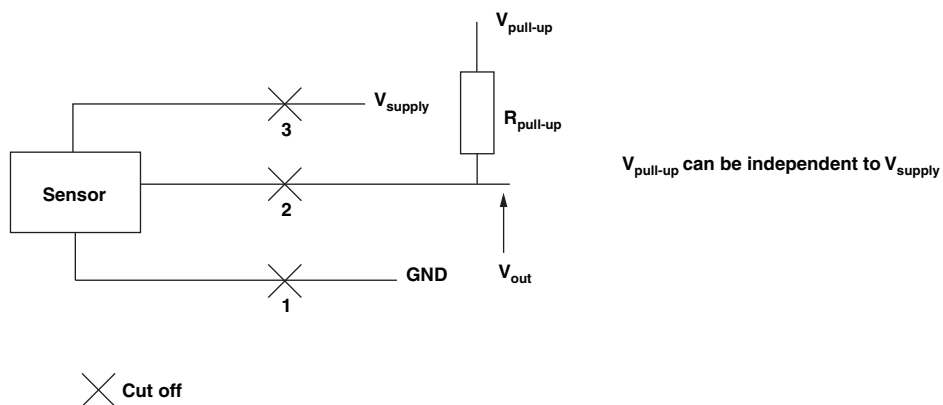


**DIAGNOSTIC MODES**

FAILURE	V_{out} ANALOG $R_{pull-up}$	V_{out} ANALOG $R_{pull-down}$	V_{out} PWM $R_{pull-up} = 1\text{ k}\Omega$ $V_{pull-up} = V_{supply} = 5\text{ V}$
1: Broken GND	Diagnostic high area	Diagnostic low area	$> 97\% V_{supply}$ without modulation
2: Broken V_{out}	Diagnostic high area	Diagnostic low area	$> 97\% V_{supply}$ without modulation
3: Broken V_{supply}	Diagnostic high area	Diagnostic low area	$> 97\% V_{supply}$ without modulation
Over voltage $V_{supply} > 7\text{ V}$	Diagnostic high area	Diagnostic low area	$> 97\% V_{supply}$ without modulation
Under voltage $V_{supply} < 2.7\text{ V}$	Diagnostic high area	Diagnostic low area	$> 97\% V_{supply}$ without modulation

**ENVIRONMENTAL SPECIFICATIONS**

Vibrations	20 g from 10 Hz to 2000 Hz, EN 60068-2-6
Shocks	3 shocks/axis; 50 g half a sine 11 ms, EN 60068-2-7
Operating temperature range	-45 °C to +125 °C
Life (in cycles)	> 5M for hollow shaft model / > 10M for D-shaft model
Rotational speed (max.)	120 rpm
Immunity to radiated electromagnetic disturbances	200 V/m 150 kHz/1 GHz, IEC 62132-2 part 2 (level A)
Immunity to power frequency magnetic field	200 A/m 50 Hz/60 Hz, EN 61000-4-8 (level A)
Radiated electromagnetic emissions	30 MHz/1 GHz < 30 dBμV/m, EN 61000-6-4 (level A)
Electrostatic discharges	Contact discharges: $\pm 8\text{ kV}$ Air discharges: $\pm 15\text{ kV}$, EN 61000-4-2

MATERIALS

Housing	Thermoplastic housing
Shaft	Stainless steel
Output	3 lead wires

Note

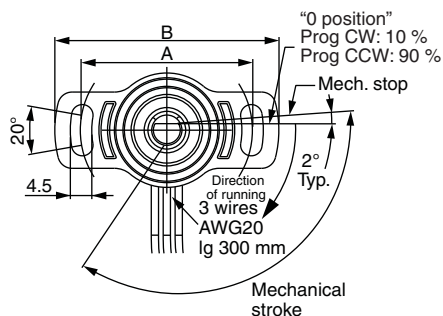
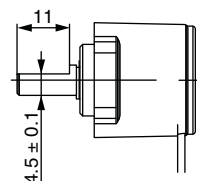
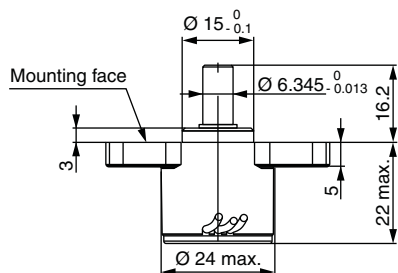
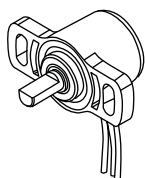
- Nothing stated herein shall be construed as a guarantee of quality or durability.



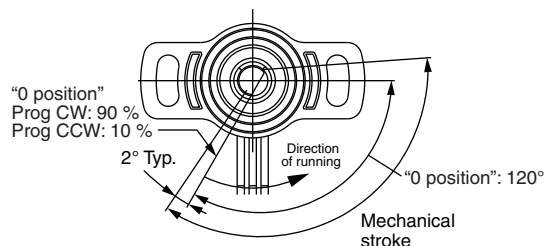
DIMENSIONS in millimeters

VARIOUS POSSIBLE TYPES OF MODEL 981 HE IN D-SHAFT VERSION

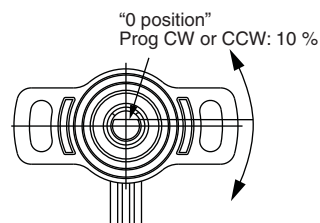
- ① 981 HE D-Shaft
Spring return CCW
Shaft: Ø 6.35 flatted length 16 mm FMF
Model: 981HE-3-x-x-W-x-1F16



- ② 981 HE D-Shaft
Spring return CW
Shaft: Ø 6.35 flatted 16 mm FMF
Model: 981HE-2-x-x-W-x-1F16



- ③ 981 HE D-Shaft
Continuous rotation
Shaft: Ø 6.35 flatted 16 mm FMF
Model: 981HE-0-x-x-W-x-1F16



Dimension	Standard	Option	Wires
A	36	38	Yellow GND (-)
B	47	48	Red Signal
			Green V _{CC} (+)