

# Positive locking cylinders

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# T-Lock® & R-Lock® cylinders

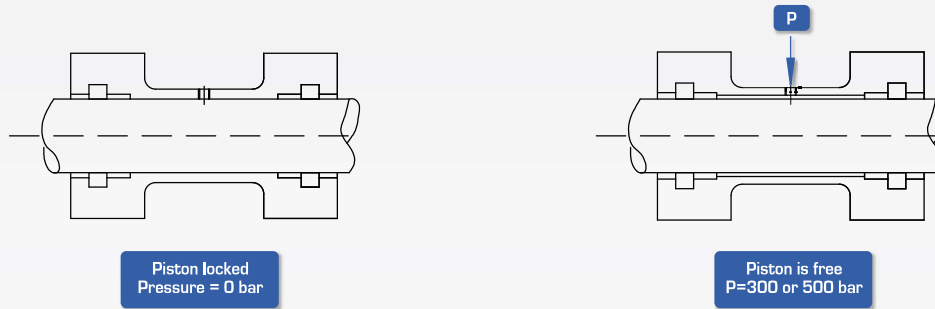
## Description Principle of operation

### Description

**T-Lock®** (translation) and **R-Lock®** (rotation) cylinders, developed and patented by QUIRI, incorporate a system based on the principle of locking through the absence of pressure. Unlocking is achieved by the use of a pressurised fluid.

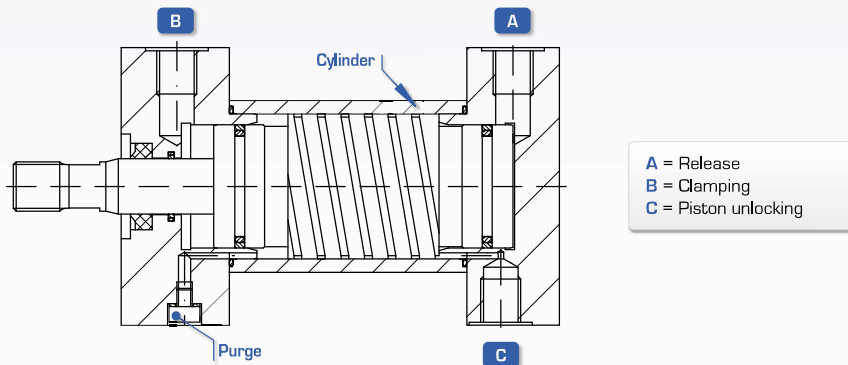
### Principle of operation of the Lock®

The **Lock®** cylinder has a diameter which is less than the piston one, thus creating a connection through adhesion due to the deformation of the materials present. Unlocking is achieved by means of hydraulic pressure applied uniformly between the surfaces in contact.

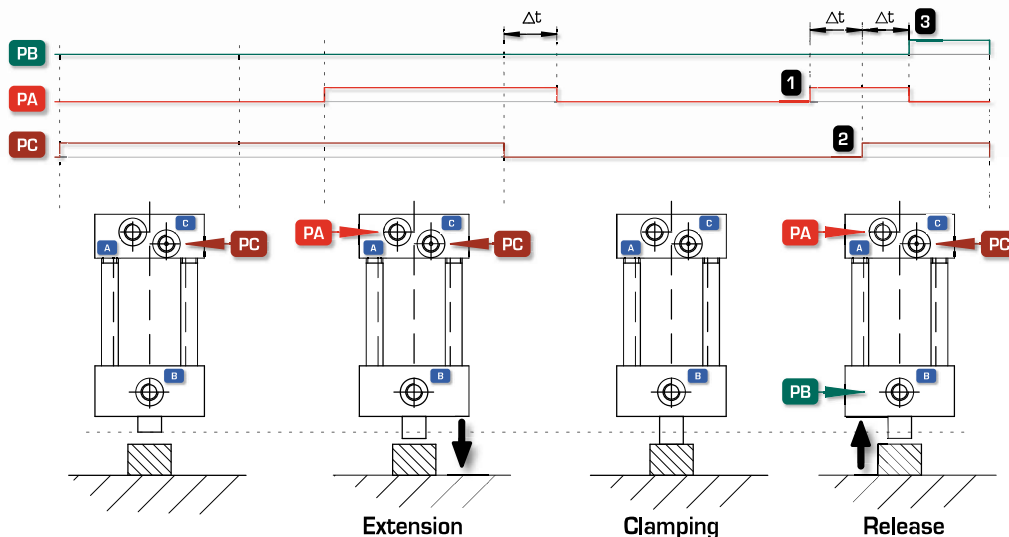


### Principle of operation of the T-Lock® cylinder

- The piston is fitted with an adjustment locked in the cylinder.
- Supplying the unlocking port (**C**) makes the cylinder deform, allowing the piston to move freely.
- The cylinder then functions as a standard double acting cylinder in traction (**PB**) or in thrust (**PA**).
- When the unlocking pressure is removed, the piston is retained by being 'gripped' with the cylinder.
- The clamping force is thus maintained in the absence of pressure.



**Phases diagrams :** During the clamping phase the cylinder is unpressurised



# T-Lock<sup>®</sup> & R-Lock<sup>®</sup> cylinders

## Description Principle of operation

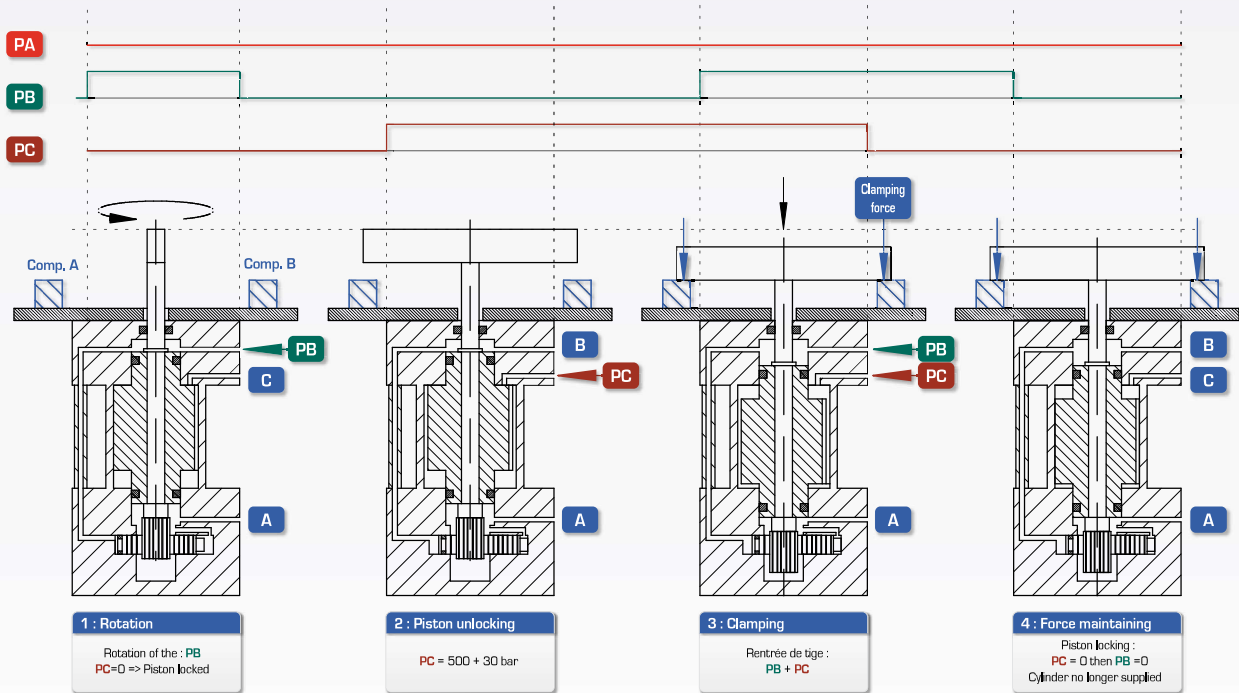
### Principle of operation of the R-Lock<sup>®</sup> cylinder

The **R-Lock<sup>®</sup>** cylinders use the same principle as the **T-Lock<sup>®</sup>** ones, with, in addition, a system for planar rotation of the arm. This pivoting system is a derivative of the hydraulic rack and pinion system.

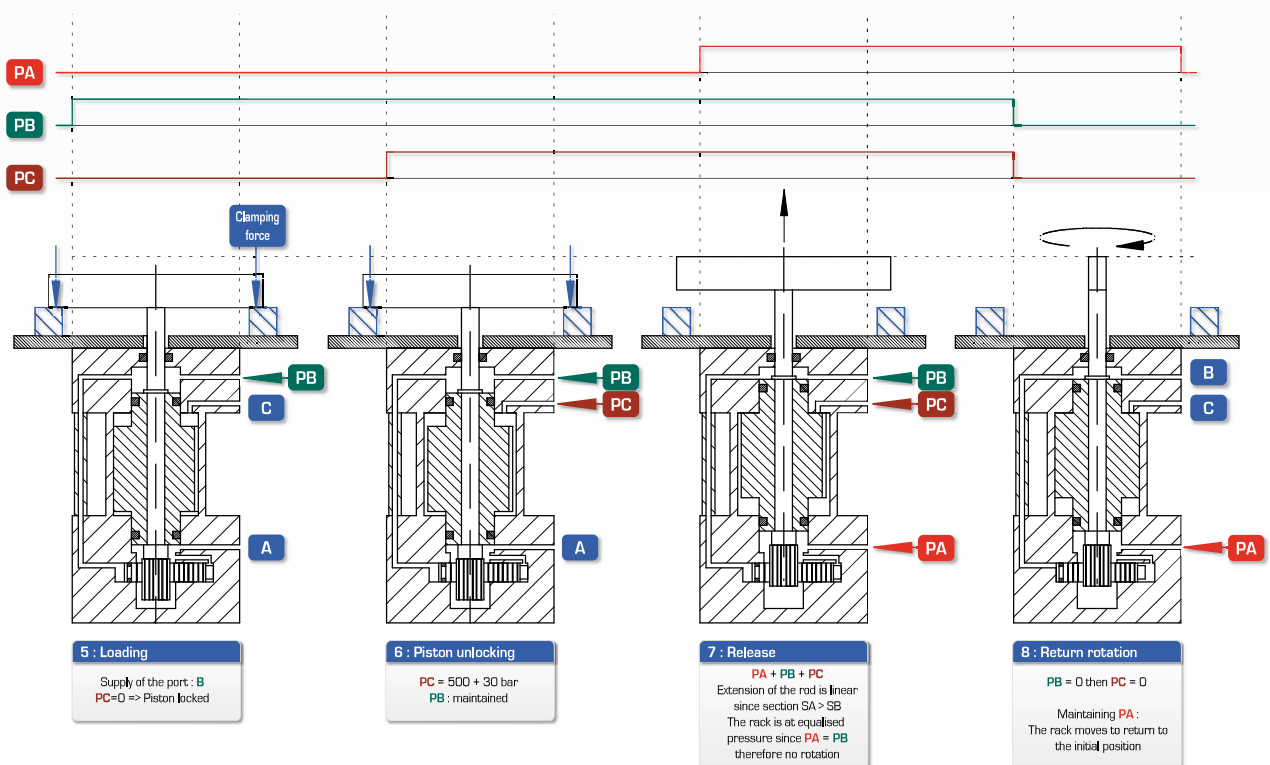
The various phases - pivoting in a plane, clamping, release and unlocking of the **Lock<sup>®</sup>** - are achieved using only three supply ports, which considerably simplifies the hydraulic supply system.

### Phases diagram

#### During clamping



#### During release



# T-Lock<sup>®</sup> cylinder : TL

Double acting - Gas tapping  
Force : 15 to 50 kN

## Description

This system of locking by absence of pressure is used to maintain a fully controlled clamping force when the cylinder is not connected to its source. In addition, it is completely unaffected by the vibrations.

In all applications for palletisation, transfer, rapid tool changes for presses, mould closure, test benches, these cylinders provide secure clamping.

## Characteristics

- supply through gas tapplings
- locked by absence of pressure
- **Lock<sup>®</sup>** unlocking pressure : 300 or 500 bar

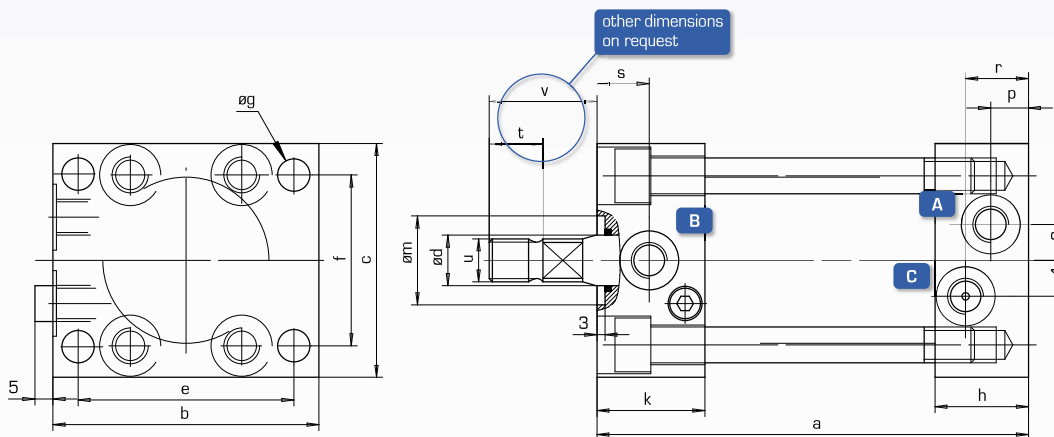
## Options

- rear sensor rod meets CNOMO standards
- custom double clamping arm supplied on request.
- pressure multipliers - see pages 112 and 113.



Type	Dimensions		
	A Rod extension	B Rod retraction	C Unlocking
TL 15	G 1/8"	G 1/8"	G 1/4"
TL 30	G 1/4"★	G 1/4"★	G 1/4"
TL 50	G 1/4"★	G 1/4"★	G 1/4"

★ G 3/8" on request



★★ The length «a» of the cylinder is a function of the unlocking pressure and the clamping force required.  
Special models made on request.

Thrust force	Traction force	Stroke	Active section	Piston øD	Rod ød	Locking force	Unlocking pressure	Type	Dimensions																
									a★★	b	c	e	f	g ø	h	k	m ø	n1	n2	p	r	s	t	u	v
15 at 186 bar	15 at 230 bar	10	P 8.04	32	14	15 mini	500	TL 15/5	120	74	65	60	48	9	26	30	30	10	10	10,5	15	14,5	16	M12 x 1,5	30
			300				TL 15/3	193																	
30 at 238 bar	30 at 299 bar	10	P 12.56	40	18	30 mini	500	TL 30/5	142	90	78	72	56	11	30	35	34	12,5	11	13	19	18	18	M16 x 1,5	35
			300				TL 30/3	215																	
50 at 210 bar	50 at 250 bar	10	P 23.75	55	22	50 mini	500	TL 50/5	160	108	96	87	60	13	32	37	42	14	12	16	21	21	28	M20 x 1,5	44
			300				TL 50/3	238																	

# R-Lock® cylinder : RL

Double acting - Gas tapping  
Force : 15 to 50 kN



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## Description

This system of locking by absence of pressure is used to maintain a fully controlled clamping force when the cylinder is not connected to its source. In addition, it is completely unaffected by the vibrations.

In all applications for palletisation, transfer, rapid tool changes for presses, mould closure, test benches, these cylinders provide secure clamping.

The clamping arm pivots in a plane then translate. The component is clamped. Pressure may be removed.

## Characteristics

- supply through gas tapplings
- locked by absence of pressure
- **Lock®** unlocking pressure : 300 or 500 bar

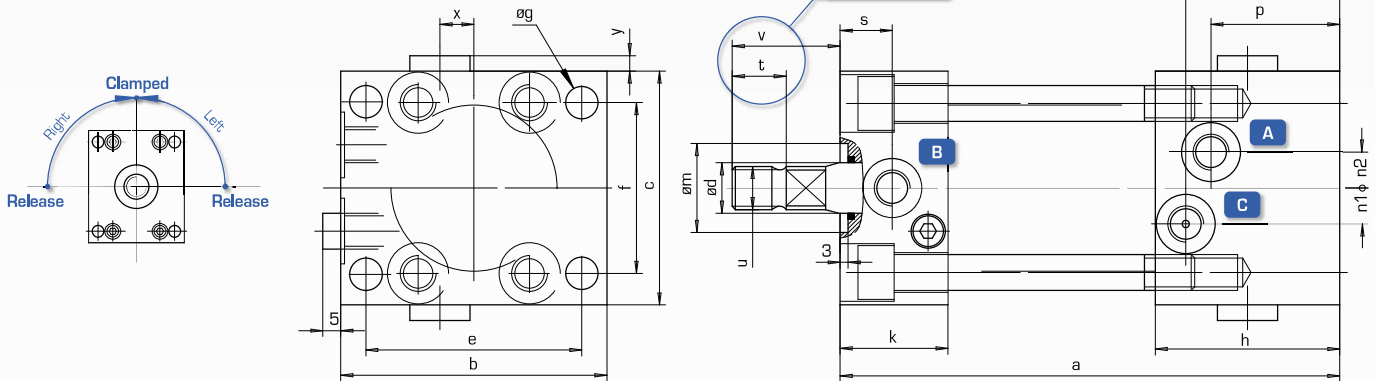
## Options

- angles of pivoting 60°, 45°, or 30° on request
- rear sensor rod meets CNOMO standards
- custom double clamping arm supplied on request.
- pressure multipliers - see pages 112 and 113.



Type	Dimensions		
	A Rod extension	B Rod retraction	C Unlocking
RL 15	G 1/8"	G 1/8"	G 1/4"
RL 30	G 1/4"★	G 1/4"★	G 1/4"
RL 50	G 1/4"★	G 1/4"★	G 1/4"

★ G 3/8" on request



★★ The length «a» of the cylinder is a function of the unlocking pressure and the clamping force required.  
Special models made on request.

Traction force	Stroke +0.5 0	Active section	Piston øD	Rod ød	Locking force	Unlocking pressure +30 0	Type	Dimensions																		
								a ★★	b	c	e	f	g ø	h	k	m ø	n1	n2	p	r	s	t	u	v	x	y
15 at 230 bar	10	P 8.04 T 6.50	32	14	15 mini	500	RL 15/5	155	74	65	60	48	9	61	30	30	10	10	45.5	50	14.5	16	M12x1.25	30	11.5	9
							RL 15/3	228																		
30 at 299 bar	10	P 12.56 T 10.02	40	18	30 mini	500	RL 30/5	178	90	78	72	56	11	66	35	34	12.5	11	48	52	20	18	M16x1.5	35	15.5	10
							RL 30/3	251																		
50 at 250 bar	10	P 23.75 T 19.95	55	22	50 mini	500	RL 50/5	202	108	96	87	60	13	74	37	42	14	12	58	63	21	28	M20x1.5	44	20	14
							RL 50/3	280																		

Positive locking cylinders

# T-Lock® & R-Lock® : TLF & RLF

Flanged

Front counter-bores :   AV - Rear counter-bores :   AR

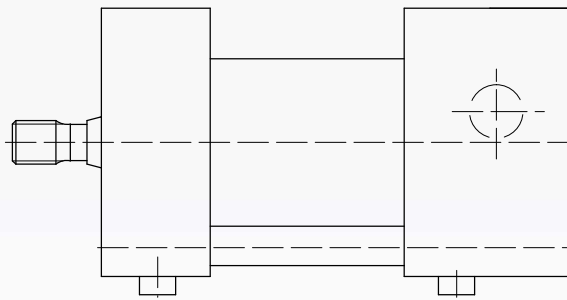
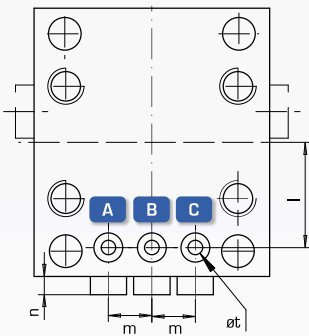
## Description

These cylinders are designed to be mounted directly onto a drilled block. Supply is achieved through drillings in the body thus the use of pipework and connections is avoided.

These cylinders offer the same characteristics as those with gas threads.

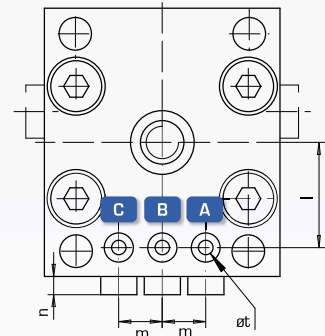
### Rear face flanged

Model :  
TLF\_\_AR  
RLF\_\_AR



### Front face flanged

Model :  
TLF\_\_AV  
RLF\_\_AV



A = Rod extension  
B = Rod retraction  
C = Piston unlocking

Other dimensions shown on the drawings for T-Lock® cylinders  
See page 96.

Type	Dimensions			
	l	m	n	t
T-Lock®	mm	mm	mm	mm
TLF 15 AV	29	12	5	4
TLF 15 AR				
TLF 30 AV	35	12,5	5	4
TLF 30 AR				
TLF 50 AV	43,5	12,5	5	4
TLF 50 AR				

Other dimensions shown on the drawings for R-Lock® cylinders  
See page 97.

Type	Dimensions			
	l	m	n	t
R-Lock®	mm	mm	mm	mm
RLF 15 AV	29	12	5	4
RLF 15 AR				
RLF 30 AV	35	12,5	5	4
RLF 30 AR				
RLF 50 AV	43,5	12,5	5	4
RLF 50 AR				

# R-Lock<sup>®</sup> cylinder : RLC

Double acting - Cylindrical body with ring  
Force : 15 kN - Compact version



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## Description

This system of locking by absence of pressure is used to maintain a fully controlled clamping force when the cylinder is not connected to its source. In addition, it is completely unaffected by the vibrations.

In all applications for palletisation, transfer, rapid tool changes for presses, mould closure, test benches, these cylinders provide secure clamping.

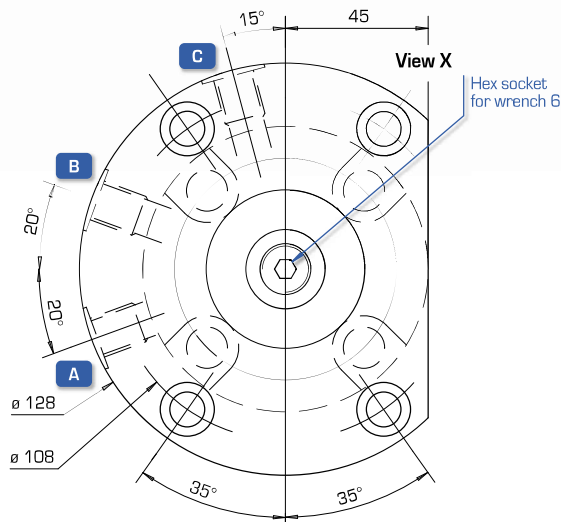
The clamping arm pivots in a plane then translate. The component is clamped. Pressure may be removed.

## Options

- supply through counter-bores under ring
- angles of pivoting 60°, 45°, or 30° on request
- rear sensor rod meets CNOMO standards
- custom double clamping arm supplied on request
- pressure multipliers - see page 112 and 113



A = Rotation rod forward + return  
B = Rotation return + forward  
C = Lock<sup>®</sup> unlocking  
A, B, C : size G 1/8" or counter-bores beneath ring



## General characteristics

- supply through gas threads in the ring
- locking through absence of pressure

## Technical characteristics

- section at rod extension : **12.56 cm<sup>2</sup>**
- section at rod retraction : **7.65 cm<sup>2</sup>**
- cylinder using pressure : **160 bar maxi**
- cylinder proof pressure : **240 bar**
- unlocking pressure : **300 ≤ P ≤ 330 bar**
- Lock<sup>®</sup> locking force : **1500 daN**
- stroke : **12 mm**
- rotation left / right : **90°**

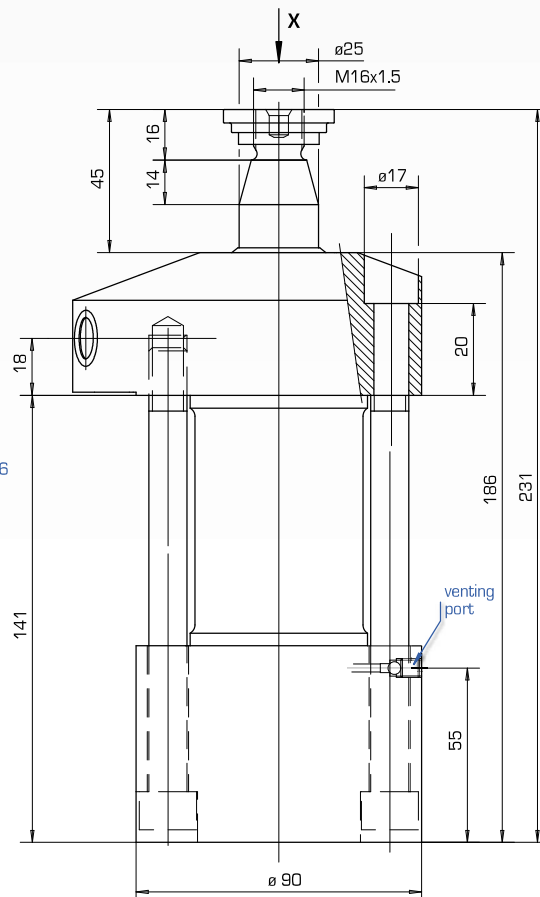
## Description :

### RLC 15/3 D90 T

- cylinder type : **R-Lock<sup>®</sup> 15 kN**
- unlocking : **300 bar**
- supply : **through threads**
- rotation : **to right 90°**

### RLC 15/3 G90 L

- cylinder type : **R-Lock<sup>®</sup> 15 kN**
- unlocking : **300 bar**
- supply : **through counter-bores on ring**
- rotation : **at left 90°**



## Description

This mounting uses the same principle of locking as the **T-Lock®** cylinder and allows a precise support position to be maintained after hydraulic disconnection. It is completely unaffected by vibrations

## Options

- rear sensor rod meets CNOMO standards
- custom double clamping arm supplied on request
- pressure multipliers - see page 112 and 113

## Note

For information on contact forces, residual support forces and using pressure, please contact us.

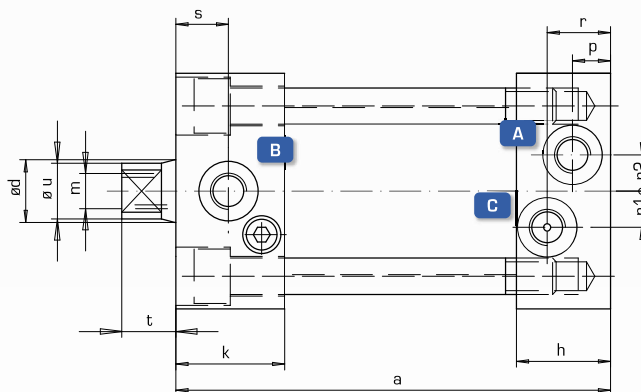
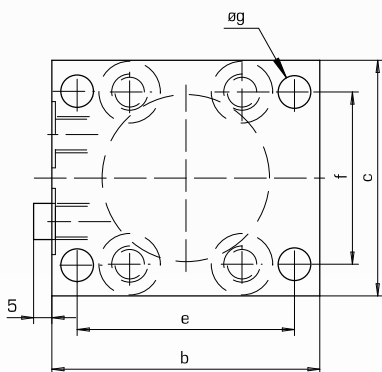
## Principle of operation

These mountings use the principle of elasticity of materials. Their operation involves 4 phases :

- 1) **Unlocking of the mounting piston :**  
PC = 300 bar
- 2) **Contact with the component :**  
Simultaneous pressure PA + PB = elastic deformation of the clamped component
- 3) **Removal of pressure :**  
PA + PB = 0  
The component then pushes against the rod due to elasticity. The residual support force is provided by seal friction
- 4) **Piston locking PC = 0 :**  
The position is maintained without pressure.



Type	Dimensions		
	A Rod extension	B Rod retraction	C Unlocking
AVTL 5	G 1/8"	G 1/8"	G 1/4"
AVTL 10	G 1/4"	G 1/4"	G 1/4"
AVTL 20	G 1/4"	G 1/4"	G 1/4"



★ Active section with differential supply = Rod section.  
To know contact forces, residual support forces and using pressure, please contact us.

Max force	Stroke	Active section ★	Piston øD	Rod ød	Locking force	Unlocking pressure	Type	Order code	Dimensions																						
									a	b	c	e	f	g	h	k	m	n1	n2	p	r	s	t	u							
kN	mm	cm²	mm	mm	kN	bar			mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm		
5 at 200 bar	10	2.54	32	18	5 mini	300	AVTL 5	761 042/000	120	74	65	60	48	9	26	30	M6	10	10	10.5	15	14.5	8	16							
10 at 265 bar	10	3.80	40	22	10 mini	300	AVTL 10	761 023/000	142	90	78	72	56	11	30	35	M8	12.5	11	13	19	18	8	20							
20 at 325 bar	10	6.16	55	28	20 mini	300	AVTL 20	761 043/000	160	108	96	87	60	13	32	37	M10	14	12	16	21	21	8	26							