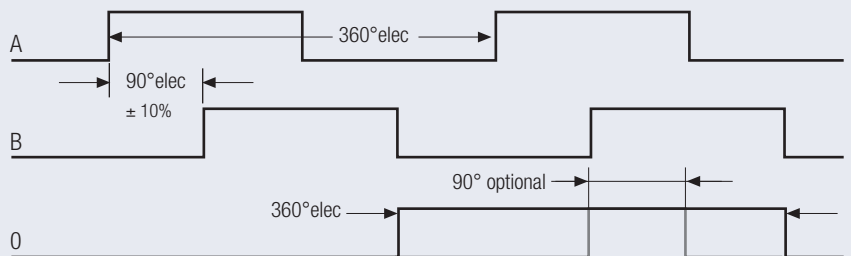
ELECTRICAL SPECIFICATIONS

Supply Voltage	4.75-30 V DC
Current Consumption	40 mA (max)
Output Circuit	Push-Pull, RS 422A
Impulse Frequency	300 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection	100 %

MECHANICAL SPECIFICATIONS

Cover	Aluminium
Body	Aluminium
Shaft	Stainless Steel
Speed	6000 RPM (max)
Torque	> 0.04 Nm
Loading	Axial 40 N, Radial 30 N
Protection	IP 65
Temperature	-20°...+70° C (-4°...+158° F) +100° C (+212° F) Optional
Weight	0.84 lb (380 g)

OUTPUT SIGNALS



A Leads B in the CW Direction (facing shaft)
Complimentary channel also available

Optional Gated Marker Pulse
Gated with A+B Shown

