

J150/J158 J1 Line *shafted rotary position sensor*

- 100% moisture resistant electronic package (IP67)
- Multiple shaft and connector options available
- Shaft and captive bearing package resistant to shaft push out forces, withstands extreme mechanical vibration
- LED indicators for power and output feedback
- Incremental or Absolute position
- Outputs: Quadrature, Step and Direction, SSI, PWM, Analog, Modicon MODBUS, & J1939 Can Bus



Left: 58mm Shafted (J158)
Right: 50mm Shafted (J150)

STANDARD OPERATING CHARACTERISTICS

ELECTRICAL	Outputs	A - [PPR] - SEPP	Incremental 13 bit Quadrature w/ Single Ended Output A B Z
		A - [PPR] - DIPP	Incremental 13 bit Quadrature w/ Differential Output A B Z & A' B' Z'
	A - 1939	J1939 13 bit @ 1000 positions (8192 positions max)	
	A - MOD1	Modicon MODBUS @ 8192 positions	
	B - PWM	PWM absolute position	
	A - SSI1	SSI absolute position @ 8192 positions	
	V1	Voltage Out / 5 VDC IN, 0-5 VDC OUT (<i>code V3 for 2x redundant output</i>)	
	V2	Voltage Out / 6-36 VDC IN, 0-5 VDC OUT	
	I1	Current Out / 0-24 VDC IN, 4-20 mA OUT (<i>code I1 for 2x redundant output</i>)	
	Input Power	6 to 30 VDC at approx 60 mA max, <i>not including output loads</i>	
	Electrical Protection	Over-voltage, reserve-voltage, output short-circuit protected	
	LED Indicators	Power and output channels	
	Connections	Terminal Plug, M8, M12, M12 Pigtail, Flying Lead Cable, Shielded Flying Lead, or Deutsch - 4 or 6 pin	
	Resolution	0.3°	
	Repeatability	0.30%	
	Nonlinearity	<1%	
MECHANICAL	Housing Diameter	50mm (J150) or 58mm (J158)	
	Housing Material	Aluminum	
	Housing Height	J150 - 1.53" body; 2.1" w/ M12 (and) J158 - 1.55" body; 2.1" w/ M12	
	Mounting	Mounting holes or servo groove	
	Weight	J150 - 6 oz / J158 - 8 oz	
	Shaft Form Factor	6mm w/ flat, Extended 6mm w/ flat, 1/4" (0.250") w/ flat, 10mm round, 3/8" slotted, Extended 3/8" slotted	
	Shaft Material	Non-magnetic stainless steel	
	Bearing Material	Dual chrome ball-bearings	
	Shaft Speed	3000 RPM max	
ENVIRONMENTAL	Operating Temperature	-30° to +80° C	
	Storage Temperature	-40° to +90° C	
	Humidity	100%	
	Shock	400g/6ms (<i>MIL STD 202</i>)	
	Vibration	5 to 3000 Hz, 20g (<i>MIL STD 202</i>)	
	Protection Class	IP67 (<i>connection dependent</i>)	

General ordering guide found on next page (S1 ; I3 / 2)



J150/J158 GENERAL ORDERING GUIDE

Build part number first by selecting **Housing Style** (code 1), **MagElec** (code 2), and **Connection** (code 3). Add **Special Codes** (code 4) to the end of the Joral part number. Refer to 'Special Part Number Information' for explanation of modifiers.

Examples: **J150-A-0080-SEPP-M12-41** - 50mm Red aluminum (J150), 10mm round shaft (modifier 41), 13 bit incremental quadrature @ 80 PPR

J150-A-1939-SC72-90 - 50mm Red aluminum (J150), 72" Shielded cable (SC72), 13 bit J1939 @ 8192 counts per rotation (modifier 90)

J158-V1-0-180-0-5-CW-C72 - 58mm Red alu. (J158), 72" Cable (C72), 5v input (V1) @ 0-180°, 0v to 5v out, clockwise direction (CW)

Code 1: Housing Style	Code 2: MagElec (Sensor Output)	Code 3: Connection	Code 4: Special Codes
J150 J150 = 50mm shafted made out of red aluminum, Connector orientation BACK EXIT only. Modifier Flange Mount: Special Code - 63 Add special code 63 to the end of J150 P/N for flange mount <i>Flange drawing found on S1; I3 / 4</i>	A - SEPP	13 bit single ended quadrature - A B Z	40 1/4" (0.250") w/ flat
	A - DIPP	13 bit differential quadrature - A B Z, A' B' Z'	41 10mm round
	A - 1939	13 bit J1939 @ 1000 positions	42 M8 male
	B - PWM	Absolute position PWM	43 M12 male
	A - MOD1	13 bit Modicon MODBUS @ 8192 positions	44 M12 male on 18' pigtail
			45 Flying lead cable (enter XX as inches)
			51 Red aluminum
			53 Black aluminum
			63 Flange Mount
			90 13 bit @ 8192 counts per rotation (Typical J1939 option)
J158 J158 = 58mm shafted made out of red aluminum, Connector orientation BACK EXIT only.	A - SSI1	Absolute position SSI @ 8192 positions	91 13 bit @ 1000 counts per rotation (Typical MODBUS option)
	V1	5 VDC IN, 0-5 VDC OUT	
	V2	6-36 VDC IN, 0-5 VDC OUT	
	V3	0-24 VDC IN, 4-20 mA OUT x2 (Redundant output)	
	I1	0-24 VDC IN, 4-20 mA OUT	
	I2	0-24 VDC IN, 4-20 mA OUT x2 (Redundant output)	
<i>* More outputs and connection options available, contact Joral if desired configuration is not listed</i>			

Special Part Number Information Review below code sections for important P/N build information

Code 1: Housing Style

- **Modifier 63** - For flange mount (J150 only) add code 63 to end of Joral P/N
- **J150** - 50mm, Red aluminum / Back exit connections only
- **J158** - 58mm, Red aluminum / Back exit connections only

Code 2: MagElec

(A - SEPP) or (A - DIPP)

- Enter Quadrature PPR in place of _____
- A = 13 bit PPR
- **Available 13 bit PPR:** 0008, 0010, 0016, 0020, 0025, 0032, 0040, 0050, 0064, 0080, 0100, 0125, 0128, 0200, 0250, 0256, 0400, 0500, 1024, 2048

A - 1939

- Standard J1939 output is 1000 positions
- A = 13 bit
- **MODIFIER 90** - for 8192 positions (max resolution) add code 90 to end of J150/J158 P/N

A - MOD1

- Standard MOD1 output is 8192 positions
- A = 13 bit
- **MODIFIER 91** - for 1000 positions add code 91 to end of J150/J158 P/N

V1, V2, and I1 (Analog MagElec P/N Guide)

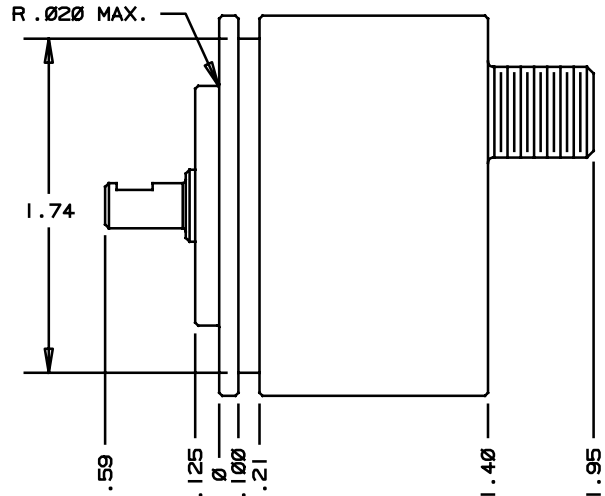
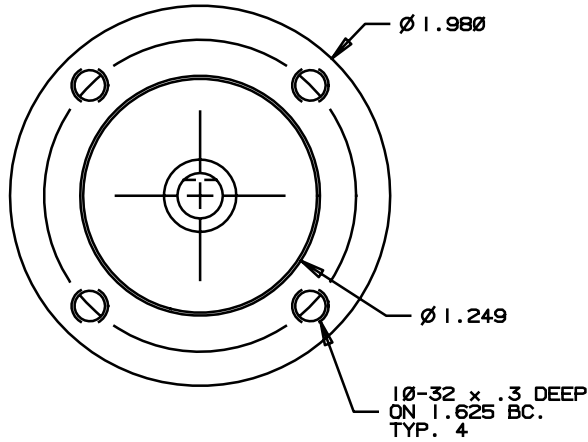
- First select MagElec code (**V1, V2 or I1**) then Angle Range (**A1-A2**), Voltage Range (**VR1-VR2**) and Signal Direction (**Clockwise [CW] or Counter [CCW]**)
- **PART NUMBER FORMULA** (MagElec)-(A1-A2)-(VR1-VR2)-(CW or CCW)
- **EXACT V1, V2, and I1 EXAMPLES**
 J150 - **V1 - 0-360 - 0.5-4.5 - CW - C72**
 J158 - **V2 - 0-180 - 0-5 - CCW - DE4**
 J158 - **I1 - 180-270 - 4-20 - CW - M12**

Code 3: Connections

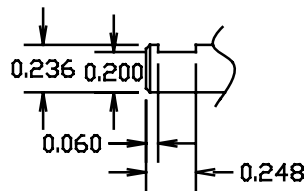
- **All Outputs, All Connections** - Connector exit back exit only (sensor epoxy side) for housing style J150 and J158
- **J1939 Output** - Addressing via varying value resistor in connection requires at least five conductors (*M12, DE6 and Cables addressing compatible*)
- **All Outputs w/ Deutsch** - DE4 and DE6 connection Deutsch connectors add \$20 to J150/J158 list



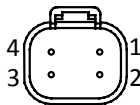
J150 DIMENSIONS & GENERAL PIN OUTS



6MM SHAFT WITH FLAT END DETAIL



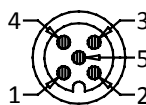
DT04-4P MALE FACE VIEW



DT04-4P J1939 OUTPUT

- 1 = YEL = CAN HIGH
- 2 = GRN = CAN LOW
- 3 = RED = +VDC (VIN)
- 4 = BLK = COMMON/GROUND

M12-5P MALE FACE VIEW



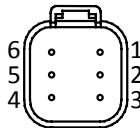
M12-5P/CABLE/FLYING LEAD QUADRATURE OUTPUT

- 1 = BRN = +VDC (VIN)
- 2 = WHT = CHANNEL B
- 3 = BLUE = COMMON/GROUND
- 4 = BLK = CHANNEL A
- 5 = GRY = CHANNEL Z

M12-5P/CABLE/FLYING LEAD PROPORTIONAL (ANALOG) OUTPUT

- 1 = BRN = +VDC (VIN)
 - 2 = WHT = DIG. LIMIT OUT*
 - 3 = BLUE = COMMON/GROUND
 - 4 = BLK = PROP. VDC OUTPUT
 - 5 = GRY = NOT USED
- *OPTION CONSULT FACTORY

DT04-6P MALE FACE VIEW



DT04-6P J1939 OUTPUT

- 1 = YEL = CAN HIGH
- 2 = GRN = CAN LOW
- 3 = RED = +VDC (VIN)
- 4 = BLK = ADDRESS GROUND
- 5 = WHT = ADDRESS PROG. RESISTOR
- 6 = BLK = COMMON/GROUND

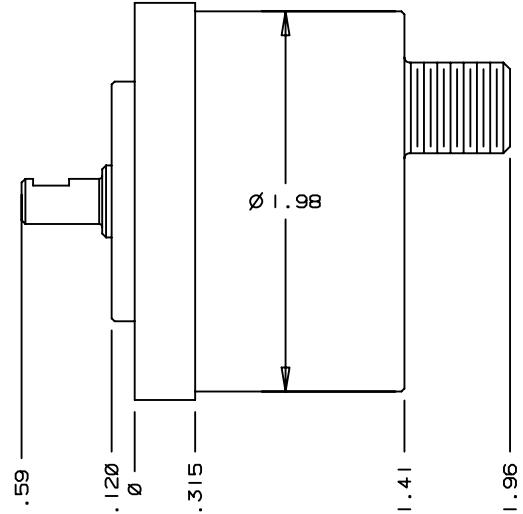
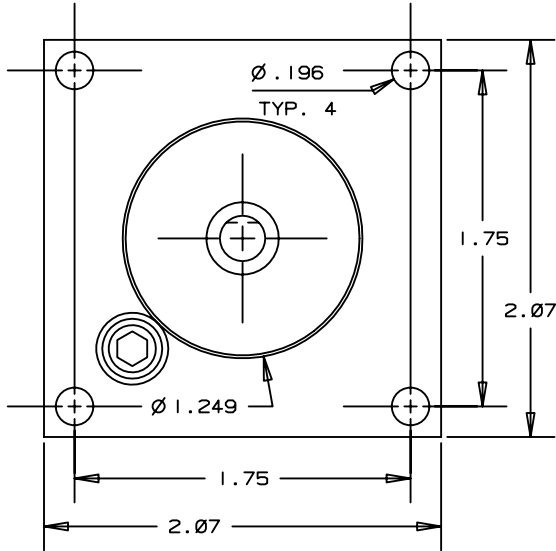
M12-5P AND 5 CONDUCTOR CABLE J1939 OUTPUT

- 1 = BRN = +VDC (VIN)
- 2 = WHT = CAN HIGH
- 3 = BLUE = COMMON/GROUND
- 4 = BLK = CAN LOW
- 5 = GRY = OPTIONAL ADDRESS PROGRAMMING RESISTOR

Dimensions informative only
For most recent dimensions please consult factory



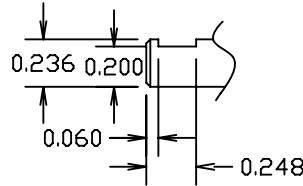
J150 FLANGE DIMENSIONS & GENERAL PIN OUTS



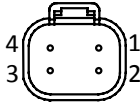
For Flange mount add special code 63 to end of Joral P/N

Example:
J150-A-0080-SEPP-M12-63

6MM SHAFT WITH FLAT END DETAIL



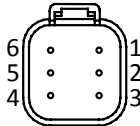
DT04-4P MALE FACE VIEW



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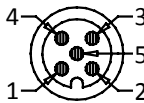
DT04-6P MALE FACE VIEW



DT04-6P J1939 OUTPUT

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M12-5P MALE FACE VIEW



M12-5P/CABLE/FLYING LEAD QUADRATURE OUTPUT

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M12-5P/CABLE/FLYING LEAD PROPORTIONAL (ANALOG) OUTPUT

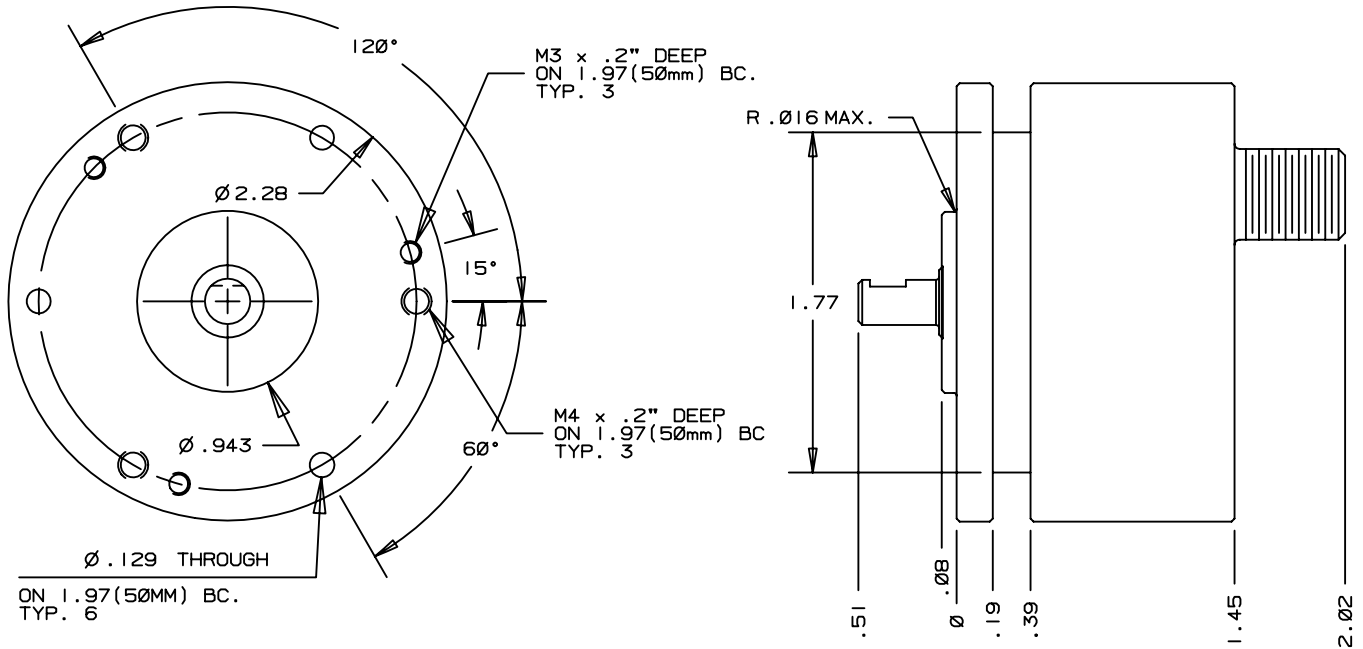
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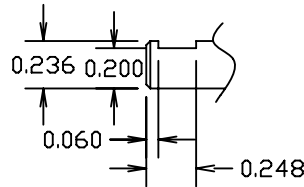
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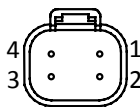
J158 DIMENSIONS & GENERAL PIN OUTS



6MM SHAFT WITH FLAT END DETAIL



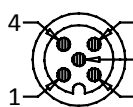
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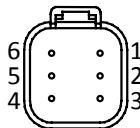
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- 5 = WHT = ADDRESS PROG. RESISTOR
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M12-5P AND 5 CONDUCTOR CABLE J1939 OUTPUT

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- 4 = BLK = CAN LOW
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