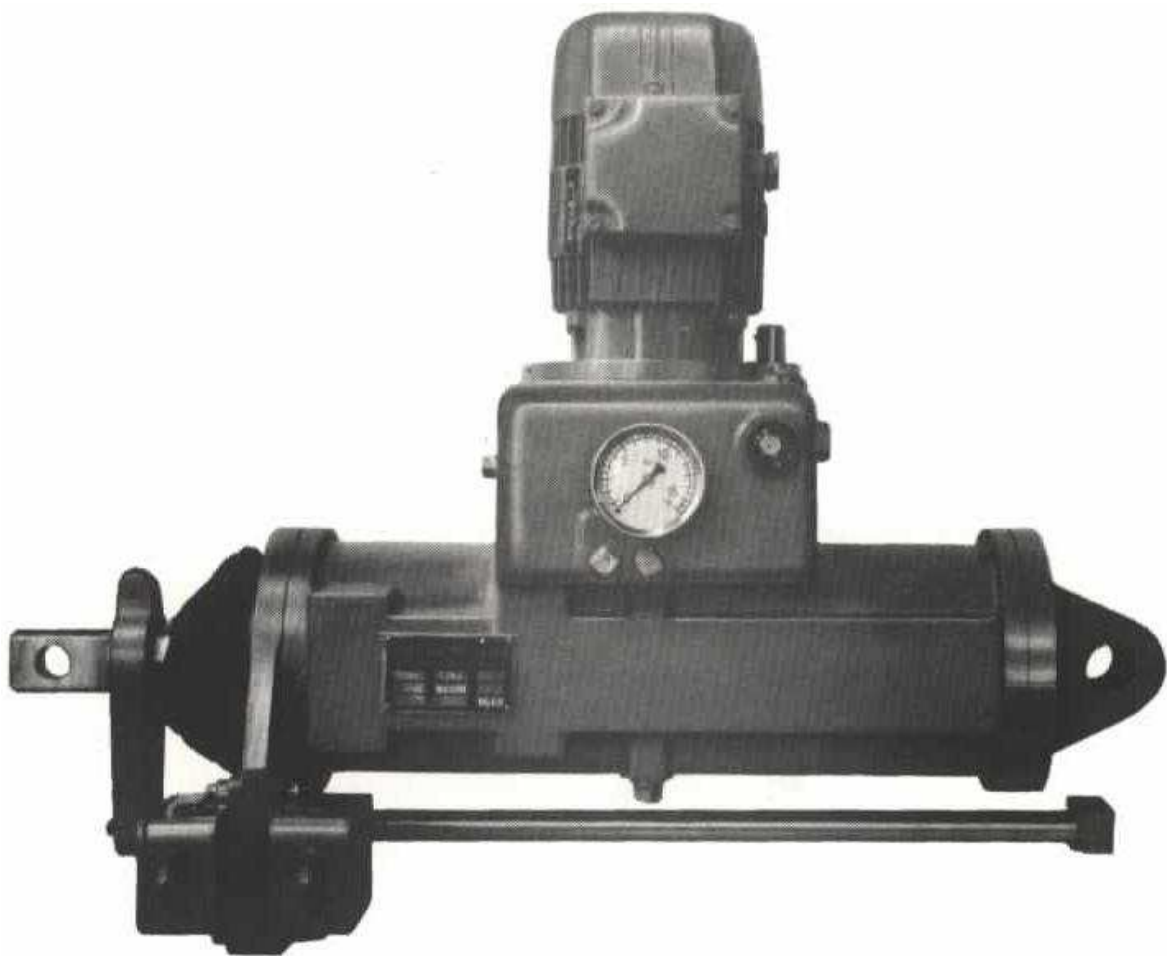




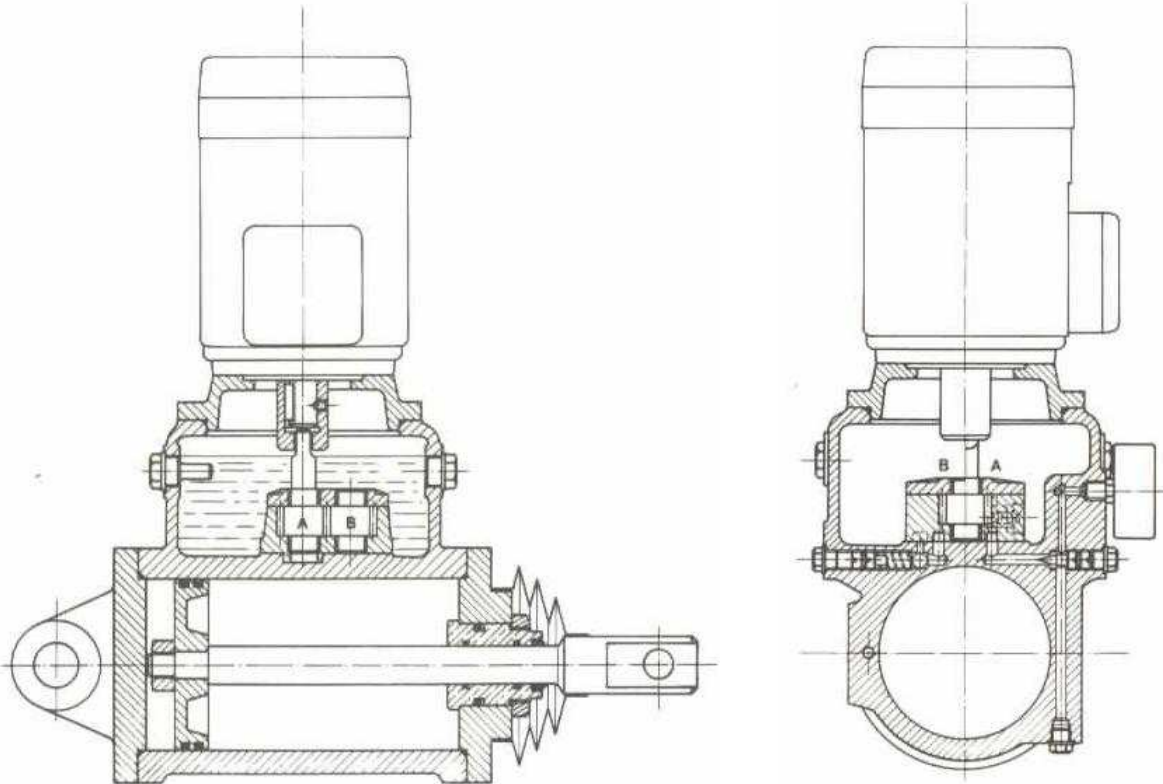
automatic valve



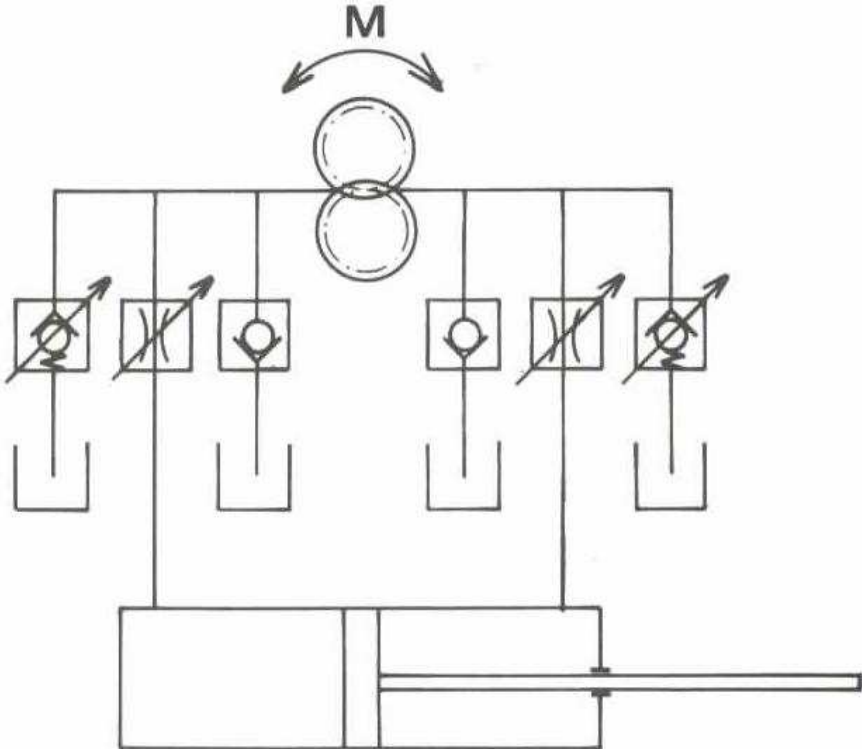
**MOTORIZED JACK
"SERVOMATIC"**

GENERAL DESCRIPTION

1. WORKING DIAGRAM



2. Hydraulic diagram



GENERAL DESCRIPTION

3. WORKING

With electricity, the motor begins to turn and drive the gear pump in the oil case. The pump (turning in the right direction) yields and drives back oil. When the oil is put to the piston left side, it moving to the right and providing at the stem end a pushing force equals to the multiplication between the pressure and the piston diameter (without the friction force). An inhaling valve is positioned to the right and left pump side.

During the moving to the right, the piston ejects the oil in front of it and pushes it to the inhaling pump side.

From motor direction changing the pulling force is changed. Now the resulting force is a pulling force and not a pushing.

During the pulling or pushing movement, the pump continues to turn and the pushing force or pulling force doesn't disappear. The pressure augmentation which should arise at the end way is evacuated through an adjustable pressure restricting valve.

Required oil – Shell Clavus OIL 17 or equivalent.

Engler viscosity - 5,2 at 20°C
 - 1,9 at 50°C

CONSTRUCTION MATERIALS

Standard type "SERVOMATIC" jack are build with the following materials:

- **Single part case-cylinder pack** – cast iron Ft 25 D with pearly structure, grinded cylinder. Case with two filling orifices, draining orifices, one snaffle and two oil level monitoring.
- **Piston** – hard galvanized stainless steel, guiding from the outside in a bronze socket.
- **Front and back estate** – molybdenum cast iron Ft 25 D with an emptying screw.
- **Electric motor** – 220V-380V – 50Hz – 1500 t/min – 0,27 to 3 KW – E type – IP44 protection – cast iron building.
- **Oil pump** – body and cover in cast iron Ft 25 D with pearly structure. Treated steel gears with teeth profile modified, running on smooth levels "DU" type.

ORIGINAL CHARACTERISTICS

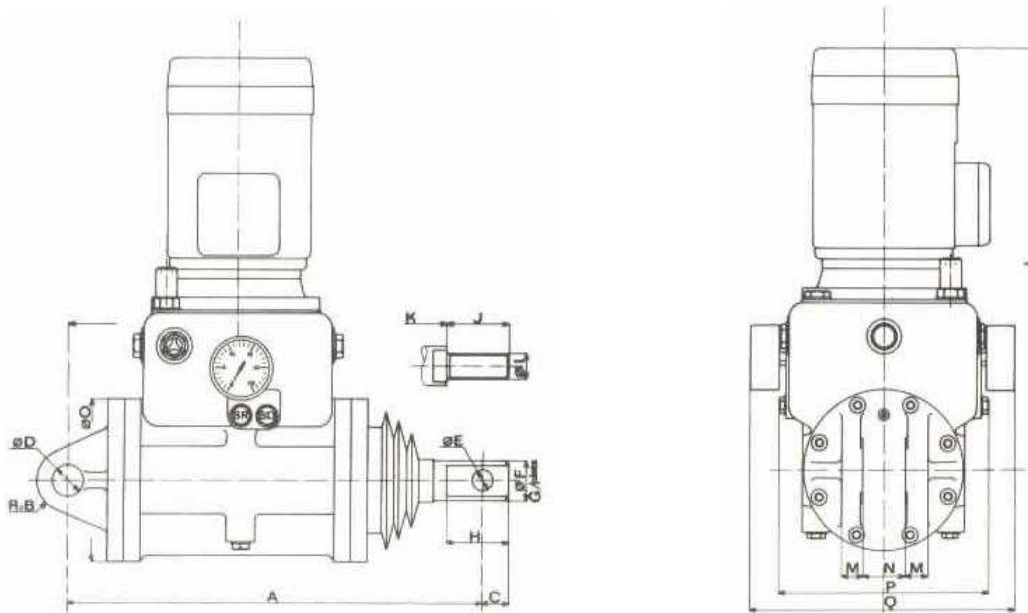
1. The adjustable pressure restricting valve – normal working pressure: 10 bars.
This disposition allows:
 - a. To adjust the SERVOMATIC force to any value between zero and the maximal jack force.
 - b. To adjust the pushing force or pulling at different values if it's required.
2. The bringing oil pipes have a strangling adjustable screw, it control the translation speed of the stem from zero to the maximum value
3. Two manometers in communication with each cylinder sides can control the driving back pressure and watch the current force provided by the jack, because a 10 bars pressure corresponds to a 1000 daN pushing force in 1000 type, at 2000daN in 2000 type, and 4000 daN in 4000 type.
4. If an obstacle block the jack movement, the pump continue to turn and yield in a closed circuit through the pressure restricting valve, with any damages to the machine.

JACK ATTACHING

Type	Outing (mm)	Force in daN	Translation speed (m/min)	Motor power at 1500 t/min in kW
1150	150	1000	0,5	0,37
1250	250		1	0,75
1350	350			
1400	400			
2200	200	2000	0,5	0,75
2250	250		1	1,5
2300	300			
2350	350			
2400	400			
2450	450			
4300	300	4000	0,5	1,5
4400	400		1	3
4500	500			

For outings, speeds, or forces higher than theses one, please contact us.

STANDARD TYPE DIMENSIONS

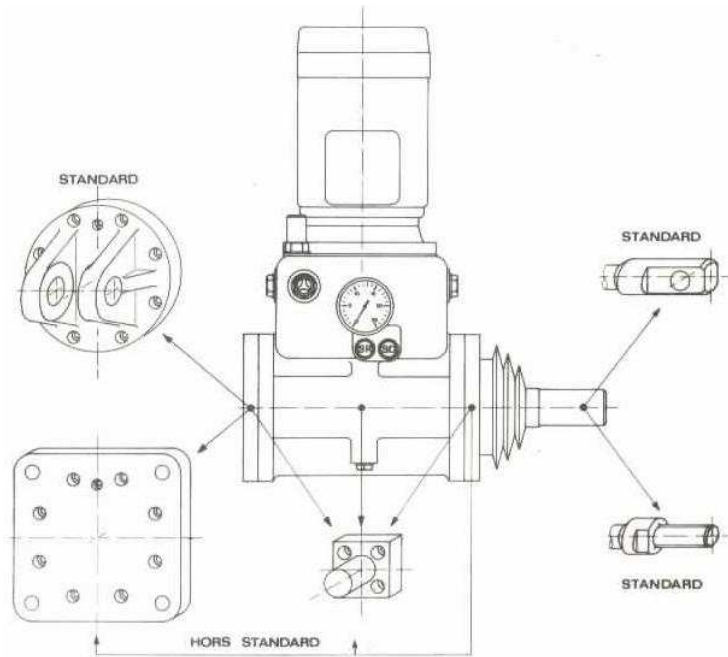


Type	A	B	C	D	E	F	G	H	I	J	K	L	L	M	N	O	P	Q	weight	oil
1150	400	30	25	30	20	38	23	60	M 24x2	60	365	410	410	20	42	160	200	260	58	4
1250	510	30	25	30	20	38	23	60	M 24x2	30	475	410	410	20	42	160	200	260	65	5
1350	620	30	25	30	20	38	23	60	M 24x2	60	585	410	410	20	42	160	200	260	72	6
1400	670	30	25	30	20	38	23	60	M 24x2	60	635	410	410	20	42	160	200	260	76	6,5
2200	480	30	30	35	25	48	30	70	M 32x2	70	440	460	530	25	42	200	270	320	94	10
2250	530	40	30	35	25	48	30	70	M 32x2	70	490	460	530	25	42	200	270	320	106	12
2300	595	40	30	35	25	48	30	70	M 32x2	70	555	460	530	25	42	200	270	320	106	12
2350	645	40	30	35	25	48	30	70	M 32x2	70	605	460	530	25	42	200	270	320	112	13
2400	710	40	30	35	25	48	30	70	M 32x2	70	605	460	530	25	42	200	270	320	120	14
2450	760	40	30	35	25	48	30	70	M 32x2	70	720	460	530	25	42	200	270	320	128	15
4300	700	50	40	50	30	58	40	80	M 42x2,5	80	660	590	610	31	42	275	340	390	200	25
4400	810	50	40	50	30	58	40	80	M 42x2,5	80	770	590	610	31	42	275	340	390	220	29
4500	920	50	40	50	30	58	40	80	M 42x2,5	80	880	590	610	31	42	275	340	390	240	33

Translation speed : 0,5 m/mm

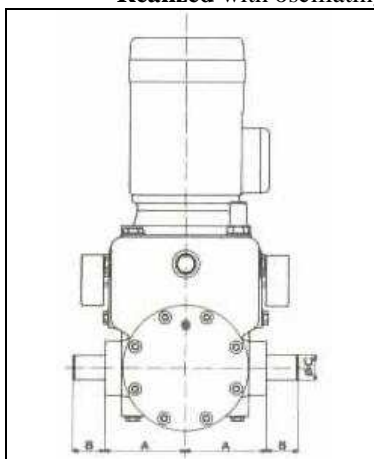
Translation speed : 1 m/mm

JACK ATTACHING



1. BACK ATTACH

- **Realized** with oscillating stands.

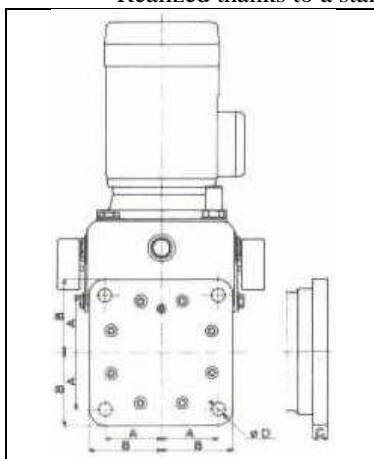


- By a back estate with a hole in order to put an axis. **It's the standard installation.** Dimensions of this installation are given in the general dimension table.
- By two link pin located at the two jack sides: link pins are in steel, centred encasing by and attached by 4 screws. The link pin position can change in the longwise direction. They might be a part of the back or front estate of the jack.

Link pin attaching:

Type	A	B	C
1000	100	40	30
2000	120	50	35
4000	160	60	40

- **Realized** thanks to a standing stand.



- By a plate used as a back or front estate – the plate is a square, with four attaching holes in corners.

Square plate attaching:

Type	A	B	C	D
1000	70	90	18	16
2000	90	115	20	18
4000	120	150	24	22

JACK ATTACHING

2. FRONT YOKING

The front yoking is realized with the end of the jack stem.

- Eyecup connector.
- Threaded connector.

These are standard installation. The stem connector dimensions are given in the general dimension table.

ALLOWED POSITIONS

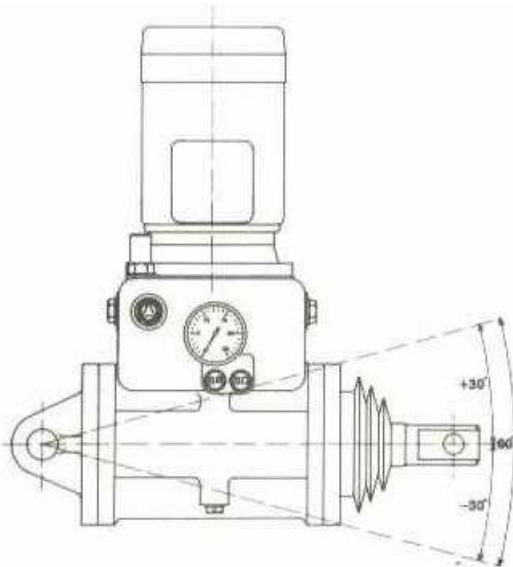
1. JACK ATTACH

In order to work with efficiently the SERVOMATIC have to be positioned with the pump always immersed in oil. The installation with the motor pointing to the bottom couldn't be allowed. The installation with the motor pointing to the top may be preferred, it's this position which creates the best pump immersion as we can note with the cut machine diagram.

The horizontal installation is possible too; the jack stem could point to the top or the bottom or be placed horizontally.

2. WORKING JACK OSCILLATION IN VERTICAL PLANE

Vertical motor

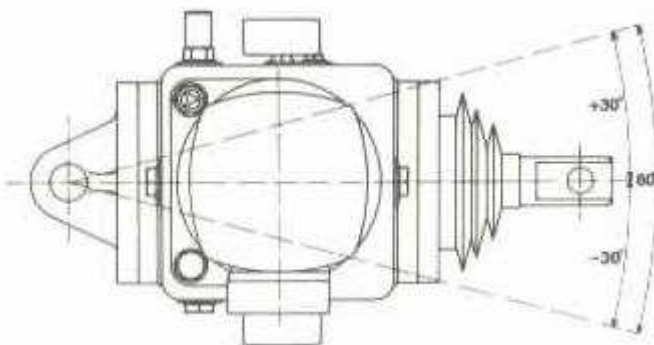


It is important to verify that in all cases the SERVOMATIC oscillation does NEVER overpass 30°, in the case of the oscillation modify the oil level in the tank, if the oscillation is also in a vertical plane. If the oscillation is on the horizontal plane thus the amplitude is not important because the oil level in the tank isn't modify by the machine oscillation.

The oscillation eyecup could be turn by 90° - the oscillation axis will be the same as motor axis.

IMPORTANT

Horizontal motor



It is really essential to provide us, if it is possible, a schema with following information:

- Average position of the SERVOMATIC
- Motor position (the motor axis)
- Amplitude oscillation movement and plane oscillation if it exists.
- Jack stem direction (to the top, bottom, or horizontal)

Theses information's are needed to the machine mounting.

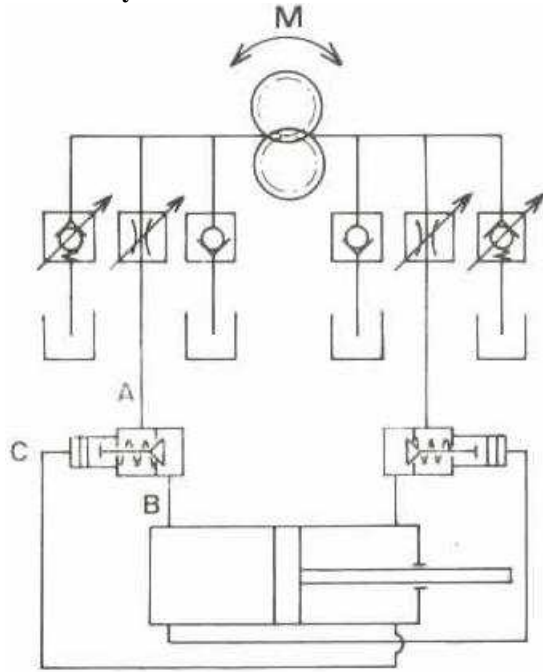
APPLICATION EXAMPLES

1. JACK STEM HYDRAULIC LOCKING UNITY

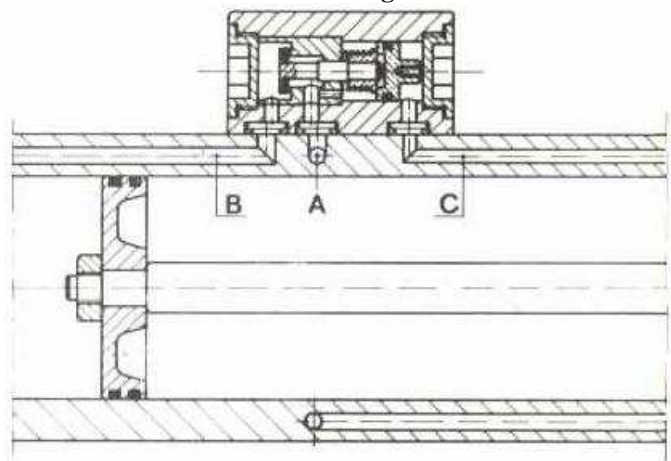
The hydraulic locking system is called non-return is indispensable when, the motor off, the stem isn't equilibrated and doesn't stay naturally in the same position.

The non-return is realized with a hydraulic driving valve.

- **Hydraulic schema**



- **Working schema**

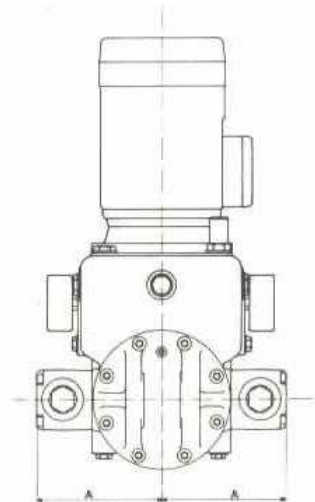


- **working**

When the pump yield to A, the valve is opening due to the oil pressure, it goes to B in the cylinder left side and pushes the stem out of the jack. When the pump is stopping, the valve is closing with the pulling spring; the oil contained in the jack cylinder left side cannot go back – it is locked in this position.

When the pump turn in the reverse direction (stem returning) a pressure in the right side chamber is required – this pressure is provided by the C pipe to the piston – the oil open the valve and it can goes out of the left side cylinder and so return in the stem.

- **Overall dimensions**



Non-return

Type	A
1000	145
2000	180
4000	230

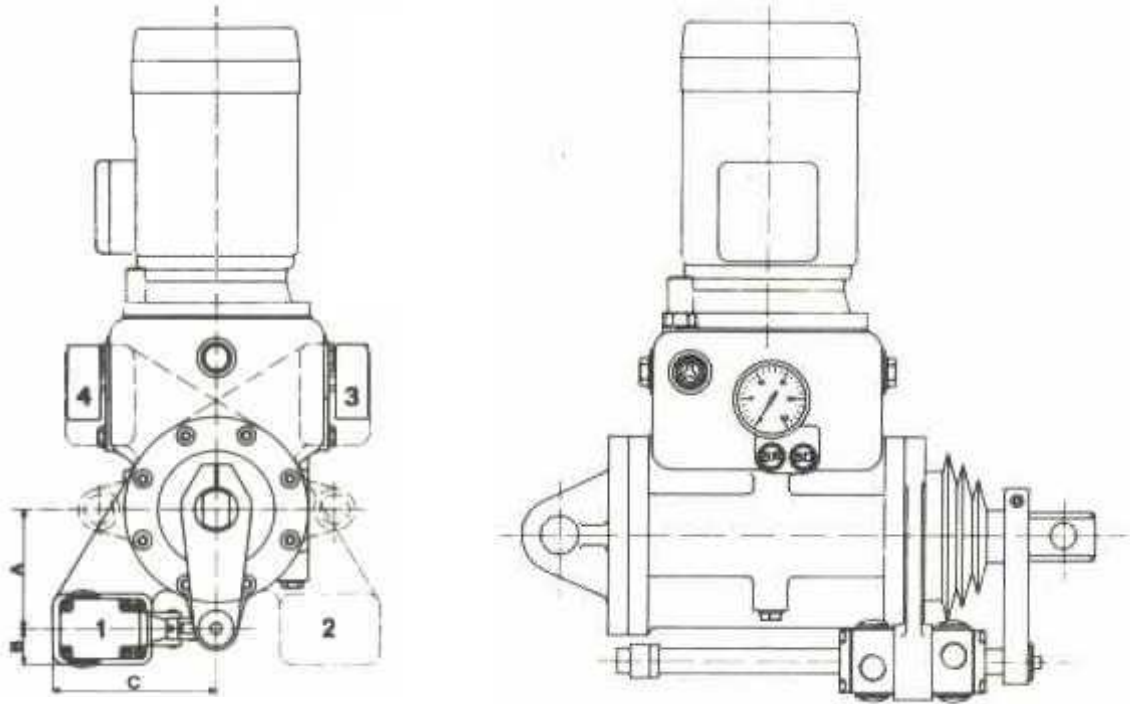
APPLICATION EXAMPLES

2. END-WAY SWITCHES

When an object commanded by the SERVOMATIC is bring to a stop position during enough long times, it is advised to integrate end-way switches to stop the motor when the movement is accomplished. But the commanded object has to stay itself in the final position to stop the pump in the end-way. In the reverse case, the SERVOMATIC must be equipped with a hydraulic locking system described upper.

Switches can be :

- A mechanical command by wedges in the two directions:



The IFC positions 1 and 2 are standard

The IFC positions 3 and 4 are out of standard, are impossible if the jack is equipped with a stem locking hydraulic system, a link pin attaching, or both.

I. F. C.

Type	A	B	C
1000	100	30	140
2000	120	30	140
4000	170	30	140

- **With temporized hydrolic push-button command, for the two directions.**

NOTA: The previous page jack shows a machine with mechanical command end-way switches.

3. SPECIAL ELECTRICAL MOTOR

- Non-bursting electrical motors
- Special type electrical motors
- 500V AC electrical motors
- DC electrical motors

APPLICATION EXAMPLES

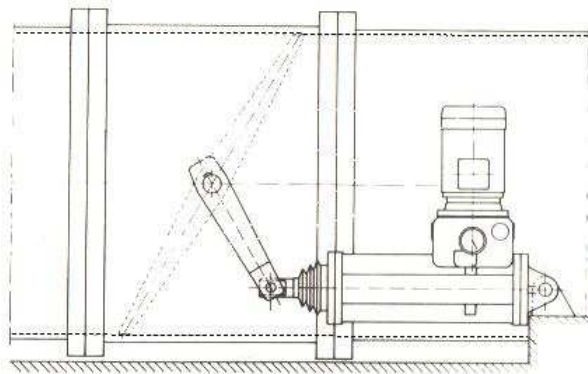
We can realize on demand after studying, jacks:

- extended outing to 1400 m/m
- reinforced, 2400 HBL
- equipped with by-pass valve. These one permit to one or the other movement (stem goes inside or outside) to be executed automatically with the weight which is moving. The movement is obtained without action of the motor but with the switching off or on of the by-pass valve. This system could be combined with non-return system and end-way switches.

1. STANDARDS JACKS

BUTTERFLY COMMAND

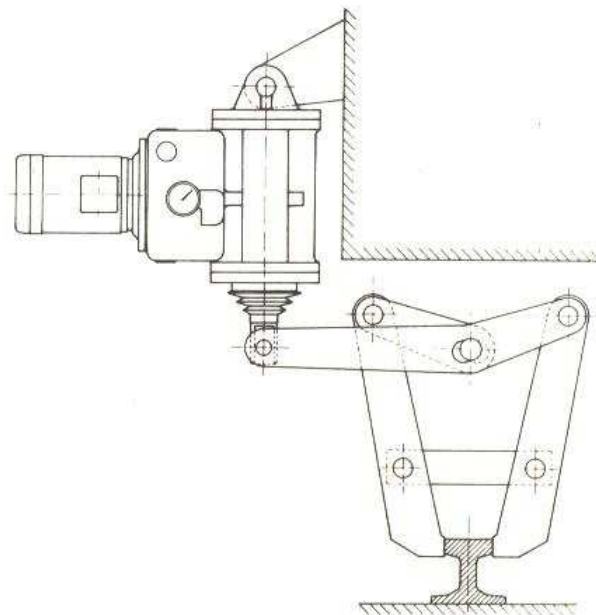
The SERVOMATIC maintain the butterfly in the “open” or “closed” position according to the direction of the motor. The butterfly is equilibrated; the SERVOMATIC motor could also be stopped at the end by the end-way switches, with mechanical control to the opening and hydraulic control to the closing.



ROLLING BRIDGE IMMOBILISATION

According to the motor direction, the SERVOMATIC maintain the pliers system in the open or closed position.

This installation is created to equip rolling bridges to assure the immobilisation in translation.



APPLICATION EXAMPLES

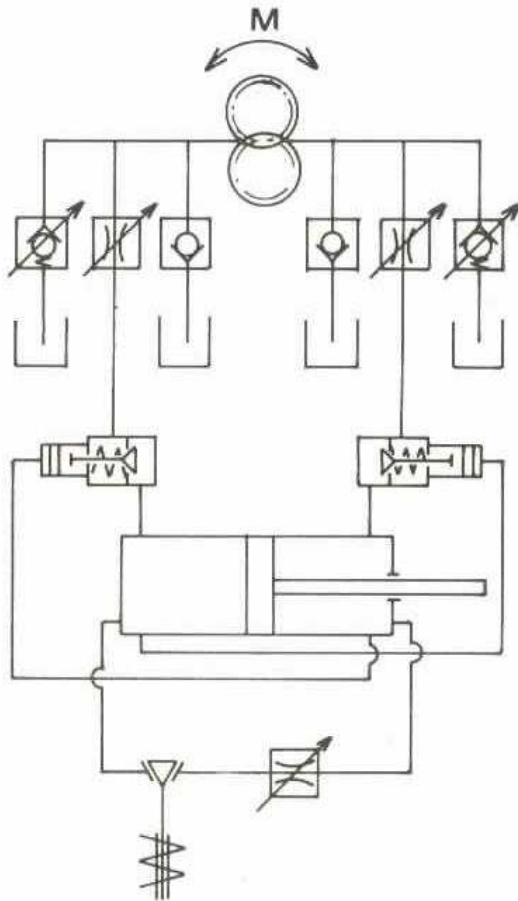
2. APPLICATION EXEMPLE OF A SPECIAL TYPE SERVOMATIC JACK

Problem – Automation of a hydraulic turbine command.

"SERVOMATIC" JACK FUNCTIONS

- Opening and closing water admission on the turbine, and flow regulation by "SERVOMATIC" jack motor action.
- Valve position maintaining – total opening, total closing, intermediate positions – by two hydraulic non-return.
- "SERVOMATIC" Switching off in position open or close by end way switches.
- Water admission quick closing on the turbine in the case of emergency stopping or shut down on the network thanks to the by-pass valve
- Adjustable water admission speed closing on the turbine by strangler adjusting on the by pass valve.

HYDRAULIC SCHEMA



RÉALISATION

