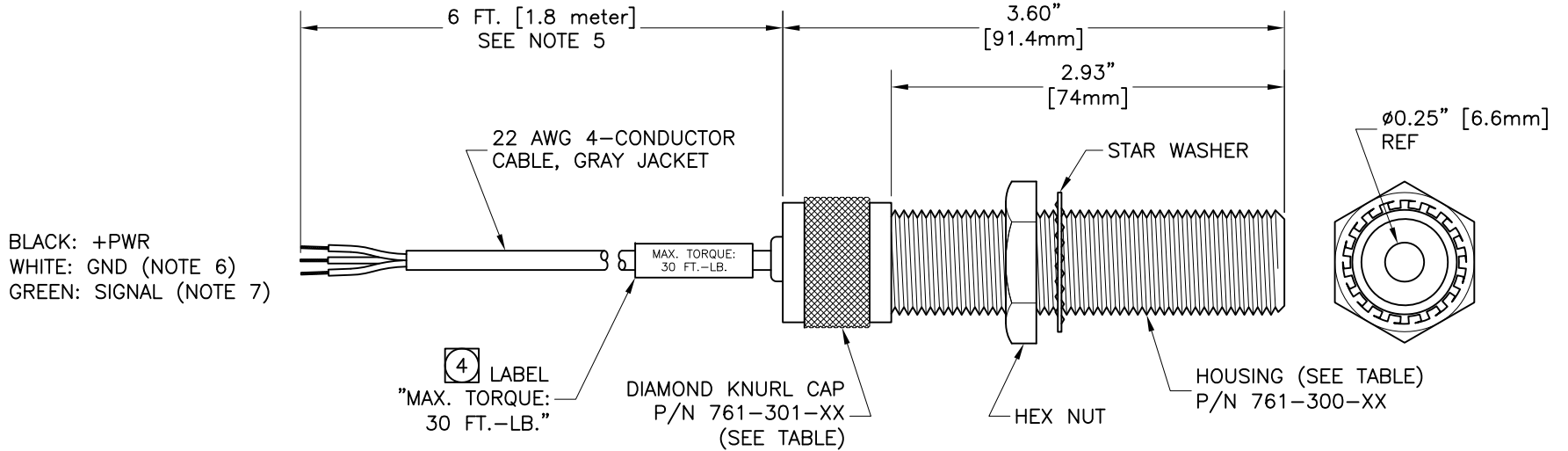


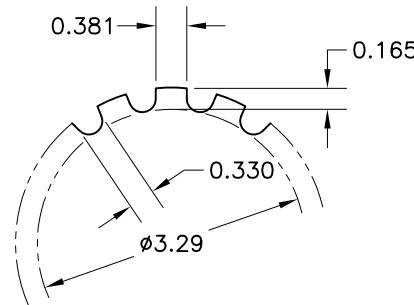
PART NO. 024-700-XX C

| PART NUMBER | THREAD | HOUSING | CAP |
|-------------|-----------|------------|------------|
| 024-700-01 | M16 X 1.5 | 761-300-01 | 761-301-01 |
| 024-700-02 | 5/8-18 | 761-300-02 | 761-301-02 |

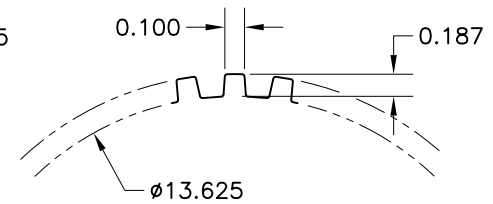


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TRANSMISSION SPEEDOMETER GEAR
NO. OF TEETH: 16
THICKNESS: 0.945"
AIR GAP: 0.050"



FLYWHEEL GEAR
OUTSIDE DIA: 14"
NO. OF TEETH: 139
DIAMETRAL OF PITCH: 10
AIR GAP: 0.050"



NOTES:

- HOUSING MATERIAL: NICKEL PLATED BRASS.
- LEADS: 4 CONDUCTOR, 22 AWG, STRAND.
- RECOMMENDED GAP: 0.050"
GEAR TO MAGNETIC SENSOR: 1 TURN.
- MAXIMUM INSTALLATION TORQUE: 30 FT.-LBS.
- SPECIFIC LENGTHS AND CONNECTORS AVAILABLE.
- OUTPUT: SQ. WAVE, 50% DUTY CYCLE.
- OUTPUT FREQUENCY: HERTZ = $\frac{RPM \times GEAR \ TEETH}{60}$

A

| REVISIONS | | | | | TOLERANCES | | HEWITT INDUSTRIES OF LOS ANGELES | |
|-----------|-------------|-----|------|----|---|--|----------------------------------|--|
| REV. | DESCRIPTION | EO# | DATE | BY | UNLESS OTHERWISE SPECIFIED: | | TITLE: | |
| | | | | | DIMENSIONS ARE IN INCHES, METRIC EQUIVALENTS ARE IN [BRACKETS]: | | DRAWN BY: JAG | |
| | | | | | .X = .030 [0.76] | | PART NO. 024-700-XX C | |
| | | | | | .XX = .010 [0.25] | | APPR. BY: | |
| | | | | | .XXX = .005 [0.13] | | DATE: 05/25/11 | |
| | | | | | FRACTIONS = 1/32 | | SHEET 1 OF 1 | |
| | | | | | ANGLES = ±1° | | | |
| | | | | | SCALE: NONE | | | |

DETAILED DESCRIPTION

The 024-700 Magnetic Sensor contains a Hall-effect device and circuitry to permit sensing close proximity (0.050" typical) gear teeth of various metals for engine or road speed measurements in rugged environments. The device and associated circuitry are contained in a sealed, threaded enclosure with flying leads that can be terminated as required. The device may be operated from external power supply ranging from 5 volts to 30 volts, and delivers a digital output signal that can swing rail-to-rail with suitable external pull-up resistor. The device output is an open-collector, with an internal pull-up (4.7K). Only three leads are required for device operation.

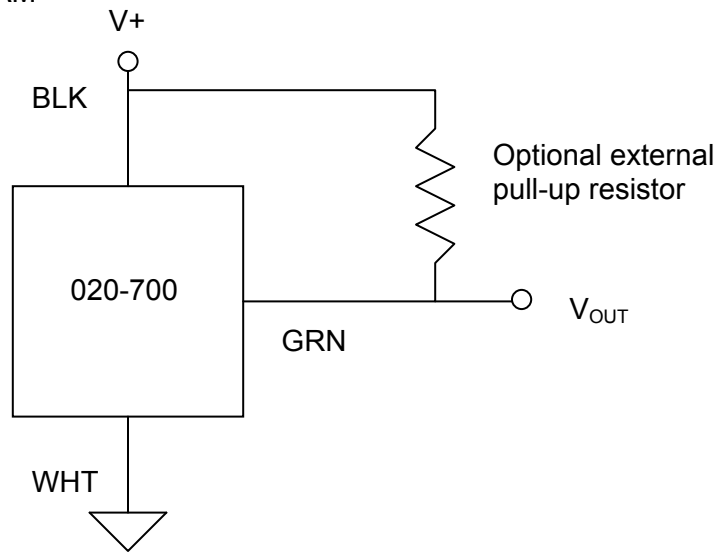
MECHANICAL

- Housing material: Nickel Plated Brass
- Thread type: Metric M16 x 1.5
- Recommended gap: 0.050 inch
 - Gear tooth to sensor adjustment: Contact, then back off one turn
- Maximum Installation Torque: 30 Ft-Lbs.

ELECTRICAL

- Cable length: 6 Ft.
 - Type: 3 Conductors, 22 AWG. Stranded.
 - Connection:
 - Black lead: + power
 - White lead: ground & signal return
 - Green lead: signal output (+)
 - Power:
 - Volts DC: 5 to 30V, 12V typical
 - Current: 10 mA maximum
 - Output type: Open collector
 - Output frequency: $f_{OUT}(Hz) = RPM \times TEETH \div 60$
duty cycle
- Examples:
2400 rpm x 134 teeth ÷ 60 = 5360 Hz.
- Duty Cycle: collector
Dependent on gear tooth, 40-50% typical

BLOCK DIAGRAM

**ABSOLUTE MAXIMUM RATINGS**

Damage to the device will occur when following ratings are exceeded.

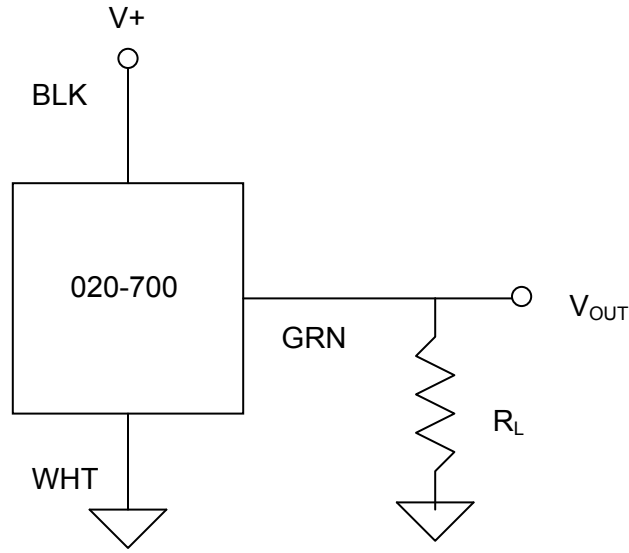
| Characteristic | Max | Units |
|--|-------------|-------|
| Positive Supply Voltage, V_{DD} to GND | 30 | V |
| I_{DD} Maximum Current | 10 | mA |
| Storage Temperature Range | -55 to +125 | °C |
| Operating Temperature Range | -40 to +85 | °C |
| ESD Rating, All Pins, (Human Body Model) | 2000 | V |

ELECTRICAL CHARACTERISTICS

$-40^{\circ}\text{C} \leq T_A \leq 85^{\circ}\text{C}$, $8.5 \leq V+ \leq 30\text{ V}$, unless otherwise noted.

| Characteristic | Min | Typ | Max | Units |
|--|------------|-----|------|-------|
| Output sink current, I_{OL} ($V_{OUT} = 0.5\text{V}$) | | | -20 | mA |
| Output source current, I_{OH} ($V_{OUT} = V+ - 4.7\text{V}$) | 1 | | | mA |
| Output voltage, high (no external pullup, $R_L = \infty$) | $V+ - 3.0$ | | | V |
| (1K external pullup, $R_L = \infty$) | $V+ - 0.8$ | | | V |
| Output voltage, low ($I_{OL} = -20\text{ mA}$) | | | 0.5 | V |
| ($I_{OL} = -1\text{ mA}$) | | | 0.1 | V |
| Output frequency | 0.5 | | 100K | Hz |

TEST CIRCUIT (See Output Characteristics, Fig. 1 and 2)



FREQUENCY OUTPUT VS. RPM
134 TOOTH GEAR



Figure 1 -- Output Frequency, f_{out}

GEAR TOOTH SENSOR 020-700
OUTPUT vs. R_L and V_+

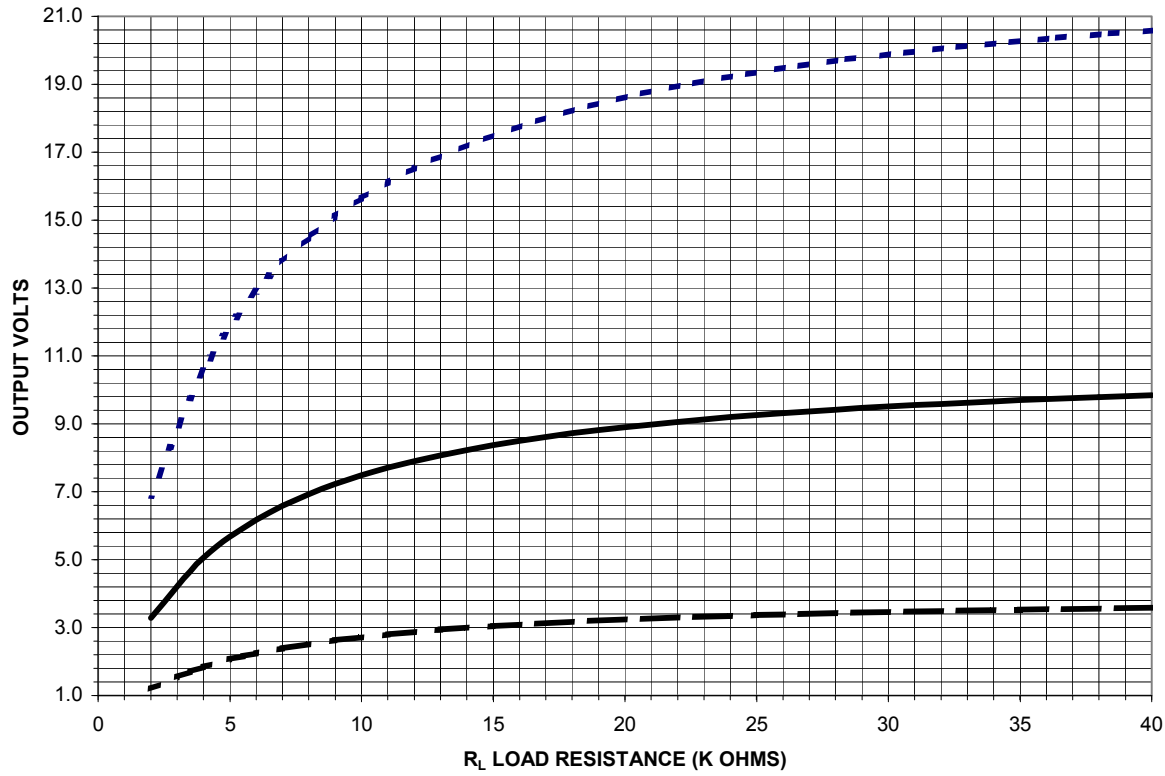
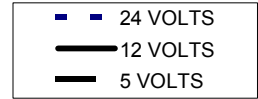


Figure 2 -- Output Voltage, V_{OUT}