ATESTEO

Excellence in drivetrain testing

Data sheet

HSTT

Technical data

Type	-	HSTT1eS	HSTT1eS	HSTT2eS
Accuracy class	%		≤±0.05	
Rated torque (Md_n)	Nm	50	100	200
Torque measuring system				
Technology	-		Rotating	
Rated torque (Md_n) #1	Nm	50	100	200
Rated torque short measurement range (optional, minimum) (Md_{ns}) #2	Nm		N/A	
Accuracy class (extended for Md_n)	%		N/A	
Outputs	-		Frequency, Voltage, Current, CAN bus, Alert	
Test signal	-		see test report	
Mechanical dimensions #3				
Outer diameter of rotor #4	mm		82 / 58	
Lengths (Rotor, without centering)	mm		40	
Pitch circle diameter #5	mm	66.00 / 44.00	66.00 / 44.00	66.00 / 48.00
Speeds and speed measuring systems				
Speed detection (integrated)	-		without	
Speed detection (optional)	-		without	
Maximum Speed without speed detection system	rpm		30,000	
Optional increased speed	rpm		40,000	
Maximum speed with magnetic speed encoder	rpm		N/A	
Maximum speed with optical speed encoder	rpm		N/A	
Maximum speed with inductive speed encoder	rpm		N/A	
Torque accuracy class per output type (related to Md_n)				
Frequency output	%		≤±0.05	
CAN output	%		≤±0.05	
Voltage output	%		≤±0.10	
Current output	%		≤±0.10	
Frequency output (option higher accuracy)	%		N/A	
CAN (option higher accuracy)	%		N/A	

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Type	-	HSTT1eS	HSTT1eS	HSTT2eS
Accuracy class	%		≤±0.05	
Rated torque (Md_n)	Nm	50	100	200
Linearity deviation including hysteresis related to Md_n #6				
Frequency, 0%...30%	%		≤±0.015	
Frequency, 30%...60%	%		≤±0.030	
Frequency, 60%...100%	%		≤±0.050	
CAN, 0%...30%	%		≤±0.015	
CAN, 30%...60%	%		≤±0.030	
CAN, 60%...100%	%		≤±0.050	
Voltage output	%		≤±0.10	
Current output	%		≤±0.10	
Rel. standard deviation of the reproducibility according to DIN 1319, by reference to variation of the output signal (rel. to Md_n)				
Frequency output	%		≤±0.03	
CAN output	%		≤±0.03	
Voltage output	%		≤±0.10	
Current output	%		≤±0.10	
Temperature influence per 10K in the nominal temperature range on the output signal related to the actual value of signal span (rel. to Md_n)				
Frequency output	%		≤±0.05	
CAN output	%		≤±0.05	
Voltage output	%		≤±0.10	
Current output	%		≤±0.10	
Temperature influence per 10K in the nominal temperature range on the zero signal (rel. to Md_n)				
Frequency output	%		≤±0.05	
CAN output	%		≤±0.05	
Voltage output	%		≤±0.10	
Current output	%		≤±0.10	
Long-term drift over 48h at reference temperature				
Voltage output	mV		<1.0	
Current output	µA		<0.80	

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Accuracy class	%		≤±0.05	
Rated torque (Md_n)	Nm	50	100	200
Nominal sensitivity (range between zero torque and rated torque)				
Frequency output	kHz		20	
Voltage output	V		5.0 / 10.0 / 2.5 / 5.0	
Current output	mA		8 / 10	
Output signal at zero torque				
Frequency output	kHz		60	
Voltage output	V		0.0 / 0.0 / 2.5 / 5.0	
Current output	mA		12 / 10	
Nominal output signal				
Frequency output at positive nominal value	kHz		80	
Frequency output at negative nominal value	kHz		40	
Voltage output at positive nominal value	V		5 / 10 / 5 / 10	
Voltage output at negative nominal value	V		-5 / -10 / 0 / 0	
Current output at positive nominal value	mA		20 / 20	
Current output at negative nominal value	mA		4 / 0	
Max. modulation range				
Frequency output	kHz		30...90	
Voltage output	V		-10.5...10.5	
Current output	mA		0...24	
Group delay time (main TCU)				
Frequency output	µs		10	
Voltage output	µs		3,000	
CAN	µs		1,000	

Technical data

Type	-	HSTT1eS	HSTT1eS	HSTT2eS
Accuracy class	%		≤±0.05	
Rated torque (Md_n)	Nm	50	100	200

Speed measuring system	Inductive (track at rotor)		
Pulse per rev (PPR)	ppr.	N/A	
Maximum speeds (related to PPR)	rpm	N/A	
Max. output frequency (RS422)	kHz	N/A	
Minimum speed for sufficient pulse stability	rpm	N/A	
Speed measuring system	**Magneto resistive (2 tracks approx. 90 degree phase shifted)**		
Pulses per rev (PPR)	ppr.	N/A	
Maximum speeds (related to PPR)	rpm	N/A	
Max. output frequency (RS422)	kHz	N/A	
Minimum speed for sufficient pulse stability	rpm	N/A	
Nominal clearance (sensor - pole ring)	mm	N/A	
Working airgap (sensor - pole ring)	mm	N/A	
Nominal axial displacement (rotor - stator) #7	mm	N/A	
Tolerance to nominal axial displacement (rotor - stator)	mm	N/A	
Speed measuring system	**Optical**		
Pulses per rev (PPR)	ppr.	N/A	
Maximum speeds (related to PPR)	rpm	N/A	
Max. output frequency (RS422)	kHz	N/A	
Minimum speed for sufficient pulse stability	rpm	N/A	
Nominal radial displacement (rotor - stator)	mm	N/A	
Tolerated radial displacement (rotor - stator) #7	mm	N/A	
Nominal axial displacement (rotor - stator) #7	mm	N/A	
Tolerance to nominal axial displacement (rotor - stator)	mm	N/A	

Technical data

Type	-	HSTT1eS	HSTT1eS	HSTT2eS
Accuracy class	%		≤±0.05	
Rated torque (Md_n)	Nm	50	100	200

Angular measuring system				
Pulses per rev	ppr		N/A	
Resolution	°		N/A	
Output signals	-		N/A	
Measurement ranges	°		N/A	

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Type	-	HSTT1eS	HSTT1eS	HSTT2eS
Accuracy class	%		≤±0.05	
Rated torque (Md_n)	Nm	50	100	200
Temperature ranges				
Nominal temperature range *(Rotor)*	°C		0...80	
Operating temperature range *(Rotor)* #8	°C		-20...85	
Storage temperature range *(Rotor)*	°C		-30...85	
Nominal temperature range *(Stator)*	°C		0...80	
Operating temperature range *(Stator)* #9	°C		-20...85	
Storage temperature range *(Stator)*	°C		-30...85	
Nominal temperature range *(TCU)*	°C		0...70	
Operating temperature range *(TCU)*	°C		-20...70	
Storage temperature range *(TCU)*	°C		-30...85	
Mechanical shock (EN 60068-2-27)				
Quantity	-		1,000	
Duration	ms		3	
Acceleration	m/s²		650	
Vibration load (EN 60068-2-6)				
Frequency	Hz		10...2,000	
Duration	min.		150	
Acceleration	m/s²		200	
Load limits #10				
Limit torque, related to Md_n	%	400	275	175
Breaking torque approx., related to Md_n	%	800	550	350
Axial limit force	kN	3.30	3.90	3.90
Lateral limit force	N	1,265.00	1,610.00	1,655.00
Bending limit torque	Nm	22.00	28.00	32.00

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Accuracy class	%		≤±0.05	
Rated torque (Md_n)	Nm	50	100	200

Mechanical values				
Torsional stiffness	kNm/rad	59	80	112
Angle of twist at Md_n	°	0.050	0.070	0.100
Axial stiffness	kN/mm	166	198	197
Radial stiffness	kN/mm	74	94	97
Bending stiffness	kNm/°	0.40	0.55	0.60
Deflection at axial limit force	mm		<0.03	
Additional radial deviation at lateral limit force	mm		<0.02	
Parallel deviation at bending limit torque	mm		<0.06	
Inherent frequency	Hz	4,450	5,350	5,250
Balance quality-level (DIN ISO 1949)	-		G2.5	
Inertia of rotor	kgm²		0.0003	
Max. limits for relative shaft vibration (peak to peak) #11	µm		$S_{(p-p)} = \frac{9000}{\sqrt{n}}$	

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Type	-	HSTT1eS	HSTT1eS	HSTT2eS
Accuracy class	%		≤±0.05	
Rated torque (Md_n)	Nm	50	100	200
Weight approx.				
Rotor #12	kg		0.3	
Stator (without speed encoder) #12	kg		1.10	
Mounting distances (without optional speed detection system)				
Nominal radial displacement (rotor - stator)	mm		1.5	
Tolerance to nominal radial displacement (rotor - stator)	mm		≤±0.1	
Nominal axial displacement (rotor - stator) #7	mm		2	
Tolerance to nominal axial displacement (rotor - stator)	mm		≤±0.5	
Flatness and concentricity tolerances rotor				
Circular run-out-axial tolerance #13	mm		0.01	
Circular run-out-radial tolerance #13	mm		0.01	
Power supply				
Nominal supply	V (DC)		24	
Supply range #14	V (DC)		23...25	
Max. current consumption in measuring mode	A		<0.70	
Max. current consumption in start-up mode	A		<2	
Nominal power consumption	W		<17	
Load resistance				
Frequency output	-		RS422	
Voltage output	kOhm		≥5	
Dynamic				
Frequency output	kHz		≤7	
Voltage output	kHz		≤1	
Current output	kHz		≤1	
CAN output conversation rate	1/s		≤1,000	

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Accuracy class	%		≤±0.05	
Rated torque (Md_n)	Nm	50	100	200
Miscellaneous				
Protection class (rotor)	-		IP54	
Protection class (stator)	-		IP54	
Protection class (rotor, extended)	-		On request	
Protection class (stator, extended)	-		On request	
Pitch circle screw information	-	6 * M6 (8.8)	6 * M6 (8.8)	8 * M6 (10.9)
CAN	-		2B	
Configuration interface	-		RS232	
Central hole	mm		N/A	
Material	-		Titanium	
Measuring range (related to Md_n)	%		120	
Compatible evaluation units (TCU)	-		TCU2	
Stator type	-		eS	
Sales information				
Article number	-	10002428	10002428	10003717
U.S. FCC certificate			Not required	

Remarks and information

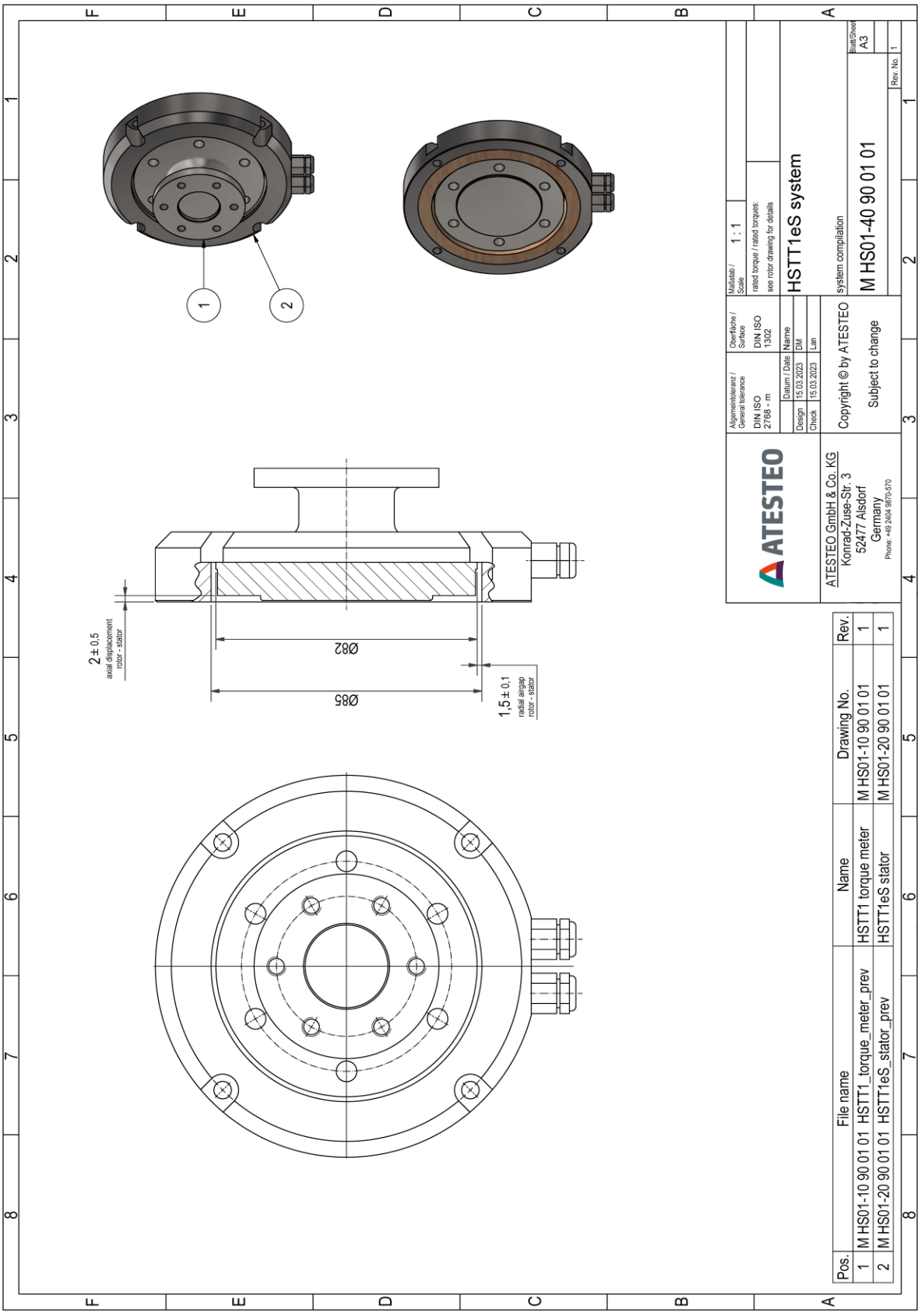
Link no.	Topic	Remark
#1	Nominal torque	Based on customer requests, the measurement systems can optionally be optimized for not listed nominal torque values (intermediate ranges possible).
#2	Second torque range	The written second nominal torque value (Md_{ns}) is the smallest possible. Greater second torque ranges can be chosen on demand. Mechanical values and load limits vary between single and dual range torque meters. A data sheet for dual range torque meters with specific values can be requested.
#3	Dimensions	Mechanical dimensions are without engagement. Use the drawings and step files as master for your constructions.
#4	Detail in the drawings	Value can vary by optional components. Please find details to this attribute in the integrated drawings.
#5	Pitch circle diameter	The pitch circle diameter is identically at input and output side for most systems. More information is given in the drawings of a product.
#6	Linearity	Values of Linearity deviation incl. Hysteresis can only be reached if positive and negative sensitivity values are used.
#7	Reference planes	Please check the drawings for information about the reference planes of this attribute.
#8	Temperature range (rotor)	No condensation allowed.
#9	Temperature range (stator)	No condensation allowed. Temperature related to housing ground point.
#10	Load limits	The given values are only valid if no other load occurs at the same time. If the loads in sum are 100%, the max. error will be 0.3% of the nominal torque.

Remarks and information

Link no.	Topic	Remark
#11	Vibration limits	Vibration limits are not an influence to the machine. They reflect the allowed effect onto the rotor (ISO 7919-3). Parameter "n" is given in "r/min.".
#12	Weights	Weights are related to components without options like speed detection system. Please contact us for exact weight information of options.
#13	Flatness and concentricity tolerances	The parameters of "Flatness and concentricity tolerances rotor" are manufacturing tolerances.
#14	Supply voltage	The supply voltage range must be given at measurement system side. Long wires can reduce the voltage level from power supply to measurement system.

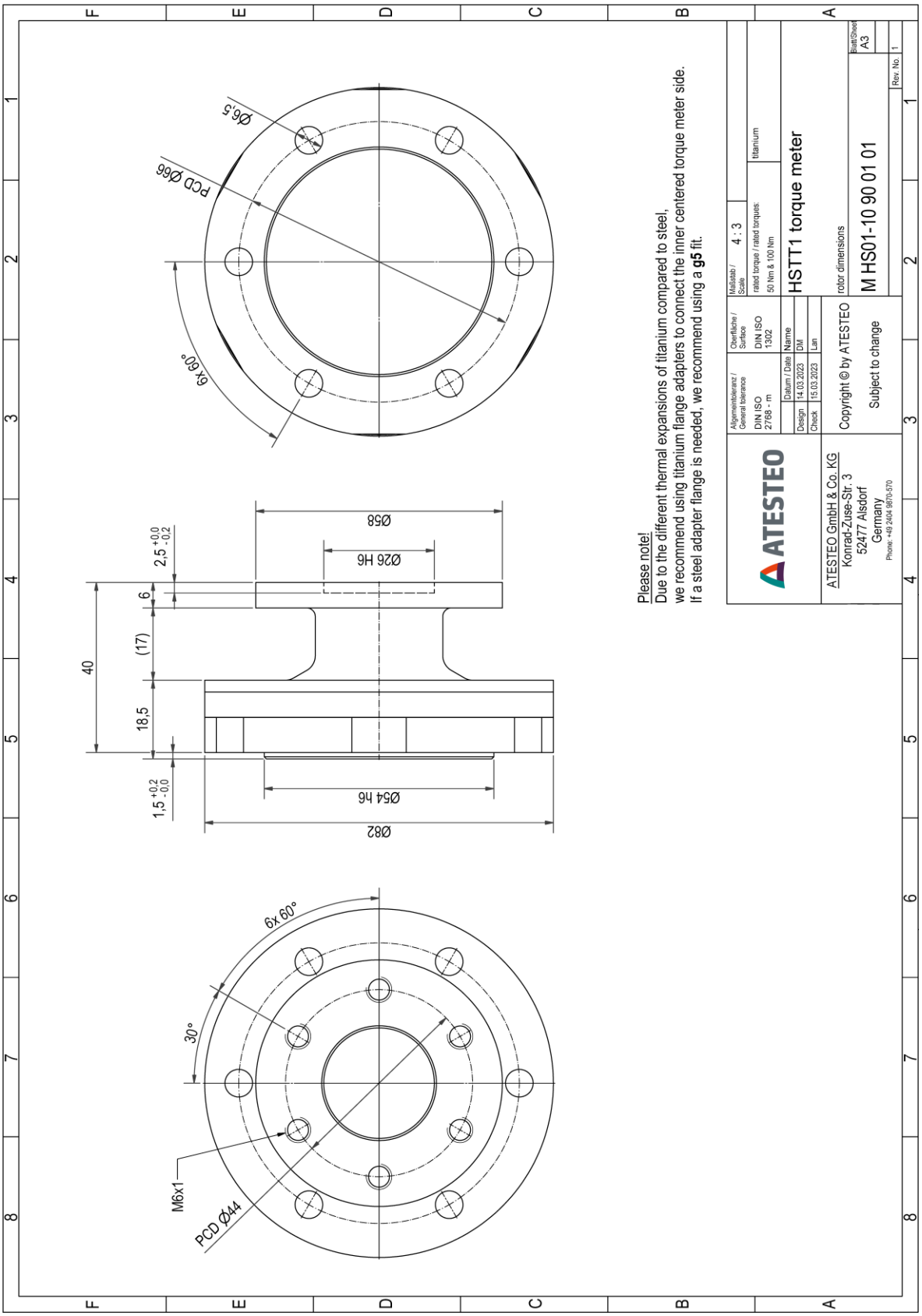
HSTT1eS

Drawing



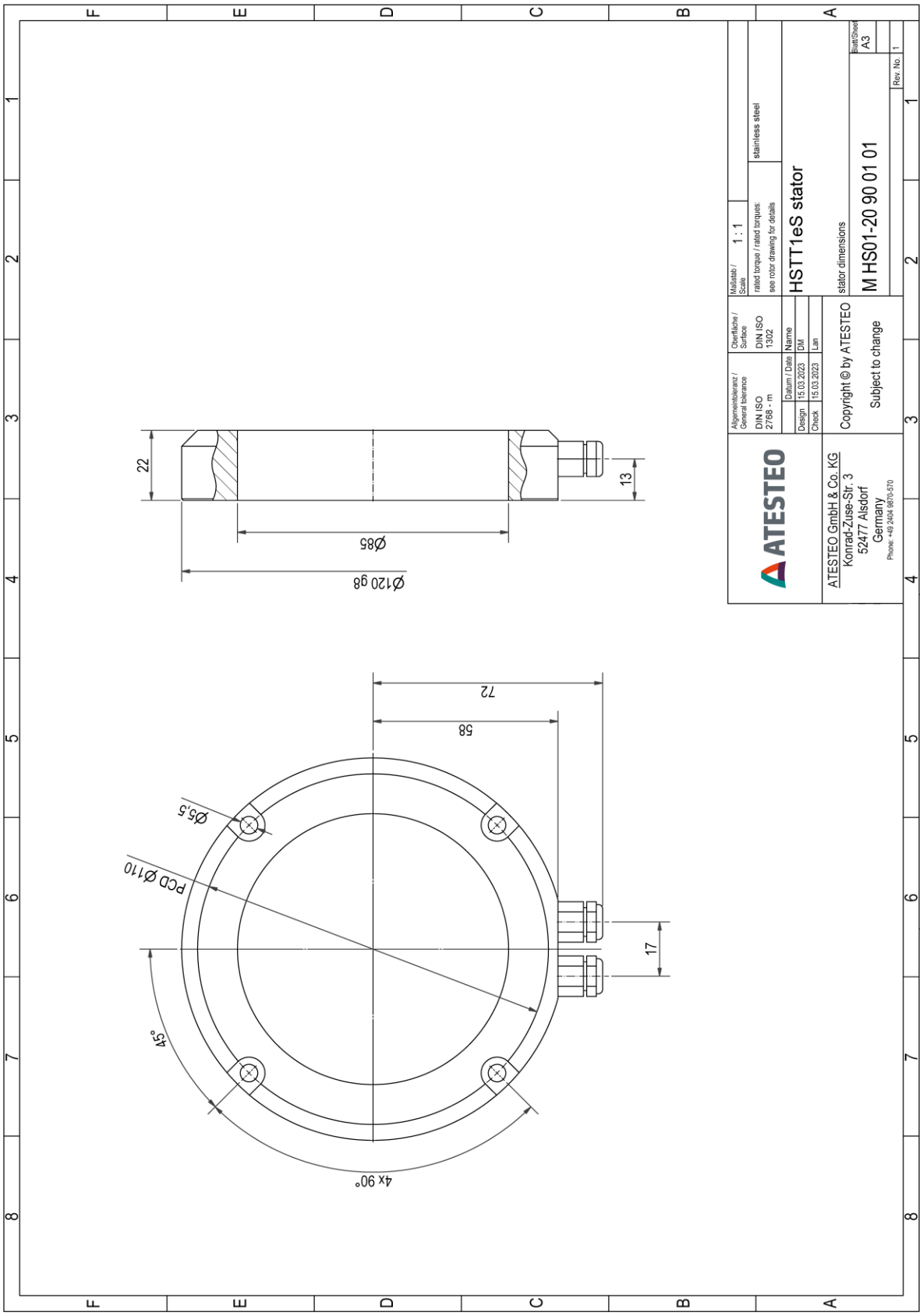
HSTT1eS Rotor

Drawing



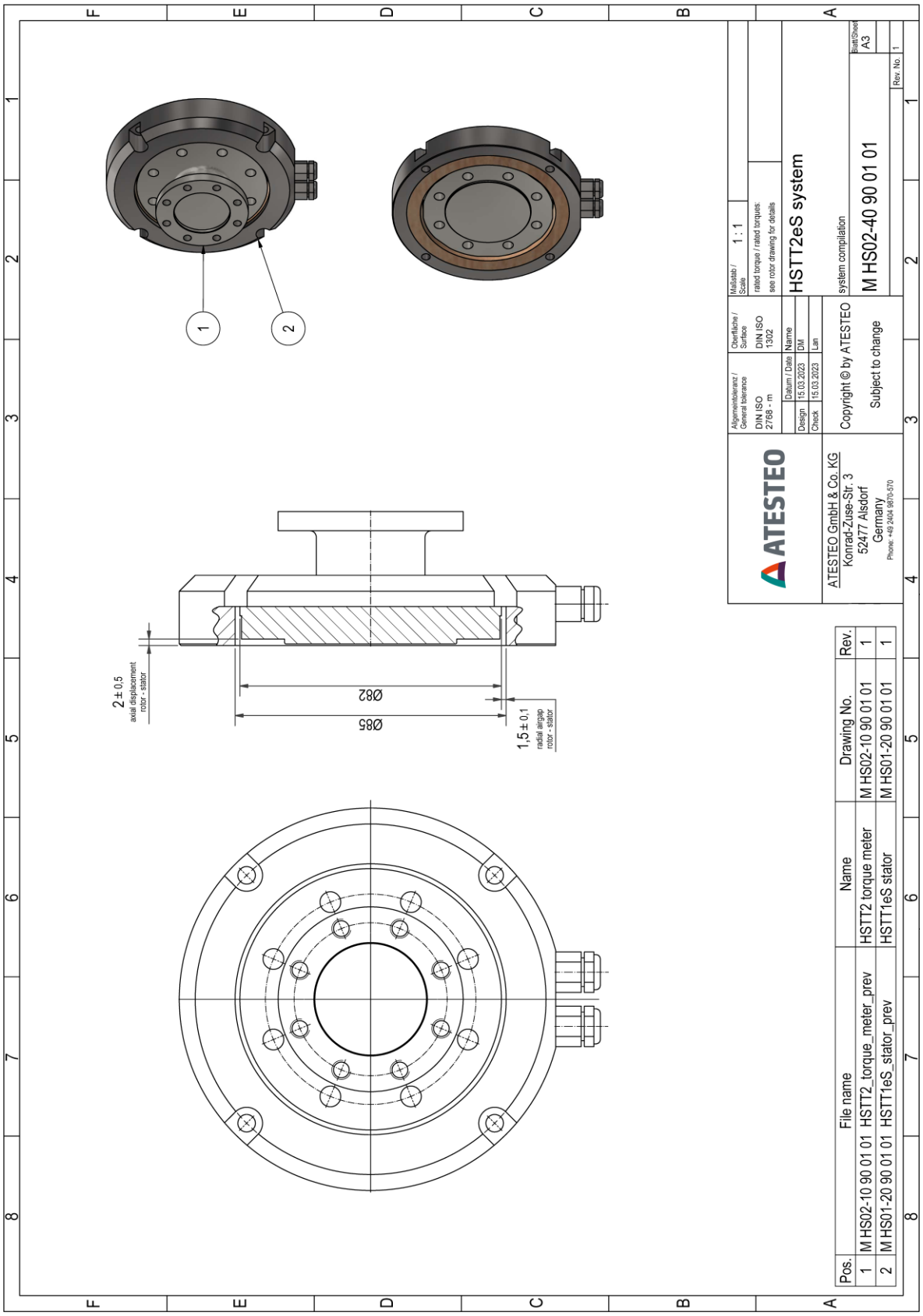
HSTT1eS Stator

Drawing



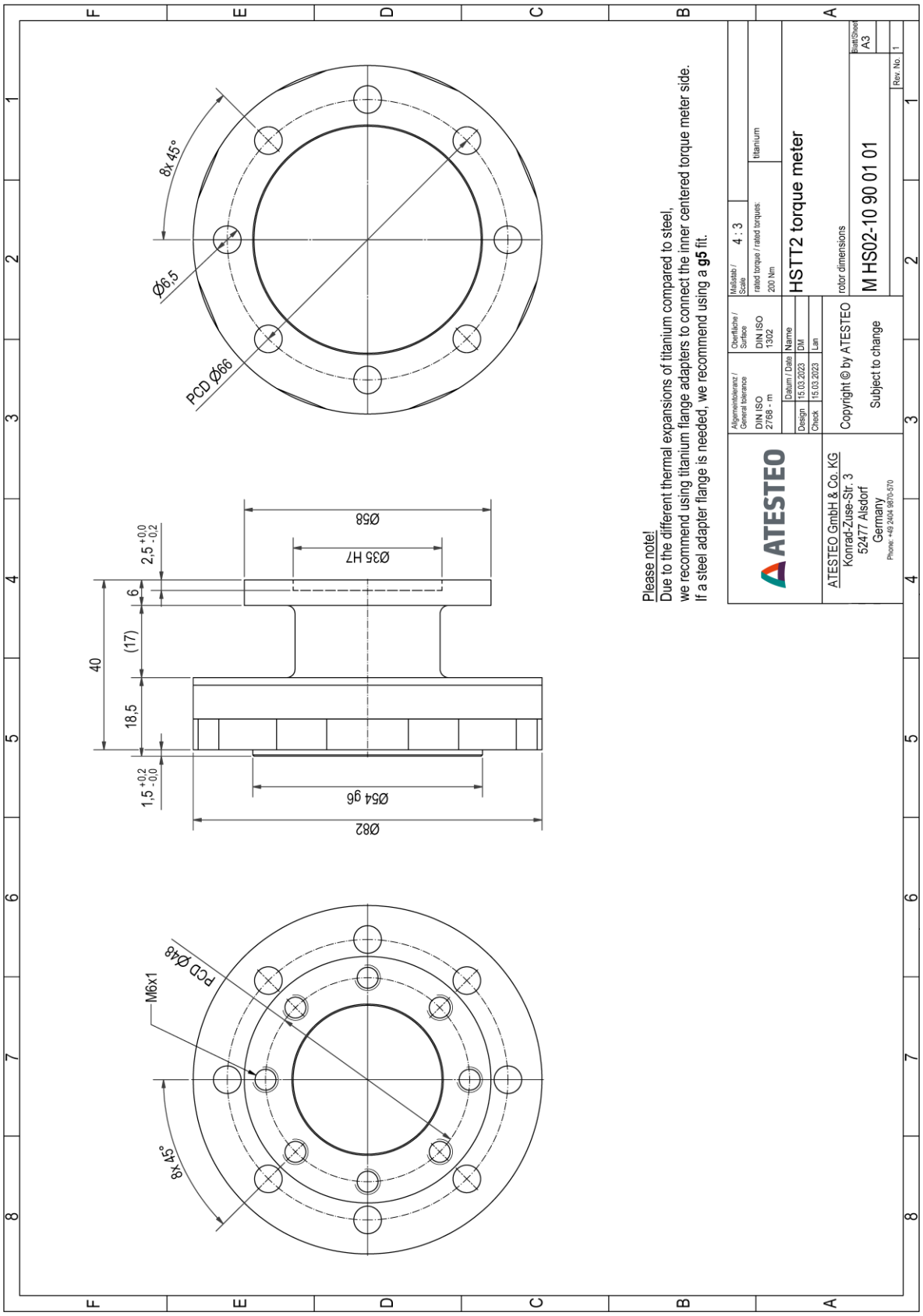
HSTT2eS

Drawing



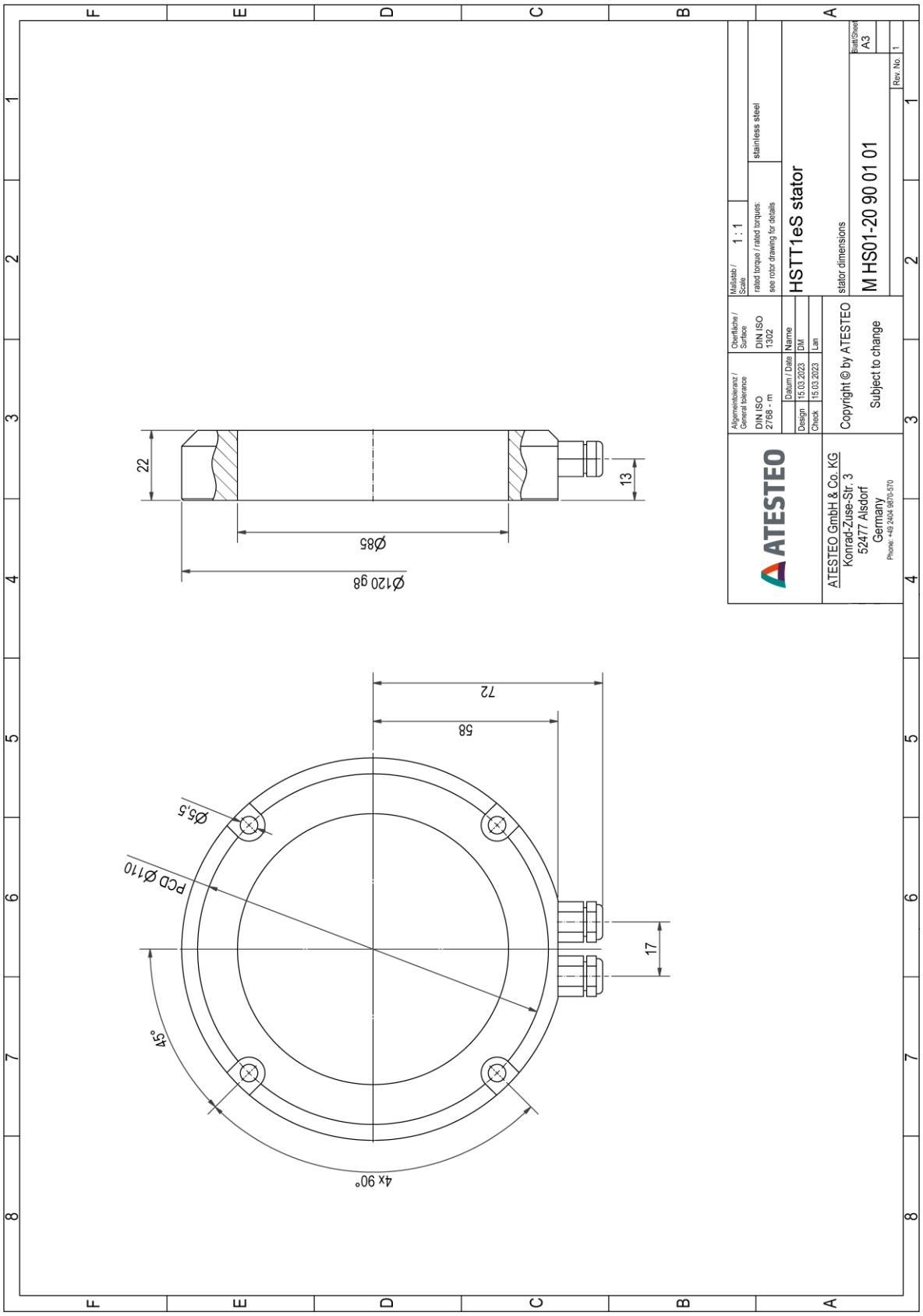
HSTT2eS Rotor

Drawing

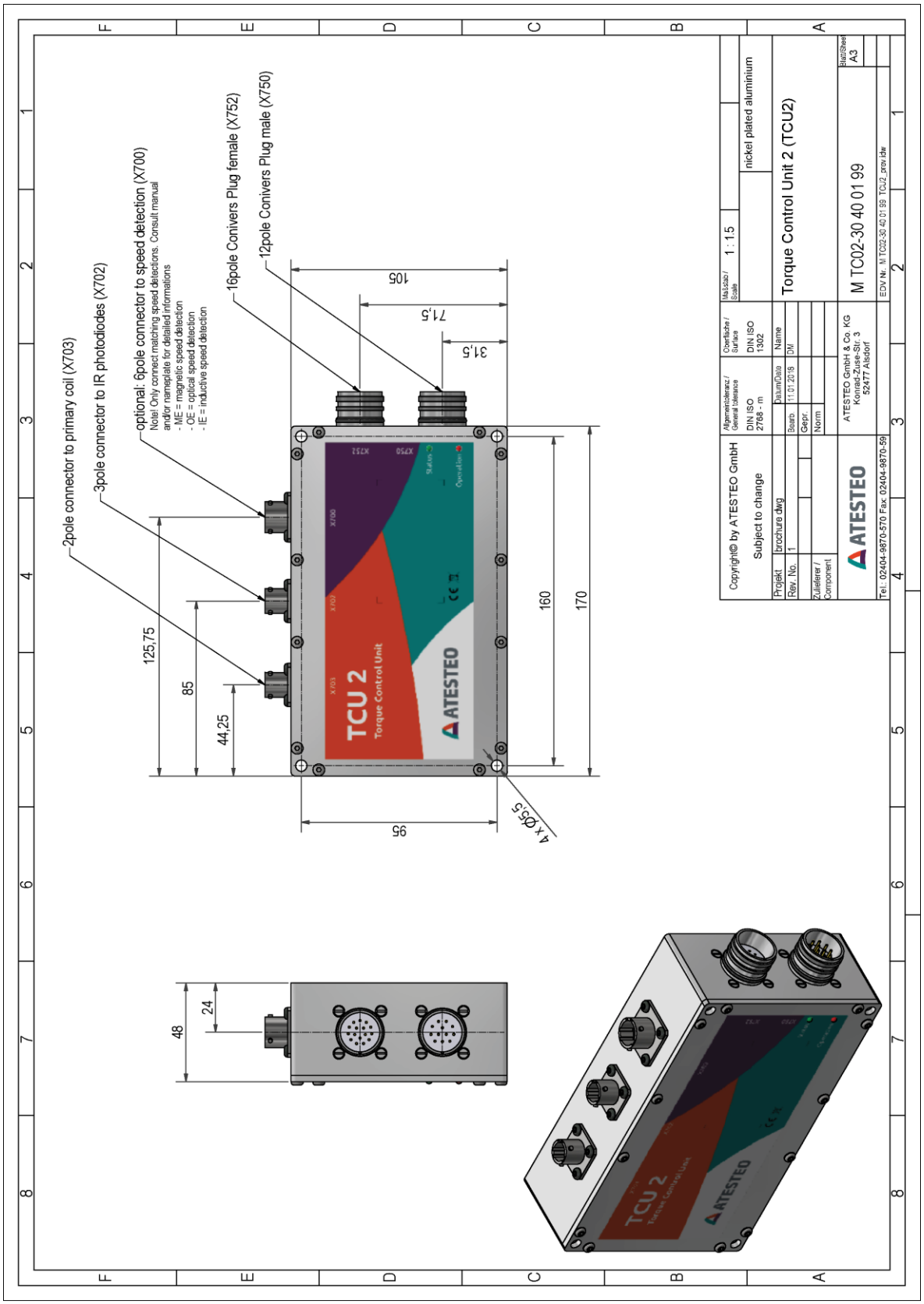


HSTT2eS Stator

Drawing



Drawing



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