

FORCE TRANSDUCER



TENSION &
COMPRESSION

- STAINLESS STEEL, MONOLITHIC STRUCTURE
- ISO 376 CLASS 00, 0.5 AND 1
- COMBINED ERROR:
 $\pm 0.028 \%FS \cdot 2 MN: \pm 0.071 \%FS$
- OFF-CENTER LOADS COMPENSATION 0.005 %FS
- METROLOGICAL FEATURES STATED BY I.N.R.I.M.



mV/V

NOMINAL LOAD (FS)

kg	kN	ACCURACY CLASS 00	ACCURACY CLASS 0.5	ACCURACY CLASS 1	Rated Output (mV/V)
1 000	10	•	•	•	2.0 ± 0.1 %FS
2 500	25	•	•	•	2.0 ± 0.1 %FS
5 000	50	•	•	•	2.0 ± 0.1 %FS
10 000	100	•	•	•	2.0 ± 0.1 %FS
20 000	200	•	•	•	2.0 ± 0.1 %FS
30 000	300	•	•	•	2.0 ± 0.1 %FS
50 000	500	•	•	•	2.0 ± 0.1 %FS
75 000	750	•	•	•	2.0 ± 0.1 %FS
100 000	1 000	•	•	•	2.0 ± 0.1 %FS
200 000	2 000	—	•	•	2.0 ± 0.1 %FS

From 100 kN upwards the ACCREDIA calibration can not be performed by laboratory LAT 00120; on request it can be ordered from another accredited laboratory.



TECHNICAL DATA

PRECISION

Accuracy class (ISO 376)	00 · 0.5 · 1
Rated Output (Cn)	2 mV/V ± 0.1 %FS
Zero Balance	± 0.2 %FS
Combined Error	± 0.028 %FS · 2 MN: ± 0.071 %FS
Non-linearity	± 0.02 %FS · 2 MN: ± 0.05 %FS
Hysteresis	± 0.02 %FS · 2 MN: ± 0.05 %FS
Repeatability 0°–120°–240° (b)	± 0.020 % · ± 0.045 % · ± 0.080 %
Interpolation (fc)	± 0.020 % · ± 0.040 % · ± 0.050 %
Reversibility (u)	± 0.030 % · ± 0.050 % · ± 0.090 %
Zero (fo)	± 0.005 %FS · ± 0.010 %FS · ± 0.010 %FS
Off-center loads compensation	0.005 %FS
Sensitivity to supporting surfaces	0.002 %FS
Temperature coefficient on zero	± 0.015 %FS / 10 °C
Temperature coefficient on span	± 0.010 %FS / 10 °C
Compensated temperature range	-10...+40 °C
Operating temperature range	-10...+70 °C
Storage temperature range	-20...+80 °C
Reference Temperature	+23 °C

MECHANICAL PROPERTIES

Material	STAINLESS STEEL, monolithic
Deflection at FN	0.2 mm · 2 MN: ~ 0.35 mm
Weight	4.5 – 48 kg

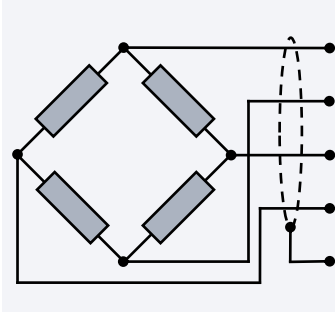
MECHANICAL LIMITS

Service load	120 %FS	Load without any permanent deformation or change in calibration.
Safe overload	150 %FS	The highest static load that may be applied once or briefly without mechanical damage.
Breaking load	> 300 %FS	Load at which permanent deformation or mechanical failure (fracture) occurs.
Max. transverse load (side)	100 %FS	Maximum lateral or shear load that can be applied (e.g. due to misalignment or friction).
Max. permissible dynamic load	75 %FS	For cyclic or oscillating loads, the amplitude should not exceed this load to prevent fatigue failure.

ELECTRICAL PROPERTIES

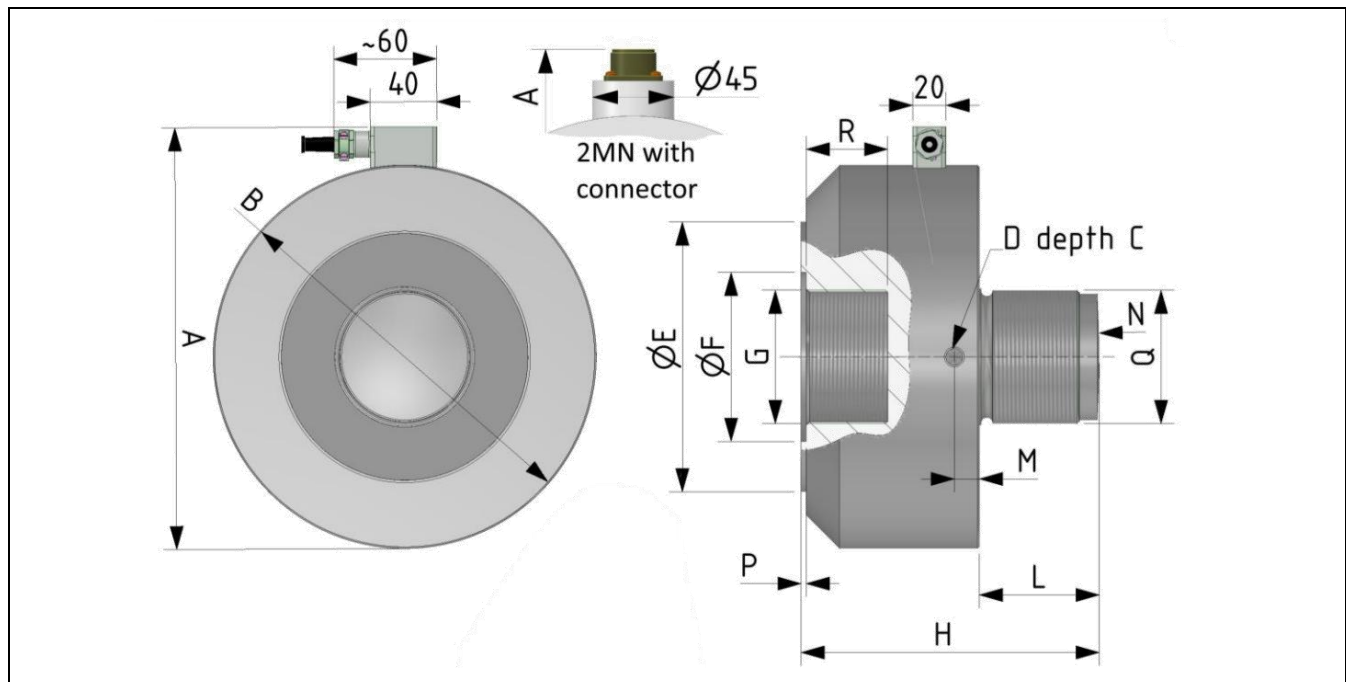
Bridge configuration	Full Wheatstone bridge, 6-wire
Input resistance	700 ± 2 Ω (10 – 50 kN) · 350 ± 2 Ω (100 kN – 2 MN)
Output resistance	705 ± 2 Ω (10 – 50 kN) · 352 ± 2 Ω (100 kN – 2 MN)
Insulation resistance	> 5 GΩ
Recommended excitation voltage	10 V · 1 – 15 V · max. 18 V
Cable	PVC 105 °C, shielded
Cable diameter	5.2 mm
Cable cores	6 × Ø 0.25 mm ² , tinned
Cable length	5 m
Connector (optional)	MIL7M

ELECTRICAL CONNECTION

	+ EXCITATION	RED · C
	+ REF./SENSE	ORANGE · F
	- EXCITATION	BLACK · B
	- REF./SENSE	BLUE · G
	+ SIGNAL	WHITE · A
	- SIGNAL	YELLOW · D
	SHIELD	E · to the body



DIMENSIONS



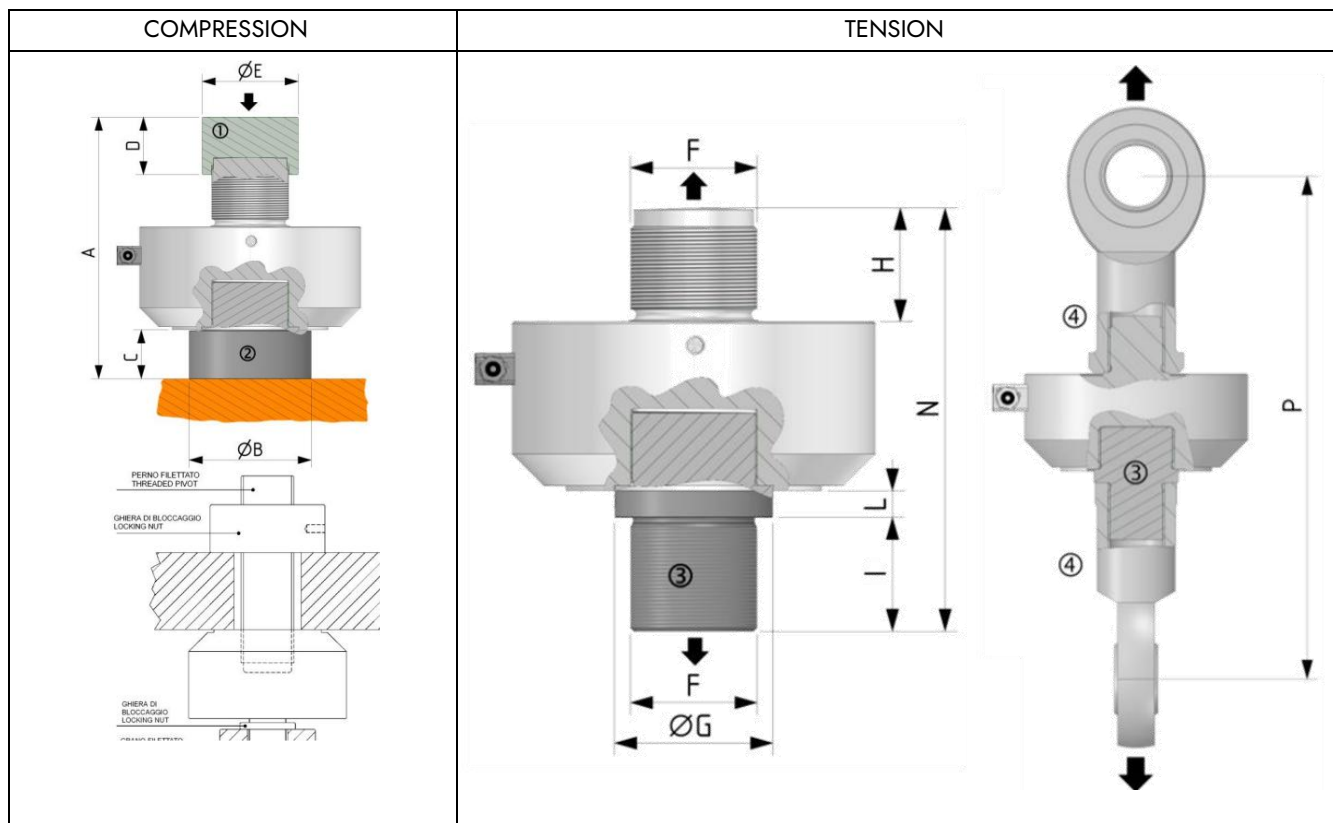
Load	mm													
	A	B	C	D	Ø E	Ø F	G	H	L	M	N	Q	P	R
10 kN	152	127	/	/	84	61	M42 × 3	92	33	10	R65	M30 × 2	1.5	20
25 kN	152	127	/	/	84	61	M42 × 3	92	33	10	R65	M30 × 2	1.5	20
50 kN	152	127	/	/	84	61	M42 × 3	92	33	10	R65	M30 × 2	1.5	20
100 kN	190	165	/	/	112	71	M56 × 3	115	43	12	R160	M42 × 3	1.5	32
200 kN	190	165	/	/	112	71	M56 × 3	136	43	12	R160	M42 × 3	1.5	32
300 kN	190	165	/	/	112	71	M56 × 3	142	43	12	R160	M42 × 3	1.5	32
500 kN	255	230	24	M12	162	101	M80 × 2	179	72	15	R300	M80 × 2	3	46
750 kN	255	230	24	M12	162	101	M80 × 2	201	72	15	R300	M80 × 2	3	46
1 MN	255	230	24	M12	162	101	M80 × 2	204	72	15	R300	M80 × 2	3	46
2 MN	269	230	10	M8	165	125	M100 × 3	260	95	26	R200	M100 × 3	3	65

COMPLIANCE AND CERTIFICATION

Protection Rating	IP67 (EN 60529)
Compliance	CE, RoHS, EAC · declaration of conformity M01-IS-05-04-01r2
Reference standard	ISO 376 — classes 00, 0.5 and 1 · ASTM E74 classification on request
Calibration	Factory-calibrated · ACCREDIA (ISO 17025) calibration certificate on request · kg calibrations on request
Metrological verification	Metrological features stated by I.N.R.I.M. — Istituto Nazionale di Ricerca Metrologica
HS-CODE	9031.80.80 (octogon)



APPLICATIONS



WARNING:

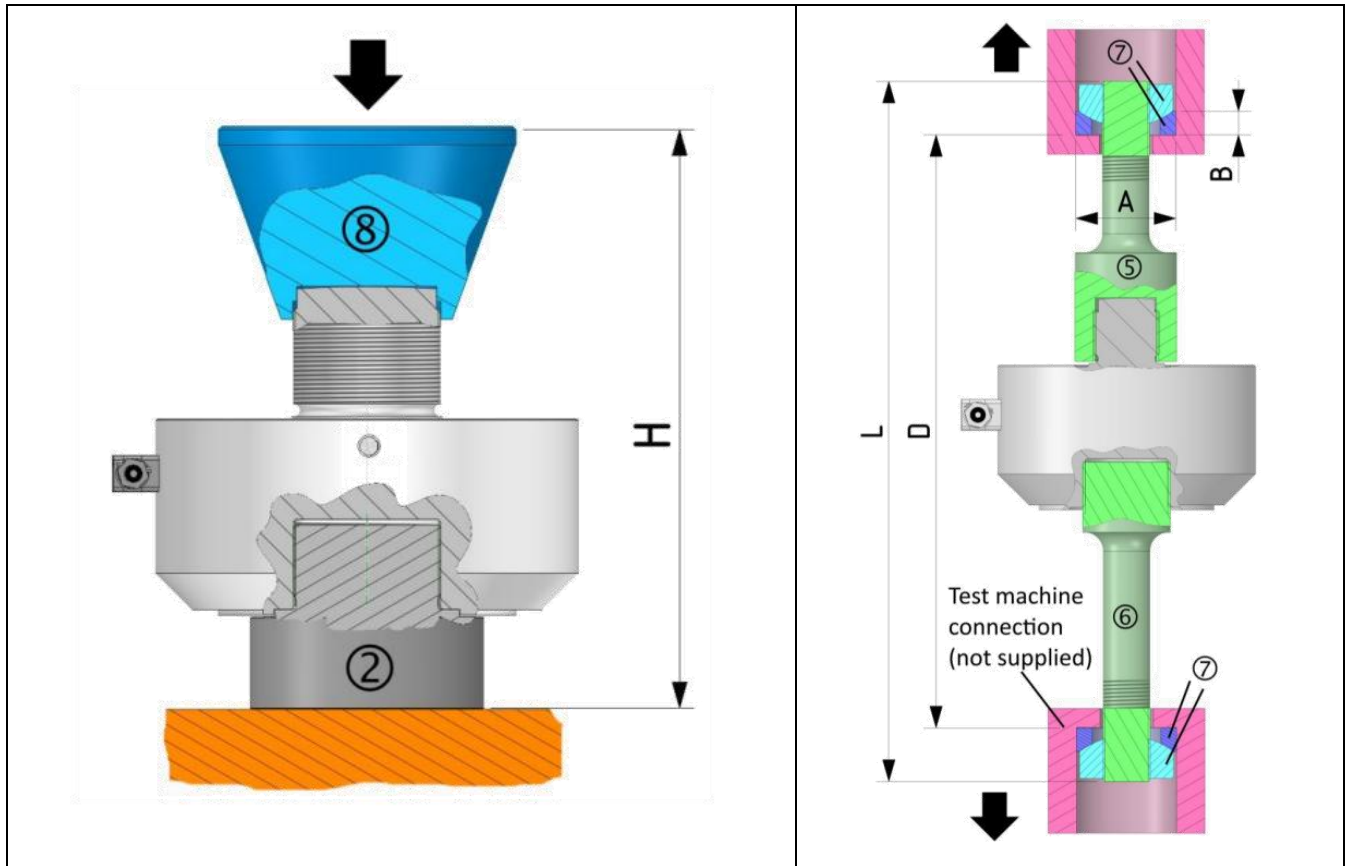
Check that accessories are correctly tightened.

Accessories material: Stainless Steel — from 10 to 200 kN: Rm 90 kg/mm², from 300 to 1000 kN: Rm 130 kg/mm²

LOAD	mm											
	A	B	C	D	E	F	G	H	I	L	N	P
5, 10, 25, 50 kN	142	65	25	40	57	M30 × 2	50	33	33	10	133	295
100 kN	182	65	25	40	57	M30 × 2	50	33	33	10	166	380
200 kN	203	100	34	48	76	M42 × 3	62	42	42	10	187	400
300 kN	209	100	34	48	76	M42 × 3	62	42	42	10	193	~ 498
500 kN	272	127	50	60	100	M80 × 2	100	72	72	20	269	/
750 kN	294	127	50	60	100	M80 × 2	100	72	72	20	291	/
1 MN	297	127	50	60	100	M80 × 2	100	72	72	20	294	/
2 MN	364	145	57	68	127	M100 × 3	123.5	95	80	20	357	/



APPLICATIONS ACCORDING TO UNI EN ISO 376



WARNING:

Check that accessories are correctly tightened.

LOAD	nn					
	L	D _{min}	D _{max}	A (c11)	B	H
10, 25 kN	~ 317	210	266	35	12	146
50 kN	~ 346	257	294	45	15	146
100 kN	~ 394	264	332	50	15	193
200 kN	~ 445	302	380	64	15	214
300 kN	~ 494	308	397	90	18	214
500 kN	~ 595	395	493	90	18	292
750 kN	~ 616	413	472	120	25	339
1 MN	~ 619	416	475	120	25	342
2 MN	—	—	—	—	—	398

NOTE: tension accessories according to UNI EN ISO 376 are not available for the LLAH 2 MN.



ACCESSORIES (TO BE PURCHASED SEPARATELY)



LOAD	ACCESSORIES (optional)
10, 25, 50 kN	Loading head
10, 25, 50 kN	Mounting plate
10, 25, 50 kN	Tension screw
10, 25, 50 kN	Knuckle joint (static applications)
100, 200, 300 kN	Loading head
100, 200, 300 kN	Mounting plate
100, 200, 300 kN	Tension screw
100, 200 kN	Knuckle joint (static applications)
300 kN	Knuckle joint (static applications), bottom
300 kN	Knuckle joint (static applications), top
500, 750, 1000 kN	Loading head
500, 750, 1000 kN	Mounting plate
500, 750, 1000 kN	Tension screw
2000 kN	Loading head
2000 kN	Mounting plate
2000 kN	Tension screw

(1) Relative errors are referred to the reading, min. 1/10 of the nominal load.
 (2) Tests and calibrations performed in COMPRESSION.
 (3) kg calibrations on request.
 (4) Classifications according to ASTM E74 on request.

