Data Sheet

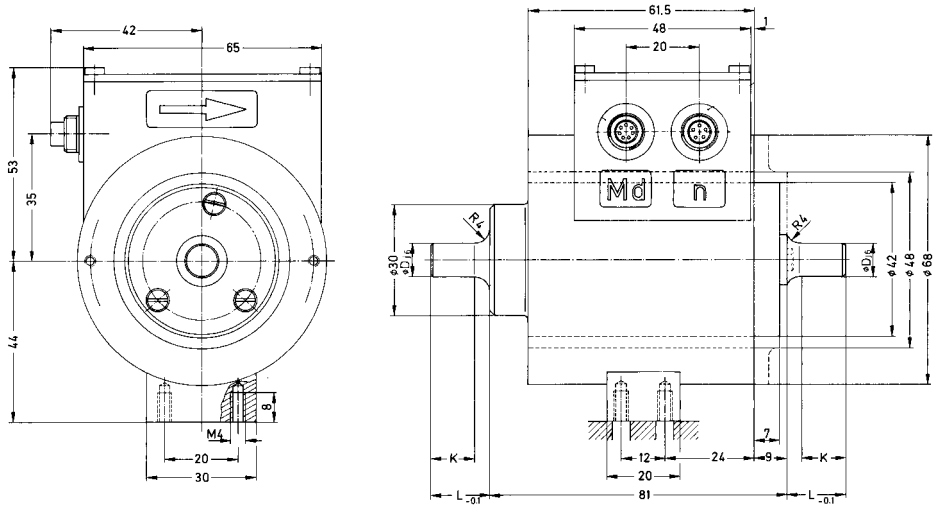
T34FN

Torque Transducers

Special features

- **No bearing reactions, non-contacting**
- **Measurement of torque, speed, sense of rotation and power**
- **Nominal torques: 1 N·m, 2 N·m, 5 N·m, 10 N·m, 20 N·m**
- **Nominal speed: 40 000 min^{-1}**
- **Stator and rotor independently combinable**
- **Measurement at rotating or static components**
- **Measurement of rapidly changing (dynamic) and constant torques**

Dimensions (in mm; 1 mm= 0.03937 inches)

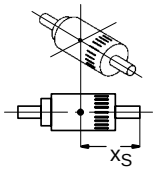


Type	Rotor	Stator	∅ D_{j6}	$L_{-0.1}$	K
T34FN40/ 1 N·m	T34R40/ 1 N·m	T34ST	9	16	12
T34FN40/ 2 N·m	T34R40/ 2 N·m		10	22	18
T34FN40/ 5 N·m	T34R40/ 5 N·m		11	22	18
T34FN40/ 10 N·m	T34R40/ 10 N·m		12	25	21
T34FN40/ 20 N·m	T34R40/ 20 N·m		13	25	21

Specifications

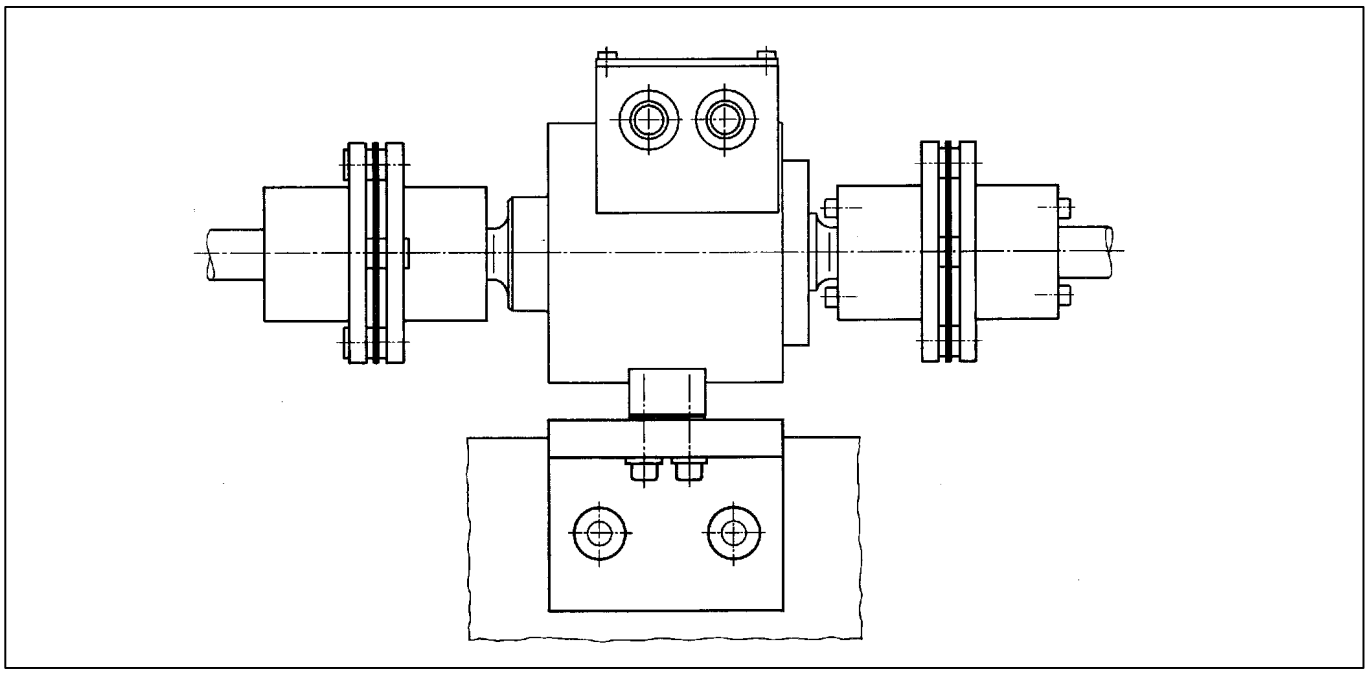
Type		T34 FN				
Torque measuring system						
Nominal torque M_N	N·m	1	2	5	10	20
Nominal sensitivity (nominal signal range between torque=zero and nominal torque)	kHz	±5				
Sensitivity tolerance (deviation of actual signal range at M_N from nominal signal range)	%	<±0.1				
Output signal at torque = zero	kHz	10				
Nominal output signal						
with positive nominal torque	kHz	15 (12 V peak-to-peak)				
with negative nominal torque	kHz	5 (12 V peak-to-peak)				
Load resistance	kOhm	≥2				
Temperature effect per 10 K in the nominal temperature range on						
output signal, related to the actual value of the signal range	%	<±0.1				
zero signal, related to nominal sensitivity	%	<±0.1				
Supply voltage						
Square wave voltage (peak-to-peak value)	V	54± 5% / 800 mA ±5 %				
Starting calibration signal	V	80±5 % / 1000 mA ±5 %				
Frequency	kHz	approx.15				
Supply voltage for the preamplifier	V	-15 / 0 / +15				
Preamplifier, maximum current consumption	mA	-20 / 0 / +20				
Linearity deviation including hysteresis, related to nominal sensitivity	%	<±0.2				
Relative standard deviation of repeatability according to DIN 1319 related to the change of output signal	%	<±0.03				
Calibration signal		approx. 50 % of M_N; value given on type plate				
Tolerance of calibration signal, related to M_N	%	<±0.05				
Speed measuring system						
Output signal for speed, pulse voltage (peak-to-peak)	V	25				
		2 x 15 pulses per revolution, displaced by π/2				
Load resistance	kOhm	≥5				
Minimum speed for sufficient pulse quality	rpm	2				
General information on the torque transducers						
Protection class EN 60 529		IP 54				
Weight, Rotor	g	345	350	360	375	400
Stator	g	850				
Nominal temperature range	°C [°F]	+10...+60 [+50...+140]				
Service temperature range	°C [°F]	-10...+60 [+14...+140]				
Storage temperature range	°C [°F]	-50...+70 [-58...+158]				
Supplementary reliability data						
Mechanical shock, degree of precision to IEC 68-2-27-1982						
Number	n	1000				
Duration	ms	3				
Acceleration	m/s^2	500				
Vibrational stressing test, degree of precision to IEC 68-2-6-1982						
Frequency range	Hz	5...65				
Duration	h	1.5				
Acceleration	m/s^2	50				

Specifications (continued)

Mechanical data						
Nominal torque M_N	Nm	1	2	5	10	20
Torsional stiffness c_T	Nm/rad	48	95	239	477	955
Torsion angle at M_N approx.	degrees	1.2				
Mass moment of inertia of the rotor						
I_V (about axis of rotation)	kg·mm²	78	78	79	80	82
$I_U=I_W$	kg·mm²	255	290	310	350	377
Center of gravity of the rotor x_S	mm	53.6	59.8	60.3	63.8	64.3
						
Permissible residual unbalance per unit weight of inertial body per plane	gmm/kg	0.125				
Quality grade to VDI 2060		G1				
Nominal speed	rpm	40 000				
Max. permissible static eccentricity of the rotor (radially) (centering with fixing elements)						
with torque measurement	mm	±2.5				
with speed measurement	mm	±1.5				
Permissible axial displacement between shaft and housing	mm	±3				
Load limits						
Torque limit, related to M_N	N·m	1.5	3	7.5	15	30
Destruction torque, related to M_N	N·m	>3	>6	>15	>30	>60
Axial limit force[1)]	kN	0.51	0.72	1.14	1.62	2.28
Lateral limit force[1)]	N	8.5	12	19	27	38
Bending limit moment [1)]	N·m	1.9	2.8	4.4	6.3	8.9
Vibration amplitude to DIN 50100 (peak-to-peak)	N·m	0.7	1.4	3.5	7	14

[1)] Each type of irregular stress can only be permitted with its given limit value (bending moment, side load or axial load, exceeding the nominal speed) if none of the others can occur. Otherwise the limit values must be reduced. If for instance 30 % of the bending moment and also 30 % of the side load are present, only 40 % of the axial load is permitted, provided that the operational torque is below the nominal value. The measurement can be affected up to 1 % by permissible bending moments, axial loads and side loads.

Installation example with disc-type couplings



Scope of delivery

Torque Transducer, interconnecting cable (3 m), mounting instruction

Accessories, to be ordered separately:

Couplings

HBM offers BSD-THOMAS couplings for operation of the T34 FN. See brochure I 23.42. for dimensions and specifications.

Cable extension

Kab 0304A – 10 (10 m)
Kab 8/00 – 6 GY/3 x 2C x 0,14C – PVC (cut to length; min 10 m)

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