

Linear actuators ILA Series

Linear Actuator ILA Series without input drive, with flange and input shaft

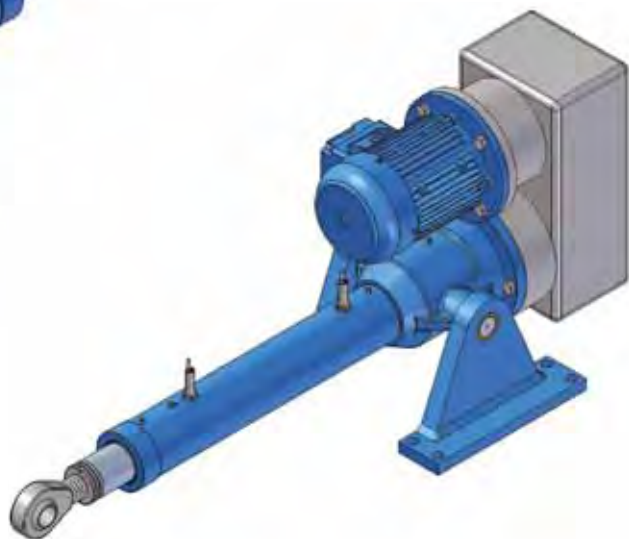


Linear Actuator ILA Series with input drive

- with bevel gearmotor



- with parallel shaft helical gearmotor



- with helical coaxial or planetary gearmotor



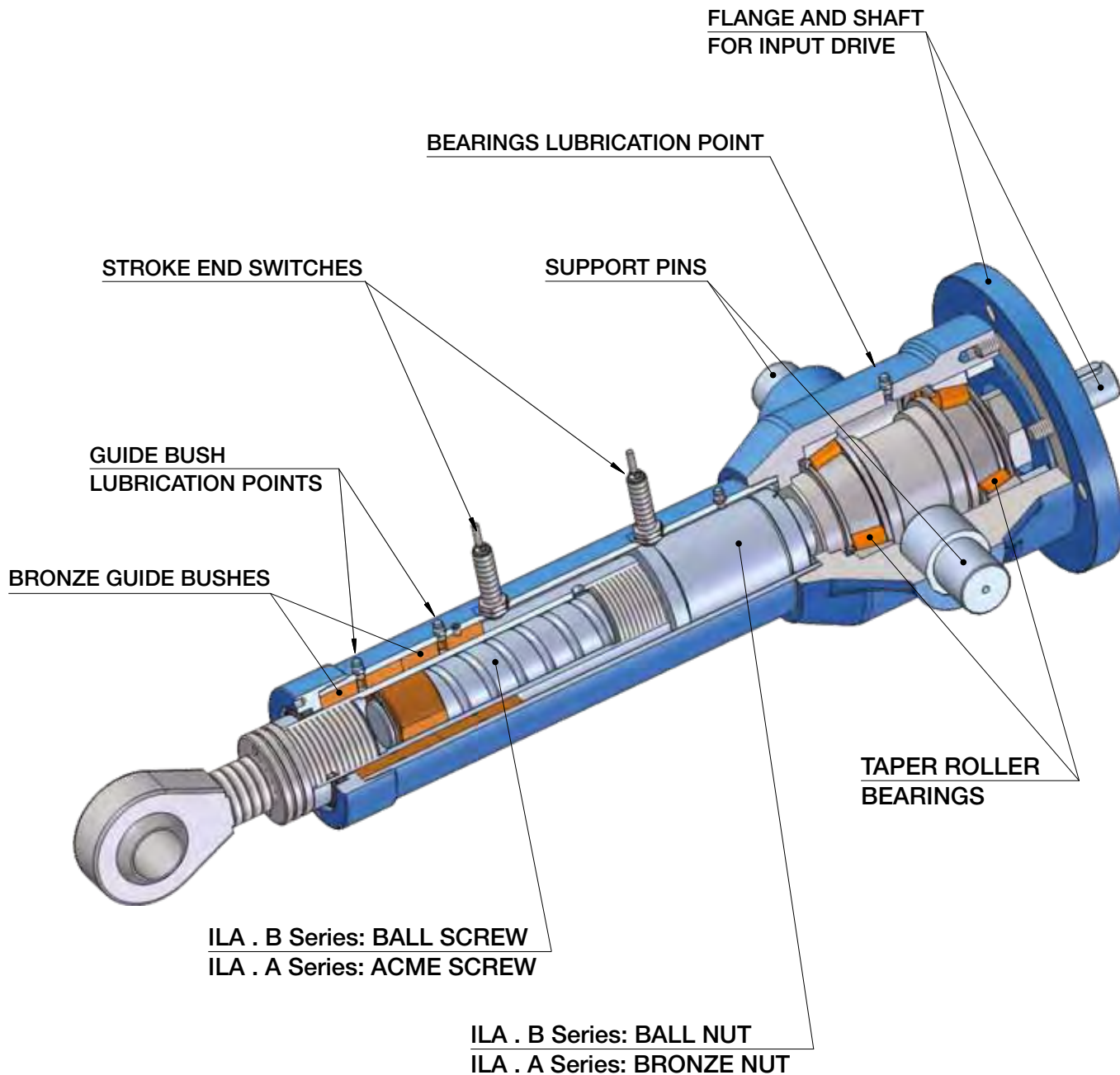
- with bevel-helical gearmotor



6

Linear actuators ILA Series

6.1 MANUFACTURING FEATURES



Linear actuators ILA Series

6.2 TECHNICAL DATA - acme screw linear actuators ILA . A Series

| SIZE | | ILA 15 A | ILA 25 A | ILA 50 A |
|--|------|---------------|---------------|---------------|
| Load capacity [kN], (push - pull) | | 15 | 25 | 50 |
| Push rod diameter | [mm] | 40 | 50 | 60 |
| Outer tube diameter | [mm] | 60 | 70 | 90 |
| Front attachment diameter | [mm] | 20 | 30 | 35 |
| Rear attachment diameter - pins | [mm] | 20 | 30 | 35 |
| Max. input solid shaft diameter | [mm] | 12 | 16 | 24 |
| 1-start acme screw (code: 1) | | Tr 22×5 | Tr 30×6 | Tr 40×7 |
| Linear travel for 1 input shaft revolution | [mm] | 5 | 6 | 7 |
| Starting efficiency | | 0.38 | 0.35 | 0.31 |
| Running efficiency at 100 rpm | | 0.45 | 0.42 | 0.42 |
| Reaction torque on front attachment at max. load | [Nm] | 32 | 69 | 180 |
| 2-start acme screw (code: 2) | | Tr 22×10 (P5) | Tr 30×12 (P6) | Tr 40×14 (P7) |
| Linear travel for 1 input shaft revolution | [mm] | 10 | 12 | 14 |
| Starting efficiency | | 0.54 | 0.51 | 0.47 |
| Running efficiency at 100 rpm | | 0.61 | 0.59 | 0.58 |
| Reaction torque on front attachment at max. load | Nm] | 45 | 94 | 237 |
| Mass (actuator 100 mm stroke length, with lubricant) | [kg] | 10 | 17 | 37 |
| Extra-mass for each additional 100 mm stroke length | [kg] | 0.9 | 2 | 3 |

Linear actuators ILA Series

6.2 TECHNICAL DATA - acme screw linear actuators ILA . A Series

| ILA 100 A | ILA 150 A | ILA 200 A | SIZE |
|---------------|----------------|----------------|---|
| 100 | 150 | 200 | Load capacity [kN], (push - pull) |
| 80 | 90 | 110 | Push rod diameter [mm] |
| 130 | 150 | 180 | Outer tube diameter [mm] |
| 40 | 45 | 50 | Front attachment diameter [mm] |
| 40 | 45 | 50 | Rear attachment diameter - pins [mm] |
| 32 | 38 | 42 | Max. input solid shaft diameter [mm] |
| Tr 55×9 | Tr 60×12 | Tr 80×12 | 1-start acme screw (code: 1) |
| 9 | 12 | 12 | Linear travel for 1 input shaft revolution [mm] |
| 0.30 | 0.35 | 0.28 | Starting efficiency |
| 0.42 | 0.47 | 0.41 | Running efficiency at 100 rpm |
| 478 | 819 | 1 706 | Reaction torque on front attachment at max. load [Nm] |
| Tr 55×18 (P9) | Tr 60×24 (P12) | Tr 80×24 (P12) | 2-start acme screw (code: 2) |
| 18 | 24 | 24 | Linear travel for 1 input shaft revolution [mm] |
| 0.46 | 0.51 | 0.43 | Starting efficiency |
| 0.58 | 0.63 | 0.58 | Running efficiency at 100 rpm |
| 562 | 1 124 | 2 222 | Reaction torque on front attachment at max. load Nm |
| 74 | 103 | 144 | Mass (actuator 100 mm stroke length, with lubricant) [kg] |
| 6 | 7.5 | 12 | Extra-mass for each additional 100 mm stroke length [kg] |

Linear actuators ILA Series

6.2 TECHNICAL DATA - ball screw linear actuators ILA . B Series

| SIZE | | ILA 15 B | ILA 25 B | ILA 50 B |
|--|---------------------------------|----------------|--------------|--------------|
| Load capacity [kN], (push - pull) | | 15 | 25 | 50 |
| Push rod diameter | [mm] | 40 | 50 | 60 |
| Outer tube diameter | [mm] | 60 | 70 | 90 |
| Front attachment diameter | [mm] | 20 | 30 | 35 |
| Rear attachment diameter - pins | [mm] | 20 | 30 | 35 |
| Max. input solid shaft diameter | [mm] | 16 | 16 | 24 |
| Ball screw (code: 1) | Diameter × Lead | 25×6 | 32×10 | 40×10 |
| | Ball [mm] | 3.969 (5/32 ") | 6.35 (1/4 ") | 6.35 (1/4 ") |
| | Number of circuits | 3 | 4 | 5 |
| | Dynamic load C _a [N] | 17 400 | 41 800 | 60 000 |
| | Static load C _{0a} [N] | 30 500 | 73 000 | 124 000 |
| Linear travel for 1 input shaft revolution | | 6 | 10 | 10 |
| Required torque on input shaft at max. load [Nm] | | 16 | 45 | 89 |
| Ball screw (code: 2) | Diameter × Lead | 25×10 | 32×20 | 40×20 |
| | Ball [mm] | 3.969 (5/32 ") | 6.35 (1/4 ") | 6.35 (1/4 ") |
| | Number of circuits | 3 | 2 | 3 |
| | Dynamic load C _a [N] | 14 000 | 32 200 | 38 500 |
| | Static load C _{0a} [N] | 25 700 | 53 000 | 74 000 |
| Linear travel for 1 input shaft revolution | | 10 | 20 | 20 |
| Required torque on input shaft at max. load [Nm] | | 27 | 90 | 177 |
| Mass (actuator 100 mm stroke length, without motor, with lubricant) [kg] | | 10 | 18 | 36 |
| Extra-mass for each additional 100 mm stroke length [kg] | | 0.9 | 2 | 3 |

Linear actuators ILA Series

6.2 TECHNICAL DATA - ball screw linear actuators ILA . B Series

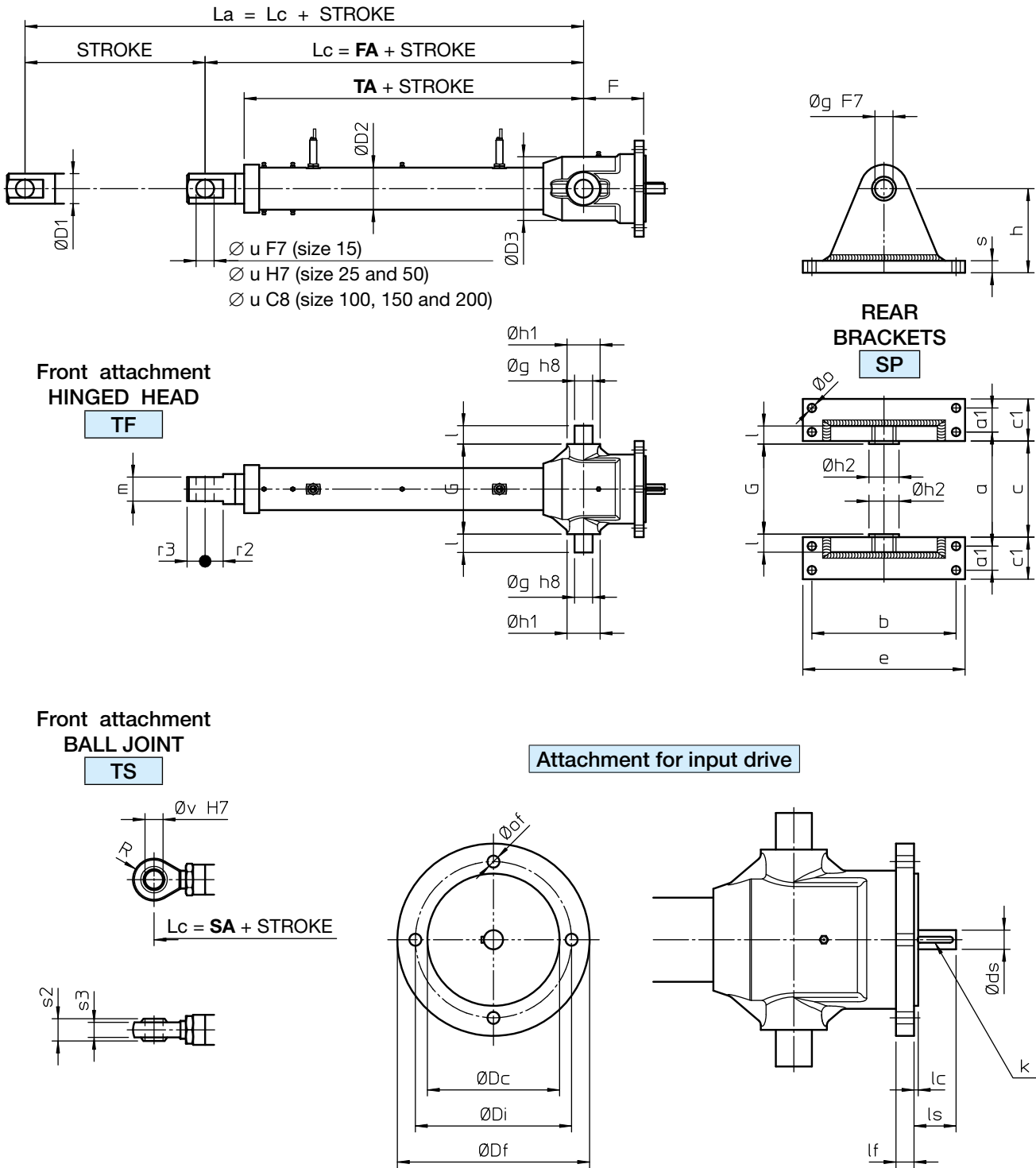
| ILA 100 B | ILA 150 B | ILA 200 B | SIZE |
|--------------|----------------|---------------|--|
| 100 | 150 | 200 | Load capacity [kN], (push - pull) |
| 80 | 90 | 110 | Push rod diameter [mm] |
| 130 | 150 | 180 | Outer tube diameter [mm] |
| 40 | 45 | 50 | Front attachment diameter [mm] |
| 40 | 45 | 50 | Rear attachment diameter - pins [mm] |
| 32 | 38 | 42 | Max. input solid shaft diameter [mm] |
| 50×10 | 63×10 | 80 ×16 | Diameter × Lead |
| 6.35 (1/4 ") | 7.144 (9/32 ") | 9.525 (3/8 ") | [mm] Ball |
| 5 | 6 | 5 | Number of circuits |
| 83 000 | 112 000 | 149 000 | [N] Dynamic load C _a |
| 188 000 | 313 000 | 393 000 | [N] Static load C _{0a} |
| 10 | 10 | 16 | Linear travel for 1 input shaft revolution |
| 177 | 266 | 442 | Required torque on input shaft at max. load [Nm] |
| 50×20 | 63×20 | 80 ×20 | Diameter × Lead |
| 6.35 (1/4 ") | 9.525 (3/8 ") | 12.7 (1/2 ") | [mm] Ball |
| 4 | 4 | 4 | Number of circuits |
| 65 000 | 101 000 | 213 000 | [N] Dynamic load C _a |
| 140 000 | 220 000 | 516 000 | [N] Static load C _{0a} |
| 20 | 20 | 20 | Linear travel for 1 input shaft revolution |
| 354 | 531 | 885 | Required torque on input shaft at max. load [Nm] |
| 72 | 107 | 146 | Mass (actuator 100 mm stroke length, without motor, with lubricant) [kg] |
| 6 | 6 | 12 | Extra-mass for each additional 100 mm stroke length [kg] |



Linear actuators ILA Series

6.3 OVERALL DIMENSIONS - acme screw linear actuators ILA . A Series

Lc - RETRACTED actuator length
 La - EXTENDED actuator length



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Linear actuators ILA Series

6.3 OVERALL DIMENSIONS - acme screw linear actuators ILA . A Series

| | FA | SA | TA |
|-----------|-----|-----|-----|
| ILA 15 A | 207 | 248 | 166 |
| ILA 25 A | 275 | 310 | 210 |
| ILA 50 A | 351 | 407 | 282 |
| ILA 100 A | 436 | 466 | 346 |
| ILA 150 A | 468 | 506 | 376 |
| ILA 200 A | 484 | 519 | 377 |

Linear actuator and rear bracket dimensions:

| | ∅ D1 | ∅ D2 | ∅ D3 | F | G | a | a1 | b | c |
|---------|------|------|------|-----|-----|-----|-----|-----|-----|
| ILA 15 | 40 | 60 | 86 | 78 | 140 | 172 | 26 | 190 | 148 |
| ILA 25 | 50 | 70 | 106 | 98 | 150 | 190 | 40 | 240 | 160 |
| ILA 50 | 60 | 90 | 140 | 114 | 200 | 240 | 50 | 270 | 210 |
| ILA 100 | 80 | 130 | 170 | 147 | 240 | 292 | 60 | 310 | 252 |
| ILA 150 | 90 | 150 | 190 | 149 | 280 | 342 | 75 | 370 | 292 |
| ILA 200 | 110 | 180 | 220 | 150 | 332 | 404 | 100 | 410 | 344 |

| | c1 | e | ∅ g | h | ∅ h1 | ∅ h2 | l | ∅ o (n° of bores) | s |
|---------|-----|-----|-----|-----|------|------|----|-------------------|----|
| ILA 15 | 50 | 220 | 20 | 120 | 45 | 35 | 20 | 12 (4 bores) | 15 |
| ILA 25 | 70 | 270 | 30 | 140 | 55 | 50 | 30 | 14 (4 bores) | 20 |
| ILA 50 | 80 | 300 | 35 | 160 | 65 | 55 | 35 | 18 (4 bores) | 20 |
| ILA 100 | 100 | 360 | 40 | 185 | 75 | 60 | 40 | 22 (4 bores) | 25 |
| ILA 150 | 125 | 425 | 45 | 225 | 75 | 65 | 45 | 26 (4 bores) | 30 |
| ILA 200 | 160 | 470 | 50 | 250 | 100 | 70 | 50 | 32 (4 bores) | 35 |

Input drive attachment dimensions:

| | ∅ Df | ∅ Di | ∅ Dc | ∅ ds | k | lc | lf | ls | ∅ of (n° of bores) |
|-----------|------|------|------|------|---------|-----|----|-----|--------------------|
| ILA 15 A | 140 | 120 | 100 | 12 | 5x5x25 | 3.5 | 17 | 35 | 8 (4 bores) |
| ILA 25 A | 160 | 140 | 120 | 16 | 6x6x30 | 3.5 | 13 | 40 | 10 (4 bores) |
| ILA 50 A | 200 | 175 | 150 | 24 | 8x7x35 | 4 | 19 | 55 | 12.5 (4 bores) |
| ILA 100 A | 250 | 215 | 180 | 32 | 10x8x40 | 4 | 25 | 60 | 14.5 (4 bores) |
| ILA 150 A | 300 | 265 | 230 | 38 | 10x8x60 | 4 | 29 | 78 | 14.5 (4 bores) |
| ILA 200 A | 350 | 300 | 250 | 42 | 14x9x70 | 4 | 33 | 110 | 18.5 (4 bores) |

NOTE: On request, the dimensions of the input drive attachment can be different according to the dimensions of the drive unit to be mounted.

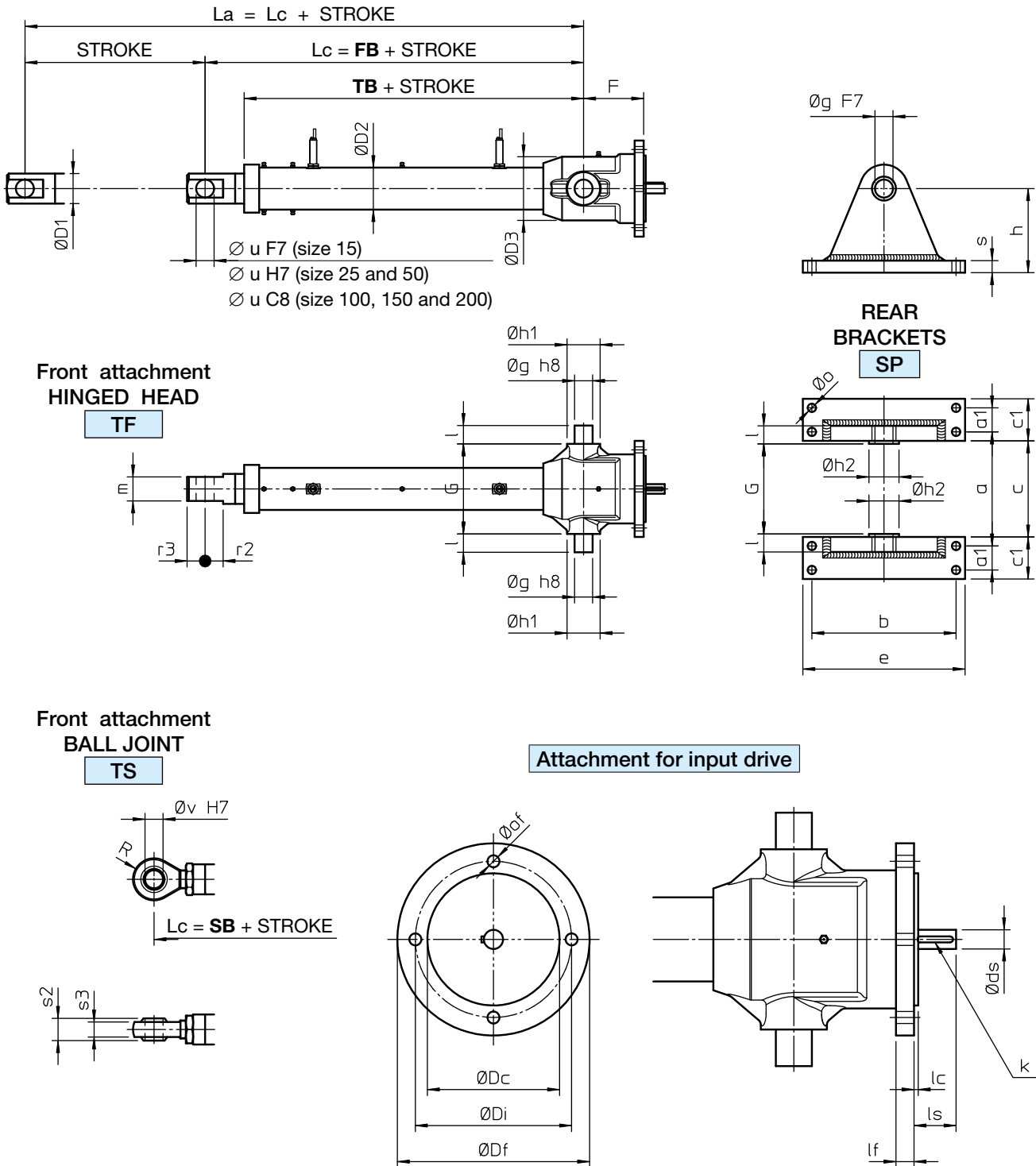
Front attachment dimensions:

| | m | R | r2 | r3 | s2 | s3 | ∅ u | ∅ v |
|-----------|----|----|----|----|----|----|-----|-----|
| ILA 15 A | 42 | 25 | — | 27 | 25 | 19 | 20 | 20 |
| ILA 25 A | 40 | 35 | 30 | 30 | 37 | 25 | 30 | 30 |
| ILA 50 A | 50 | 40 | 30 | 35 | 43 | 28 | 35 | 35 |
| ILA 100 A | 60 | 45 | 45 | 55 | 28 | 23 | 40 | 40 |
| ILA 150 A | 70 | 51 | 50 | 60 | 32 | 27 | 45 | 45 |
| ILA 200 A | 80 | 56 | 60 | 70 | 35 | 30 | 60 | 60 |

Linear actuators ILA Series

6.3 OVERALL DIMENSIONS - ball screw linear actuators ILA . B Series

Lc - RETRACTED actuator length
 La - EXTENDED actuator length



6

Linear actuators ILA Series

6.3 OVERALL DIMENSIONS - ball screw linear actuators ILA . B Series

| | FB | | SB | | TB | |
|-----------|----------------|----------------|----------------|----------------|----------------|----------------|
| ILA 15 B | 190 (BS 25×6) | 208 (BS 25×10) | 231 (BS 25×6) | 249 (BS 25×10) | 148 (BS 25×6) | 166 (BS 25×10) |
| ILA 25 B | 330 | | 365 | | 267 | |
| ILA 50 B | 371 (BS 40×10) | 391 (BS 40×20) | 427 (BS 40×10) | 447 (BS 40×20) | 309 (BS 40×10) | 329 (BS 40×20) |
| ILA 100 B | 436 (BS 50×10) | 472 (BS 50×20) | 466 (BS 50×10) | 502 (BS 50×20) | 344 (BS 50×10) | 380 (BS 50×20) |
| ILA 150 B | 484 (BS 63×10) | 516 (BS 63×20) | 510 (BS 63×10) | 542 (BS 63×20) | 390 (BS 63×10) | 422 (BS 63×20) |
| ILA 200 B | 532 (BS 80×16) | 554 (BS 80×20) | 567 (BS 80×16) | 589 (BS 80×20) | 432 (BS 80×16) | 454 (BS 80×20) |

Linear actuator and rear bracket dimensions:

| | ∅ D1 | ∅ D2 | ∅ D3 | F | G | a | a1 | b | c |
|---------|------|------|------|-----|-----|-----|-----|-----|-----|
| ILA 15 | 40 | 60 | 86 | 78 | 140 | 172 | 26 | 190 | 148 |
| ILA 25 | 50 | 70 | 106 | 98 | 150 | 190 | 40 | 240 | 160 |
| ILA 50 | 60 | 90 | 140 | 114 | 200 | 240 | 50 | 270 | 210 |
| ILA 100 | 80 | 130 | 170 | 147 | 240 | 292 | 60 | 310 | 252 |
| ILA 150 | 90 | 150 | 190 | 149 | 280 | 342 | 75 | 370 | 292 |
| ILA 200 | 110 | 180 | 220 | 150 | 332 | 404 | 100 | 410 | 344 |

| | c1 | e | ∅ g | h | ∅ h1 | ∅ h2 | l | ∅ o (n° of bores) | s |
|---------|-----|-----|-----|-----|------|------|----|-------------------|----|
| ILA 15 | 50 | 220 | 20 | 120 | 45 | 35 | 20 | 12 (4 bores) | 15 |
| ILA 25 | 70 | 270 | 30 | 140 | 55 | 50 | 30 | 14 (4 bores) | 20 |
| ILA 50 | 80 | 300 | 35 | 160 | 65 | 55 | 35 | 18 (4 bores) | 20 |
| ILA 100 | 100 | 360 | 40 | 185 | 75 | 60 | 40 | 22 (4 bores) | 25 |
| ILA 150 | 125 | 425 | 45 | 225 | 75 | 65 | 45 | 26 (4 bores) | 30 |
| ILA 200 | 160 | 470 | 50 | 250 | 100 | 70 | 50 | 32 (4 bores) | 35 |

Input drive attachment dimensions:

| | ∅ Df | ∅ Di | ∅ Dc | ∅ ds | k | lc | lf | ls | ∅ of (n° of bores) |
|-----------|------|------|------|------|---------|-----|----|-----|--------------------|
| ILA 15 B | 140 | 120 | 100 | 16 | 5×5×25 | 3.5 | 17 | 45 | 8 (4 bores) |
| ILA 25 B | 160 | 140 | 120 | 16 | 6×6×30 | 3.5 | 13 | 40 | 10 (4 bores) |
| ILA 50 B | 200 | 175 | 150 | 24 | 8×7×35 | 4 | 19 | 55 | 12.5 (4 bores) |
| ILA 100 B | 250 | 215 | 180 | 32 | 10×8×40 | 4 | 25 | 60 | 14.5 (4 bores) |
| ILA 150 B | 300 | 265 | 230 | 38 | 10×8×60 | 4 | 29 | 78 | 14.5 (4 bores) |
| ILA 200 B | 350 | 300 | 250 | 42 | 14×9×70 | 4 | 33 | 110 | 18.5 (4 bores) |

NOTE: On request, the dimensions of the input drive attachment can be different according to the dimensions of the drive unit to be mounted.

Front attachment dimensions:

| | m | R | r2 | r3 | s2 | s3 | ∅ u | ∅ v |
|-----------|----|----|----|----|----|----|-----|-----|
| ILA 15 B | 42 | 25 | — | 27 | 25 | 19 | 20 | 20 |
| ILA 25 B | 40 | 35 | 30 | 30 | 37 | 25 | 30 | 30 |
| ILA 50 B | 50 | 40 | 30 | 35 | 43 | 28 | 35 | 35 |
| ILA 100 B | 60 | 45 | 45 | 55 | 28 | 23 | 40 | 40 |
| ILA 150 B | 70 | 51 | 50 | 60 | 32 | 27 | 45 | 45 |
| ILA 200 B | 80 | 56 | 60 | 70 | 35 | 30 | 60 | 60 |

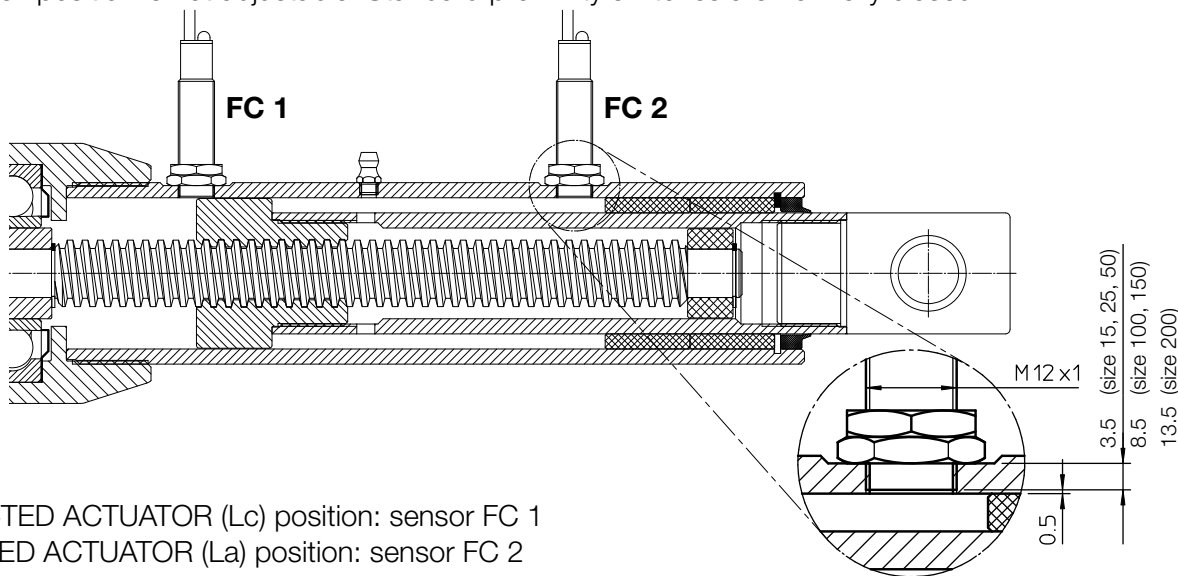
Linear actuators ILA Series

6.4 ACCESSORIES

INDUCTIVE PROXIMITY STROKE END SWITCHES Code FCP

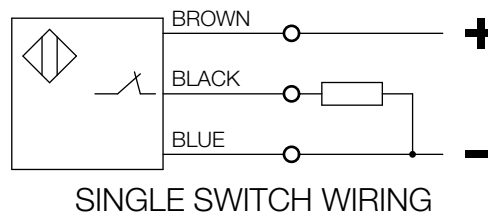
The INDUCTIVE PROXIMITY STROKE END SWITCHES FCP allow the actuator to stop before reaching the internal mechanical stop avoiding damage. They can be also used to fix intermediate positions along the actuator stroke length.

The INDUCTIVE PROXIMITY STROKE END SWITCHES are fixed directly on the actuator outer tube in the required position. Their position is not adjustable. Standard proximity switches are normally closed.

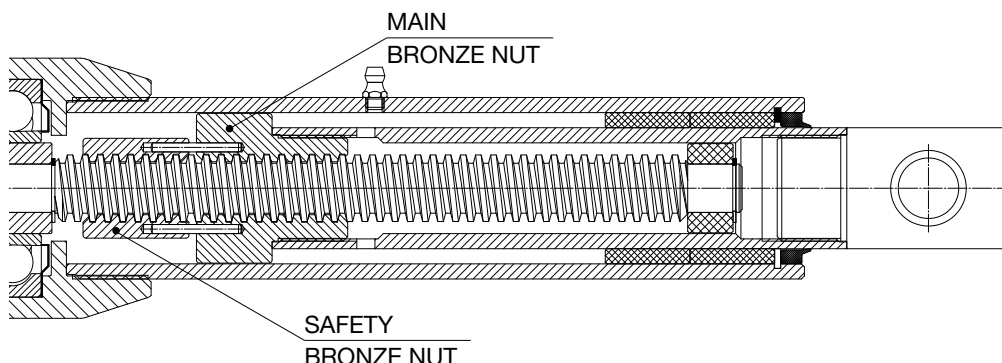


- RETRACTED ACTUATOR (Lc) position: sensor FC 1
- EXTENDED ACTUATOR (La) position: sensor FC 2

| ELECTRIC FEATURES | |
|---------------------------------|-------------------------|
| Type: | inductive, PNP |
| Contact: | normally CLOSED (NC) |
| Voltage: | (10 ... 30) V DC |
| Max. output current: | 200 mA |
| Voltage drop (activated switch) | < 3 V (at 200 mA) |
| Wires: | 3 × 0.2 mm ² |
| Cable length: | 2 m |



SAFETY NUT Code MS

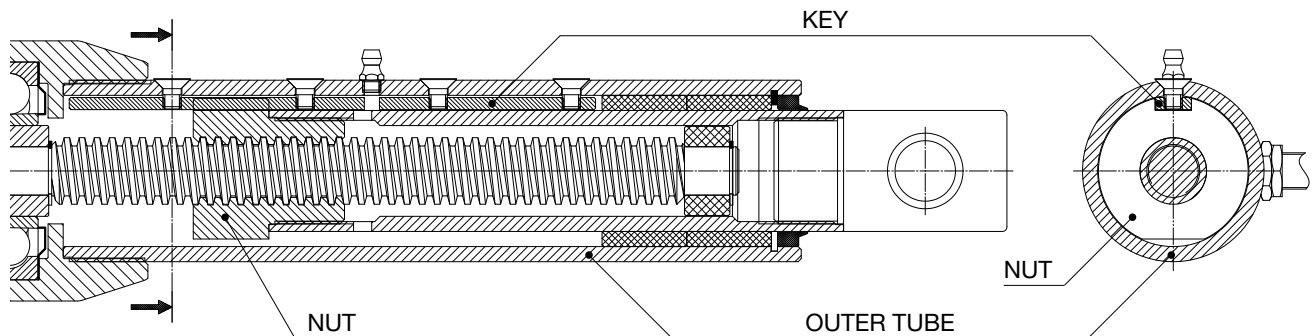


The SAFETY NUT is an auxiliary bronze nut connected by 2 pins to the main bronze nut. The distance between the two nuts in a new actuator is equal to a half of the thread pitch. If the main nut wears up to a half of the thread pitch or crashes, the SAFETY NUT supports the load avoiding its fall down.

The SAFETY NUT is a one-direction device. Its position with respect to the main nut depends on the load direction. The SAFETY NUT is available for actuators working with push load. For applications with pull load a special design is available (contact SERVOMECH).

The SAFETY NUT MS is available for all acme screw actuators (ILA . A Series).

ANTI-TURN device Code AR



To achieve a linear motion it is necessary to prevent the rotary movement of the nut and of the push rod fixed to it. In many applications it is the external structure itself that, being connected to the push rod, prevents the rotation and allows the linear motion.

In some cases the load applied on the push rod cannot be guided and therefore the rotation cannot be avoided. In such cases it is necessary to use actuators with an internal anti-turn device. The ANTI-TURN device allows the linear motion without any external reaction on the push rod. It can be supplied upon request.

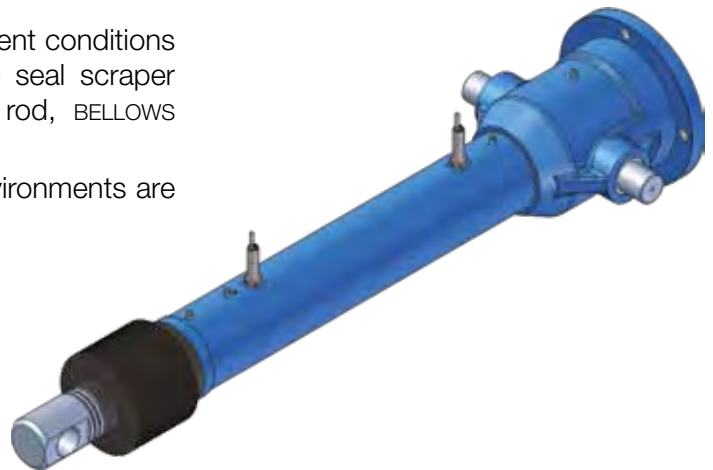
The anti-turn device shown in the above picture consists in a steel key fixed and aligned along the outer tube. The bronze nut, provided with a suitable keyway, slides on this key, making translate the push rod.

The ANTI-TURN device AR is available for all acme screw actuators (ILA . A Series).

PROTECTIVE BELLOWS Code B

When the actuators are used in severe environment conditions with contaminant agents that can damage the seal scraper between the outer outer tube and the push rod, BELLOWS protection can be useful.

Bellows made of special materials for severe environments are available upon request.



Linear actuators ILA Series

6.5 ORDERING CODE

| | | | | | | | | |
|---|----|---|---------|------|----|----|-----|--|
| ILA | 25 | A | Tr 30x6 | C400 | TS | SP | FC | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8.A | |
| gearbox ... | | | | | | | | |
| 9 | | | | | | | | |
| AC 3-phase motor 1.5 kW 4-pole 230/400 V 50 Hz IP 55 Ins. F | | | | | | | | |
| 10 | | | | | | | | |

| | | |
|----|---|-------------------|
| 1 | Actuator series ILA | |
| 2 | Actuator size 15, 25, 50, 100, 150, 200 | pages 186 ... 189 |
| 3 | Type of linear drive screw A - acme screw B - ball screw | pages 186 ... 189 |
| 4 | Linear drive screw | pages 186 ... 189 |
| 5 | Stroke code | |
| 6 | Front attachment TS - ball joint TF - hinged head | pages 190 ... 193 |
| 7 | Rear attachment (without code) - pins SP - rear brackets | pages 190 ... 193 |
| 8 | Stroke end switches FCP - inductive proximity switches | page 194 |
| 9 | Input drive gearbox data | |
| 10 | Motor data | |
| 11 | Other specifications example: push rod in stainless steel AISI 304 example: lubricant for low temperature | |
| 12 | Filled in SELECTION DATA sheet | page 197 |
| 13 | Application layout | |

APPLICATION: _____

REQUIRED STROKE: _____ mm

REQUIRED LINEAR SPEED: _____ mm/s _____ mm/min _____ m/min TIME TO PERFORM 1 STROKE: _____ s

STATIC LOAD: PULL: _____ N PUSH: _____ N at STROKE _____ mm

DYNAMIC LOAD: PULL: _____ N PUSH: _____ N at STROKE _____ mm

ACTUATOR SUBJECTED TO VIBRATIONS NOT SUBJECTED TO VIBRATIONS

OPERATING: _____ cycle / hour _____ working hours / day Notes: _____

REQUIRED LIFETIME: _____ cycle _____ hours _____ calendar days Notes: _____

ENVIRONMENT: TEMPERATURE _____ °C DUST HUMIDITY _____ % AGGRESSIVE AGENT _____

Acme screw actuators **ILA . A Series** Ball screw actuators **ILA . B Series**

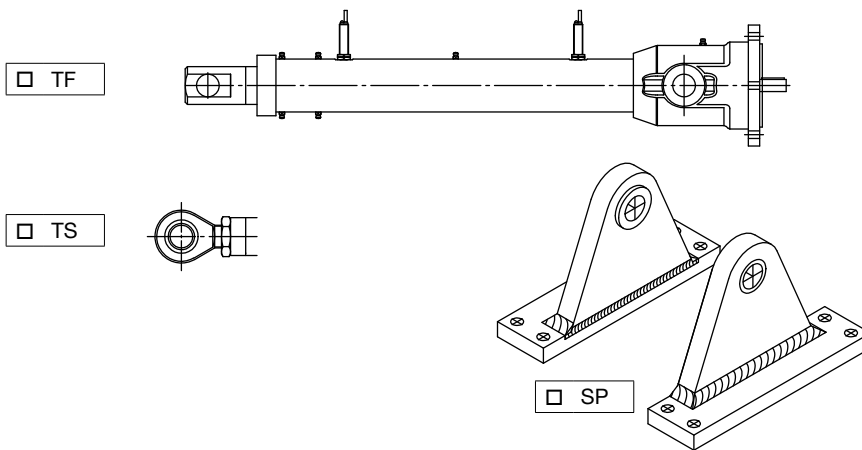
Size: 15 25 50 100 150 200

1-start acme screw

ball screw with STANDARD lead

2-start acme screw

ball screw with LONG lead



INPUT DRIVE _____

ELECTRIC MOTOR _____

ANTI-TURN DEVICE AR

SAFETY NUT MS

BELLOWS

PUSH ROD IN STAINLESS STEEL

OUTER TUBE IN STAINLESS STEEL

OTHER: _____

Acme screw actuators **ILA . A Series**

Ball screw actuators **ILA . B Series**

PRODUCT: _____

INPUT DRIVE

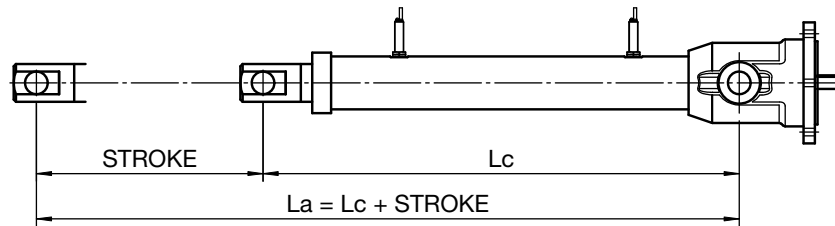
WITHOUT

ELECTRIC MOTOR

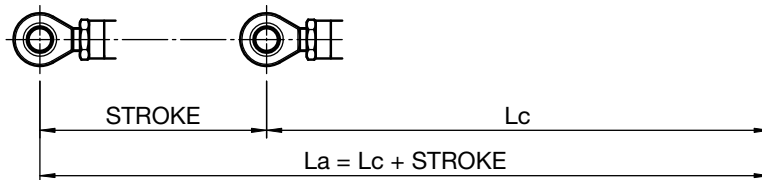
WITHOUT

Product serial number: _____ ; q.ty: _____

HINGED HEAD TF



BALL JOINT TS



LINEAR ACTUATOR LENGTH

WORKING RANGE

RETRACTED ACTUATOR length: $L_c =$ _____ mm
 EXTENDED ACTUATOR length: $L_a =$ _____ mm
 STROKE ($L_a - L_c$): $C =$ _____ mm

INTERNAL MECHANICAL STOP LIMIT

MIN. actuator length: _____ mm
 MAX. actuator length: _____ mm

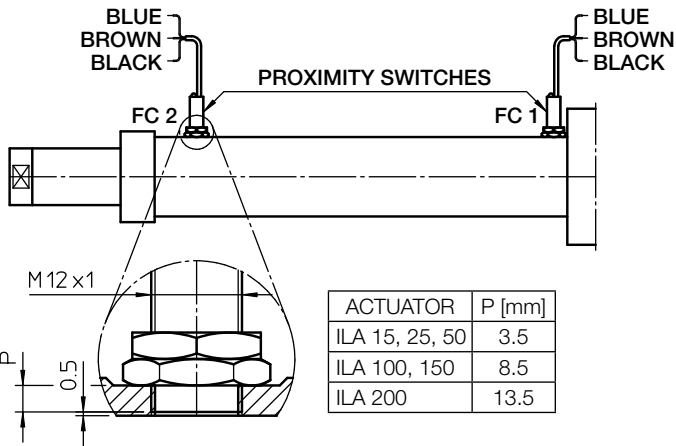
Servomech. QCS

PASSED

Date: _____

Signature: _____

PROXIMITY STROKE END SWITCHES **FCP** □



The PROXIMITY STROKE END SWITCHES **FCP** has proximity sensors FC 1 and FC 2.

- type: inductive, PNP
- contact: **normally CLOSED**
- supply voltage: (10 ... 30) V DC
- max. output current: 200 mA
- max. voltage drop (activated sensor): < 3 V (ref. 200 mA)

FC 1 - sensor for RETRACTED ACTUATOR position
 FC 2 - sensor for EXTENDED ACTUATOR position

SINGLE SENSOR WIRING:



WARNING!

1. The values **Lc** (RETRACTED ACTUATOR length), **La** (EXTENDED ACTUATOR length) and **C** (STROKE) are the extreme limit values.
2. **BEFORE** using the linear actuator:
 - verify the input shaft rotating direction and the push rod running direction;
 - make sure that the motor and the limit switches are correctly connected and that the right voltage is used.
3. Linear actuators equipped with brake motor supplied by SERVOMECH:
 - the brake is **NORMALLY CLOSED** (NEGATIVE action). When the power supply is switched off, the brake is engaged. The brake opens only when power is supplied;
 - if the brake is wired directly to the connecting pins of the terminal box, it does not require any power supply;
 - if the brake is wired separately, make sure that the correct voltage is used;
 - if the brake is equipped with hand release device, make sure that the brake is engaged before starting the linear actuator.
4. **Alignment check:** the load must be in line with the actuator. No off-set or radial loads are allowed.

NOTE: _____

INPUT DRIVE LUBRICANT: _____
 BEARINGS LUBRICANT: _____
 SCREW – NUT LUBRICANT: _____