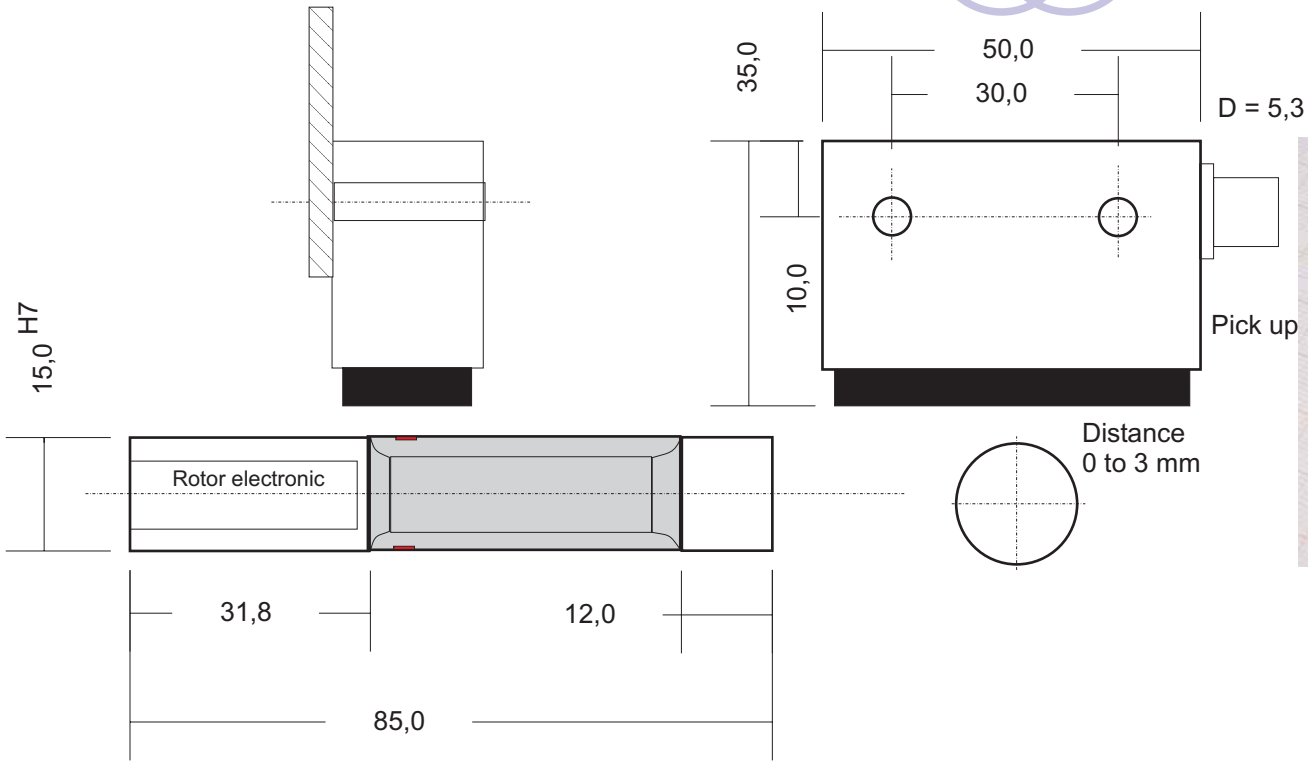
Torque Measuring Transducer

Miniature Torque Measuring Shaft without Bearings (1 Nm to 500 Nm)

Characteristics:

* Coupling with Lenze clamping elements
* Very small moment of inertia
* Accuracy 0,1%
* Signal transmission via Sensortelemetry
* Completely encapsulated
* Rotational speed up to 30,000 rpm
* Temperature range -30 to 125°C



Torque measuring flange

Measuring range: 5 Nm
Measuring range: 10 Nm
Measuring range: 20 Nm

Inertia (5 Nm): 1,5 *10^{-6} kgm^2
Inertia (10 Nm): 1,707*10^{-6} kgm^2
Inertia (20 Nm): 2,03 *10^{-6} kgm^2
Inertia (50 Nm): 4,2 *10^{-6} kgm^2

Type specific mechanical data (Typ MWS....)

M_{nom} (Nm)	5	10	20	50	100	200	500
Weight (Rotor) (kg):	0.15	0.2	0.4	0.4	0.4	0.4	0.4
Inertia (10^{-6} kgm^2):	1,5	1,7	3	6	10	25	110
(With/without speed system)							
Torsional stiffness (Nm/°):	0,04	0,04	0,08	0,20	0,40	0,80	2,00
Torsional angle related to M_{nom} (°):	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Axial stiffness (kN/mm) c_a:	5	7	9	12	15	18	21
Radial stiffness (kN/mm) c_r:	30	40	50	200	400	500	600
Bending moment stiffness (kNm/°) c_b:	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Max. axial load (kN):	0.18	0.18	0.18	0.37	0.75	0.75	0.75
Max. radial load (kN):	0.15	0.15	0.18	0.30	0.50	0.65	0.8
Max. bending moment (kNm):	0.10	0.10	0.15	0.20	0.40	0.60	0.70
Max. excursion at max. axial force (mm):	<0.04	<0.04	<0.04	<0.04	<0.08	<0.08	<0.08
Balance quality level (DIN ISO 1940):				G2.5			
Max. speed (rpm):	30,000	20,000	20,000	20,000	18,000	16,000	14,000
Highspeed option (rpm):	100,000	80,000	80,000	80,000	36,000	32,000	28,000
Speed acquisition (inductive, teeth/turn):	6	6	6	10	12	14	16

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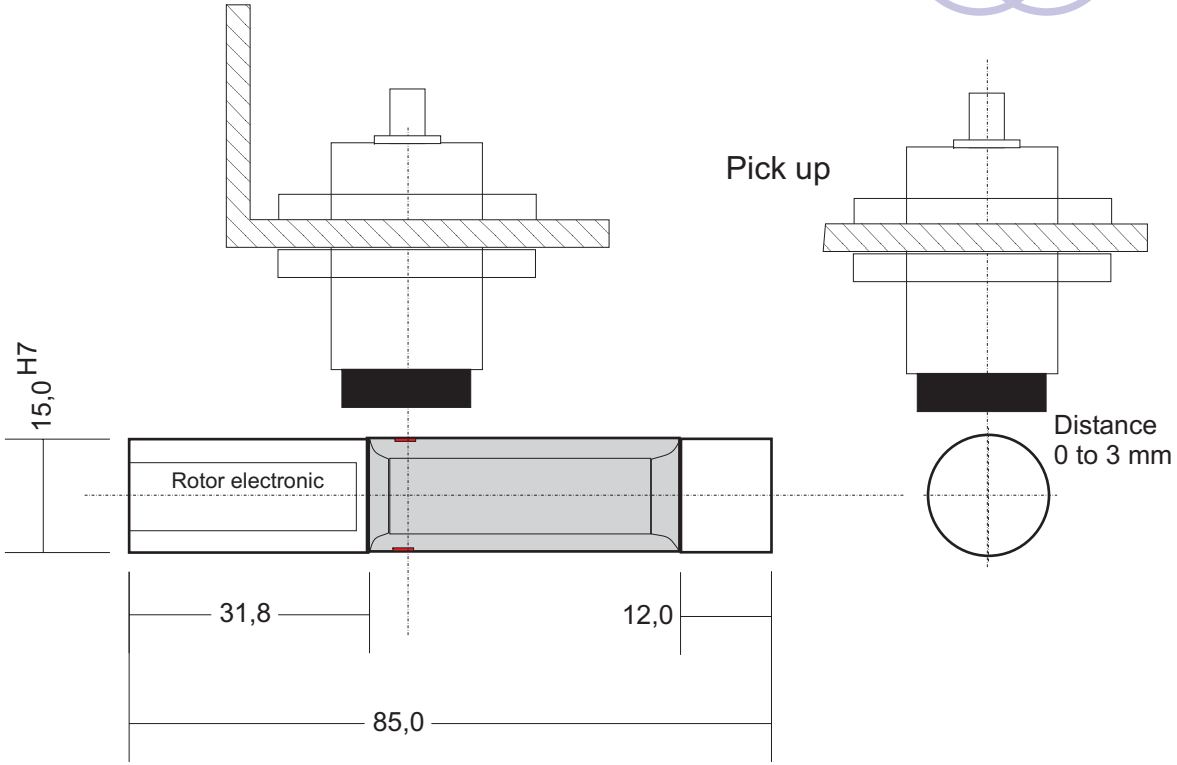

Torque measuring flange

Measuring range: 1 Nm
Measuring range: 5 Nm
Measuring range: 10 Nm
Measuring range: 20 Nm

Inertia (1 Nm): 1,45 *10^{-6} kgm^2
Inertia (5 Nm): 1,5 *10^{-6} kgm^2
Inertia (10 Nm): 1,707*10^{-6} kgm^2
Inertia (20 Nm): 2,03 *10^{-6} kgm^2

Type specific mechanical data (Typ MWS....)

M_{nom} (Nm)	5	10	20	50	100	200	500
Weight (Rotor) (kg):	0.15	0.2	0.4	0.4	0.4	0.4	0.4
Inertia (10^{-6} kgm^2):	1,5	1,7	3	6	10	25	110
(With/without speed system)							
Torsional stiffness (Nm/°):	0,04	0,04	0,08	0,20	0,40	0,80	2,00
Torsional angle related to M_{nom} (°):	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Axial stiffness (kN/mm) c_a:	5	7	9	12	15	18	21
Radial stiffness (kN/mm) c_r:	30	40	50	200	400	500	600
Bending moment stiffness (kNm/°) c_b:	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Max. axial load (kN):	0.18	0.18	0.18	0.37	0.75	0.75	0.75
Max. radial load (kN):	0.15	0.15	0.18	0.30	0.50	0.65	0.8
Max. bending moment (kNm):	0.10	0.10	0.15	0.20	0.40	0.60	0.70
Max. excursion at max. axial force (mm):	<0.04	<0.04	<0.04	<0.04	<0.08	<0.08	<0.08
Balance quality level (DIN ISO 1940):				G2.5			
Max. speed (rpm):	30,000	20,000	20,000	20,000	18,000	16,000	14,000
Highspeed option (rpm):	100,000	80,000	80,000	80,000	36,000	32,000	28,000
Speed acquisition (inductive, teeth/turn):	6	6	6	10	12	14	16

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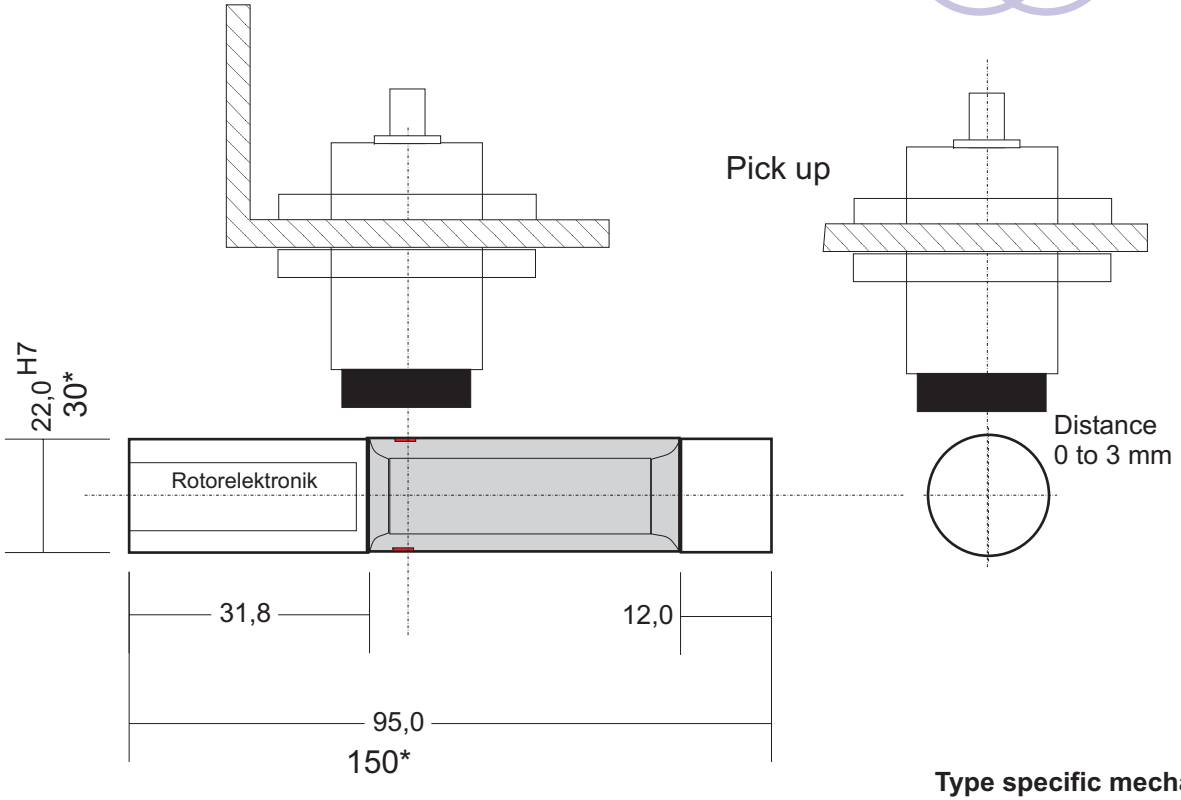

* Range 200 and 500 Nm

Torque measuring flange

Measuring range: 50 Nm
Measuring range: 100 Nm
Measuring range: 200 Nm

Inertia (50 Nm): 4,2 *10^{-6} kgm^2
Inertia (100 Nm): 12,25*10^{-6} kgm^2
Inertia (200 Nm): 30,25*10^{-6} kgm^2

Type specific mechanical data (Typ MWS....)

M_{nom} (Nm)	**5**	**10**	**20**	**50**	**100**	**200**	**500**
Weight (Rotor) (kg):	0.15	0.2	0.4	0.4	0.4	0.4	0.4
Inertia (10^{-6} kgm^2):	1,5	1,7	3	6	10	25	110
(With/without speed system)							
Torsional stiffness (Nm/°):	0,04	0,04	0,08	0,20	0,40	0,80	2,00
Torsional angle related to M_{nom} (°):	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Axial stiffness (kN/mm) c_a:	5	7	9	12	15	18	21
Radial stiffness (kN/mm) c_r:	30	40	50	200	400	500	600
Bending moment stiffness (kNm/°) c_b:	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Max. axial load (kN):	0.18	0.18	0.18	0.37	0.75	0.75	0.75
Max. radial load (kN):	0.15	0.15	0.18	0.30	0.50	0.65	0.8
Max. bending moment (kNm):	0.10	0.10	0.15	0.20	0.40	0.60	0.70
Max. excursion at max. axial force (mm):	<0.04	<0.04	<0.04	<0.04	<0.08	<0.08	<0.08
Balance quality level (DIN ISO 1940):				G2.5			
Max. speed (rpm):	30,000	20,000	20,000	20,000	18,000	16,000	14,000
Highspeed option (rpm):	100,000	80,000	80,000	80,000	36,000	32,000	28,000
Speed acquisition (inductive, teeth/turn):	6	6	6	10	12	14	16

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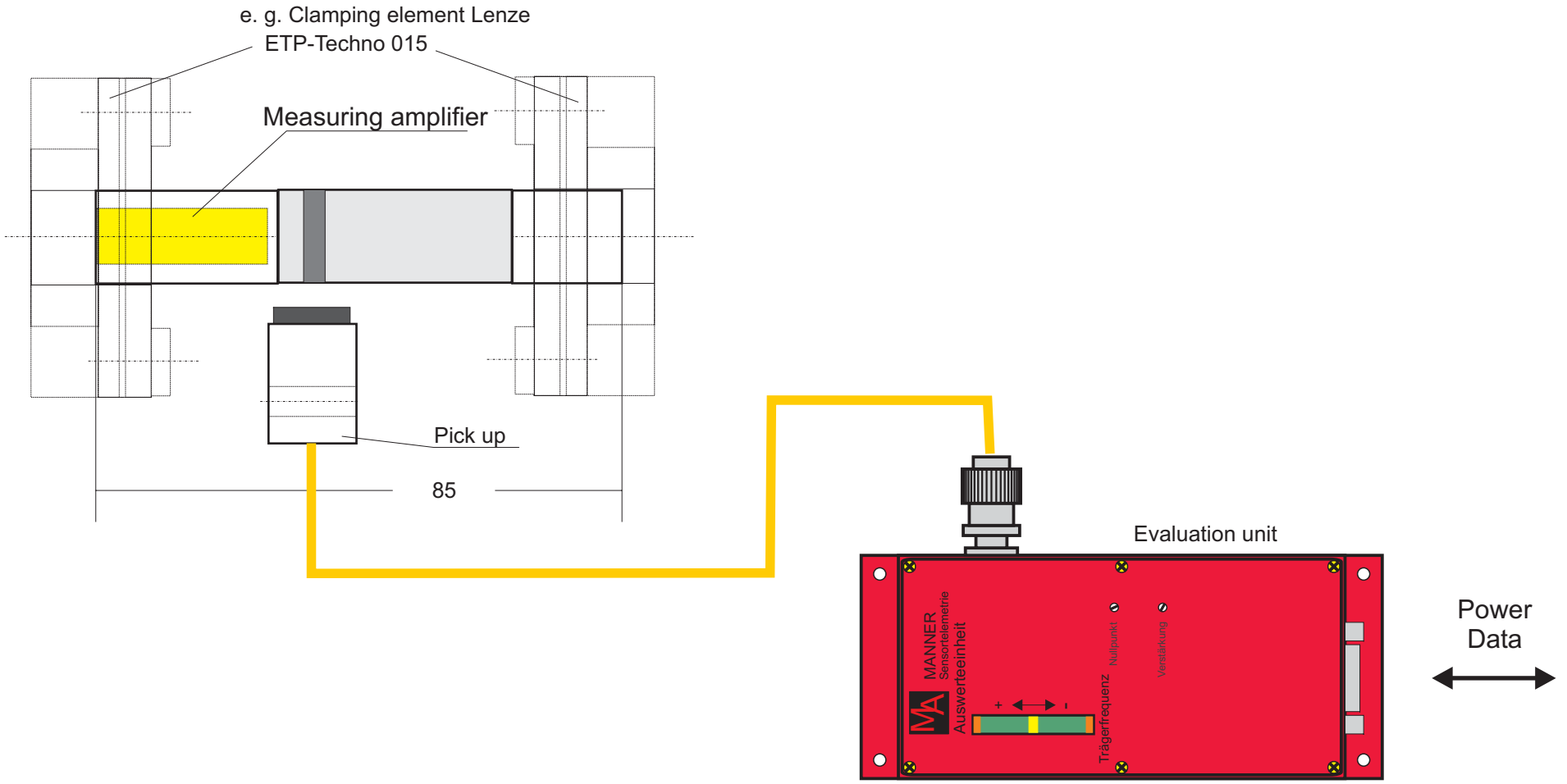
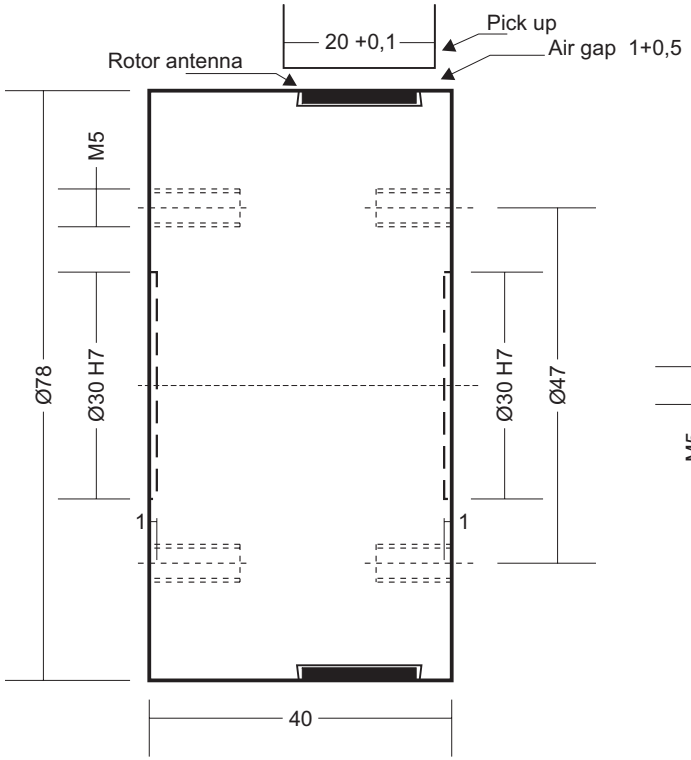
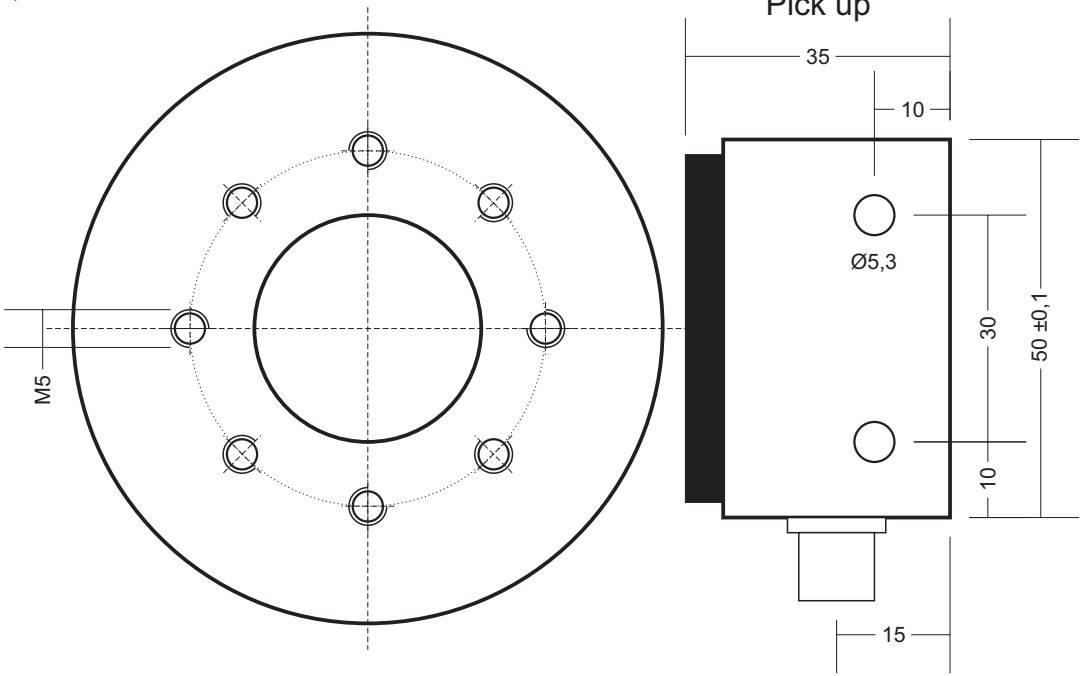


Torque measuring shaft

Measuring range:	5 Nm
Measuring range:	10 Nm
Measuring range:	20 Nm
Measuring range:	50 Nm
Measuring range:	100 Nm





Type specific mechanical data

M_{nom} (Nm)	20	50	100
Weight (Rotor) (kg):	0.4	0.4	0.4
Inertia (kgm^2):	0.0002	0.0002	0.0002
(With/without speed system)			
Torsional stiffness (kNm/°):	4	5	6
Torsional angle related to M_{nom} (°):	0.01	0.01	0.01
Axial stiffness (kN/mm) c_a:	156	156	156
Radial stiffness (kN/mm) c_r:	50	200	400
Bending moment stiffness (kNm/°) c_b:	0.35	0.35	0.35
Max. axial load (kN):	0.18	0.37	0.75
Max. radial load (kN):	0.18	0.37	0.75
Max. bending moment (kNm):	0.18	0.37	0.75
Max. excursion at max. axial force (mm):	<0.04	<0.04	<0.08
Balance quality level (DIN ISO 1940):	G6.3 (G2.5 option)		
Max. speed (rpm):	14,000	14,000	14,000
Highspeed option (rpm):	18,000	18,000	18,000
Speed acquisition (inductive, teeth/turn):	64	64	64
Hollow shaft (option):	---	---	---

Torque measuring flange

Measuring range: 20 Nm
Measuring range: 50 Nm
Measuring range: 100 Nm

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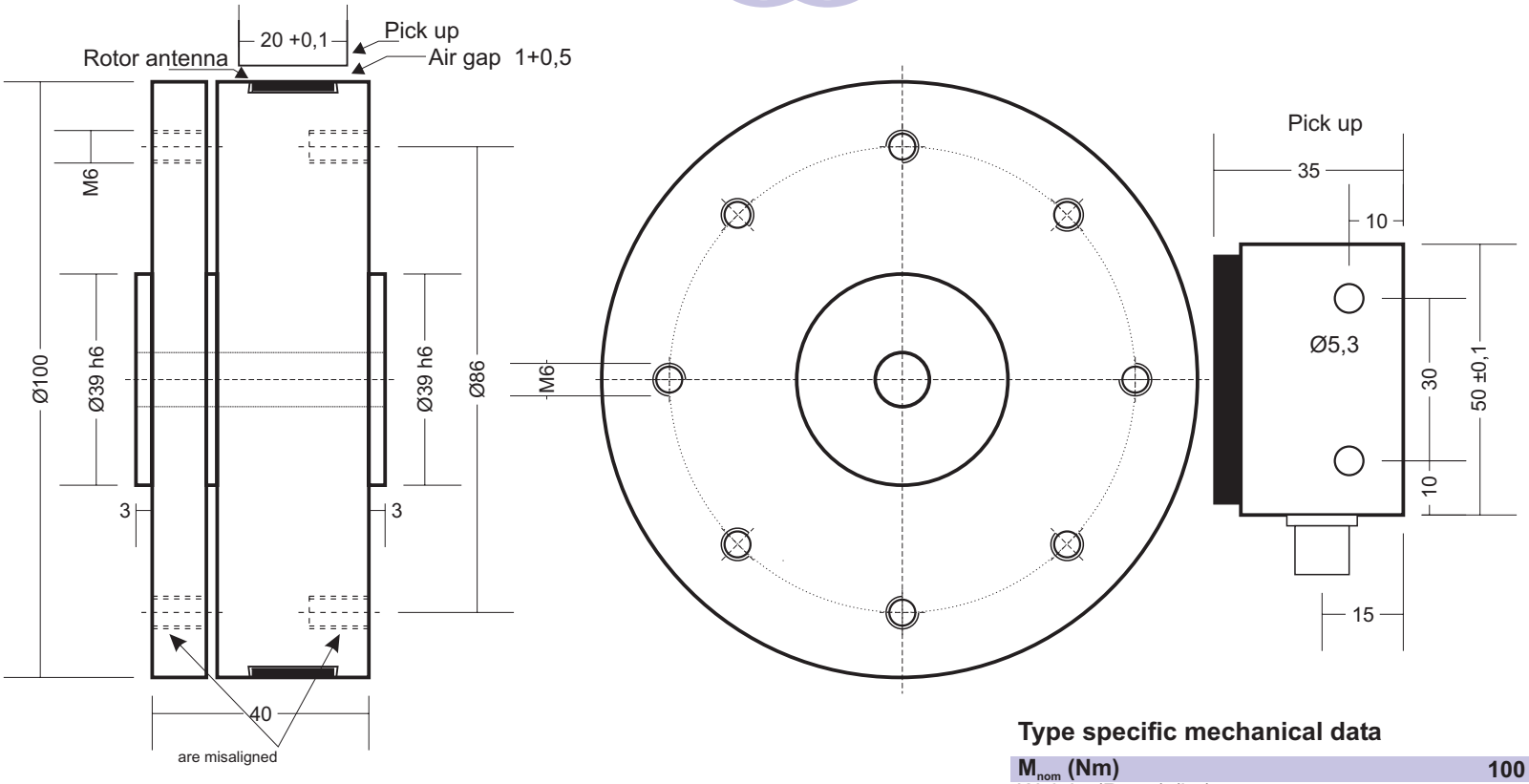

Torque measuring flange

Measuring range: 100 Nm
Measuring range: 200 Nm

Type specific mechanical data

M_{nom} (Nm)	100	200
Weight (Rotor) (kg):	1.6	1.7
Inertia (kgm^2): (With/without speed system)	0.0025	0.0026
Torsional stiffness (kNm/°):	10	20
Torsional angle related to M_{nom} (°):	0.01	0.01
Axial stiffness (kN/mm) c_a:	90	180
Radial stiffness (kN/mm) c_r:	400	800
Bending moment stiffness (kNm/°) c_b:	2	4
Max. axial load (kN):	0.75	1.5
Max. radial load (kN):	0,75	1.5
Max. bending moment (kNm):	0.75	1.5
Max. excursion at max. axial force (mm):	<0.04	<0.08
Balance quality level (DIN ISO 1940):	G6.3 (G2.5 option)	
Max. speed (rpm):	12,000	12,000
Highspeed option (rpm):	18,000	18,000
Speed acquisition (inductive, teeth/turn):	64	64
Hollow shaft (option):	yes	yes

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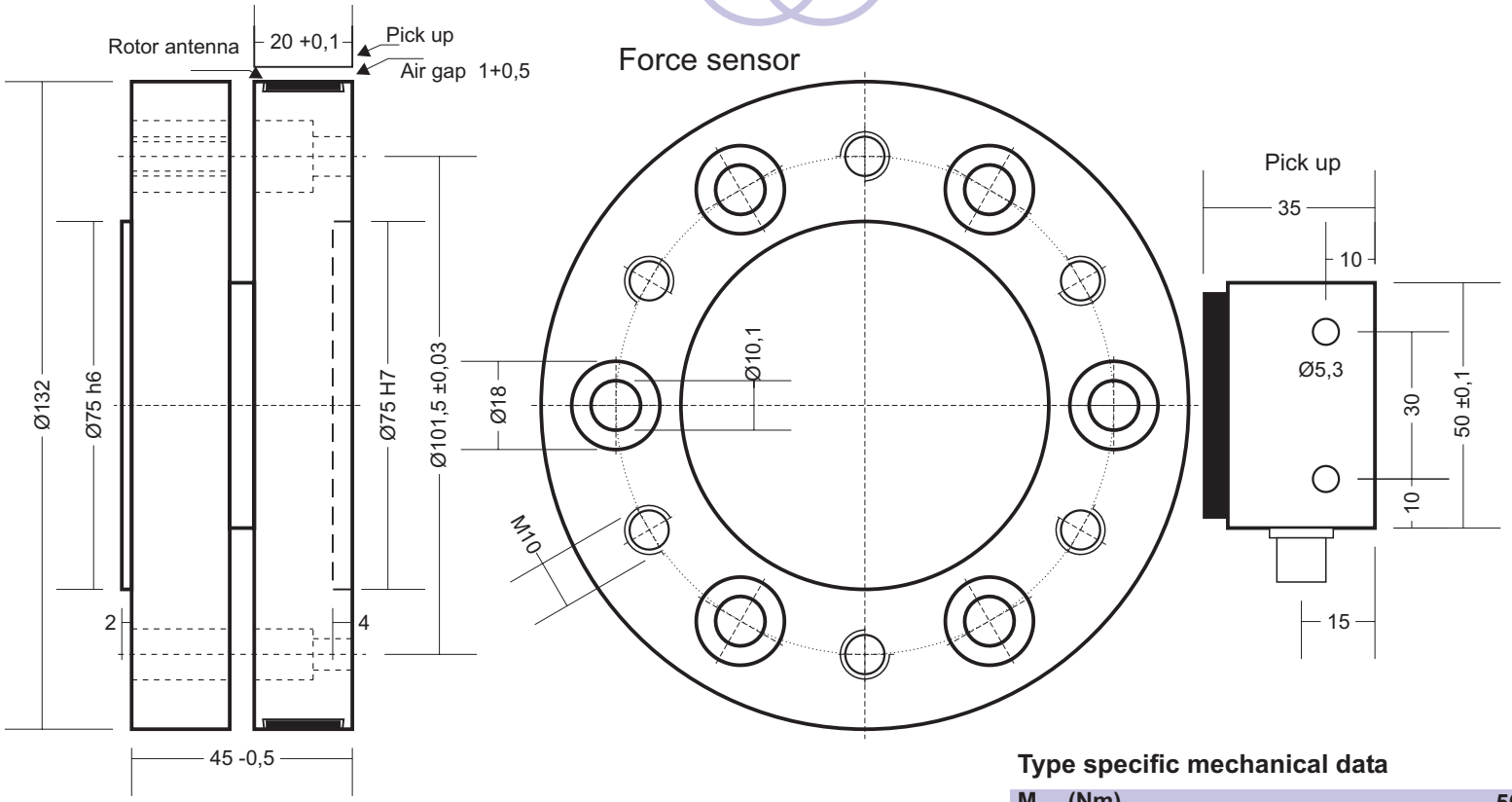

Torque measuring flange

Measuring range: 500 Nm
Measuring range: 1000 Nm

Type specific mechanical data

M_{nom} (Nm)	500	1000
Weight (Rotor) (kg):	2.9	3
Inertia (kgm^2):	0.009	0.01
(With/without speed system)		
Torsional stiffness (kNm/°):	52	105
Torsional angle related to M_{nom} (°):	0.01	0.01
Axial stiffness (kN/mm) c_a:	90	180
Radial stiffness (kN/mm) c_r:	400	800
Bending moment stiffness (kNm/°) c_b:	2	4
Max. axial load (kN):	3.7	7.5
Max. radial load (kN):	3.7	7.5
Max. bending moment (kNm):	3.7	7.5
Max. excursion at max. axial force (mm):	<0.04	<0.08
Balance quality level (DIN ISO 1940):	G6.3 (G2.5 option)	
Max. speed (rpm):	12,000	12,000
Highspeed option (rpm):	16,000	16,000
Speed acquisition (inductive, teeth/turn):	90	90
Hollow shaft (option):	yes	yes

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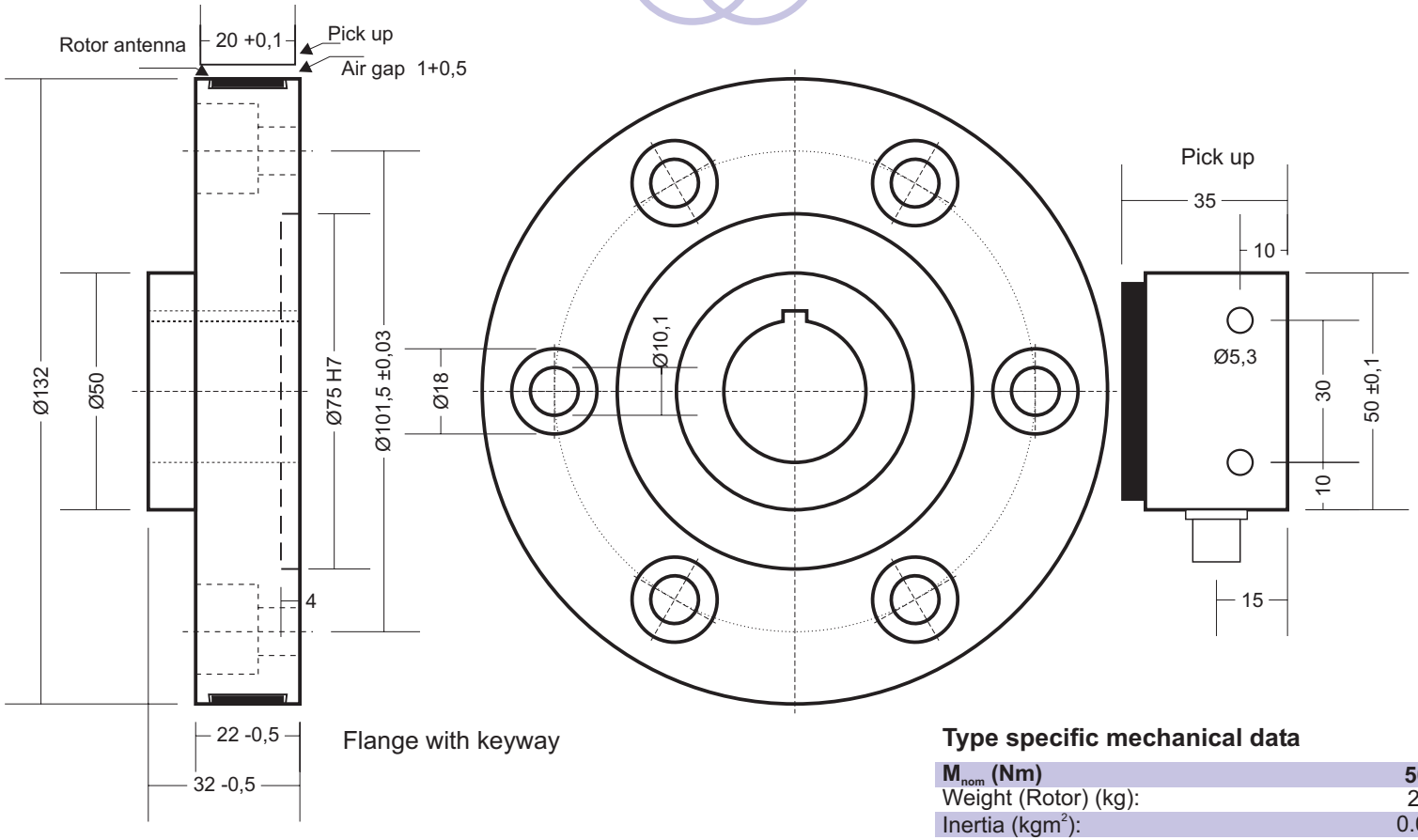

Flange with keyway

Type specific mechanical data

M_{nom} (Nm)	500	1,000
Weight (Rotor) (kg):	2.0	2.1
Inertia (kgm^2):	0.005	0.006
(With/without speed system)		
Torsional stiffness (kNm/°):	52	105
Torsional angle related to M_{nom} (°):	0.01	0.01
Axial stiffness (kN/mm) c_a:	90	180
Radial stiffness (kN/mm) c_r:	400	800
Bending moment stiffness (kNm/°) c_b:	2	4
Max. axial load (kN):	3.7	7.5
Max. radial load (kN):	3.7	7.5
Max. bending moment (kNm):	3.7	7.5
Max. excursion at max. axial force (mm):	<0.04	<0.08
Balance quality level (DIN ISO 1940):	G6.3 (G2.5 option)	
Max. speed (rpm):	12,000	12,000
Highspeed option (rpm):	16,000	16,000
Speed acquisition (inductive, teeth/turn):	90	90
Hollow shaft (option):	yes	yes

Torque measuring flange

Measuring range: 500 Nm
Measuring range: 1000 Nm

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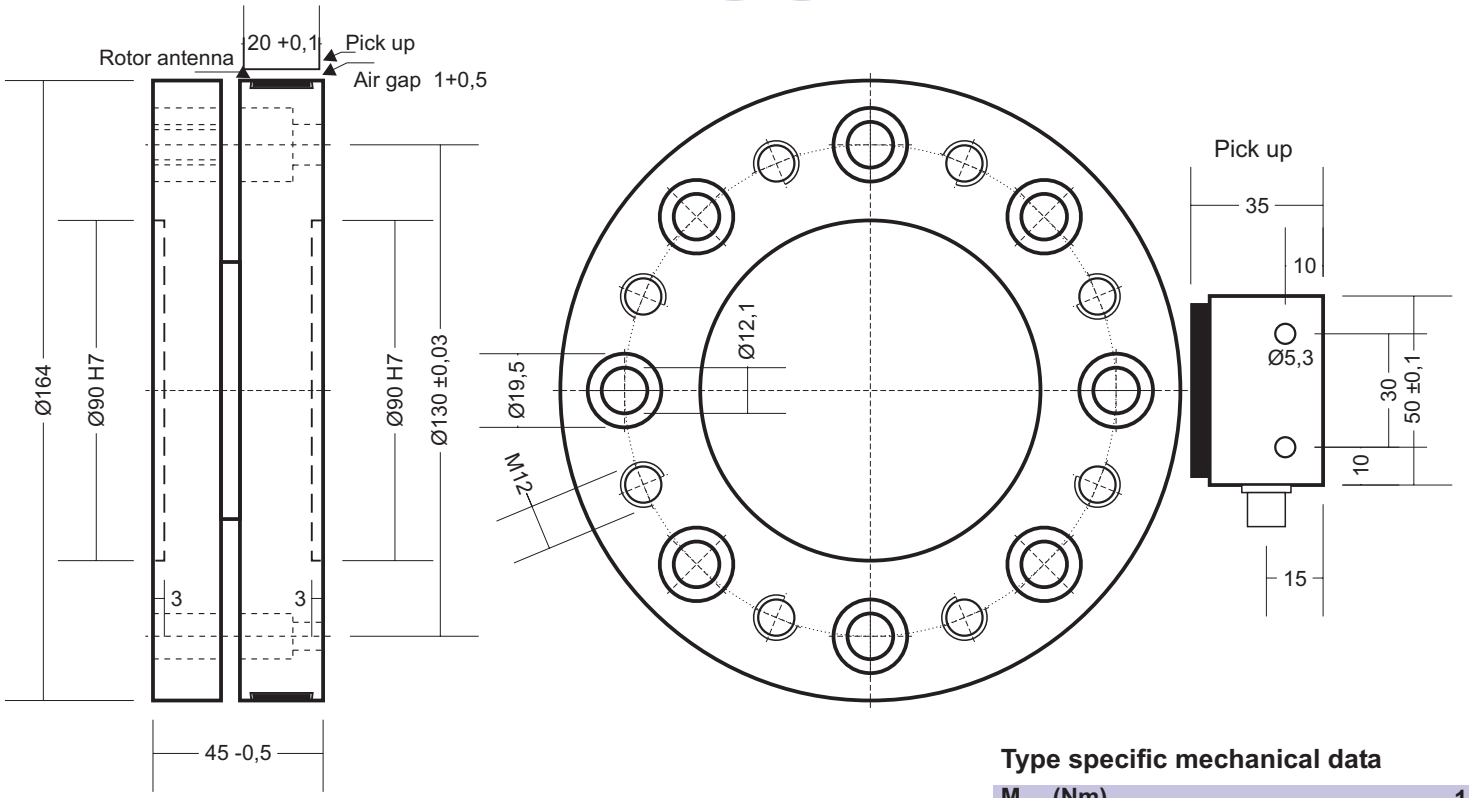

Torque measuring flange

Measuring range: 1 kNm
Measuring range: 2 kNm
Measuring range: 3 kNm

Type specific mechanical data

M_{nom} (Nm)	1,000	2,000	3,000
Weight (Rotor) (kg):	4.6	4.8	5.0
Inertia (kgm^2): (With/without speed system)	0.018	0.019	0.020
Torsional stiffness (kNm/°):	105	210	315
Torsional angle related to M_{nom} (°):	0.01	0.01	0.01
Axial stiffness (kN/mm) c_a:	180	350	540
Radial stiffness (kN/mm) c_r:	800	1,300	2,400
Bending moment stiffness (kNm/°) c_b:	2	4	6
Max. axial load (kN):	7.5	15	21
Max. radial load (kN):	7.5	15	21
Max. bending moment (kNm):	7.5	15	21
Max. excursion at max. axial force (mm):	<0.04	<0.08	<0.12
Balance quality level (DIN ISO 1940):	G6.3 (G2.5 Option)		
Max. speed (rpm):	8,000	8,000	8,000
Highspeed option (rpm):	13,000	13,000	13,000
Speed acquisition (inductive, teeth/turn):	120	120	120
Hollow shaft (option):	yes	yes	yes

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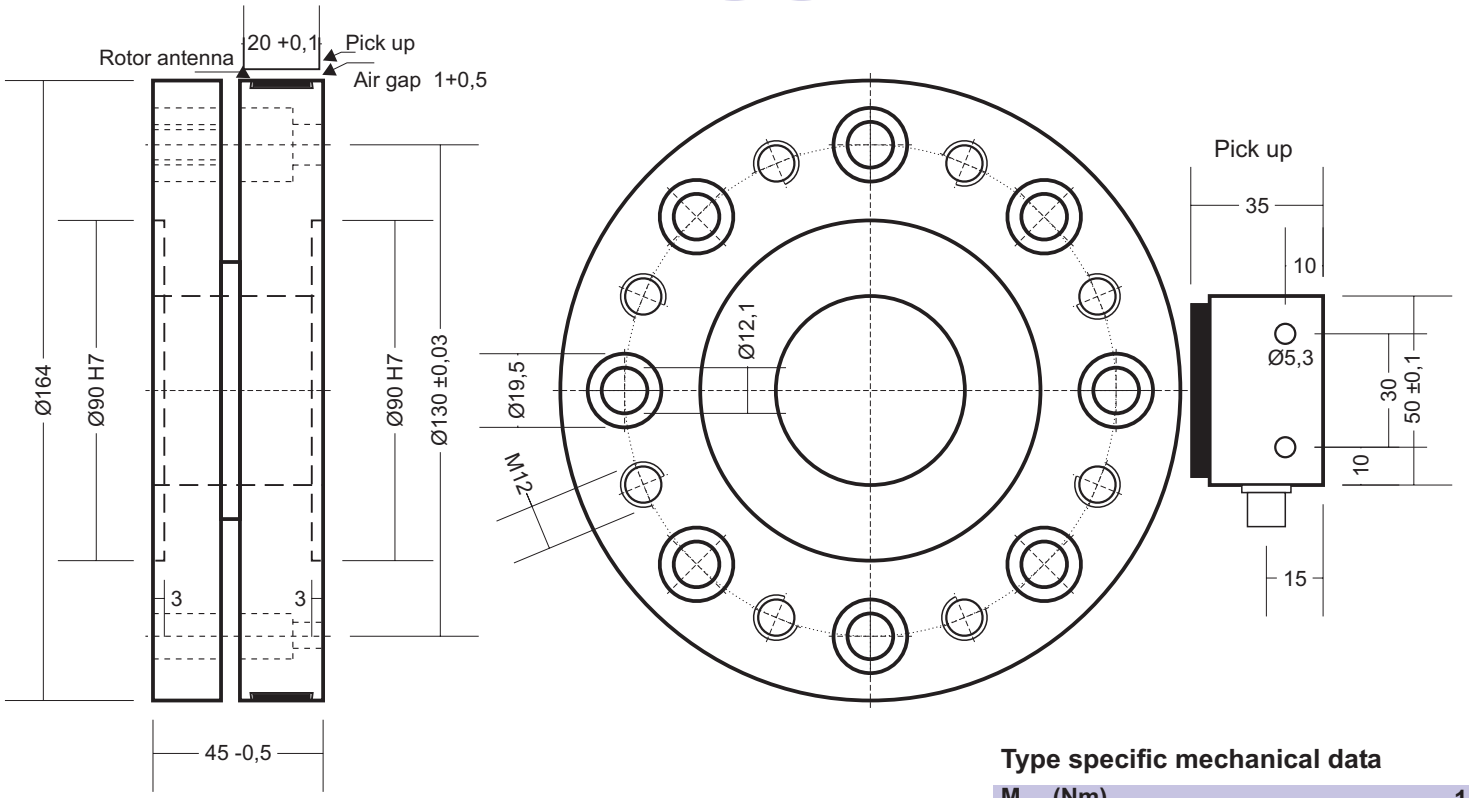

Type specific mechanical data

M_{nom} (Nm)	1,000	2,000	3,000
Weight (Rotor) (kg):	4.0	4.2	4.3
Inertia (kgm^2): (With/without speed system)	0.017	0.018	0.019
Torsional stiffness (kNm/°):	105	210	315
Torsional angle related to M_{nom} (°):	0.01	0.01	0.01
Axial stiffness (kN/mm) c_a:	180	350	540
Radial stiffness (kN/mm) c_r:	800	1,300	2,400
Bending moment stiffness (kNm/°) c_b:	2	4	6
Max. axial load (kN):	7.5	15	21
Max. radial load (kN):	7.5	15	21
Max. bending moment (kNm):	7.5	15	21
Max. excursion at max. axial force (mm):	<0.04	<0.08	<0.12
Balance quality level (DIN ISO 1940):	G6.3 (G2.5 Option)		
Max. speed (rpm):	8,000	8,000	8,000
Highspeed option (rpm):	13,000	13,000	13,000
Speed acquisition (inductive, teeth/turn):	120	120	120
Hollow shaft (option):	---	---	---

Torque measuring flange

Measuring range: 1 kNm
Measuring range: 2 kNm
Measuring range: 3 kNm

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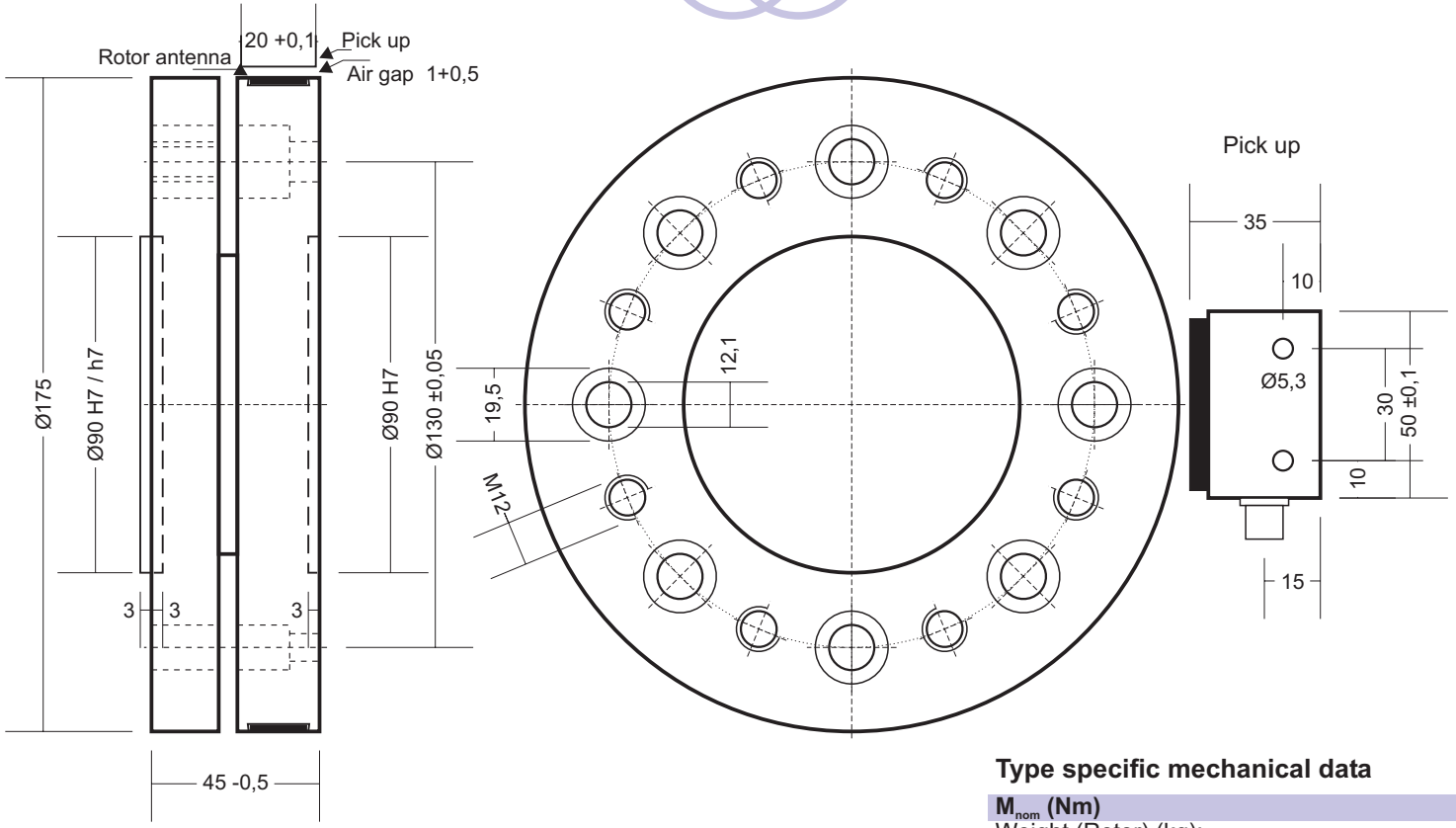
Hollow shaft



Type specific mechanical data

M_{nom} (Nm)	2,000	3,000
Weight (Rotor) (kg):	5.2	5.3
Inertia (kgm²): (With/without speed system)	0.028	0.030
Torsional stiffness (kNm/°):	210	315
Torsional angle related to M_{nom} (°):	0.01	0.01
Axial stiffness (kN/mm) c_a:	350	540
Radial stiffness (kN/mm) c_r:	1,300	2,400
Bending moment stiffness (kNm/°) c_b:	4	6
Max. axial load (kN):	15	21
Max. radial load (kN):	15	21
Max. bending moment (kNm):	15	21
Max. excursion at max. axial force (mm):	<0.08	<0.12
Balance quality level (DIN ISO 1940):	G6.3 (G2.5 option)	
Max. speed (rpm):	8,000	8,000
Highspeed option (rpm):	13,000	13,000
Speed acquisition (inductive, teeth/turn):	120	120
Hollow shaft (option):	yes	yes

Torque measuring flange

Measuring range: 2 kNm
Measuring range: 3 kNm

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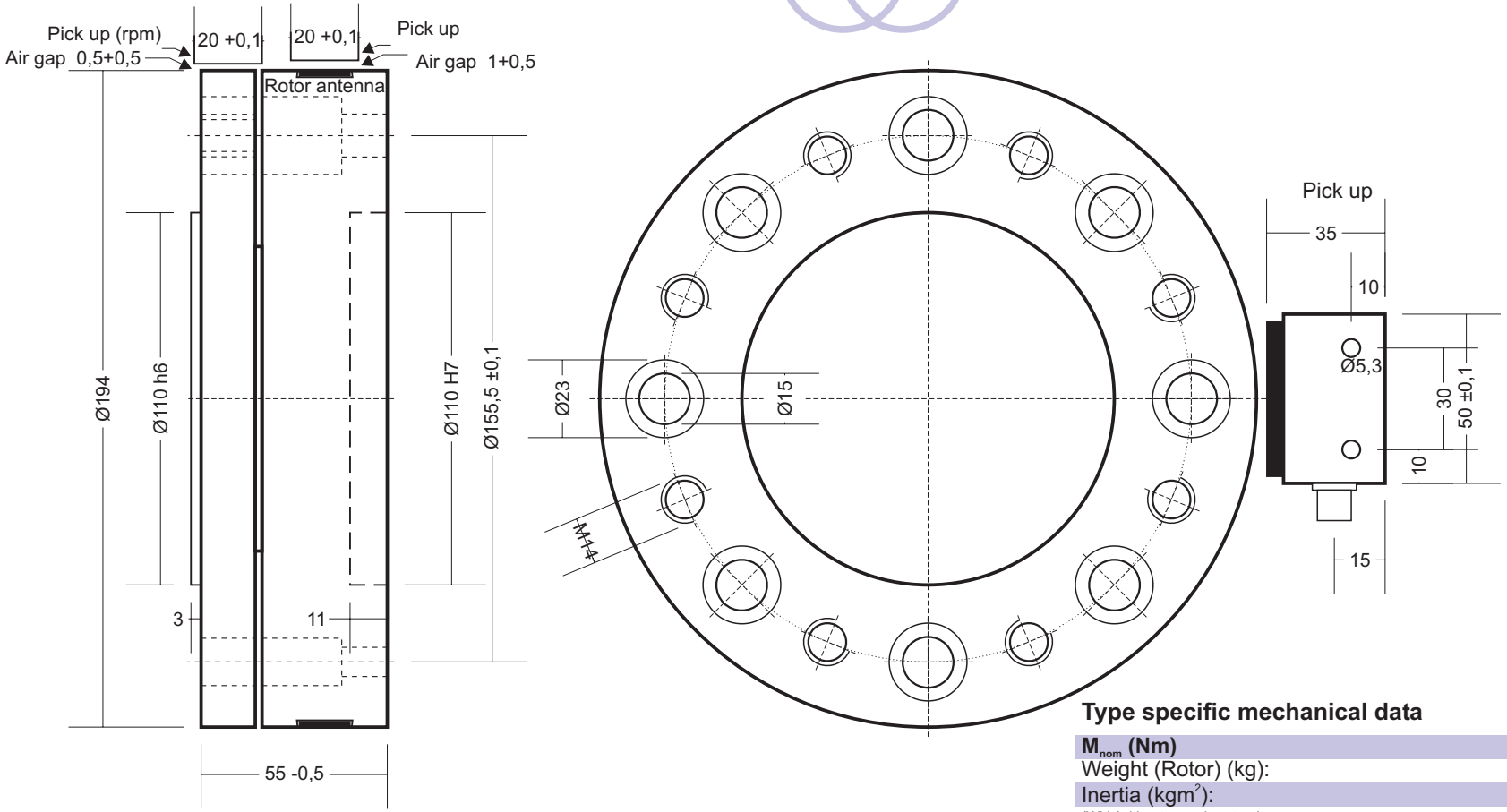

Torque measuring flange

Measuring range: 5 kNm

Type specific mechanical data

M_{nom} (Nm)	**5,000**
Weight (Rotor) (kg):	10.5
Inertia (kgm^2): (With/without speed system)	0.0614
Torsional stiffness (kNm/°):	500
Torsional angle related to M_{nom} (°):	0.01
Axial stiffness (kN/mm) c_a:	900
Radial stiffness (kN/mm) c_r:	4,000
Bending moment stiffness (kNm/°) c_b:	10
Max. axial load (kN):	38
Max. radial load (kN):	38
Max. bending moment (kNm):	38
Max. excursion at max. axial force (mm):	<0.04
Balance quality level (DIN ISO 1940):	G6.3 (G2.5 Option)
Max. speed (rpm):	8,000
Highspeed option (rpm):	12,000
Speed acquisition (inductive, teeth/turn):	120
Hollow shaft (option):	yes

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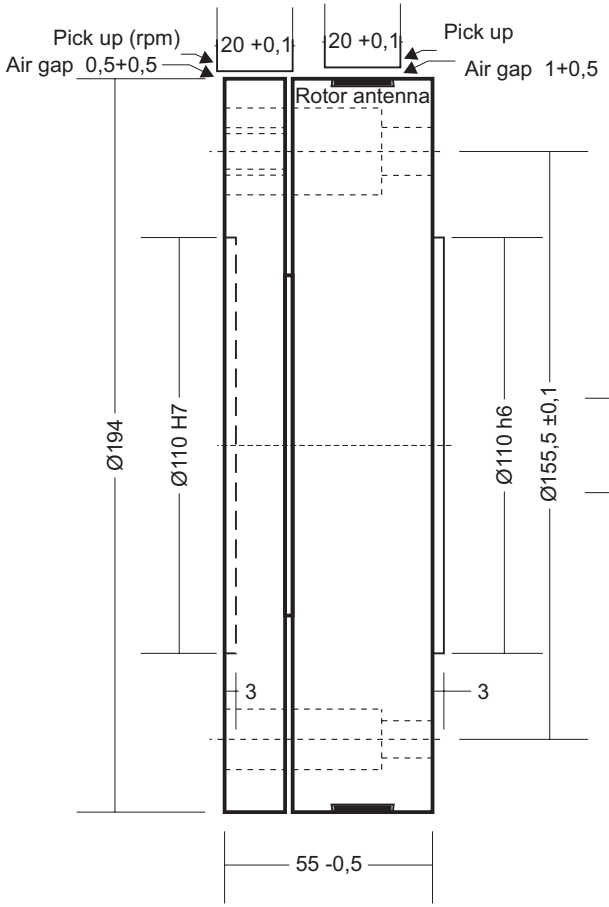

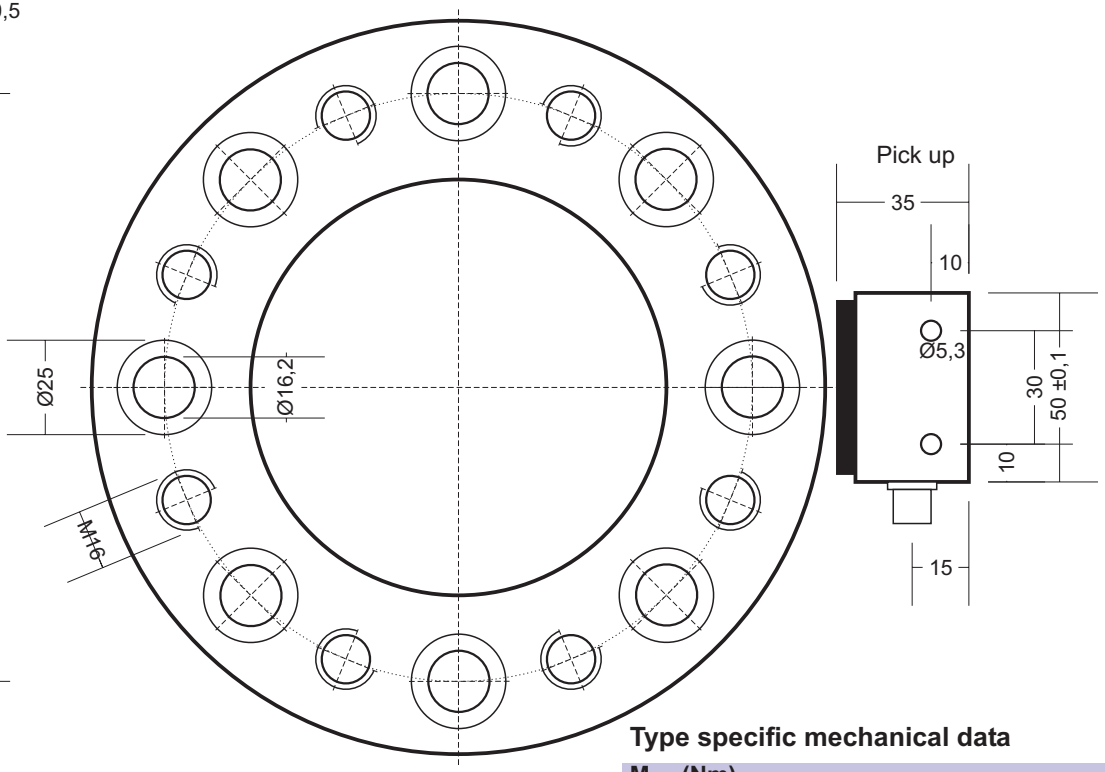

Torque measuring flange

Measuring range: 10 kNm

Type specific mechanical data

M_{nom} (Nm)	**10,000**
Weight (Rotor) (kg):	10.3
Inertia (kgm^2): (With/without speed system)	0.062
Torsional stiffness (kNm/°):	1,050
Torsional angle related to M_{nom} (°):	0.01
Axial stiffness (kN/mm) c_a:	1,800
Radial stiffness (kN/mm) c_r:	8,000
Bending moment stiffness (kNm/°) c_b:	20
Max. axial load (kN):	75
Max. radial load (kN):	75
Max. bending moment (kNm):	75
Max. excursion at max. axial force (mm):	<0.08
Balance quality level (DIN ISO 1940):	G6.3
Max. speed (rpm):	6,000
Highspeed option (rpm):	9,000
Speed acquisition (inductive, teeth/turn):	120
Hollow shaft (option):	yes

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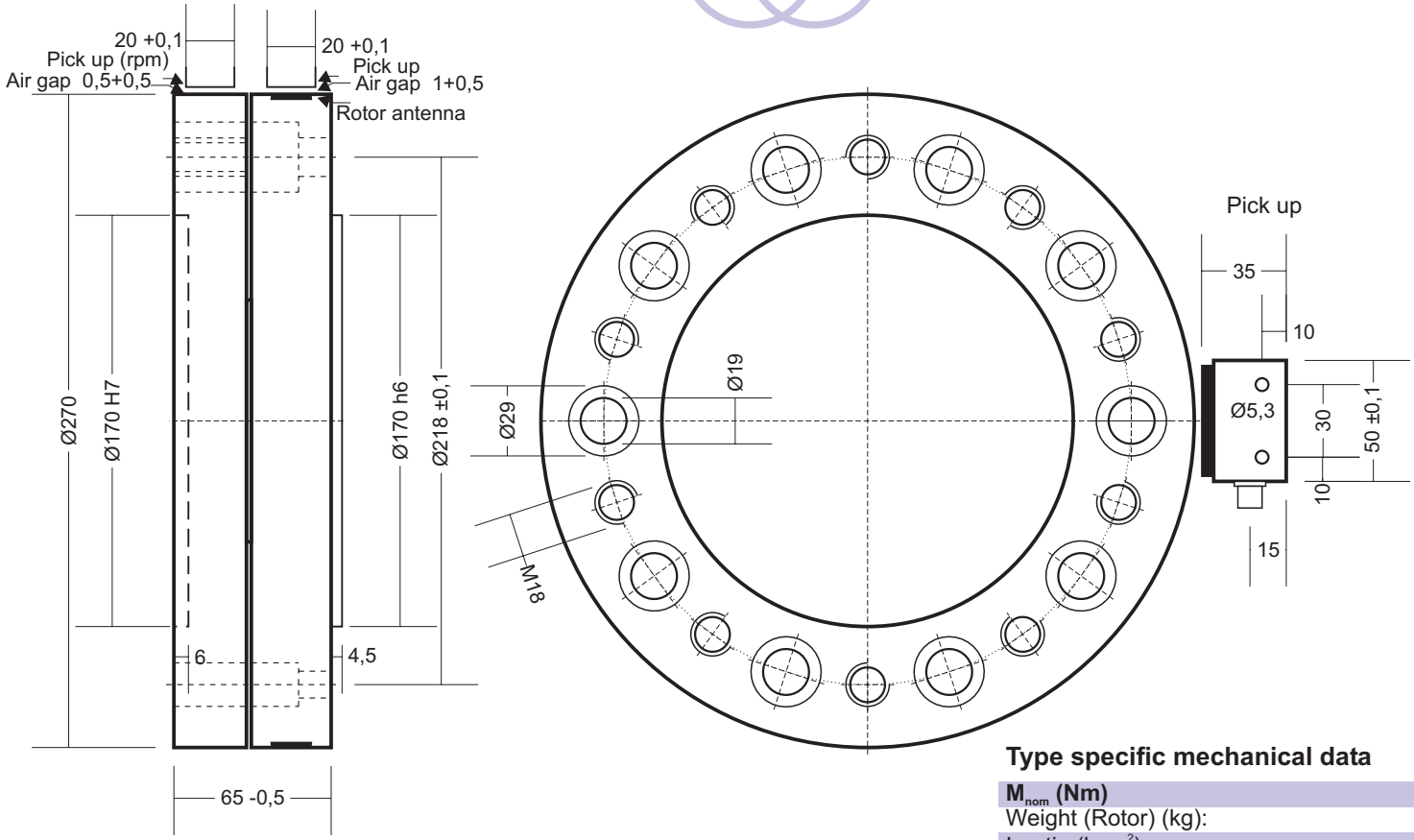

Torque measuring flange

Measuring range: 20 kNm

Type specific mechanical data

M_{nom} (Nm)	**20,000**
Weight (Rotor) (kg):	19.4
Inertia (kgm^2):	0.251
(With/without speed system)	
Torsional stiffness (kNm/°):	2,000
Torsional angle related to M_{nom} (°):	0.01
Axial stiffness (kN/mm) c_a:	3,600
Radial stiffness (kN/mm) c_r:	16,000
Bending moment stiffness (kNm/°) c_b:	40
Max. axial load (kN):	150
Max. radial load (kN):	150
Max. bending moment (kNm):	150
Max. excursion at max. axial force (mm):	<0.08
Balance quality level (DIN ISO 1940):	G6.3
Max. speed (rpm):	4,000
Highspeed option (rpm):	7,000
Speed acquisition (inductive, teeth/turn):	270
Hollow shaft (option):	yes

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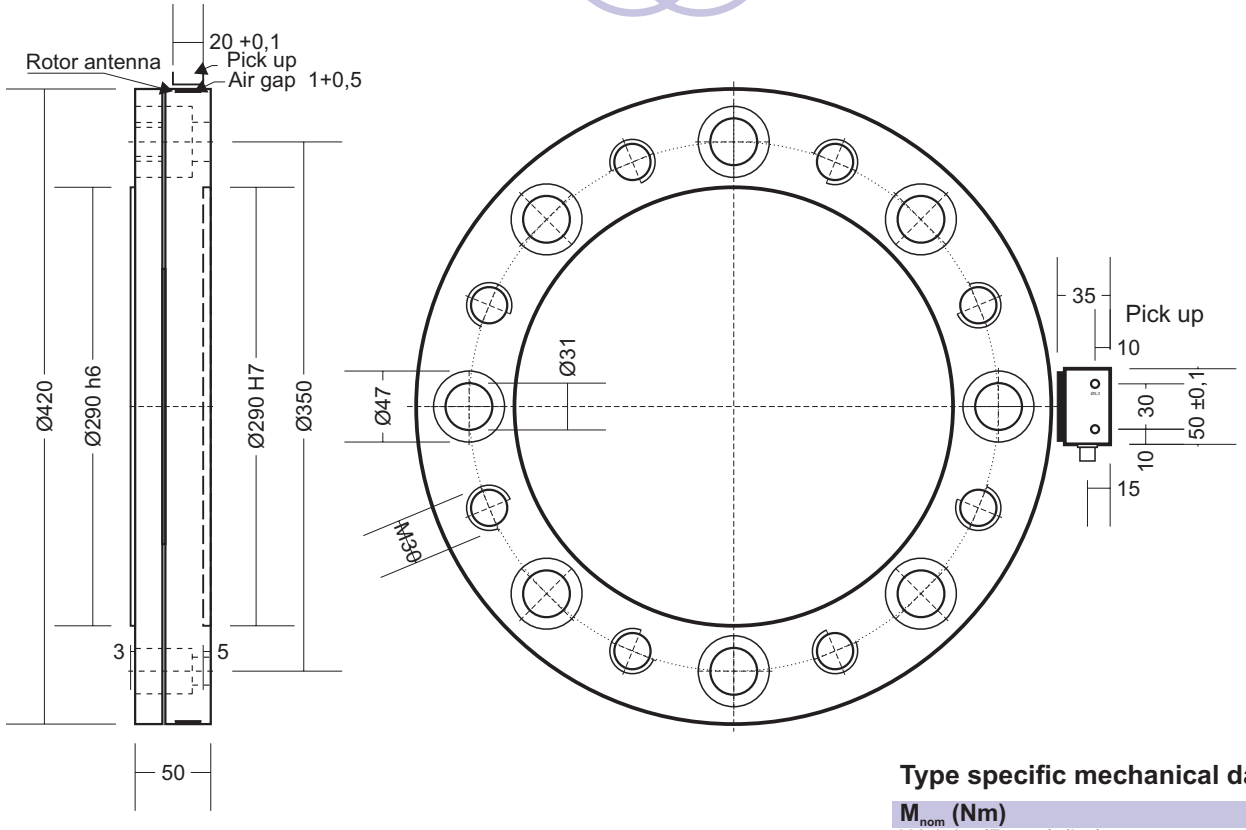


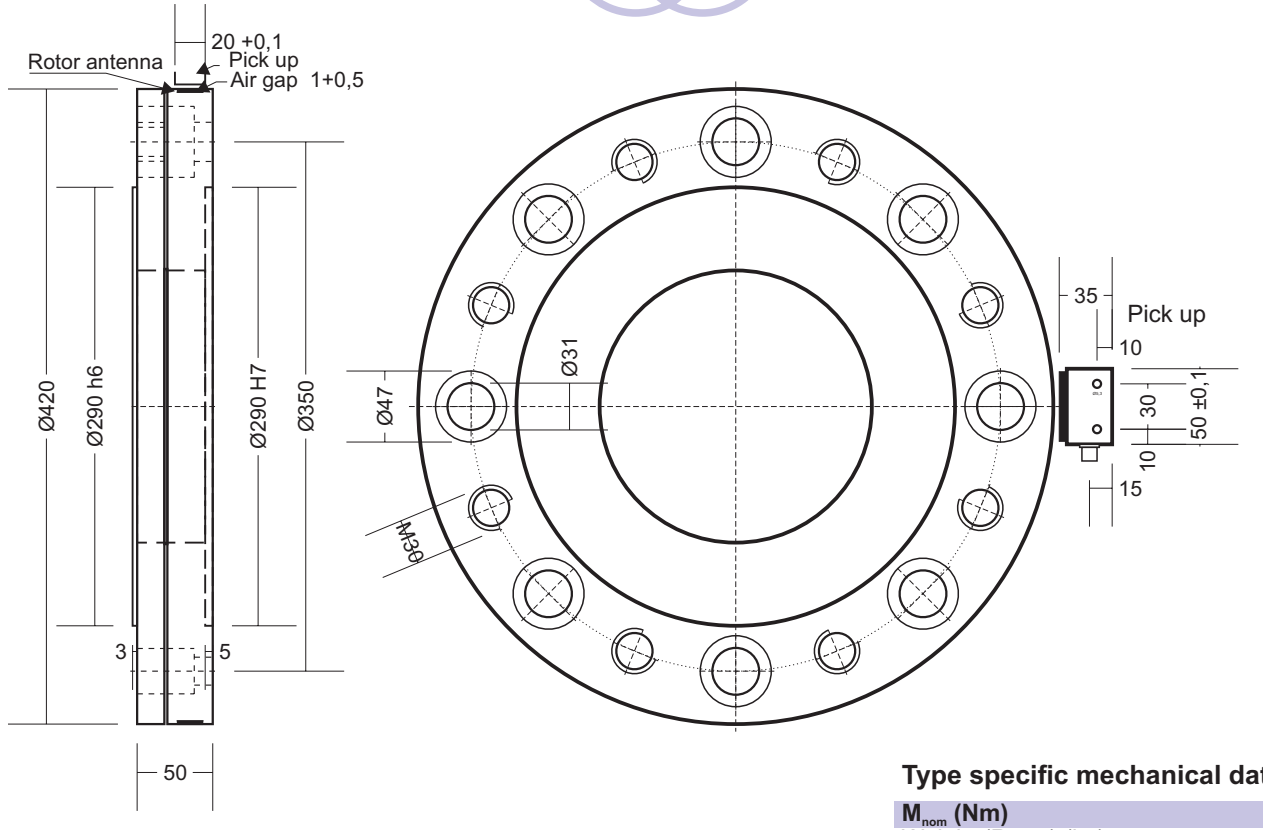
Torque measuring flange

Measuring range: 25 kNm
Measuring range: 50 kNm
Measuring range: 75 kNm

Type specific mechanical data

M_{nom} (Nm)	25,000	50,000	75,000
Weight (Rotor) (kg):	45	46	48
Inertia (kgm^2): (With/without speed system)	1.05	1.07	1.09
Torsional stiffness (kNm/°):	2,500	5,000	7,500
Torsional angle related to M_{nom} (°):	0.01	0.01	0.01
Axial stiffness (kN/mm) c_a:	3,600	3,600	3,600
Radial stiffness (kN/mm) c_r:	12,000	16,000	24,000
Bending moment stiffness (kNm/°) c_b:	40	40	40
Max. axial load (kN):	170	200	240
Max. radial load (kN):	170	200	240
Max. bending moment (kNm):	170	200	240
Max. excursion at max. axial force (mm):	<0.15	<0.15	<0.15
Balance quality level (DIN ISO 1940):	G9.4 (G6.3 Option)		
Max. speed (rpm):	4,000	4,000	4,000
Highspeed option (rpm):	7,000	7,000	7,000
Speed acquisition (inductive, teeth/turn):	360	360	360
Hollow shaft (option):	yes	yes	yes

MANNER® Sensortelemetrie



Type specific mechanical data

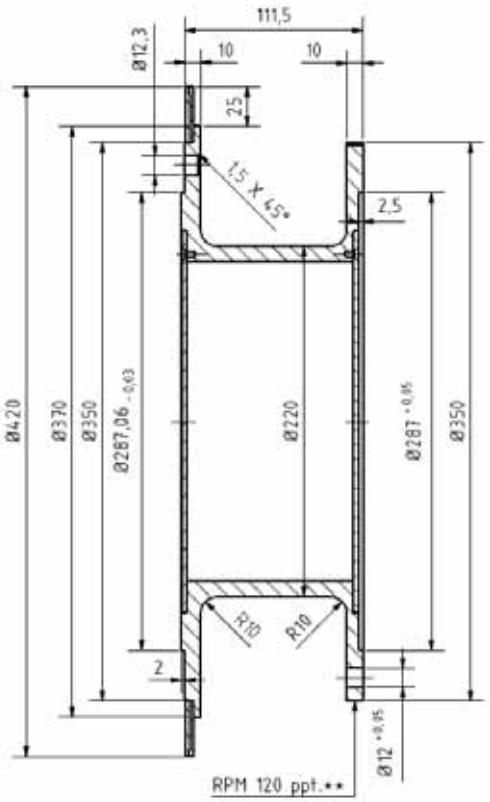
M_{nom} (Nm)	25,000	50,000	75,000
Weight (Rotor) (kg):	45	46	48
Inertia (kgm²):	1.05	1.07	1.09
(With/without speed system)			
Torsional stiffness (kNm/°):	2,500	5,000	7,500
Torsional angle related to M_{nom} (°):	0.01	0.01	0.01
Axial stiffness (kN/mm) c_a:	3,600	3,600	3,600
Radial stiffness (kN/mm) c_r:	12,000	16,000	24,000
Bending moment stiffness (kNm/°) c_b:	40	40	40
Max. axial load (kN):	170	200	240
Max. radial load (kN):	170	200	240
Max. bending moment (kNm):	170	200	240
Max. excursion at max. axial force (mm):	<0.15	<0.15	<0.15
Balance quality level (DIN ISO 1940):	G9.4 (G6.3 Option)		
Max. speed (rpm):	4,000	4,000	4,000
Highspeed option (rpm):	7,000	7,000	7,000
Speed acquisition (inductive, teeth/turn):	360	360	360
Hollow shaft (option):	---	---	---

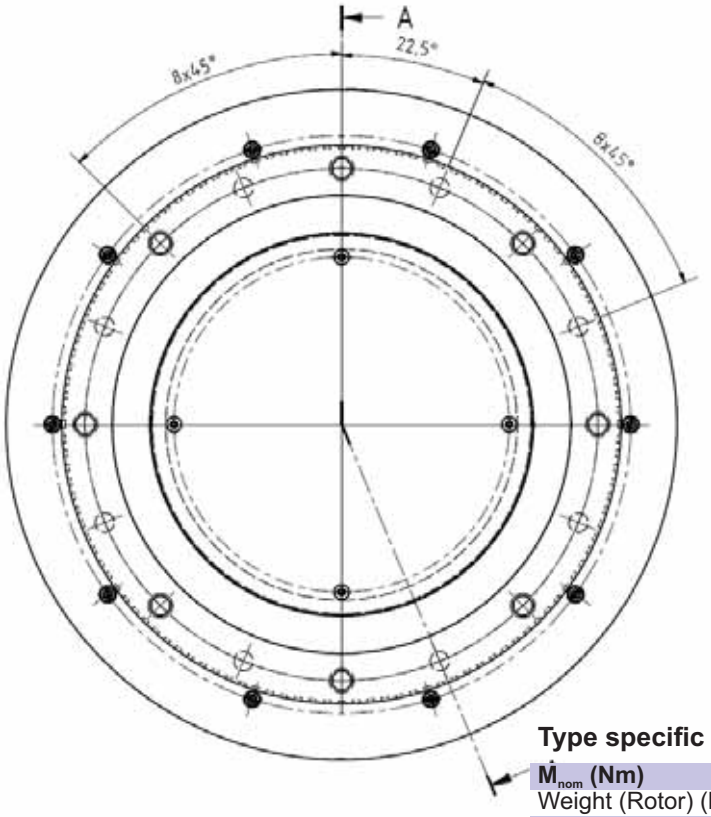
Torque measuring flange

Measuring range: 25 kNm
Measuring range: 50 kNm
Measuring range: 75 kNm

MANNER® Sensortelemetrie

Hollow shaft

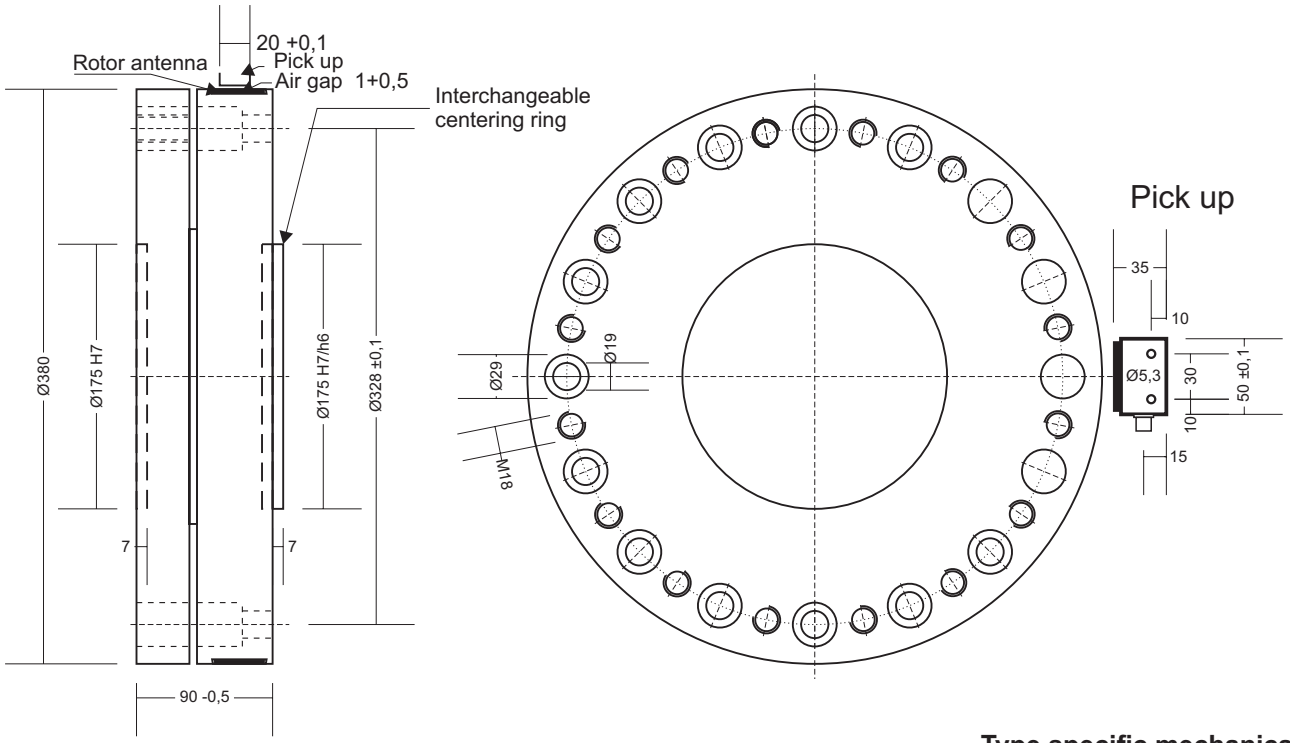




Type specific mechanical data

$\dot{M}_{nom}$ (Nm)	25,000	50,000	75,000
Weight (Rotor) (kg):	45	46	48
Inertia (kgm^2): (With/without speed system)	1.05	1.07	1.09
Torsional stiffness (kNm/°):	2,500	5,000	7,500
Torsional angle related to M_{nom} (°):	0.01	0.01	0.01
Axial stiffness (kN/mm) c_a:	3,600	3,600	3,600
Radial stiffness (kN/mm) c_r:	12,000	16,000	24,000
Bending moment stiffness (kNm/°) c_b:	40	40	40
Max. axial load (kN):	170	200	240
Max. radial load (kN):	170	200	240
Max. bending moment (kNm):	170	200	240
Max. excursion at max. axial force (mm):	<0.15	<0.15	<0.15
Balance quality level (DIN ISO 1940):	G9.4 (G6.3 Option)		
Max. speed (rpm):	4,000	4,000	4,000
Highspeed option (rpm):	7,000	7,000	7,000
Speed acquisition (inductive, teeth/turn):	360	360	360
Hollow shaft (option):	---	---	---

MANNER® Sensortelemetrie



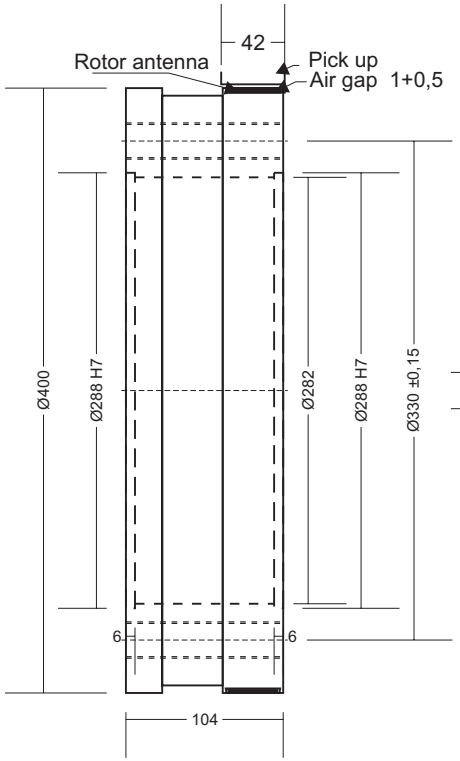
Torque measuring flange

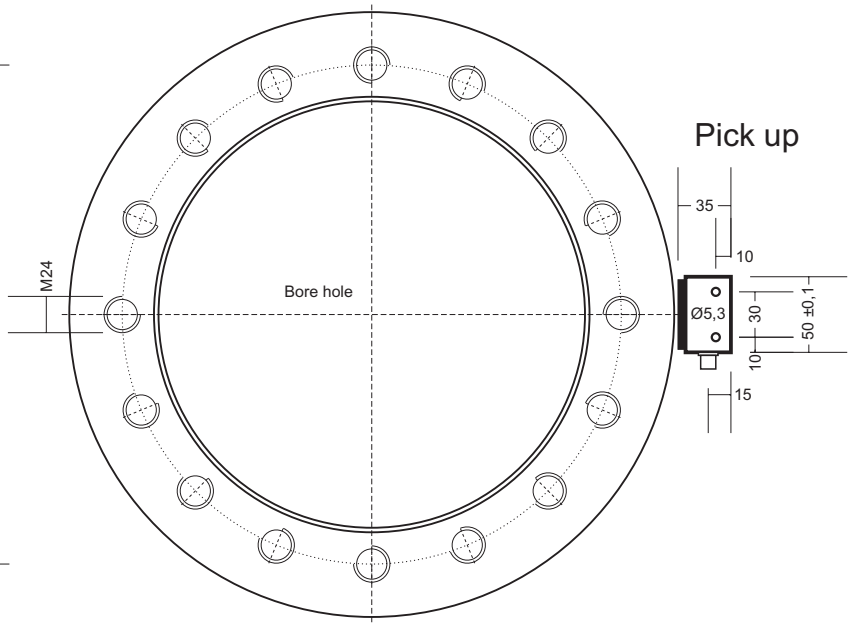
Measuring range: 50 kNm

Type specific mechanical data

M_{nom} (Nm)	**50,000**
Weight (Rotor) (kg):	42
Inertia (kgm^2):	1.1
(With/without speed system)	
Torsional stiffness (kNm/°):	5,000
Torsional angle related to M_{nom} (°):	0.01
Axial stiffness (kN/mm) c_a:	6,000
Radial stiffness (kN/mm) c_r:	20,000
Bending moment stiffness (kNm/°) c_b:	80
Max. axial load (kN):	350
Max. radial load (kN):	350
Max. bending moment (kNm):	350
Max. excursion at max. axial force (mm):	<0.15
Balance quality level (DIN ISO 1940):	G9.4 (G6.3 Option)
Max. speed (rpm):	3,000
Highspeed option (rpm):	4,000
Speed acquisition (inductive, teeth/turn):	360
Hollow shaft (option):	yes

MANNER® Sensortelemetrie





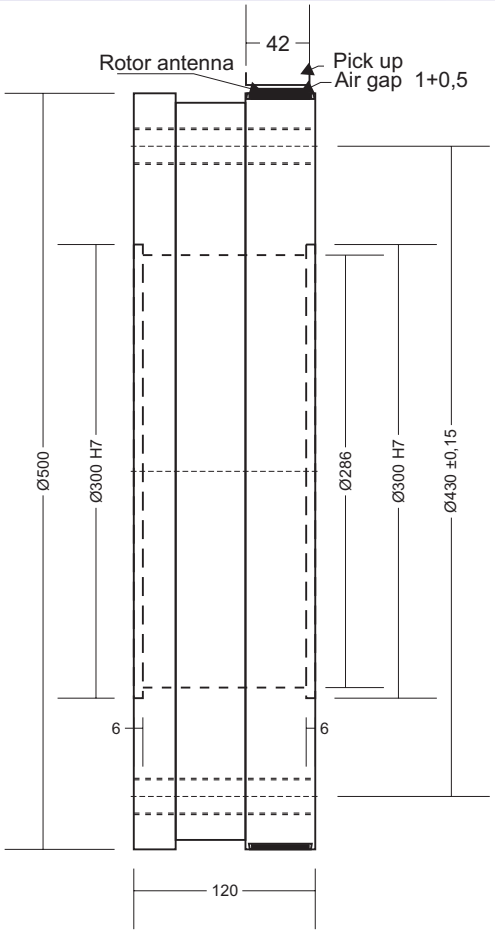
Torque measuring flange

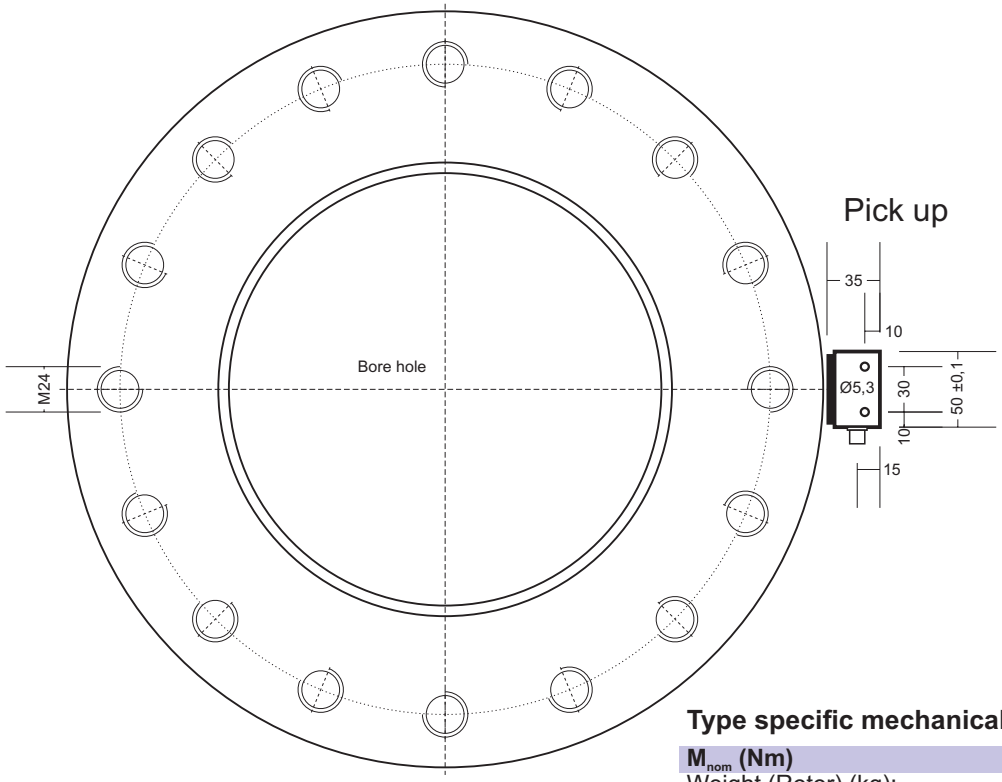
Measuring range: 100 kNm
Measuring range: 150 kNm

Type specific mechanical data

M_{nom} (Nm)	100,000	150,000
Weight (Rotor) (kg):	38	40
Inertia (kgm^2):	1.29	1.45
(With/without speed system)		
Torsional stiffness (kNm/°):	10,000	15,000
Torsional angle related to M_{nom} (°):	0.01	0.01
Axial stiffness (kN/mm) c_a:	5,000	7,000
Radial stiffness (kN/mm) c_r:	20,000	25,000
Bending moment stiffness (kNm/°) c_b:	160	240
Max. axial load (kN):	400	600
Max. radial load (kN):	400	600
Max. bending moment (kNm):	400	600
Max. excursion at max. axial force (mm):	<0.15	<0.15
Balance quality level (DIN ISO 1940):	G9.4 (G6.3 Option)	
Max. speed (rpm):	2,000	2,000
Highspeed option (rpm):	3,000	3,000
Speed acquisition (inductive, teeth/turn):	360	360
Hollow shaft (option):	---	---

MANNER® Sensortelemetrie





Torque measuring flange

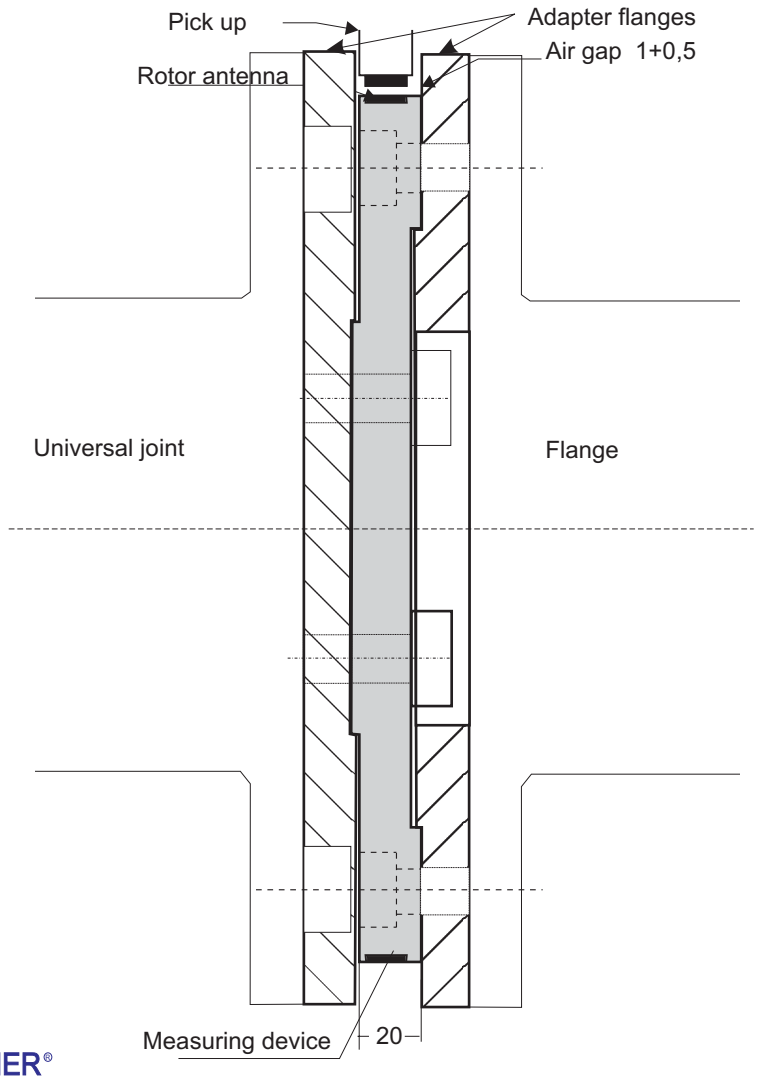
Measuring range: 250 kNm

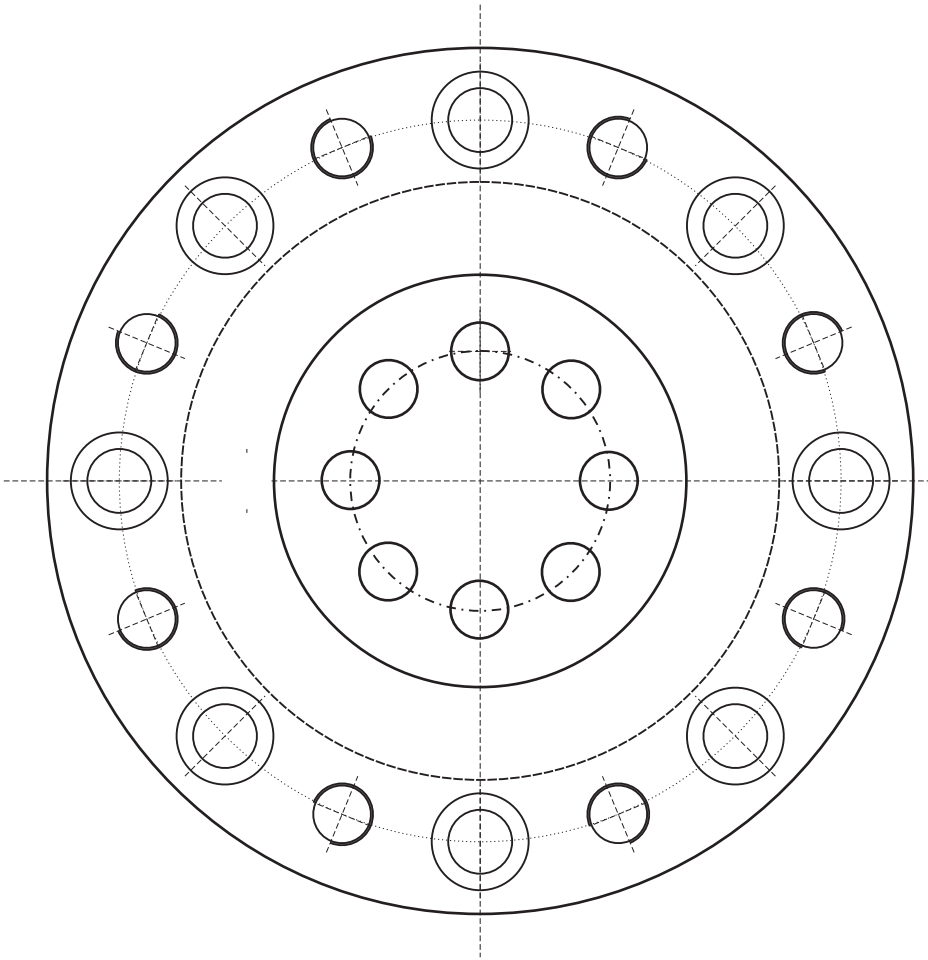
Type specific mechanical data

M_{nom} (Nm)	**250,000**
Weight (Rotor) (kg):	60
Inertia (kgm^2): (With/without speed system)	2
Torsional stiffness (kNm/°):	25,000
Torsional angle related to M_{nom} (°):	0.01
Axial stiffness (kN/mm) c_a:	11,000
Radial stiffness (kN/mm) c_r:	40,000
Bending moment stiffness (kNm/°) c_b:	400
Max. axial load (kN):	1,000
Max. radial load (kN):	1,000
Max. bending moment (kNm):	1,000
Max. excursion at max. axial force (mm):	<0.15
Balance quality level (DIN ISO 1940):	G9.4 (G6.3 Option)
Max. speed (rpm):	1,700
Highspeed option (rpm):	2,000
Speed acquisition (inductive, teeth/turn):	480
Hollow shaft (option):	---

MANNER® Sensortelemetrie

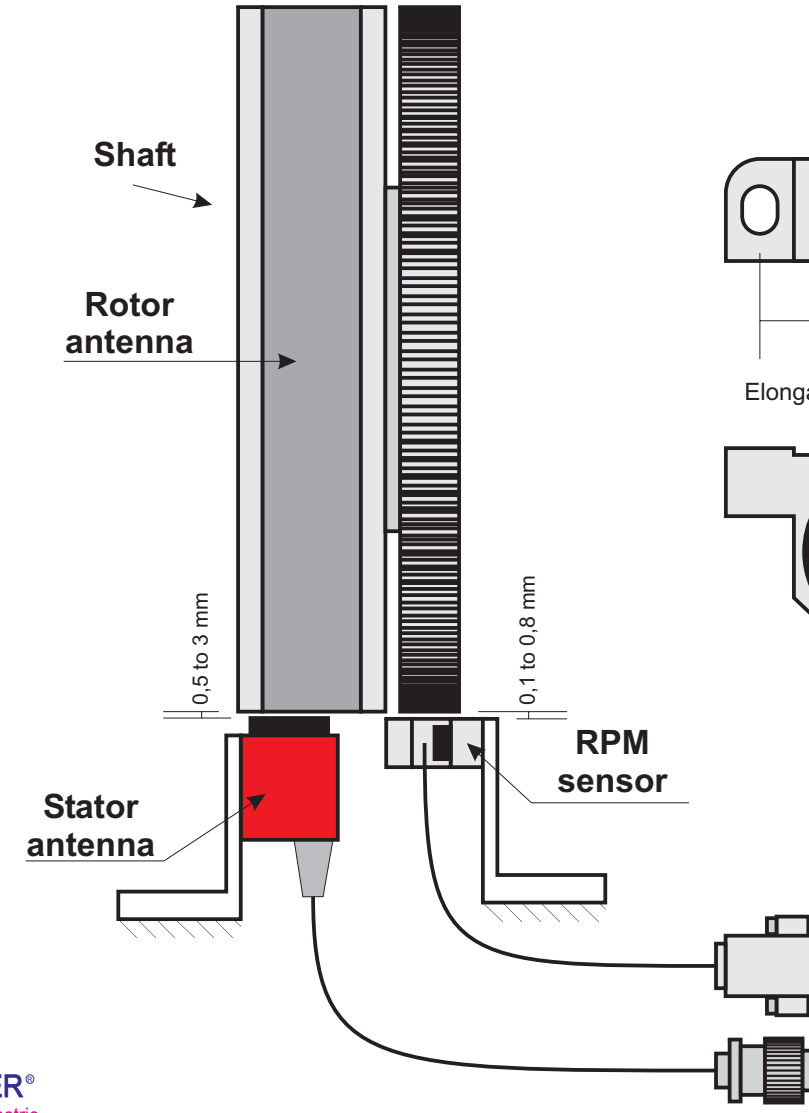
Torque Measuring Flange

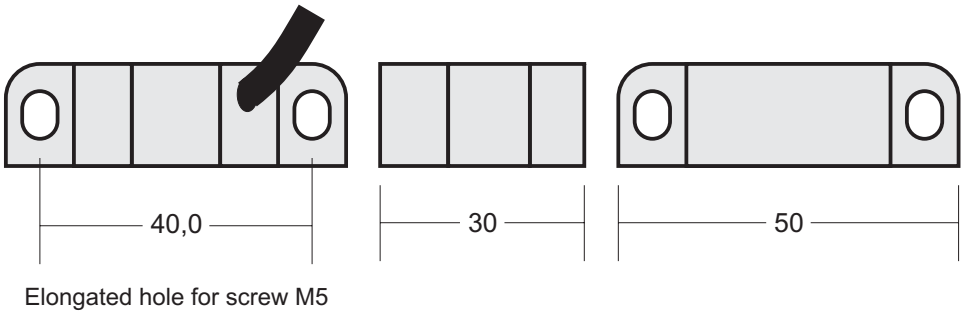


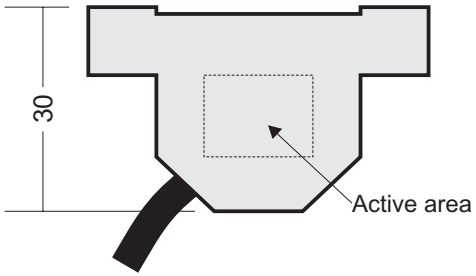


MANNER® Sensortelemetrie

Measuring Rotational Speed



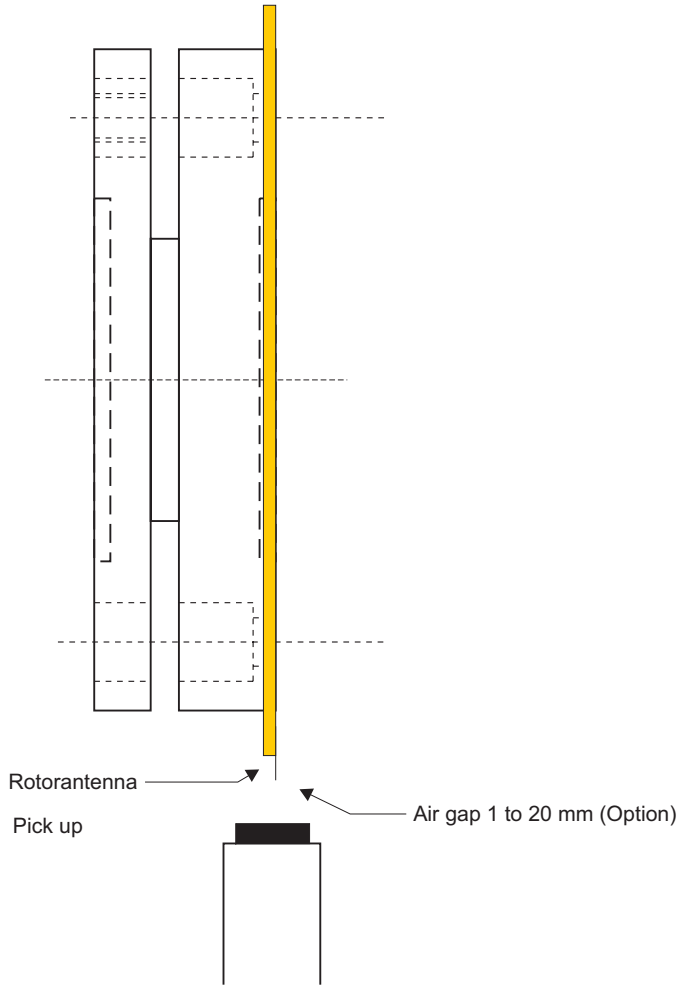


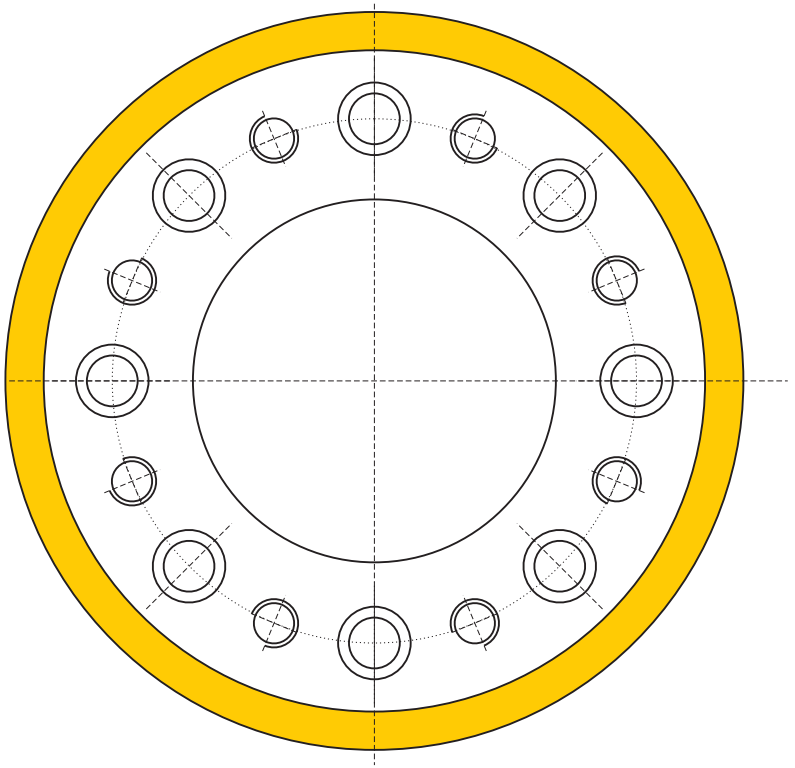


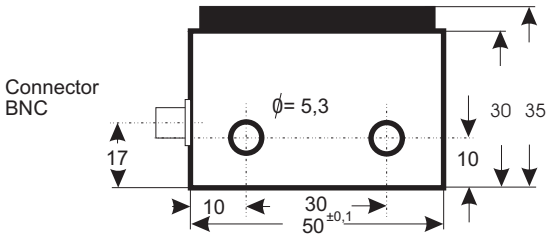
Technical data (rpm)
Phase Sensor 1 to Sensor 2: 90°
Frequency: 0 to 25 kHz
Air gap: 0,5 -0,4;+0,3 mm
Module: 1,5 (others optional)

MANNER® Sensortelemetrie

Application for Big Axial Movements and High Speed



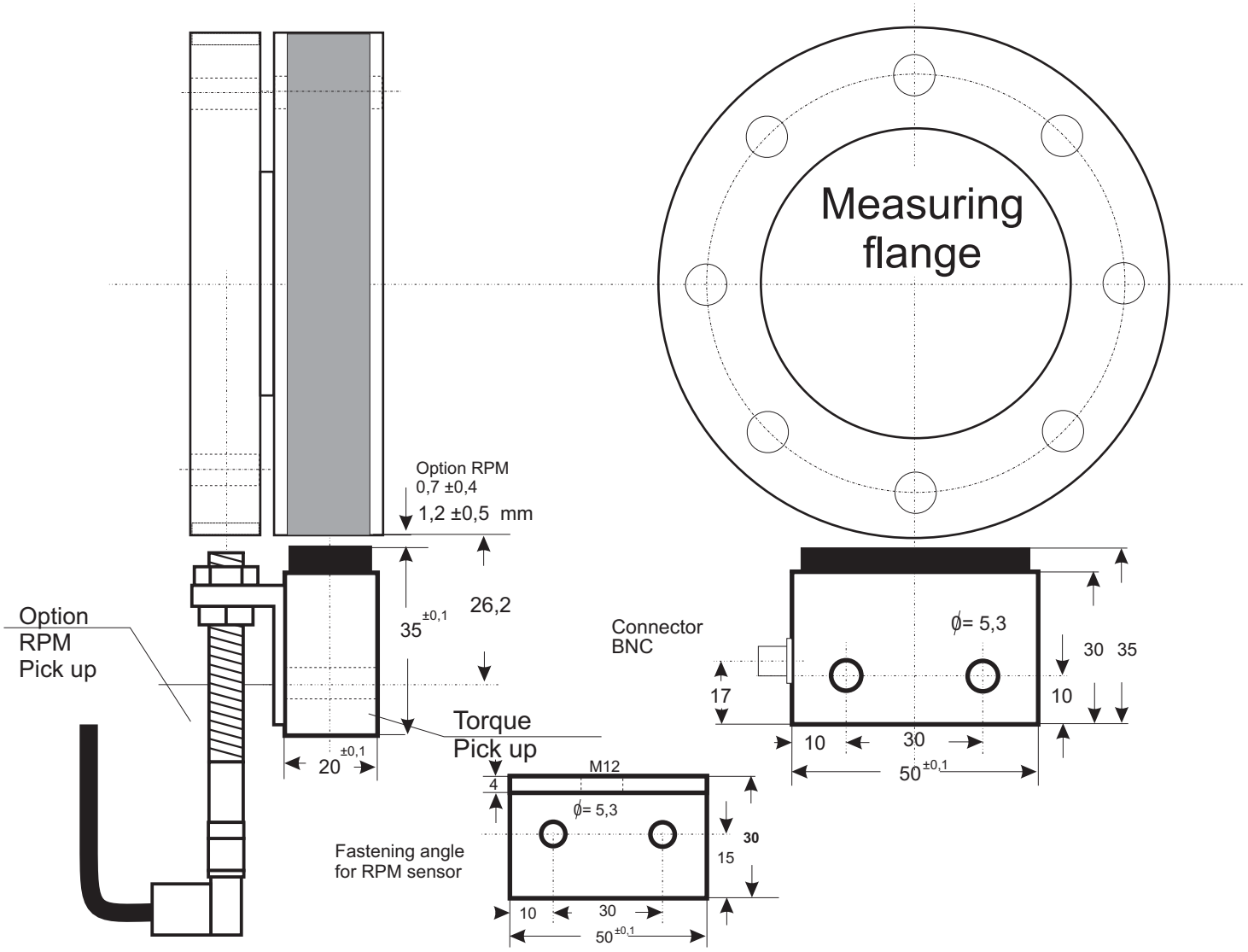




MANNER® Sensortelemetrie

Measuring Torque and Rotational Speed

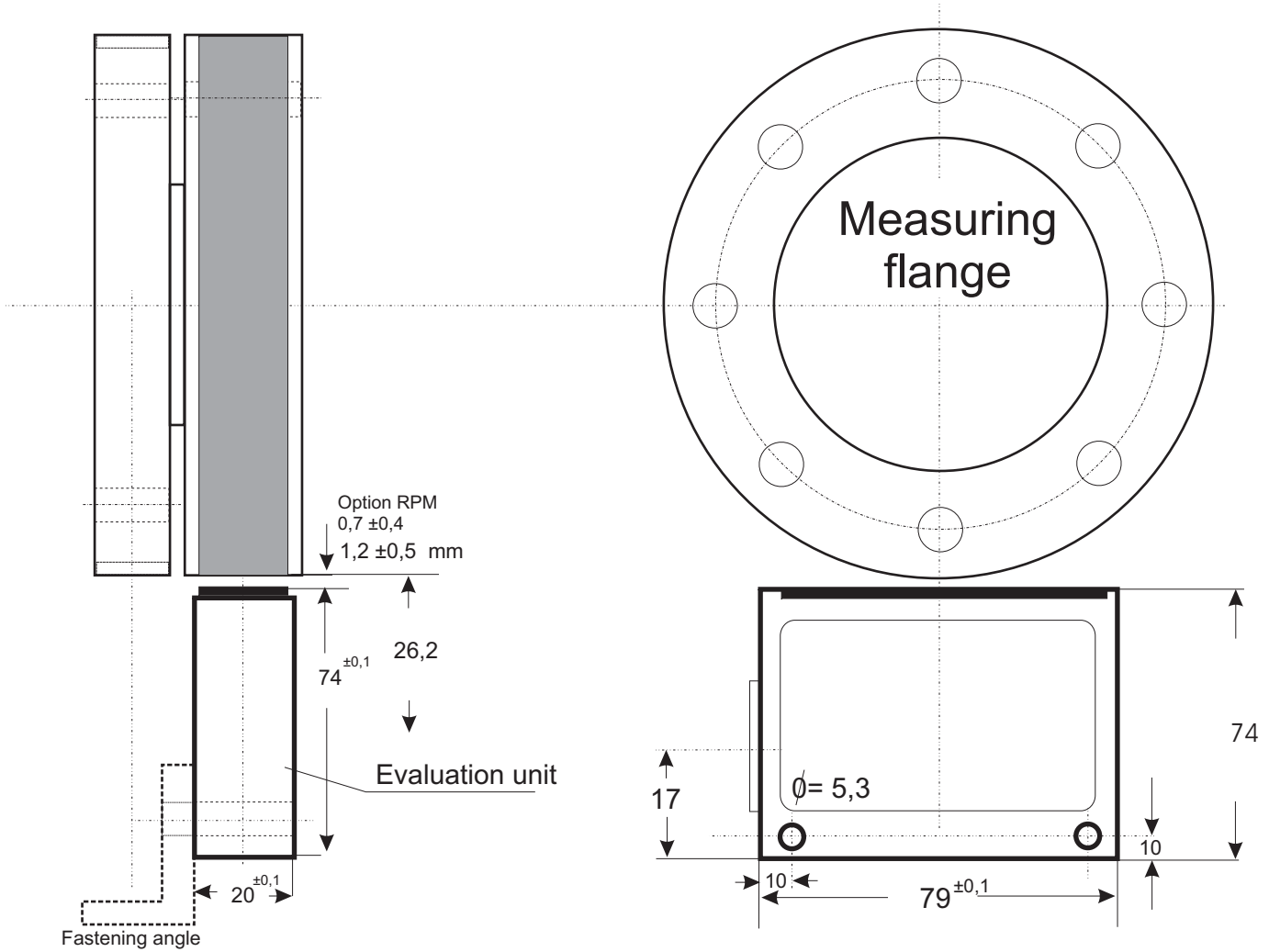
(Alternative)



MANNER® Sensortelemetrie

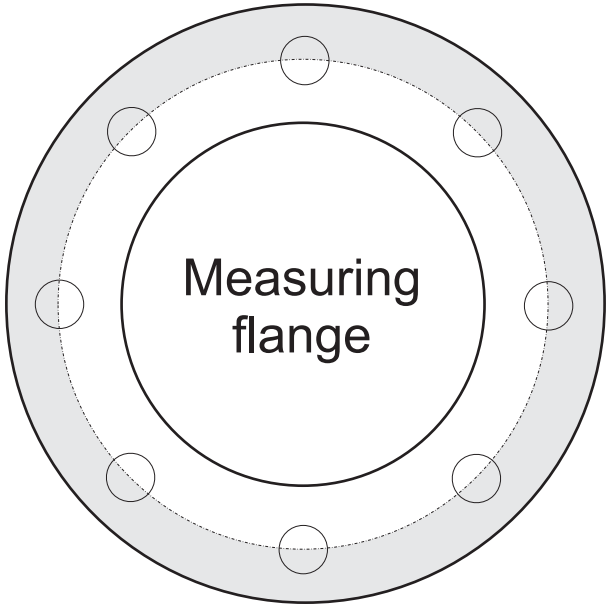
Measuring Torque and Rotational Speed

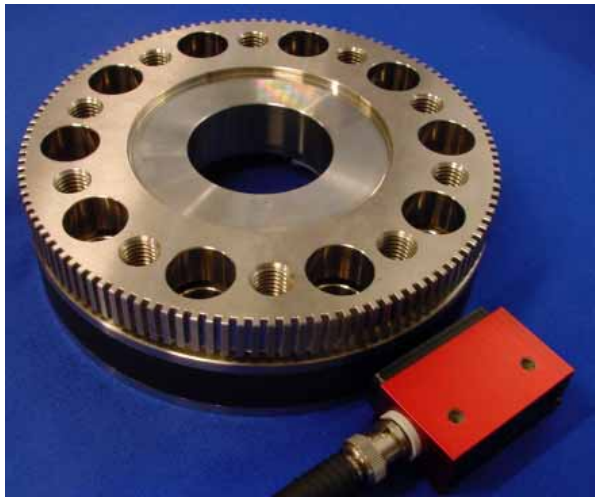
(Alternative / Evaluation unit)

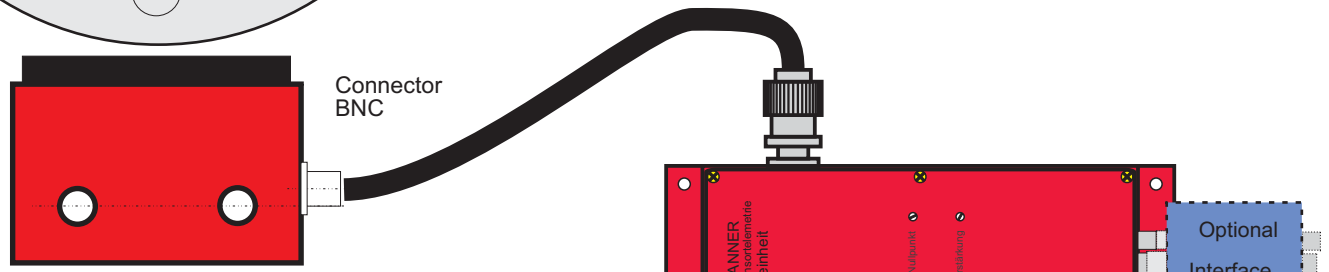


MANNER® Sensortelemetrie

Torque Measuring System with Compact Evaluation Unit







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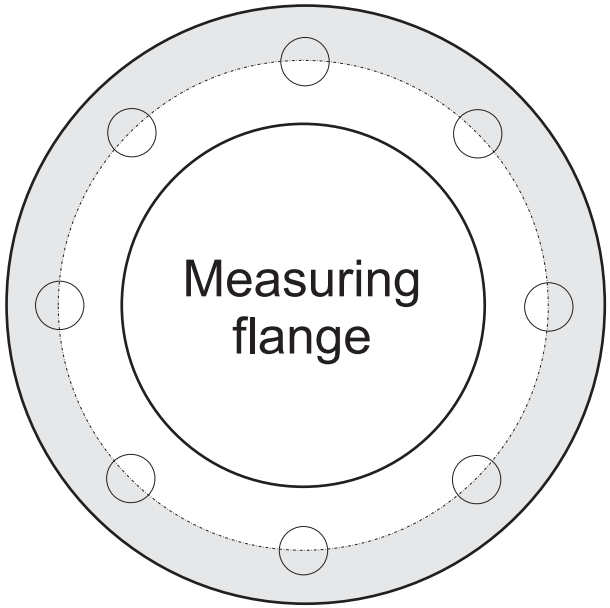
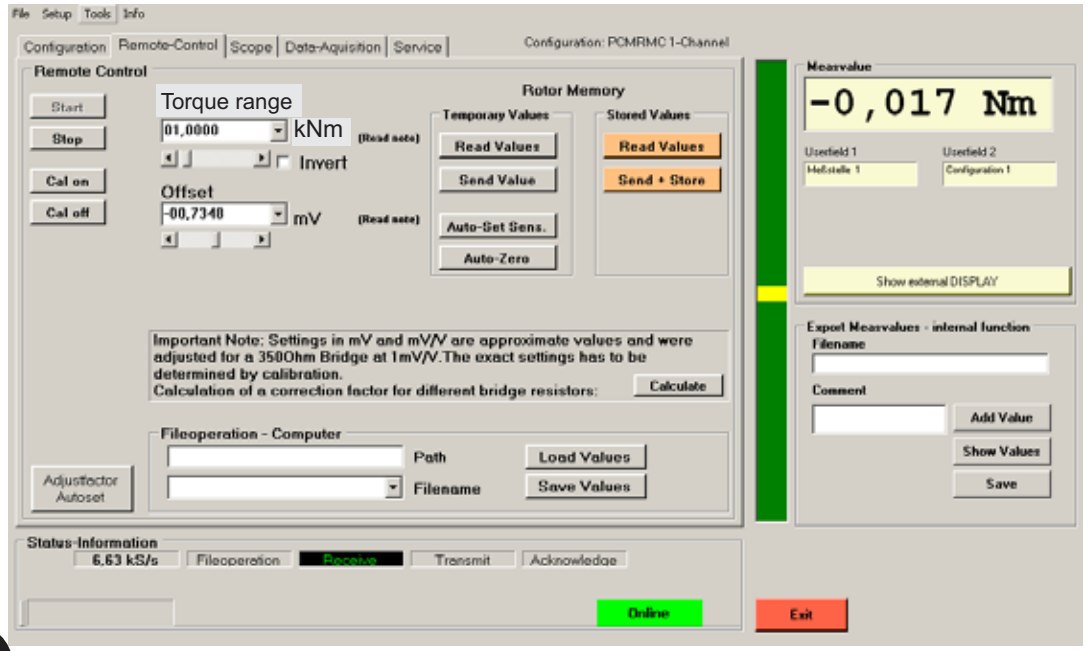
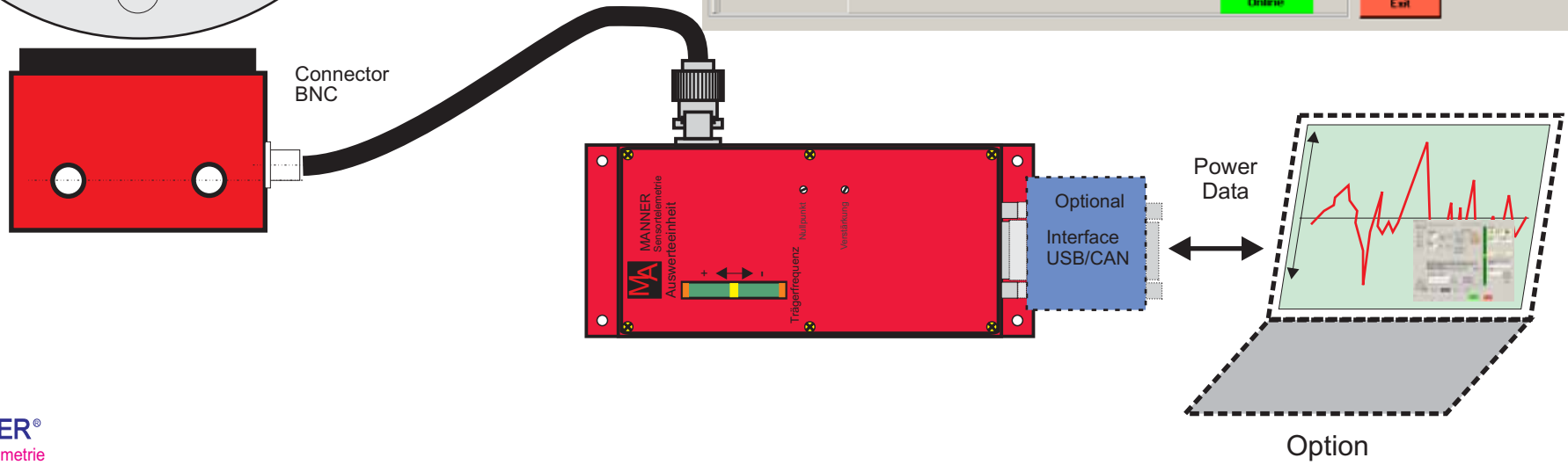
Torque Measuring System with Compact Evaluation Unit

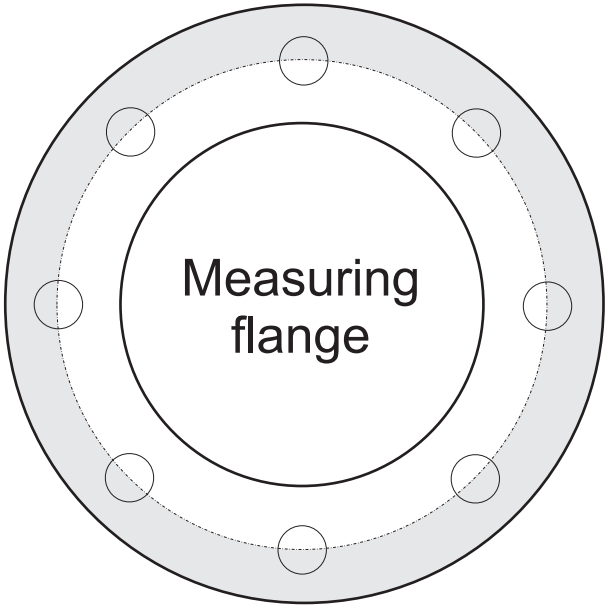


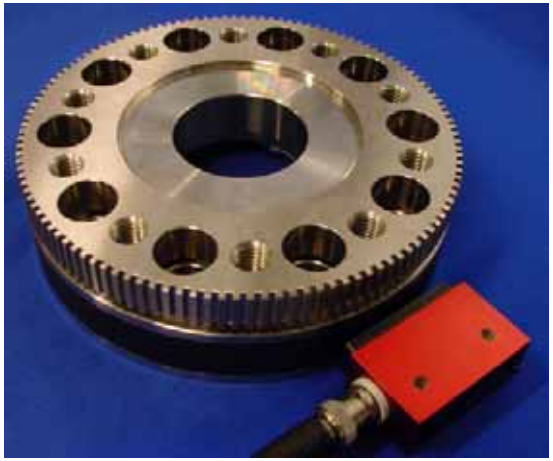


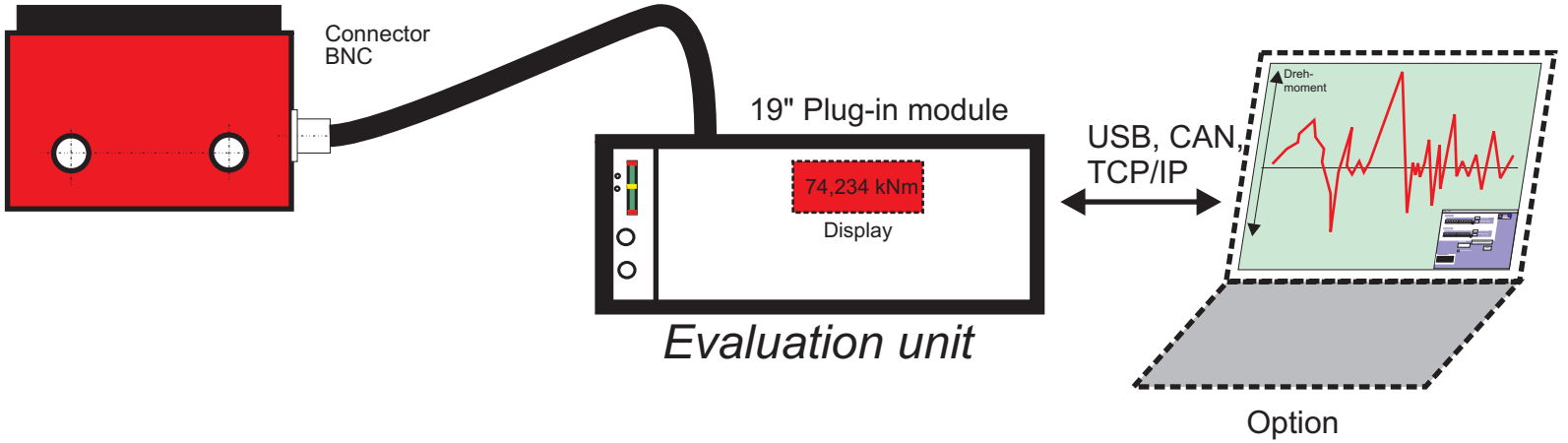


MANNER® Sensortelemetrie

Torque Measuring System with 19" Evaluation Unit







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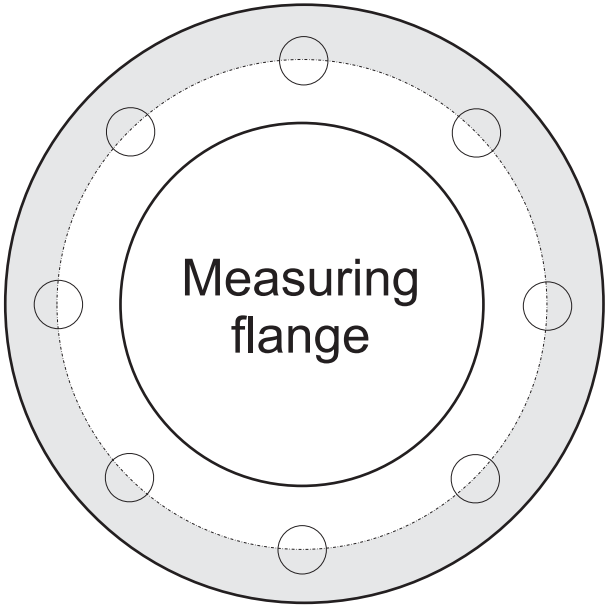
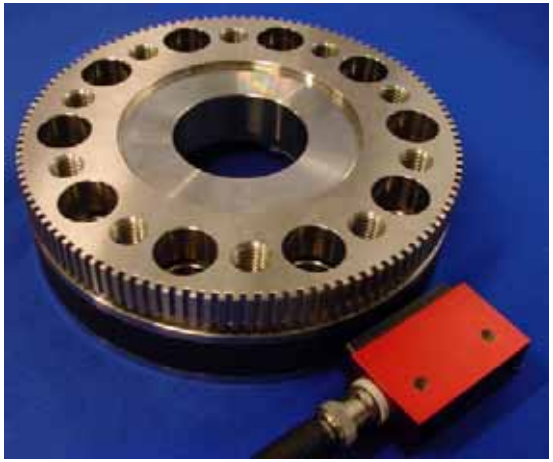
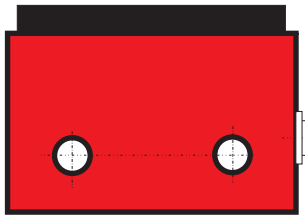
Torque Measuring System with 19" Plug-In Board







Connector
BNC

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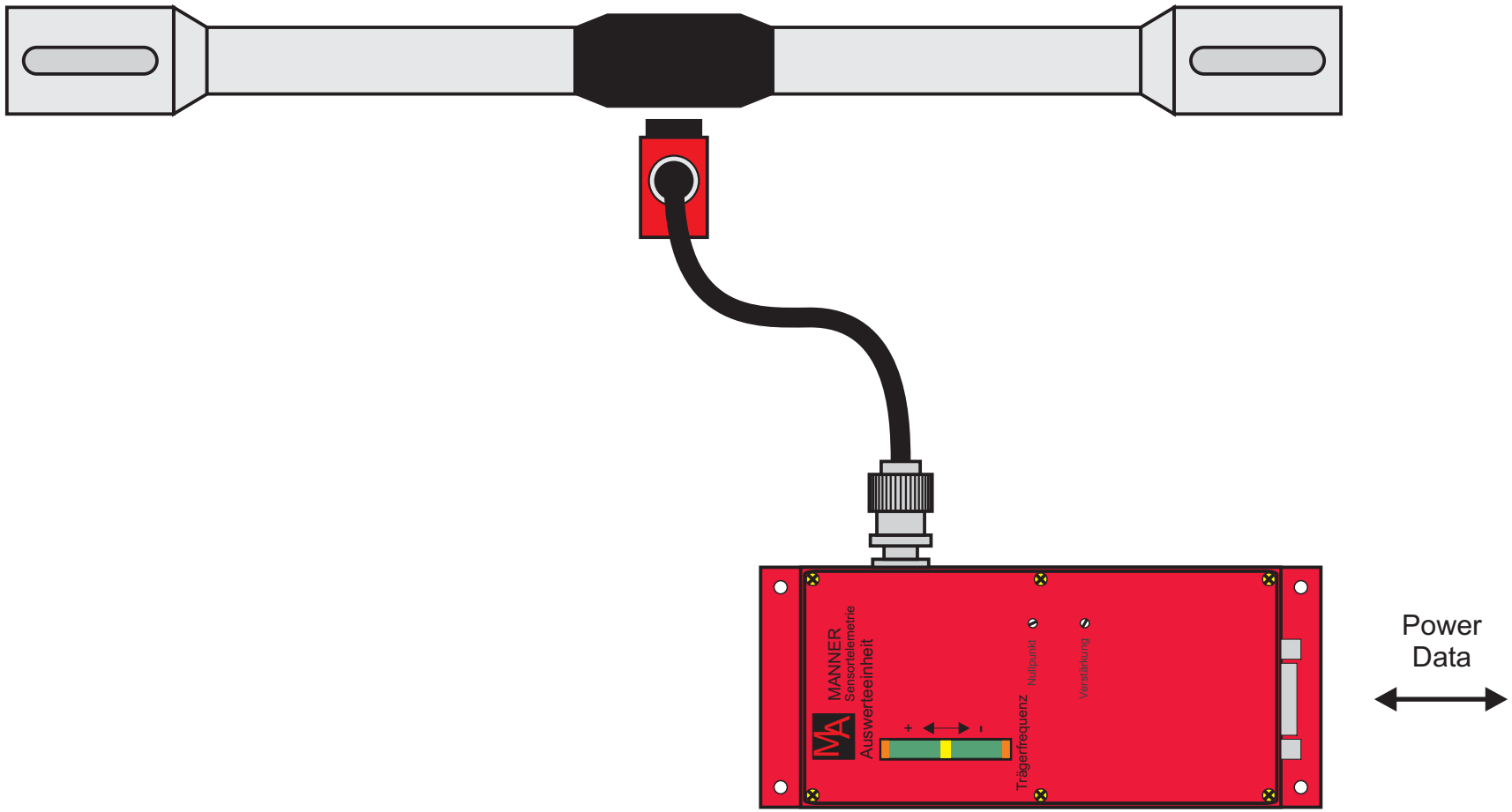
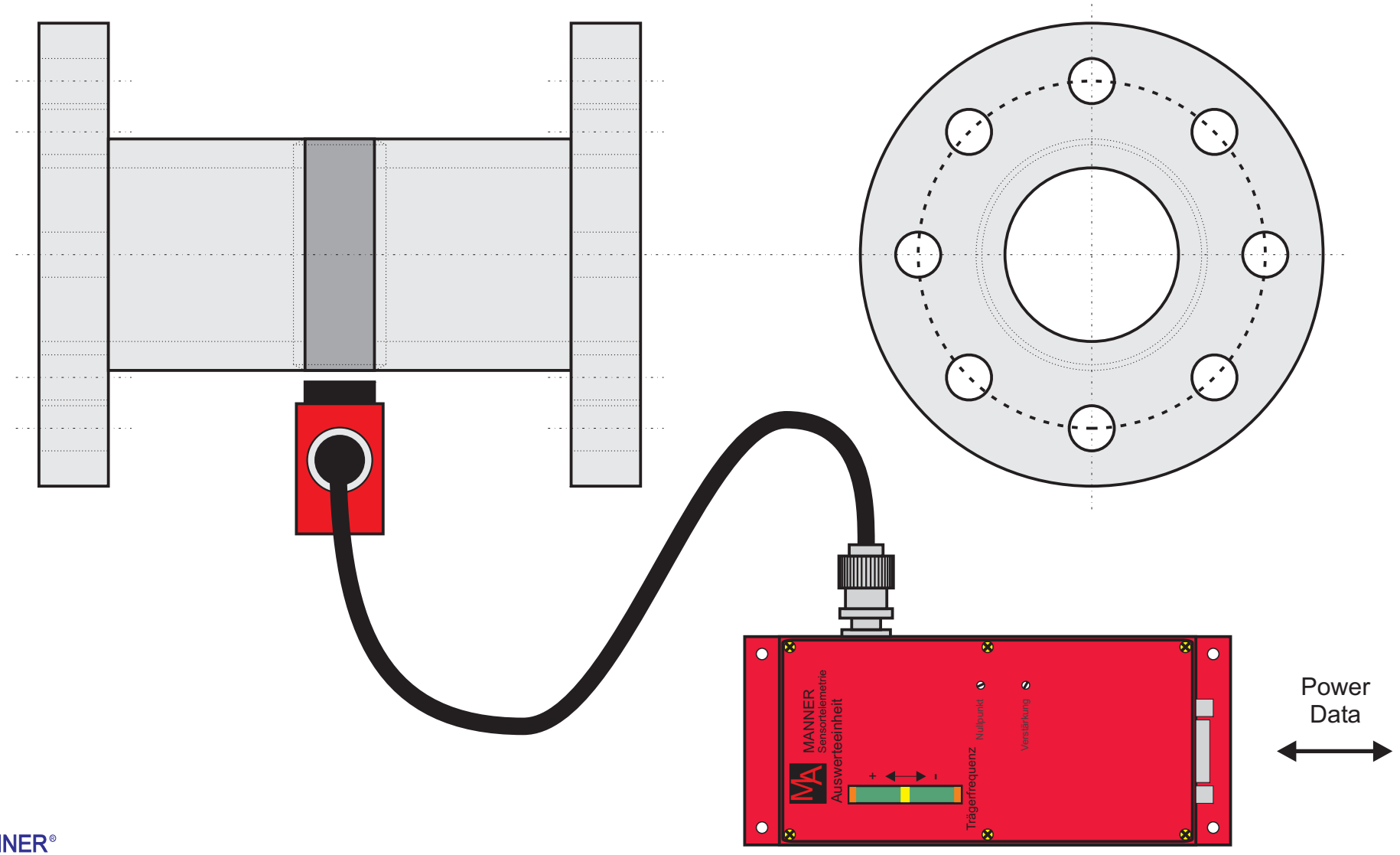
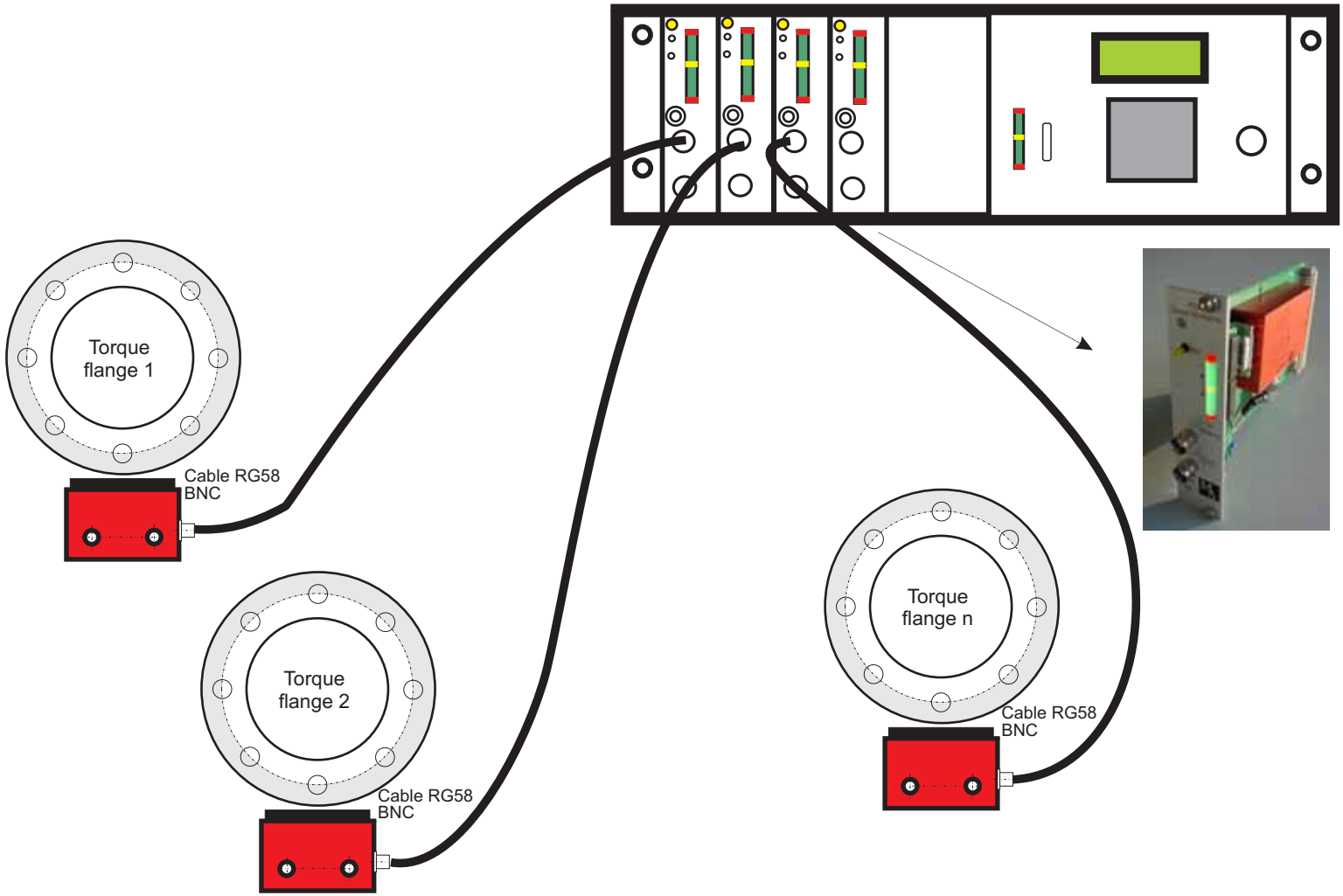
Measuring shaft



Measuring Flange



Configuration



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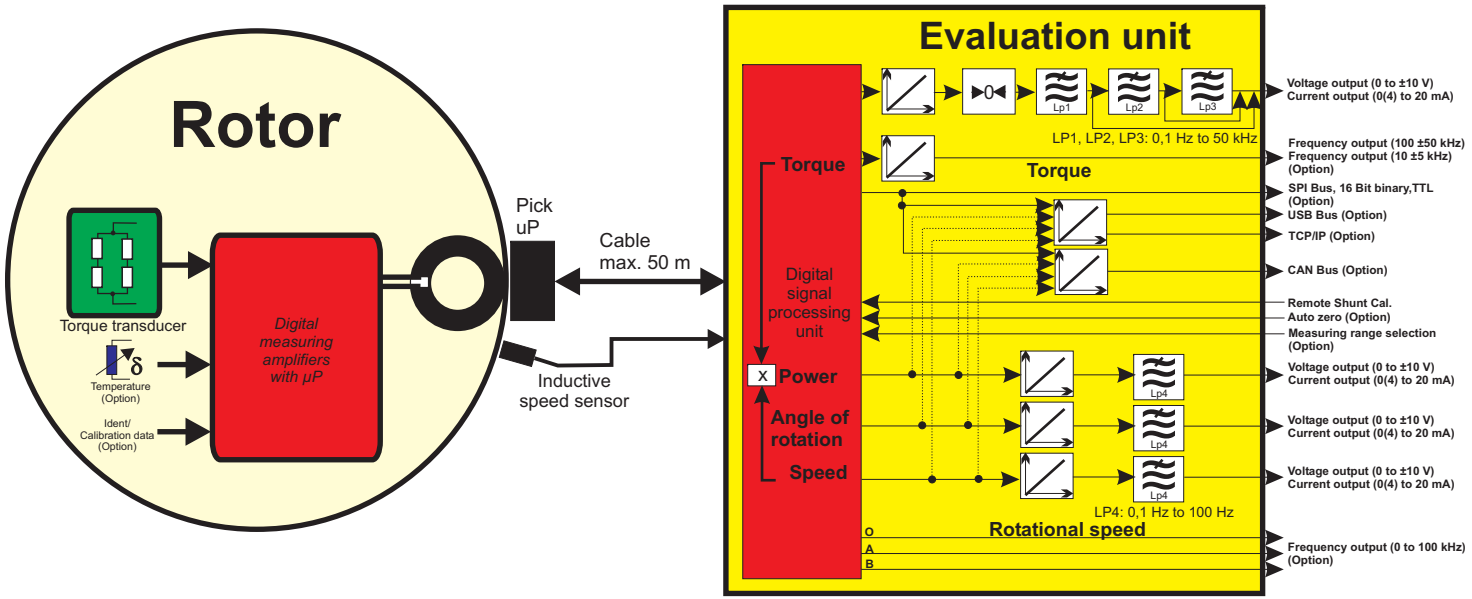
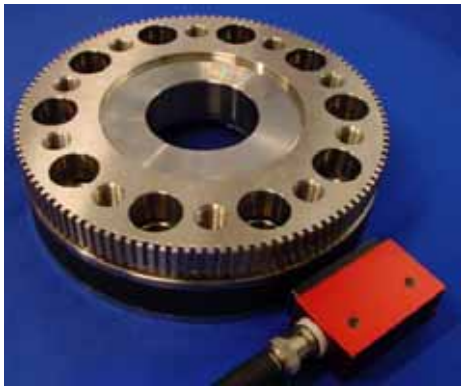
Block Diagram / Signal Flow of Digital Torque Meter





Compact evaluation unit

General Specification Torque Transducer MW...

Torque

Deviation of Linearity including hysteresis (total system, related to M_{Nom})
Digital / analog: <0.2 % (0.1 %, 0.005 % Option)

Repeatability
(DIN 1319, standard deviation): <±0.03 %

Available Output Signals
Voltage: 0 to ±10 V (rated to torque range), $R_{internal}$ = 50 Ω
Current: 0(4) to 20 mA (rated to torque range), max. load = 300 Ω
Frequency: 100 ±50 kHz (rated to torque range), $R_{internal}$ = 50 Ω
SPI Bus (Data, Clock, Frame)
USB Bus
CAN Bus

Available Signal Bandwidth (Low pass filter 5th order Bessel):
Group delay time:

Bandwidth	Frequency / Digital	Analog
10 Hz (-3 dB):	60 ms	100 ms
100 Hz (-3 dB):	6 ms	10 ms
1 kHz (-3 dB):	**600 µs**	**1,000 µs**
10 kHz (-3 dB):	120 µs	200 µs
50 kHz (-3 dB):	20 µs	40 µs

Option switchable low pass filter

Resolution electrical signal: 16 Bit
Residual signal ripple output voltage: <5 mV
Remote controlled shunt signal: 80 % of M_{Nom}

Temperature drift per 10 K of the output signal
Zero point (rated to M_{Nom}, total system)
Analog output: ±0.05 % (±0.01 % Option)
Digital / frequency output: ±0.04 % (±0.005 % Option)
Signal span (rated to M_{Nom}, total system)
Analog output: ±0.05 % (±0.02 % Option)
Digital / frequency output: ±0.04 % (±0.01 % Option)

Long-term drift over 48 hours (votage output): <3 mV

EMC: Emission per EN6126
RFI voltage \ power \ field strength: Class A
Immunity from interference (EN61326-1)
Electromagnetic field: 30 V/m
Magnetic field: 50 A/m
ESD: 10 kV

Degree of protection (EN 60529): IP54 (IP65 Option)

Reference temperature: 23 °C
Working temperature: -10 to +85 °C (-45 to +160 °C Option)
Storage temperature: -25 to +90 °C (-55 to +170 °C Option)

Vibration resistance: 1,000 g for 1 h
Impact resistance: 2,000 g
Balance quality per DIN ISO 1940: see type
Max. axial displacement (flange to pick up): <1.5 mm
Max. radial distance (flange to pick up): 0.3 to 2 mm (0 to 20 mm)

Max. loads
Max. torque (related to M_{Nom}): 400 % (800 % Option)
Breaking torque (related to M_{Nom}): 800 % (1600 % Option)
Oscillation (peak to peak) DIN 50100 (related to M_{Nom}): 300 %

Speed system

Type: massive toothed rim, inductive pick up
Number of increments: see special data sheet
Outputs
1 trace: digital TTL
2 trace: digital TTL, 90° phase shift (Option)
Analog output range: 0 to +10 V, related to $speed_{Nom}$ (Option), $R_{internal}$ = 50 Ω
Bandwidth: 100 Hz (-3dB)
Group delay time (digital): <10 µs
Temperature drift: <0.02 % of related $speed_{Nom}$

Pick up 8a

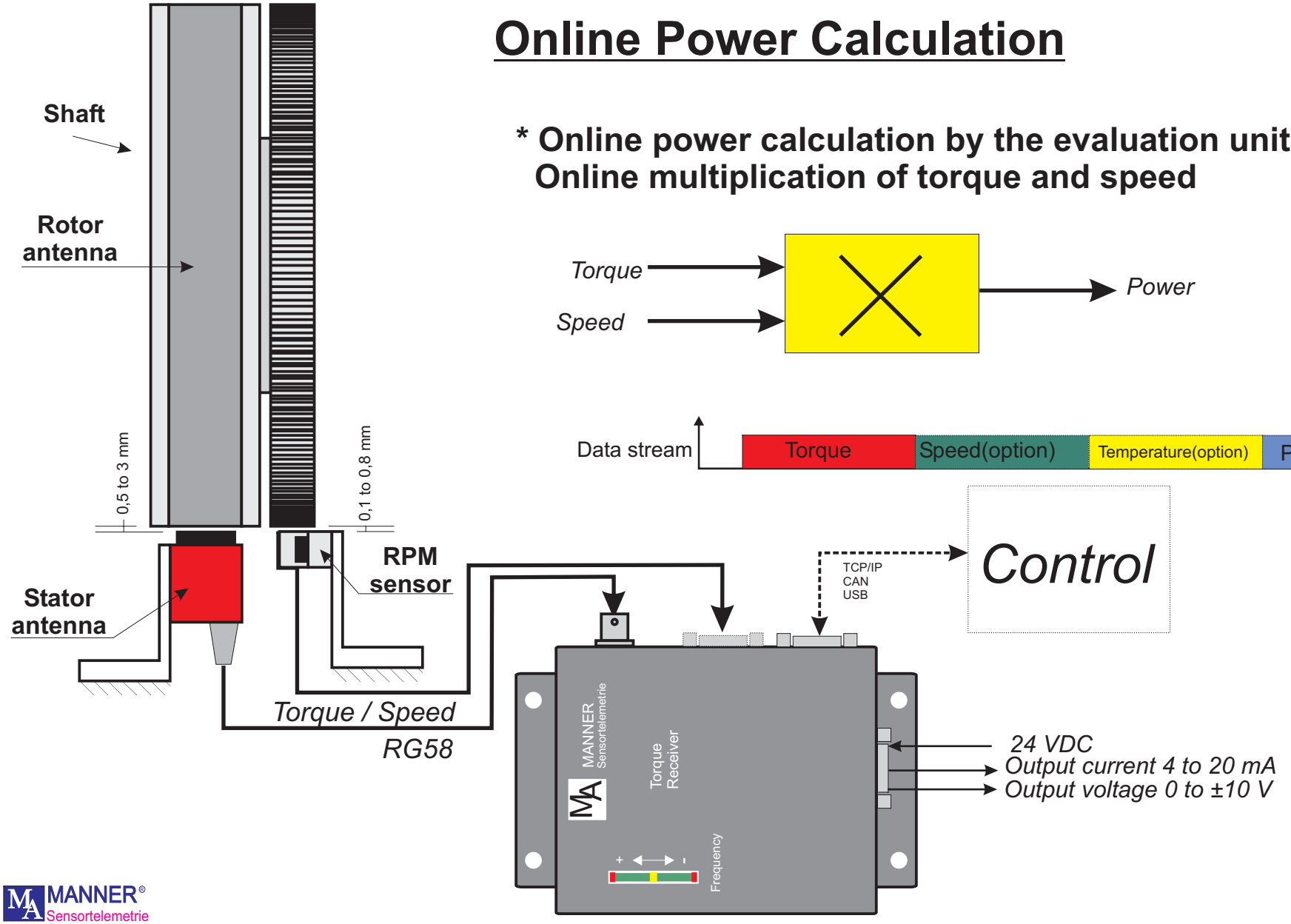
Weight: 0.1 kg
Dimensions: 50 x 35 x 20 mm (60 x 55 x 40 mm Option)

Receivers

(available types)
Receiver compact supply: 24 V DC, 1 A, (9 to 36 V DC Option)
Receiver plug-in card 19" Rack supply: ±15 V DC, 1 A
19" Rack supply: 90 to 270 V AC, 50 / 60 Hz

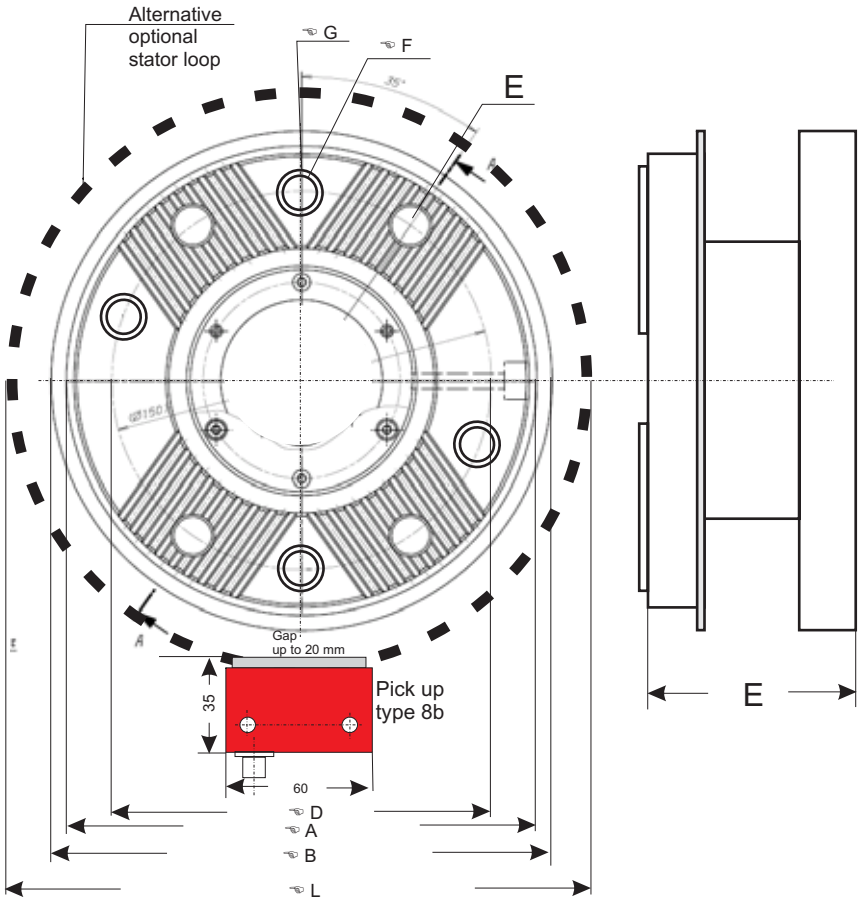
Online Power Calculation

*** Online power calculation by the evaluation unit**
Online multiplication of torque and speed



MANNER® Sensortelemetrie

Flanges with X-Toothing



Type **X-Toothing according to ISO 12667**		MWK_ 5kNm KV120	MWK_ 10kNm KV150	MWK_ 20kNm KV165	MWK_ 30kNm KV180	MWK_ 40kNm KV200
☜ A	mm	120h7	150h7	165h7	180h7	200h7
☜ B	mm	132h7	162h7	177h7	192h7	212h7
☜ C	mm	132h7	162h7	177h7	1922h7	212h7
☜ D	mm	100	130	140	150	165
☜ E	mm	M10x1	M12	M12	M14	M14
☜ F	mm	11	13	13	15	15
☜ G	mm	18	20	20	22	22
☜ H	mm	50	50	50	50	50
☜ I	mm	140	170	185	200	220
opt. ☜ K	mm	166	194	209	244	244