

## Reactive Torque Sensor D-2452/D-2452-P with Nominal Torque from 0.005 ... 20000 N·m



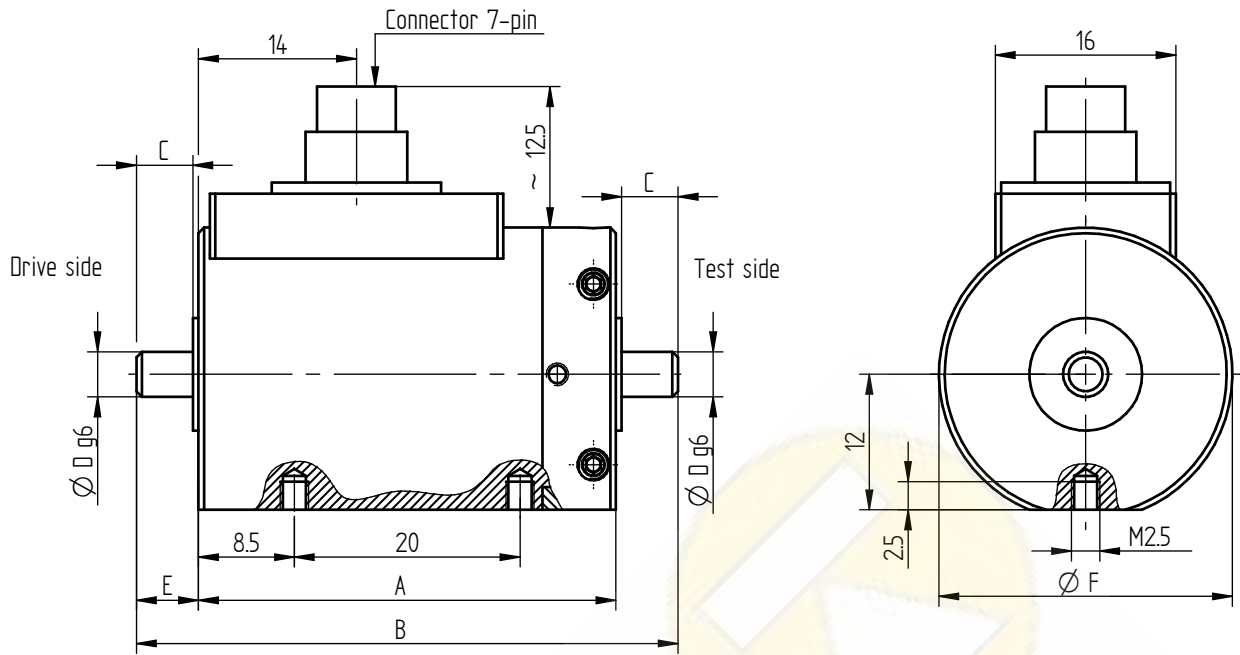
### Performance Features

- Torque sensor for reaction torque measurement
- Sensors with nominal torque to 0.02 N·m with integrated overload protection
- Cylindrical shaft ends on both sides
- Very short axial length
- High torsional stiffness
- Simple handling and assembly
- Special versions on request

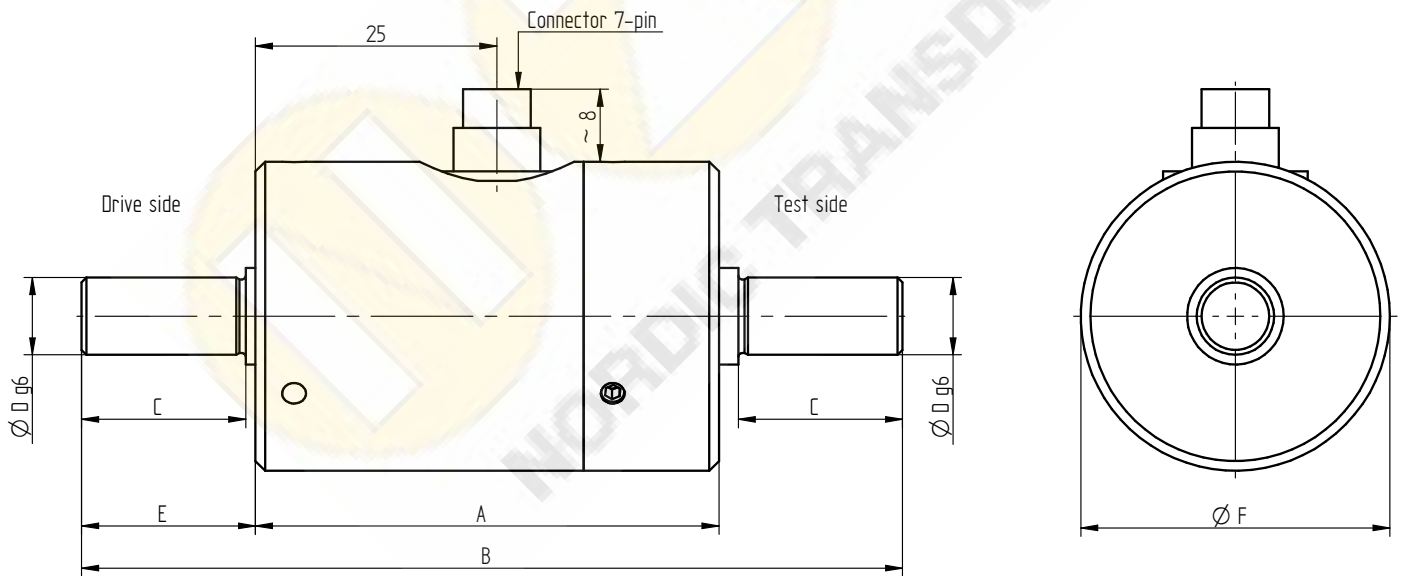
### Application

- Process measuring and control technology
- Fully automated machining centres
- Measuring and control devices
- Tool engineering
- Special mechanical engineering

## Dimensions of D-2452/D-2452-P in mm

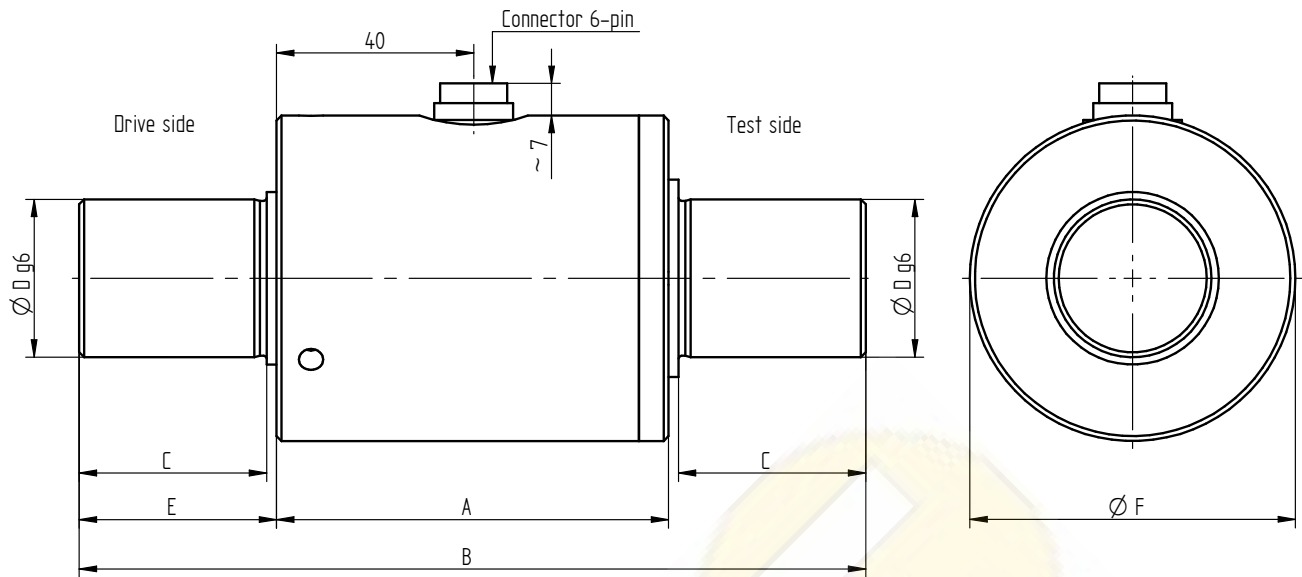


Nominal Torque [N·m]	Dimensions [mm]						Weight [kg]
	A	B	C	ØD	E	ØF	
0.005/0.01/0.02	37	48	5	4	5.5	26	0.1

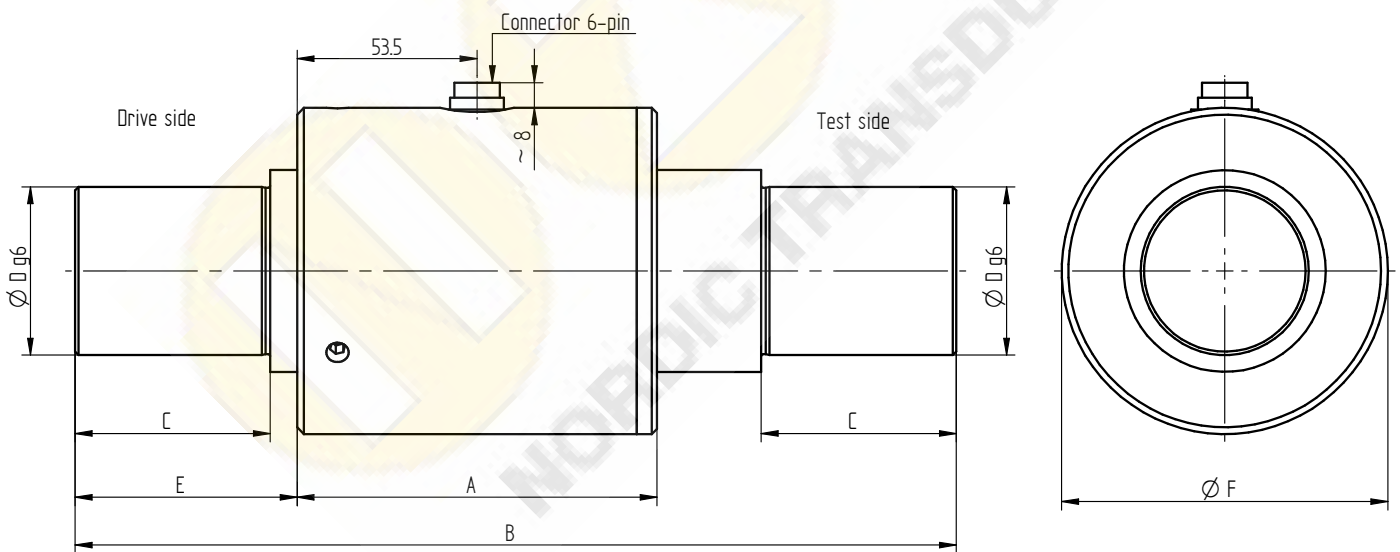


Nominal Torque [N·m]	Dimensions [mm]						Weight [kg]
	A	B	C	ØD	E	ØF	
0.05	48	65	7	6	8	32	0.1
0.1/0.2/0.5/1/2/5	48	85	17	8	18	32	0.1
10	48	85	17	10	18	32	0.2

## Dimensions of D-2452/D-2452-P in mm

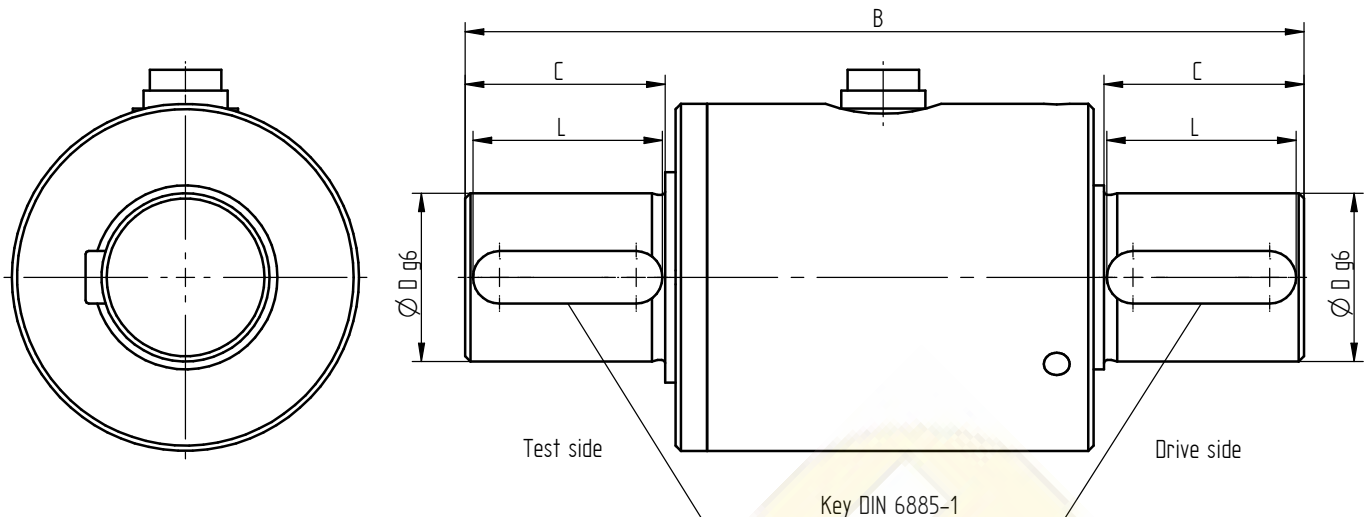


Nominal Torque [N·m]	Dimensions [mm]						Weight [kg]
	A	B	C	ØD	E	ØF	
20	73	111.5	18	18	19	51	0.5
50/100	73	147.5	36	18	37	51	0.6
200/500	79.5	159.5	38	32	40	66	1.5



Nominal Torque [N·m]	Dimensions [mm]						Weight [kg]
	A	B	C	ØD	E	ØF	
1000	107	262	58	50	66	97	7.0
2000/5000	107	377	110	70	126	112	13.5
10000/20000	140	470	120	110	160	173	42.5

## Dimensions of Version with Feather Keys in mm



Nominal Torque [N·m]	Dimensions [mm]					Weight [kg]
	B	ØD	C	L	Feather Key <sup>1</sup>	
0.1 / 0.2 / 0.5 / 1 / 2 / 5	85	8	17	14	2 x 2 x 14	0.1
10	85	10	17	14	3 x 3 x 14	0.2
20	111.5	18	18	14	6 x 6 x 14	0.5
50/100	147.5	18	36	30	6 x 6 x 30	0.6
200/500	159.5	32	38	36	10 x 8 x 36	1.5
1000	262	50	58	50	14 x 9 x 50	7.0
2000/5000	377	70	110	100	20 x 12 x 100	13.5
10000/20000	570	110	170	160	28 x 16 x 160	42.5

## Connection Assignment

6-pin	D-2452/D-2452-P	Series 723
Pin 1	Excitation (-)	
Pin 2	Excitation (+)	
Pin 3	Shield	
Pin 4	Signal (+)	
Pin 5	Signal (-)	
Pin 6	Control signal (option)	

7-pin	D-2452/D-2452-P	Series 712
Pin 1	Excitation (-)	
Pin 2	Excitation (+)	
Pin 3	Shield	
Pin 4	Signal (+)	
Pin 5	Signal (-)	
Pin 6	Control signal (option)	
Pin 7	NC	

<sup>1</sup> Calculated load type for feather key: single side light shocks

## Technical Data acc. to VDI/VDE/DKD 2639

Reactive Torque Sensor D-2452/D-2452-P		
Nominal Torque $M_{nom}$	N·m	0.005 ... 20000
Accuracy class	% $M_{nom}$	0.1 (optional 0.05%)
Relative repeatability error in unchanged mounting position $b'$	%	± 0.02
Bridge resistance $R_{Br}$	Ω	1000 [≥500 N·m; 2000]
Operating range of excitation voltage	VDC	2 ... 12
Electrical connection		6-pin series 723 <sup>2</sup> 7-pin series 712 <sup>2</sup>
Reference temperature $T_{ref}$	°C	23
Rated temperature range	°C	-5 ... 45
Operating temperature range	°C	-15 ... 55
Temperature effect on zero signal $TK_0$	% $M_{nom}/10$ K	±0.2
Temperature effect on characteristic value $TK_C$	% $M_{nom}/10$ K	±0.1
Maximum operating torque $M_G$ (static)	% $M_{nom}$	150
Torque limit $M_{max}$ (static)	% $M_{nom}$	200 [≤0.02 N·m; 500]
Breaking torque $M_B$ (static)	% $M_{nom}$	>300 [≤0.02 N·m; >800]
Permissible oscillation stress when subjected to torque $M_{df}$	% $M_{nom}$	70 (peak-to-peak)
Level of protection		IP50

Article-No. D-2452	Article-No. D-2452-P <sup>3</sup>	Nominal Torque [N·m]	Rated Cha- racteristic Value [mV/V] ±0.1%	Springrate [N·m/rad]	Mass Moment of Inertia [kg·m <sup>2</sup> ]		Axial Force Limit [N]	Lateral Force Limit [N]
					Drive Side	Test Side		
107772	-	0.005	0.3	0.46	3.9E-06	1.1E-08	35	0.9
107758	-	0.01	0.5	0.46	3.9E-06	1.1E-08	35	0.9
107759	-	0.02	0.5	3.6	3.9E-06	1.1E-08	35	0.9
106099	-	0.05	0.5	3.7	1.1E-05	1.9E-07	40	0.9
106100	115743	0.1	0.5	1.8E+01	1.1E-05	6.1E-07	42	0.9
106101	115744	0.2	0.8	1.8E+01	1.1E-05	6.1E-07	58	1.2
106102	111401	0.5	0.8	9.7E+01	1.1E-05	6.1E-07	172	1.9
106103	115745	1	0.8	1.2E+02	1.1E-05	6.1E-07	227	2.9
106104	111635	2	0.8	3.6E+02	1.1E-05	6.3E-07	348	5.5
106105	115746	5	0.8	4.1E+02	1.1E-05	6.3E-07	650	14
106106	115747	10	0.8	9.1E+02	1.1E-05	7.4E-07	1000	26
106108	115748	20	0.8	4.2E+03	1.0E-04	7.0E-06	1680	43
106110	115749	50	0.8	6.1E+03	1.1E-04	8.6E-06	3100	80
106111	114219	100	0.8	8.5E+03	1.1E-04	8.8E-06	4800	160
106112	115750	200	0.8	6.6E+04	3.6E-04	7.9E-05	8000	290
106113	115751	500	0.8	7.1E+04	3.6E-04	8.0E-05	14000	700
106114	115752	1000	0.8	3.1E+05	2.5E-03	1.1E-03	23000	900
106115	115753	2000	0.8	7.2E+05	6.2E-03	4.1E-03	33000	1200
106116	115754	5000	0.8	8.0E+05	6.3E-03	4.2E-03	57000	2800
106117	115755	10000	1.5	3.1E+06	4.9E-02	3.0E-02	90000	4400
106118	115756	20000	1.5	3.7E+06	4.9E-02	3.0E-02	130000	8200

<sup>2</sup> Female cable connector in scope of delivery at first delivery

<sup>3</sup> Version „-P“ feather key

## Options

Article-No.	Description	
101695	Accuracy class	0.05 % $M_{nom}$
100218	Control signal	100 % $M_{nom}$
42828	Extended temperature range	-30 °C...100 °C
42829	Extended temperature range	-30 °C...120 °C [ $\geq 20$ N·m]

## Calibrations

Article-No.	Description	
400676	Linearity diagram in accordance to factory standard	25 % steps
400664	Linearity diagram in accordance to factory standard	10% steps
400961	Proprietary calibration acc. to VDI/VDE 2646	3 steps
400700	Proprietary calibration acc. to VDI/VDE 2646	5 steps
400688	Proprietary calibration acc. to VDI/VDE 2646	8 steps
	DAkkS-Calibration/Standard on request	

## Accessories

### Electrical Connection

Article-No.	Description
10294	Female cable connector 7-pin series 712
10367	Female angled connector 7-pin series 712
10316	Connection cable, 3 m, with 7-pin female cable connector series 712 and free strands
103348	Connection cable angled, 3 m, with 7-pin female cable connector series 712 and free strands
10301	Female cable connector 6-pin series 581
10315	Female angled connector 6-pin series 682
10266	Connection cable, 3 m, with 6-pin female cable connector series 581 and free strands
10387	Connection cable angled, 3 m, with 6-pin female angled connector series 682 and free strands

## Amplifiers

Examples of suitable amplifiers for the torque sensor D-2452/D-2452-P:

LCV	SI-USB	GM 40	GM 80	GM 80-PA
				