

# Model 744 Heavy Duty "444" Tacho Style Encoder



Ø115 mm Flange

## Features

- Standard "444" Style, 115mm Diameter
- Up to 30,000 PPR
- Choice of Shaft Sizes
- IP64 Sealing Available

The 744 is designed to provide a digital encoder signal format to replace traditional Tacho style feedback devices. With available PPR's going as high as 30,000 pulses and a choice of shaft sizes along with the heavy duty bearings and mechanical assembly make the 744 perfect for those applications requiring a rugged and dependable encoder.

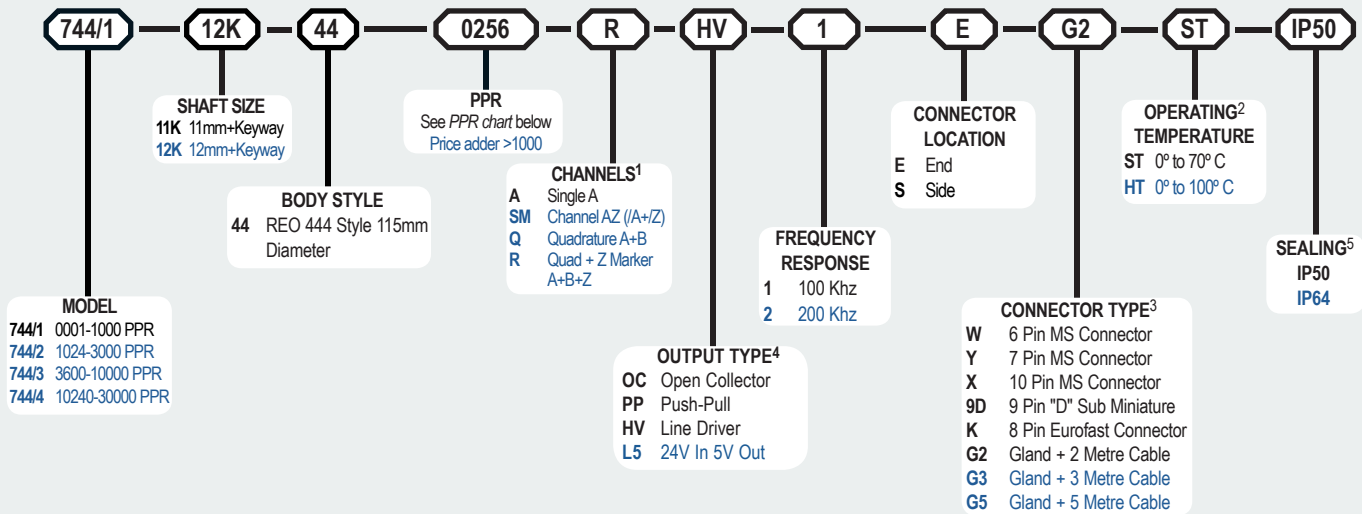
## Common Applications

Motion Control Feedback, Conveyors, Elevator Controls, Machine Control, Food Processing, Process Control, Robotics, Material Handling, Textile machines

## Model 744 Ordering Guide

Blue type indicates price adder options. Not all configuration combinations may be available.

Contact Customer Service for details.



## Model 744 PPR Options

0001*	0002*	0004*	0005*	0006*	0007*	0008*	0010*	0011*
0012*	0014*	0020	0021*	0024*	0025*	0028*	0030*	0032*
0033*	0034*	0035*	0038*	0040*	0042*	0045*	0050*	0060
0064*	0100	0120	0125	0128*	0144*	0150*	0160*	0192*
0200	0240*	0250	0254*	0256*	0300	0333*	0360	0400
0500	0512	0600	0625*	0635	0665*	0720	0889	1000
1024	1200	1204 <sup>a</sup>	1250 <sup>a</sup>	1270 <sup>a</sup>	1440	1500	1800	2000
2048	2400 <sup>a</sup>	2500	2540 <sup>a</sup>	2880 <sup>a</sup>	3000 <sup>a</sup>	3600 <sup>a</sup>	4000 <sup>a</sup>	4096 <sup>a</sup>
5000 <sup>a</sup>	6000 <sup>a</sup>	7200 <sup>a</sup>	7500 <sup>a</sup>	9000 <sup>a</sup>	10,000 <sup>a</sup>	10,240 <sup>a</sup>	12,000 <sup>a</sup>	12,500 <sup>a</sup>
14,400 <sup>a</sup>	15,000 <sup>a</sup>	18,000 <sup>a</sup>	20,000 <sup>a</sup>	20,480 <sup>a</sup>	25,000 <sup>a</sup>	30,000 <sup>a</sup>		

\* Contact Customer Service for High Temperature Option.

<sup>a</sup> High Temperature Option (H) limited to 85° C maximum for these PPR options.

Contact Customer Service to determine all currently available PPR values. Special disk resolutions are available upon request. A one-time NRE fee may apply.

For specification  
assistance call  
Customer Service at  
**+44 (0)1978 262100**

## NOTES:

- 1 Contact Customer Service for additional index gating options.
- 2 24 Vcc max for high temperature option.
- 3 Contact Customer Service for non-standard cable lengths.
- 4 Marker (Index) not available with 6-Pin (HV-Q) or 7-Pin MS connector & HV Output.
- 5 Increased starting torque with IP64 option.

# Model 744 Heavy Duty "444" Tacho Style Encoder

## Model 744 Specifications

### Electrical

Input Voltage.....4.75 to 24 VCC max for temperatures up to 70° C

Input Current.....100 mA max with no output load

Input Ripple.....100 mV peak-to-peak at 0 to 100 kHz

Output Format.....Incremental- Two square waves in quadrature with channel A leading B for clockwise shaft rotation, as viewed from the encoder mounting face. See *Waveform Diagrams* below.

Output Types.....Open Collector- 50 mA max per channel  
Push-Pull- 20 mA max per channel  
Line Driver- 20 mA max per channel (Meets RS 422 at 5 VCC supply)

Index.....Occurs once per revolution. The index for units >3000 PPR is 90° gated to Outputs A and B. See *Waveform Diagrams* below.

Freq Response.....Up to 200 KHz

Noise Immunity.....Tested to BS EN61000-4-2; IEC801-3; BS EN61000-4-4; DENV 50141; DENV 50204; BS EN55022 (with European compliance option); BS EN61000-6-2; BS EN50081-2

Symmetry.....1 to 6000 PPR: 180° (±18°) electrical at 100 kHz output  
6001 to 20,480 PPR: 180° (±36°) electrical

Quad Phasing.....1 to 6000 PPR: 90° (±22.5°) electrical at 100 kHz output  
6001 to 20,480 PPR: 90° (±36°) electrical

Min Edge Sep.....1 to 6000 PPR: 67.5° electrical at 100 kHz output  
6001 to 20,480 PPR: 54° electrical  
>20,480 PPR: 50° electrical

Rise Time.....Less than 1 microsecond

Accuracy.....Instrument and Quadrature Error: For 200 to 1999 PPR, 0.017° mechanical (1.0 arc minutes) from one cycle to any other cycle. For 2000 to 3000 PPR, 0.01° mechanical (0.6 arc minutes) from one cycle to any other cycle. Interpolation error (units > 3000 PPR only) within 0.005° mechanical. (Total Optical Encoder Error = Instrument + Quadrature + Interpolation)

### Mechanical

Max Shaft Speed.....6000 RPM. Higher shaft speeds may be achievable, contact Customer Service.

Shaft Size.....See order code

Shaft Material.....303 stainless steel

Shaft Rotation.....Bi-directional

Radial Shaft Load.....120N Operating

Axial Shaft Load.....120N Operating

Starting Torque.....7.0615 x 10<sup>-3</sup> Nm typical with no seal  
2.118 x 10<sup>-2</sup> Nm typical with IP64 shaft seal

Electrical Conn.....6-, 7-, or 10-pin MS Style, 8-pin M12 (12 mm), 9-pin D-subminiature, or gland with 2M of cable (foil and braid shield, 24 AWG conductors)

Housing.....Black non-corrosive finish

Bearings.....Precision ABEC ball bearings

Mounting.....115/85mm, 6 x M6 @ 100mm PCD

Weight.....600 grams typical

### Environmental

Operating Temp.....0° to 70° C for standard models  
0° to 100° C for high temperature option (0° to 85° C for certain resolutions, see PPR Options.)

Storage Temp.....-25° to +85° C

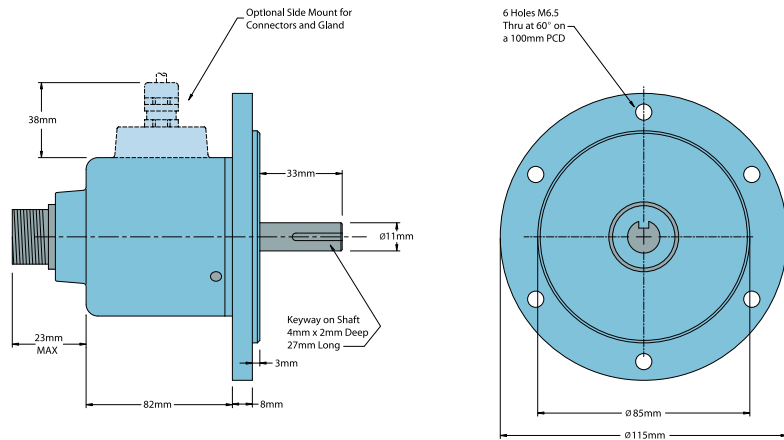
Humidity.....95% RH non-condensing

Vibration.....10 g @ 58 to 500 Hz

Shock.....50 g @ 11 ms duration

Sealing.....IP50 standard, IP64 optional

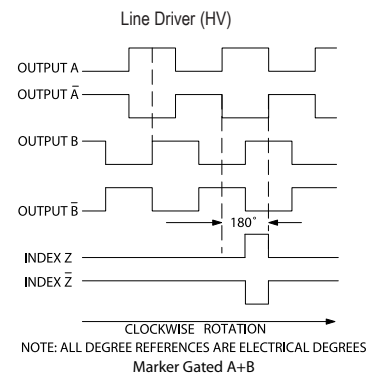
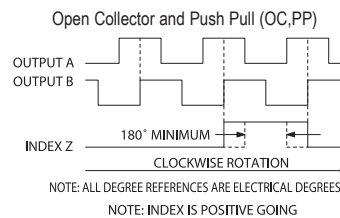
## Model 744 '444' Style 115mm Diameter



All dimensions are in mm with a tolerance of  $\pm 0.127$ mm or  $\pm 0.254$  unless otherwise specified



### Waveform Diagrams



### Wiring Table

Function	Gland Cable† Wire Color	5-pin M12** PP,OC,PU	8-pin M12** HV	8-pin M12** OC,PP,PU	6 Pin MS** PU,OC,PP	6 Pin MS** HV	7 Pin MS** HV	7 Pin MS** PU,OC,PP	10 Pin MS** HV,L5	9 Pin D-SUB HV,L5
0 Volts	Black	3	7	7	F	F	F	F	F	9
+VCC	White	1	2	2	D	D	D	D	D	1
A	Brown	4	1	1	A	A	A	A	A	2
A'	Yellow	--	3	--	--	C	C	--	H	3
B	Red	2	4	4	B	B	B	B	B	4
B'	Green	--	5	--	--	E	E	--	I	5
Z	Orange	5	6	6	C	--	--	C	C	6
Z'	Blue	--	8	--	--	--	--	--	J	7
Shield	Bare*	Case	Case	8	Case	Case	G	G	G	8

\*CE: Cable shield (bare wire) is connected to internal case.

†Standard cable is 24 AWG conductors with foil and braid shield.

\*\*CE: Shield is connected to connector case unless otherwise specified.

**CAUTION - Always check wiring colour code against Encoder Label due to changes in specification since September 2006**