

## General information

### 4.1 Installation – Maintenance – Lubrication

#### Transport and handling

Screw jacks with mounted ball screw and all accessories can be often difficult to handle because of their overall dimensions. Therefore, it is recommended to handle the products with care during transport and handling to avoid damages on mechanical parts and/or fittings and also to prevent any risk for the personnel in charge of such operations. Screw jack supporting points should be previously identified and used during transport or to raise it by handling. In case of doubts, please contact SERVOMECH for support to prevent any possible damage!

#### Storage

During storage, screw jacks shall be protected against atmospheric agents thus to prevent dust or other contaminants to settle on ball screw and other moving parts.

In case of long storage periods, for example more than 6 months, it is necessary to move the input shafts to avoid damaging of the ring seals. Furthermore, keep all not painted parts properly lubricated to prevent oxidation.

#### Installation

The screw jack must be installed to work with push or pull axial load only, avoiding lateral and radial load. The correct perpendicularity between ball screw axis and screw jack fixing side shall be checked carefully. The installation of many screw jacks for synchronized lifting movement requires particular attention on two different factors:

- alignment of load support points: screw ends in case of travelling ball screw; bronze nut in case of travelling nut;
- use of connecting shafts and couplings with high torsional stiffness, to assure a perfect synchronism of all lifting points.

#### Commissioning and use

Before screw jack commissioning and activation, the following checks must be carried out:

- input shaft turning direction and related ball screw or nut linear motion direction;
- stroke end limit switches position cannot exceed the given limits;
- proper connection of the mechanical transmission and electric motor (rotating direction and motor supply voltage).

#### Lubrication and maintenance

SERVOMECH screw jacks are supplied with lubricant type and quantity as indicated in the lubricants table. For the proper lubrication of all screw jack components, please always specify in your order the screw jack mounting position.

Scheduled maintenance shall be carried out on screw jacks depending on the relevant use and environment conditions.

Ball nuts must be periodically greased every 1000 working hours, with lubricant quantity and type as stated in the table or an equivalent one. For this operation it is recommended to use the specific re-lubrication systems, consisting of grease nipples placed on the cover in case of screw jack Mod.A (travelling screw), or directly on the nut in case of Mod.B (travelling nut).

Worm gears are long-life lubricated. Additional lubrication can be done only in case of verified lubricant leakage. In such a case, use the lubricant type indicated in the table or an equivalent one.

For further information about installation and maintenance, please refer to screw jacks Use and Maintenance Manual.

### 4.1 Installation – Maintenance – Lubrication

Lubricants for **screw jacks Model A (travelling screw)**:

SCREW JACK	GEARBOX		NUT	
MA 5 BS	grease: AGIP Grease SLL 00	0.07 kg	grease: LUBCON Thermoplex ALN 1001	10 g
MA 10 BS		0.14 kg		15 g
MA 25 BS	oil: AGIP BLASIA S 320	0.35 litre		25 g
MA 50 BS		0.75 litre		50 g
MA 100 BS		1.5 litre		200 g
MA 150 BS		1.5 litre		200 g
MA 200 BS		2.3 litre		250 g
MA 350 BS		4 litre		400 g

Lubricants for screw jacks Model B (travelling nut):

SCREW JACK	GEARBOX		NUT	
MA 5 BS	grease: AGIP Grease SLL 00	0.07 kg	grease: LUBCON Thermoplex ALN 1001 <sup>(1)</sup>	
MA 10 BS		0.14 kg		
MA 25 BS	oil: AGIP BLASIA S 320	0.35 litre		
MA 50 BS		0.75 litre		
MA 80 BS		0.75 litre		
MA 150 BS		1.5 litre		
MA 200 BS		2.3 litre		
MA 350 BS		4 litre		
SJ 5 BS	grease: AGIP Grease SM2	0.07 kg		
SJ 10 BS		0.14 kg		
SJ 25 BS	grease: AGIP Grease SLL 00	0.23 kg		
SJ 50 BS		0.6 kg		
SJ 100 BS		0.5 kg		
SJ 150 BS		1.5 kg		
SJ 200 BS		2 kg		
SJ 250 BS		2 kg		
SJ 300 BS		2 kg		
SJ 400 BS		3 kg		
HS 10		oil: AGIP BLASIA S 320		0.22 litre
HS 25				0.45 litre
HS 50	0.55 litre			
HS 100	1.1 litre			
HS 150	2.8 litre			
HS 200	5.5 litre			

<sup>(1)</sup> - for the lubricant quantity necessary for each type of nut, please refer to the table on page 104

## General information

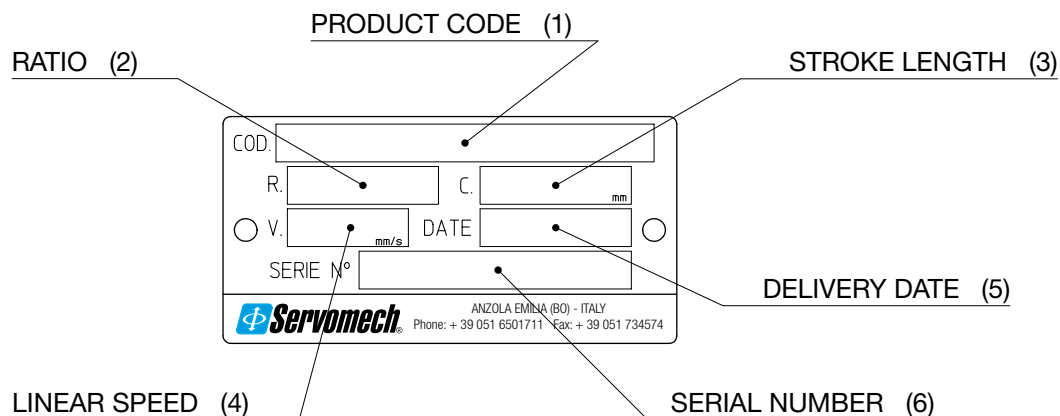
### 4.1 Installation – Maintenance – Lubrication

Lubricants for nuts of screw jacks Model B (travelling nut):

Ball screw $BS\ d_0 \times P_h$	Nut code	number of circuits $i$	Lubricant quantity	
			mass [g]	volume [cm <sup>3</sup> ]
BS 16 × 5	SFN-_.16.05.3R	3	2	
BS 16 × 10	SFN-_.16.10.3R	3	2	
BS 16 × 16	SFN-_.16.16.2R-2	2	1	
BS 20 × 5	SFN-_.20.05.3R	3	2	
	SFN-_.20.05.5R	5	3	
BS 20 × 10	SFN-_.20.10.3R	3	3	
BS 20 × 20	SFN-_.20.20.2R-2	2	2	
BS 25 × 5	SFN-_.25.05.3R	3	3	
BS 25 × 10	SFN-_.25.10.3R	3	4	
BS 25 × 25	SFN-_.25.25.2R-2	2	2	
BS 32 × 5	SFN-_.32.05.4R	4	4	
BS 32 × 10	SFN-_.32.10.3R	3	11	
	SFN-_.32.10.4R	4	12	
	SFN-_.32.10.5R	5	13	
BS 32 × 20	SFN-_.32.20.3R	3	12	
BS 32 × 32	SFN-_.32.32.2R-2	2	6	
BS 40 × 10	SFN-_.40.10.5R	5	17	
BS 40 × 20	SFN-_.40.20.3R	3	16	
BS 40 × 40	SFN-_.40.40.2R-2	2	9	
BS 50 × 10	SFN-_.50.10.5R	5	26	
BS 50 × 20	SFN-_.50.20.4R	4	27	
BS 63 × 10	SFN-_.63.10.5R	5	34	
BS 63 × 20	SFN-_.63.20.4R	4	60	
BS 80 × 10	SFN-_.80.10.6R	6	48	
BS 80 × 16	SFN-_.80.16.5R	5	81	
BS 80 × 20	SFN-_.80.20.5R-F	5	56	
BS 80 × 20	SFN-_.80.20.4R	4	115	
BS 100 × 16	SFN-_.100.16.5R	5	110	
BS 100 × 20	SFN-_.100.20.5R	5	170	
BS 120 × 20	SFN-_.120.20.7R	7	370	

## 4.2 Product label

Every SERVOMECH screw jack is provided with a nameplate, as shown below, which allows the unit identification and gives technical information about the product.

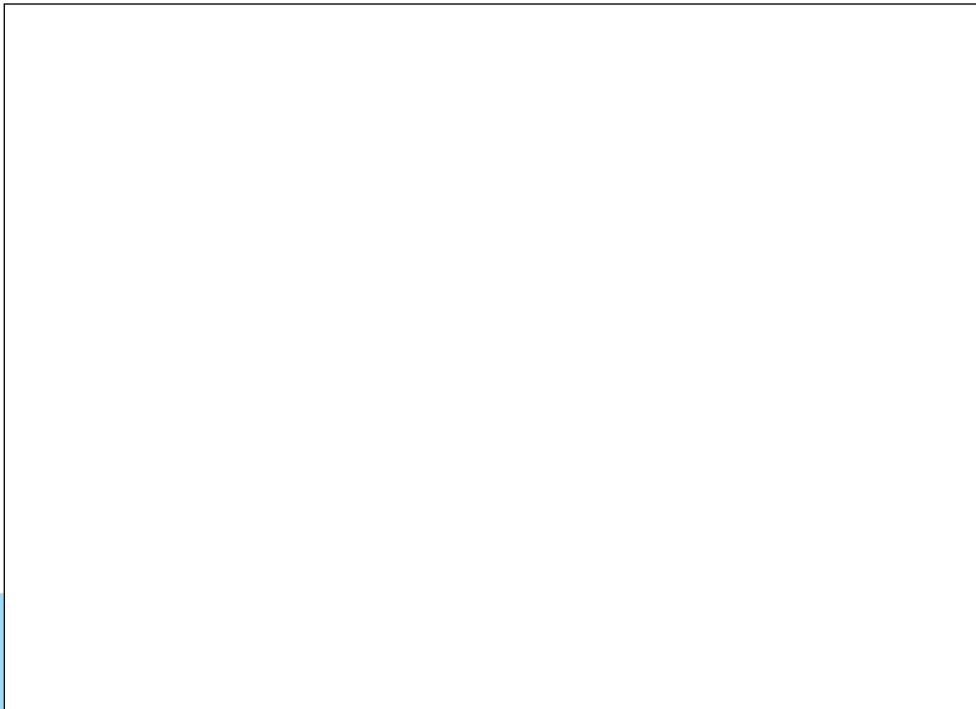


- 1) **Product code:** is an alphanumeric code stating the series, size, ratio, version and stroke limit device of the screw jack;
- 2) **Ratio:** is the ratio of the worm gear;
- 3) **Stroke length:** is the stroke length in millimetres achievable by the actuator;
- 4) **Linear speed:** is the linear speed in mm/sec for screw jacks supplied with an electric motor; if the motor is not supplied, this field is blank;
- 5) **Delivery date:** is the assembly date, expressed in week/year (ex.: 37/13 = week 37 / year 2013) which usually is also the delivery date; this date is considered as warranty reference;
- 6) **Serial number:** is the number referred to the unit and assures the exact identification of the product, even after a long time; it must be given as reference when ordering spare parts for the unit.

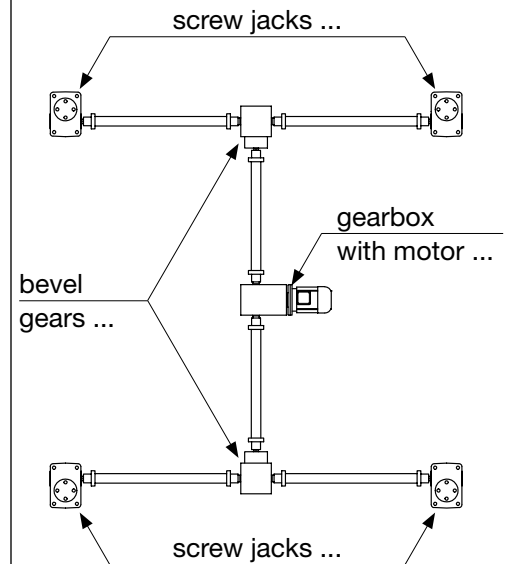
Company: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Contact person: \_\_\_\_\_ Position: \_\_\_\_\_  
 Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_ E-mail: \_\_\_\_\_

APPLICATION: \_\_\_\_\_

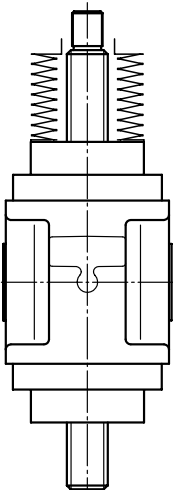
SKETCH - APPLICATION LAYOUT - plane view



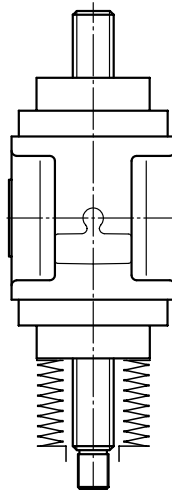
Example



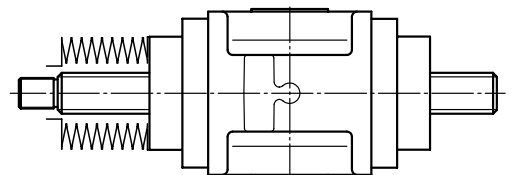
Side view of a single screw jack



UPWARD MOUNTING



DOWNWARD MOUNTING



HORIZONTAL MOUNTING

4

NUMBER OF SCREW JACKS PER APPLICATION: \_\_\_\_\_

STROKE REQUIRED: \_\_\_\_\_ mm      ACME SCREW LENGTH: \_\_\_\_\_ mm

**TOTAL STATIC** LOAD FOR APPLICATION:      PULL: \_\_\_\_\_ daN      PUSH: \_\_\_\_\_ daN

**MAX. STATIC** LOAD FOR **SINGLE SCREW JACK**:      PULL: \_\_\_\_\_ daN      PUSH: \_\_\_\_\_ daN      at STROKE \_\_\_\_\_ mm

SCREW JACK MOUNTING:

- Euler I (screw jack housing firmly fixed to the base – free travelling acme screw end)
- Euler II (screw jack housing and travelling acme screw end fixed to pivoting supports)
- Euler III (screw jack housing firmly fixed to the base – guided travelling acme screw end)

SCREW JACK  SUBJECTED TO VIBRATIONS     NOT SUBJECTED TO VIBRATIONS

**TOTAL DYNAMIC** LOAD FOR APPLICATION:      PULL: \_\_\_\_\_ daN      PUSH: \_\_\_\_\_ daN

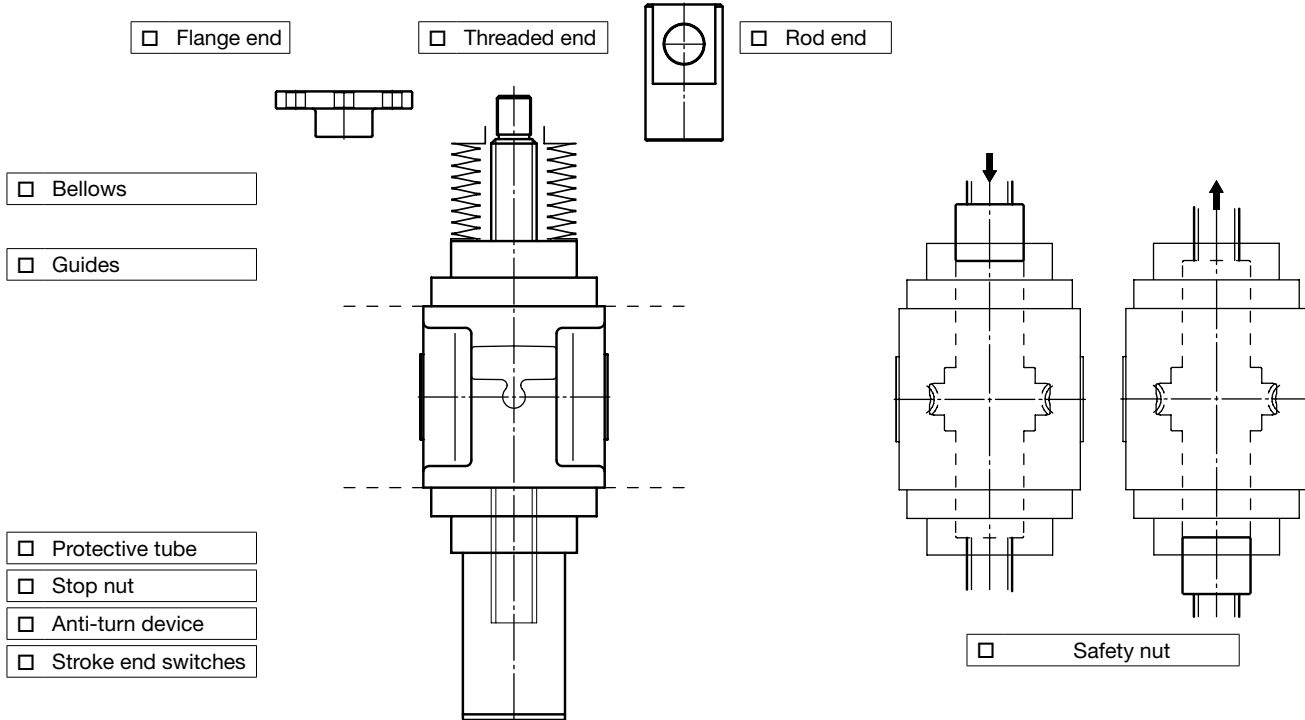
**MAX. DYNAMIC** LOAD FOR **SINGLE SCREW JACK**:      PULL: \_\_\_\_\_ daN      PUSH: \_\_\_\_\_ daN      at STROKE \_\_\_\_\_ mm

LINEAR SPEED REQUIRED: \_\_\_\_\_ mm/s    \_\_\_\_\_ mm/min    \_\_\_\_\_ m/min      SINGLE STROKE PERFORMING TIME: \_\_\_\_ s

DUTY CYCLE:      \_\_\_\_\_ cycles / hour      \_\_\_\_\_ working hours / day      Notes: \_\_\_\_\_

LIFETIME REQUIRED:      \_\_\_\_\_ cycles      \_\_\_\_\_ clock hours      \_\_\_\_\_ calendar days      Notes: \_\_\_\_\_

ENVIRONMENT:      TEMPERATURE \_\_\_\_\_ °C     DUST      HUMIDITY \_\_\_\_ %      POLLUTER \_\_\_\_\_



Suggestions based on previous experiences of similar application: \_\_\_\_\_

Notes: \_\_\_\_\_

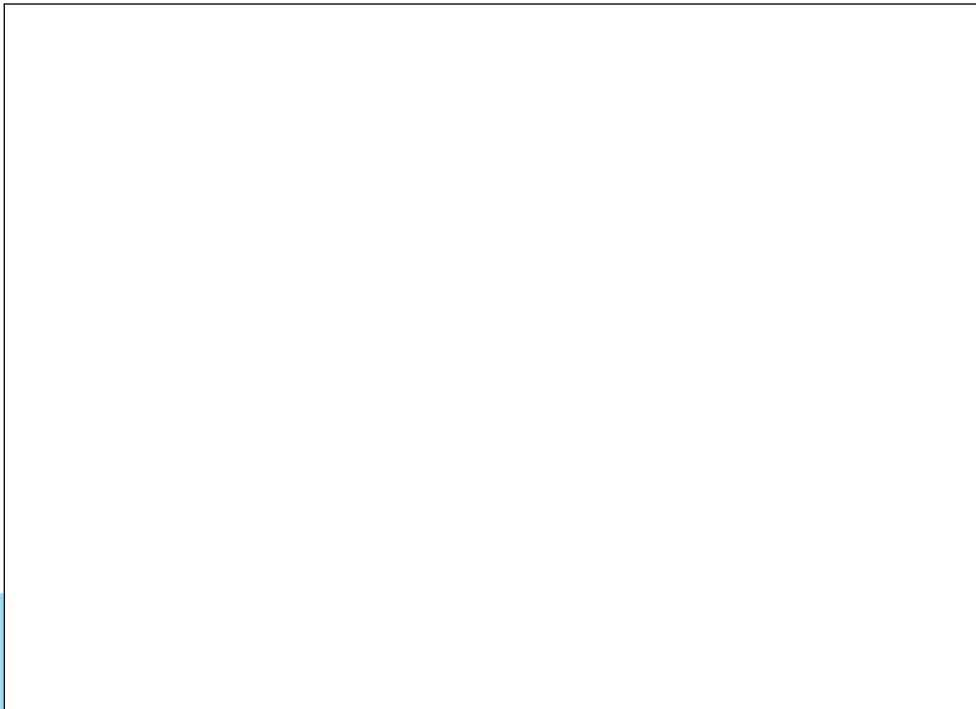
Number of screw jacks required: \_\_\_\_\_



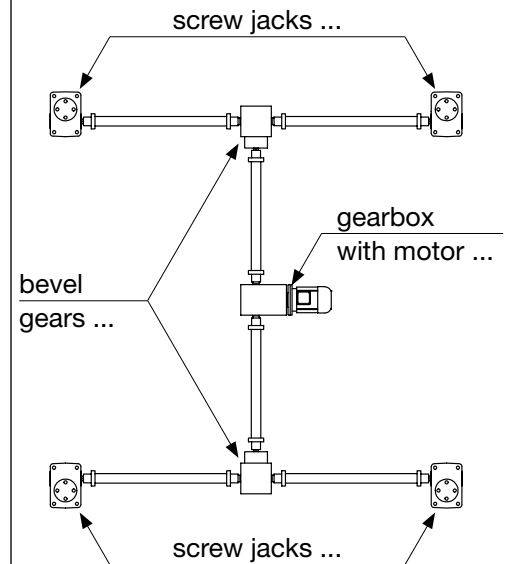
Company: \_\_\_\_\_  
 Address: \_\_\_\_\_  
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 Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_ E-mail: \_\_\_\_\_

APPLICATION: \_\_\_\_\_

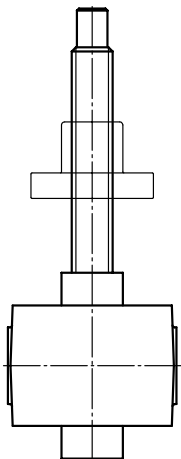
SKETCH - APPLICATION LAYOUT – plane view



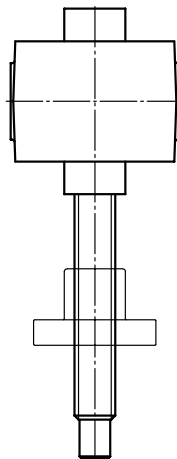
Example



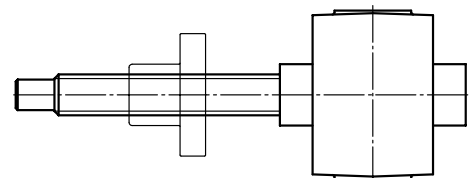
Side view of a single screw jack



UPWARD MOUNTING



DOWNWARD MOUNTING



HORIZONTAL MOUNTING

4

NUMBER OF SCREW JACKS PER APPLICATION: \_\_\_\_\_

STROKE REQUIRED: \_\_\_\_\_ mm      ACME SCREW LENGTH: \_\_\_\_\_ mm

**TOTAL STATIC** LOAD FOR APPLICATION:      PULL: \_\_\_\_\_ daN      PUSH: \_\_\_\_\_ daN

**MAX. STATIC** LOAD FOR **SINGLE SCREW JACK**:      PULL: \_\_\_\_\_ daN      PUSH: \_\_\_\_\_ daN      at STROKE \_\_\_\_\_ mm

SCREW JACK MOUNTING:

- Euler I (screw jack housing firmly fixed to the base – free travelling nut)
- Euler II (screw jack housing and travelling nut fixed to pivoting supports)
- Euler III (screw jack housing firmly fixed to the base – guided travelling nut)

SCREW JACK  SUBJECTED TO VIBRATIONS     NOT SUBJECTED TO VIBRATIONS

**TOTAL DYNAMIC** LOAD FOR APPLICATION:      PULL: \_\_\_\_\_ daN      PUSH: \_\_\_\_\_ daN

**MAX. DYNAMIC** LOAD FOR **SINGLE SCREW JACK**:      PULL: \_\_\_\_\_ daN      PUSH: \_\_\_\_\_ daN      at STROKE \_\_\_\_\_ mm

LINEAR SPEED REQUIRED: \_\_\_\_\_ mm/s    \_\_\_\_\_ mm/min    \_\_\_\_\_ m/min      SINGLE STROKE PERFORMING TIME: \_\_\_\_ s

DUTY CYCLE:      \_\_\_\_\_ cycles / hour      \_\_\_\_\_ working hours / day      Notes: \_\_\_\_\_

LIFETIME REQUIRED:      \_\_\_\_\_ cycles      \_\_\_\_\_ clock hours      \_\_\_\_\_ calendar days      Notes: \_\_\_\_\_

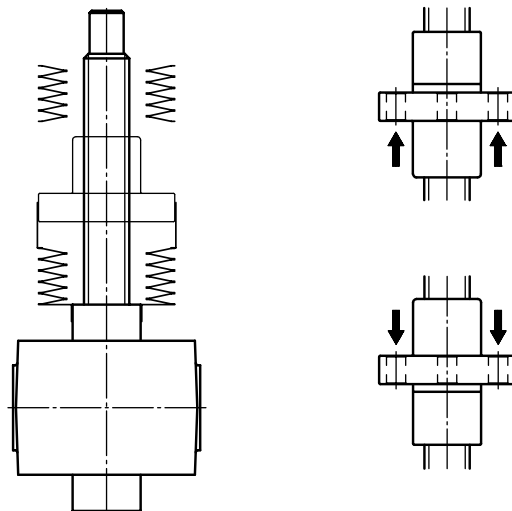
ENVIRONMENT:      TEMPERATURE \_\_\_\_\_ °C     DUST      HUMIDITY \_\_\_\_ %      POLLUTER \_\_\_\_\_

Cylindrical end

Bellows

Bellows

Safety nut



Suggestions based on previous experiences of similar application: \_\_\_\_\_

Notes: \_\_\_\_\_

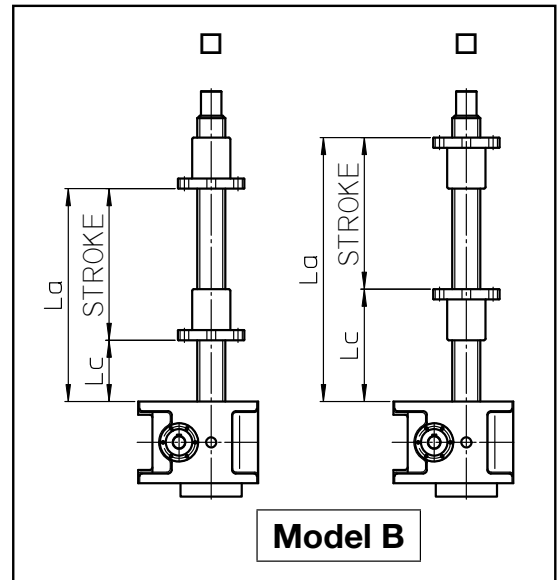
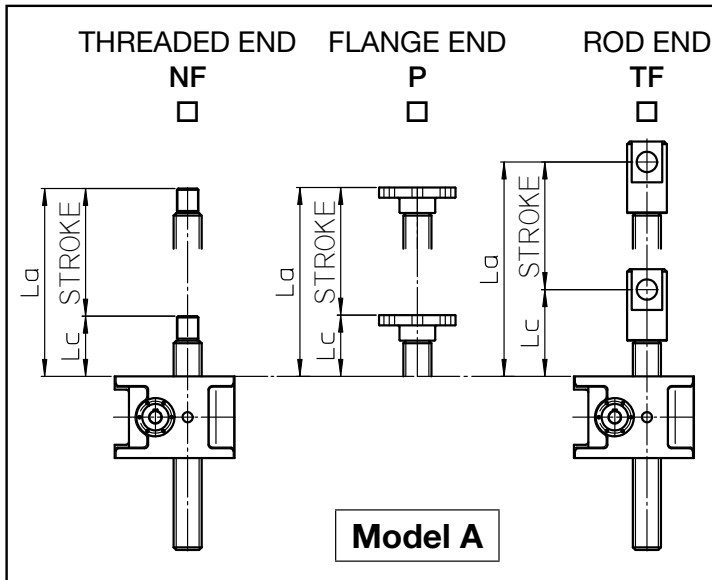
Number of screw jacks required: \_\_\_\_\_



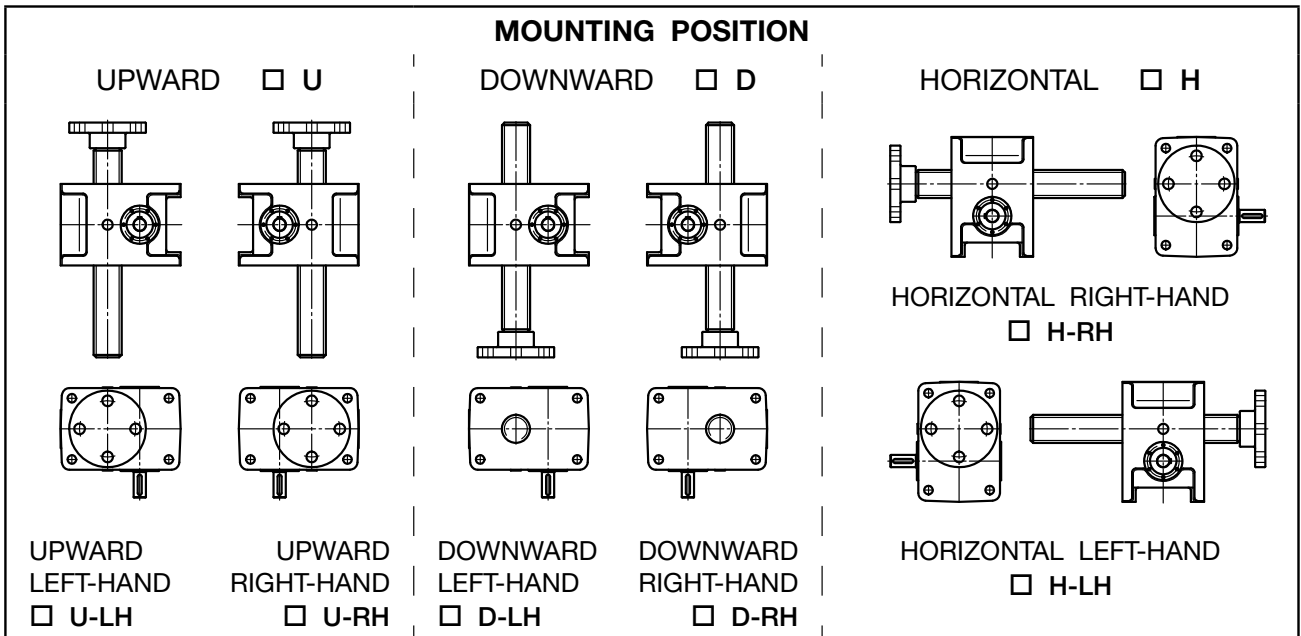
PRODUCT: \_\_\_\_\_

STROKE: \_\_\_\_\_ ACME SCREW: \_\_\_\_\_ BALL SCREW: \_\_\_\_\_

ACCESSORIES: \_\_\_\_\_



SAFETY NUT Model A:  MSA Model B:  SBC



**SCREW JACKS MAIN DIMENSIONS**

RETRACTED JACK LENGTH:  $L_c =$  \_\_\_\_\_ mm

EXTENDED JACK LENGTH:  $L_a =$  \_\_\_\_\_ mm

MAX. WORKING STROKE ( $L_a - L_c$ ):  $C =$  \_\_\_\_\_ mm

**Servomech. QMS**

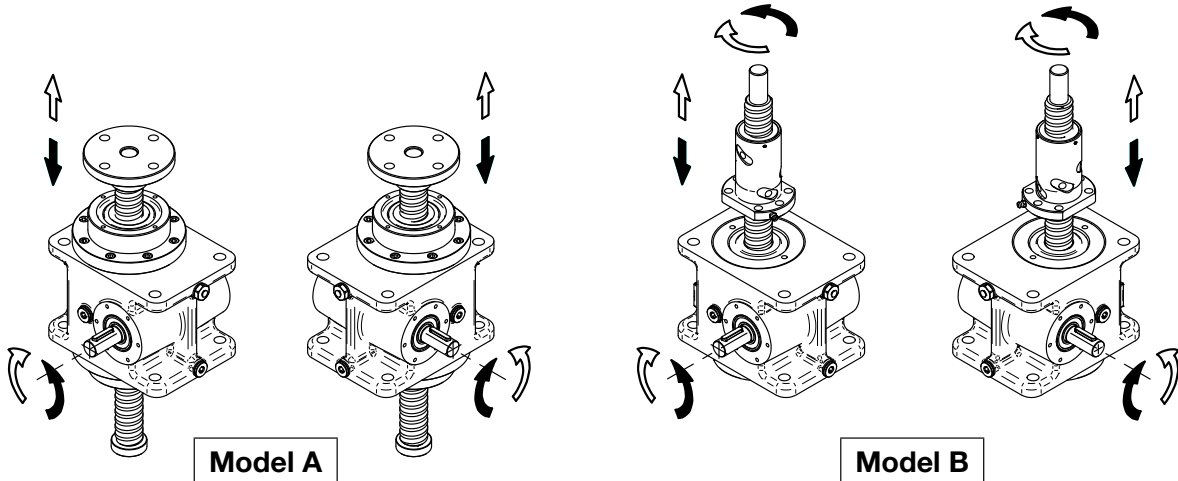
**PASSED**

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

4

**INPUT SHAFT ROTATION - SCREW OR NUT LIFTING DIRECTION**



**WARNING!**

1. The values  $L_c$  (retracted jack length),  $L_a$  (extended jack length) and  $C$  (max. working stroke) are the extreme permissible values.
2. For a correct installation and commissioning of the screw jack see the Installation, Use and Maintenance Manual.
3. The following operations must be done **BEFORE** commissioning:
  - ensure that the breather plug is in the highest position respect to all other plugs;
  - lubricate acme or ball screw - nut;
  - connect the stroke limit device to the electric control circuit of the screw jack or lifting system;
  - check the lifting direction of the acme or ball screw (Model A) or nut (Model B).

NOTE: \_\_\_\_\_

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\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

WORMGEAR LUBRICANT: \_\_\_\_\_

SCREW - NUT LUBRICANT: \_\_\_\_\_

SERVOMECH s.p.a.  
Via Monaldo Calari, 1 40011 Anzola Emilia (BOLOGNA) ITALY  
Phone: + 39 051 6501711 Fax: + 39 051 734574 e-mail: info@servomech.it

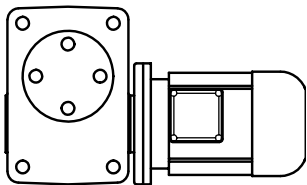
## General information

### 4.6 Lifting systems

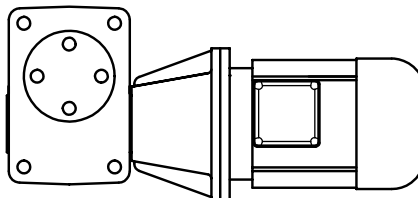
SERVOMECH can support customers by selecting the complete drive solution for screw jack systems:

- screw jack with flange for motor mounting or with input shaft
- AC 3-phase or 1-phase electric motor, DC electric motors, servomotors
- inverter drives
- screw jacks with control of axial position and linear speed
- bevel gears
- connecting transmission shafts and couplings
- general technical support for:
  - screw jack selection
  - life estimation and calculation
  - lay-out system drawings

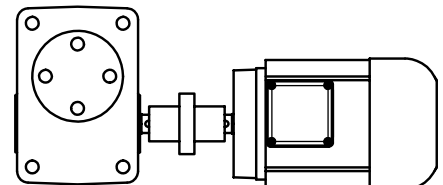
#### Motor-driven screw jacks (all series)



Screw jack  
with plug-in  
IEC flange and hollow input shaft



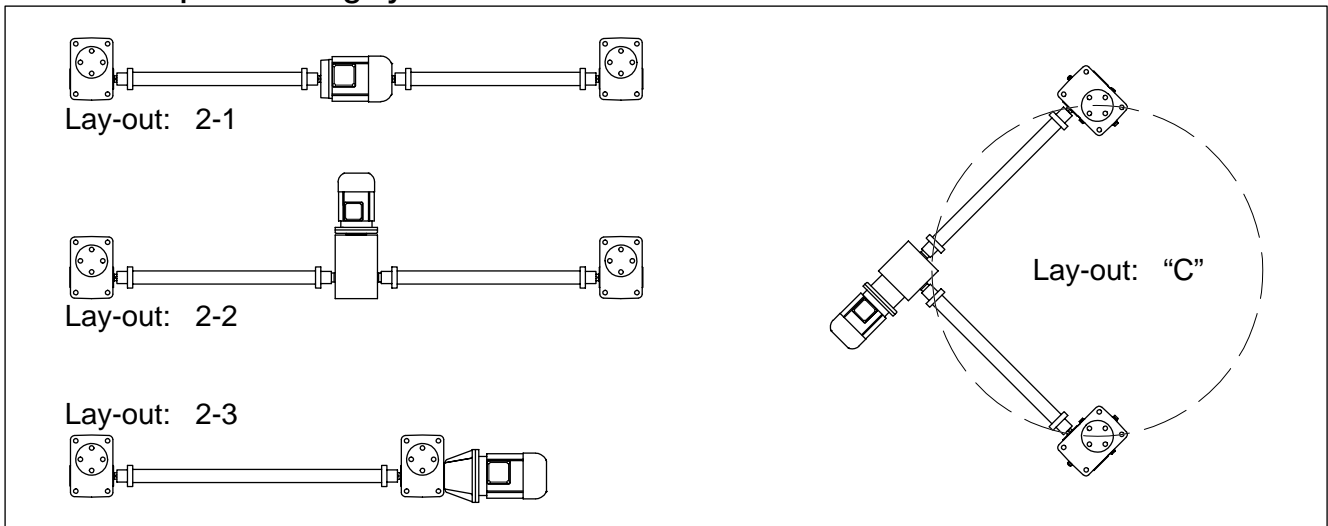
Screw jack  
with IEC bell-housing and coupling



Screw jack with single input shaft  
coupling  
IEC B3 motor

#### Screw jacks MA BS Series and SJ BS Series

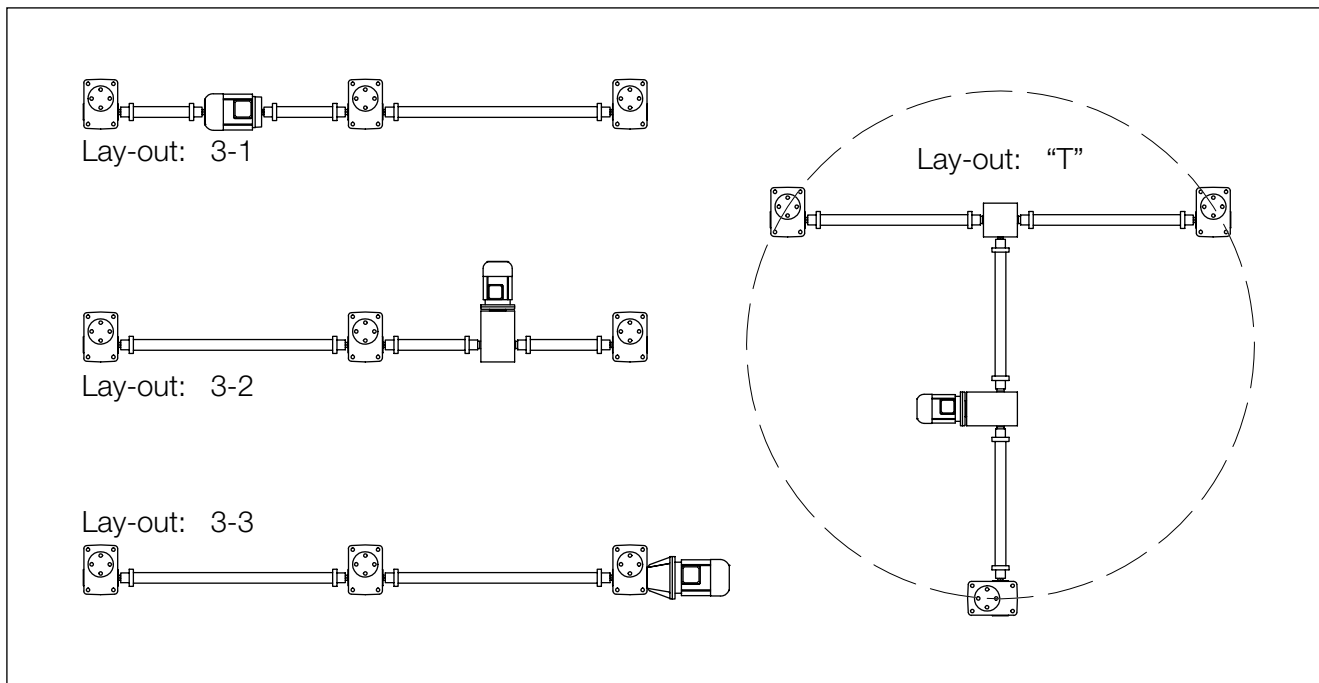
LAY-OUT: 2 points lifting system



## 4.6 Lifting systems

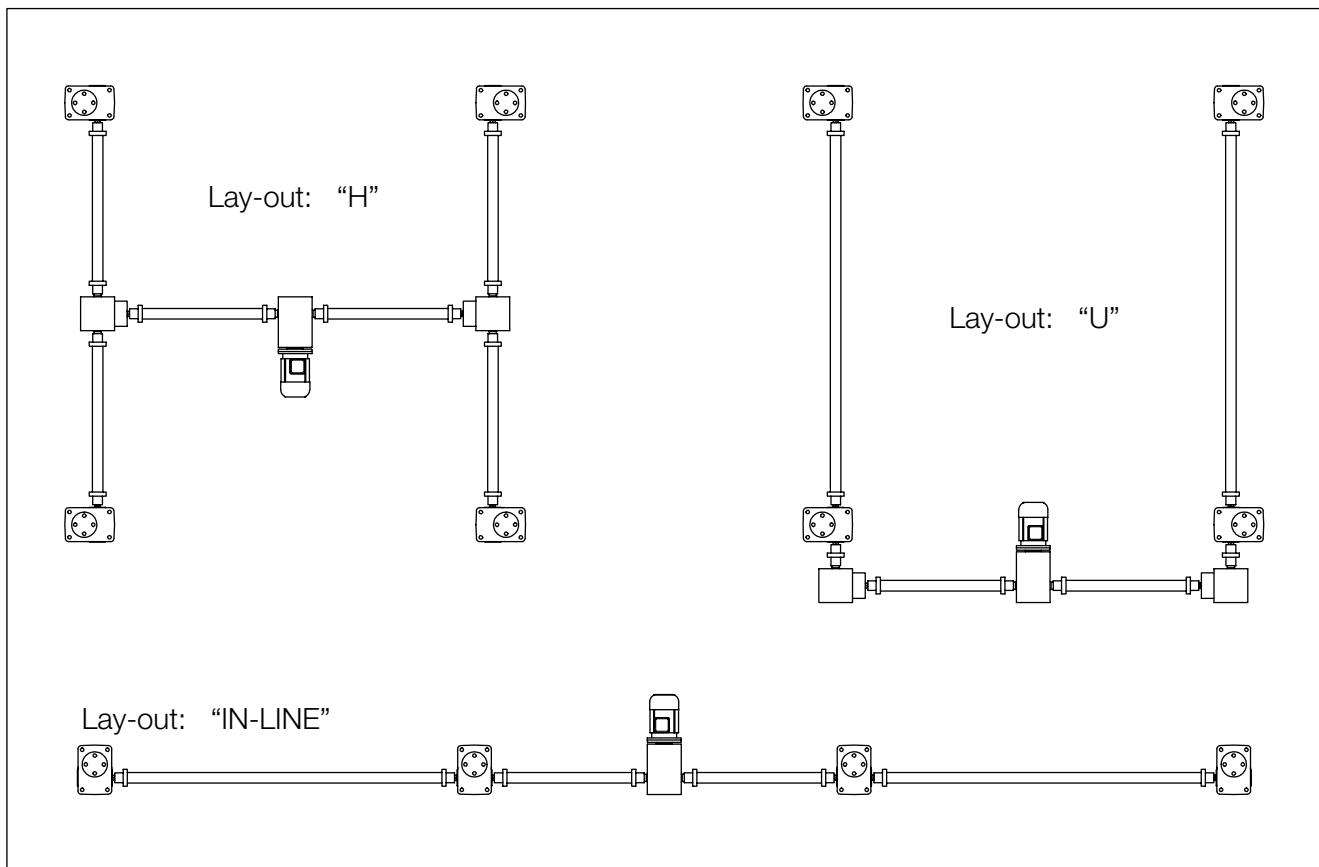
### Screw jacks MA BS Series and SJ BS Series

LAY-OUT: 3 points lifting system



### Screw jacks MA BS Series and SJ BS Series

LAY-OUT: 4 points lifting system

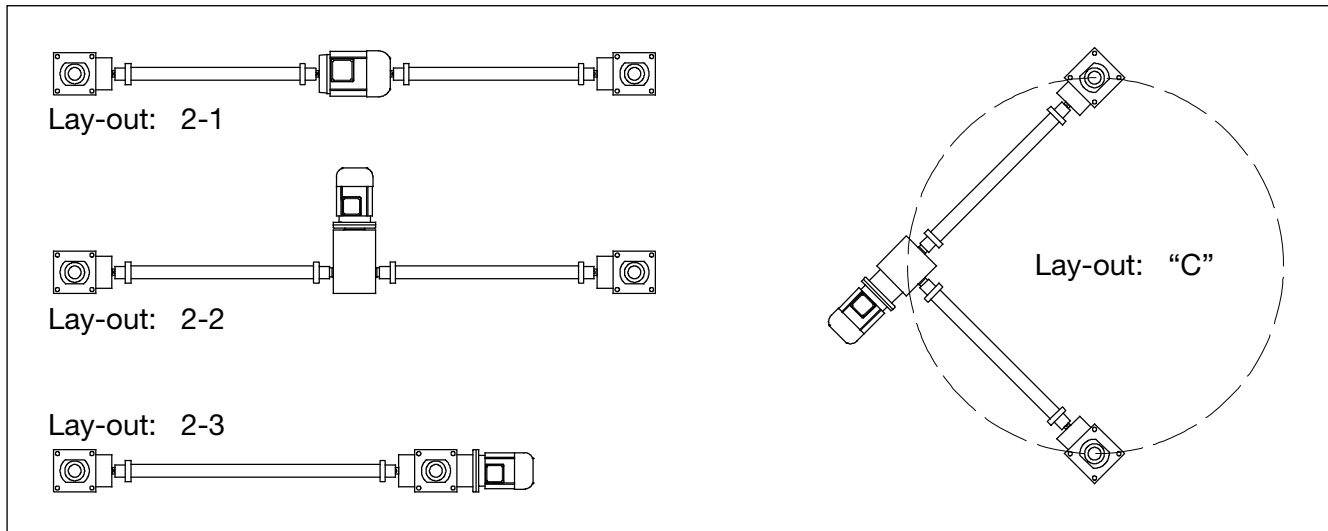


## General information

### 4.6 Lifting systems

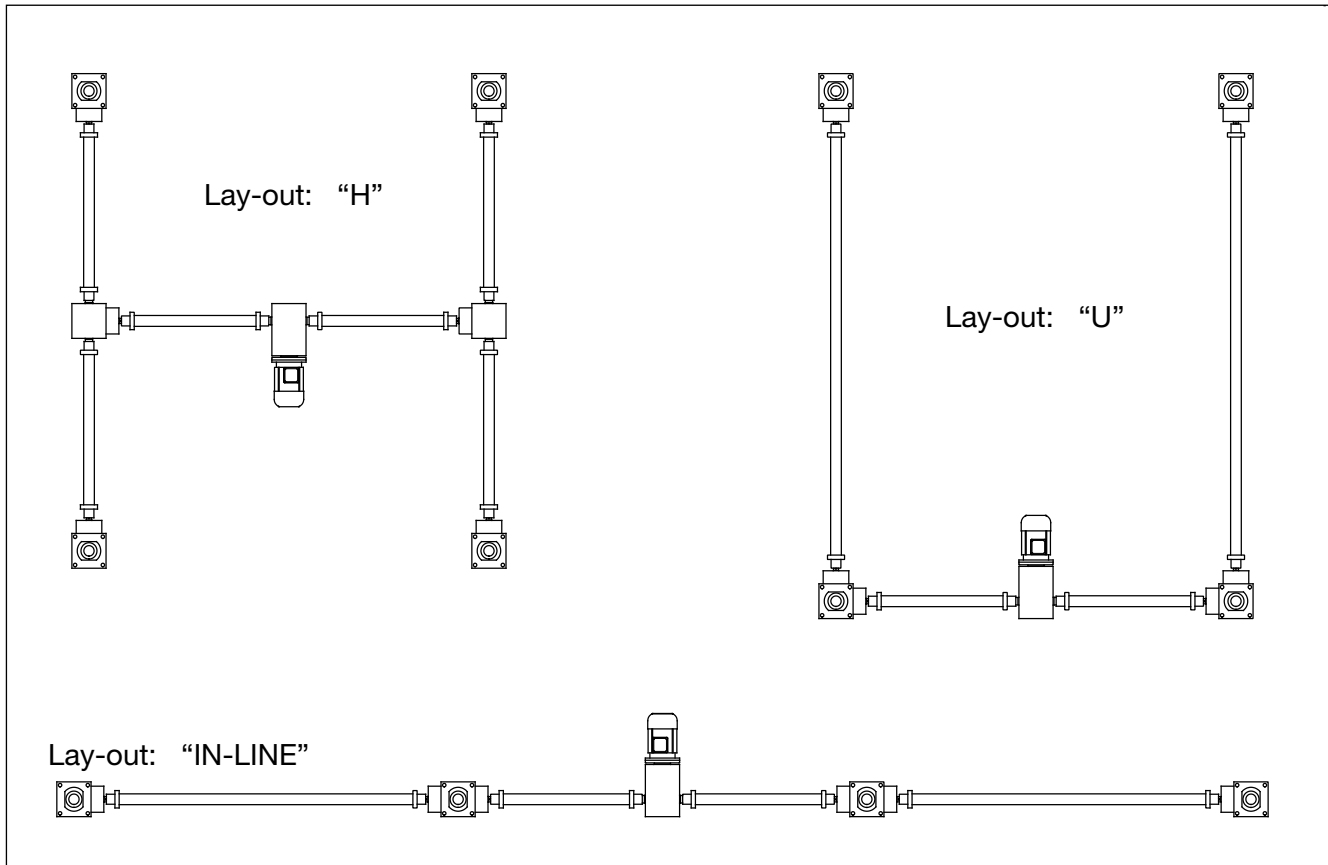
#### Screw jacks HS Series

LAY-OUT: 2 points lifting system



#### Screw jacks HS Series

LAY-OUT: 4 points lifting system



4