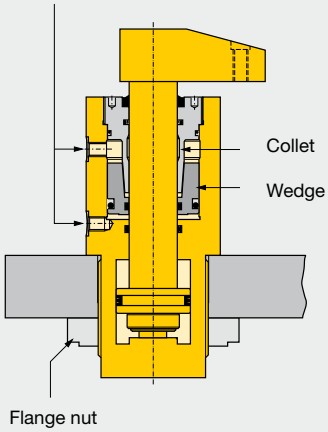
Swing cylinders - Collet-Lok® design

Shown: MPTR-100V, MPFR-100V

MP series

Enerpac Collet-Lok® cylinders are designed to mechanically hold the workpiece after hydraulic pressure is removed. Clamping capacities range from 4,4 to 37,8 kN.

BSPP oil connection



Hydraulic pressure pushes the collet up a wedge, locking the plunger in the clamping position.

Lower flange Collet-Lok® swing cylinder mounted on a pallet.

Ideal when live hydraulics are not available

- Double acting Collet-Lok® action allows fully automated operation
- Additional level of safety since live hydraulics are not required to maintain clamping force
- Collet-Lok® swing cylinders can be mounted by the flange or threaded into the fixture. Flanged models have manifold ports and tubing ports.
- Viton seals are standard.

Selection chart

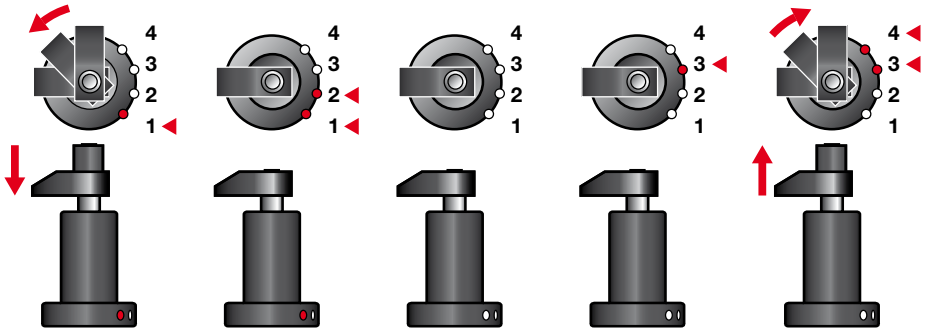
Clamping force [1]	Stroke		Left turning	Right turning	Cylinder effective area		Oil capacity		Max. oil flow [1]	Standard clamp arm
	mm			90°	cm^2		cm^3			Sold separately
kN	Clamp	Total			Clamp	Un-clamp	Clamp	Un-clamp	l/min	
▼ Lower flange			Model number							
4,4	8	24,2	MPFL-50V	MPFR-50V	1,6	4,5	3,9	10,9	0,5	MA-540
8,9	12	28,2	MPFL-100V	MPFR-100V	3,2	7,1	9,0	19,9	1,0	MA-1050
37,8	10	42	MPFL-300V*	MPFR-300V*	13,2	22,2	55,7	93,4	4,0	MA-3070
▼ Threaded body			Model number							
8,9	12	28,2	MPTL-100V	MPTR-100V	3,2	7,1	9,0	19,9	0,5	MA-1050
37,8	10	42	MPTL-300V*	MPTR-300V*	13,2	22,2	55,7	93,4	4,0	MA-3070

[1] Using standard clamp arm. Clamp arms are sold separately (□14).

Note: - Call Enerpac for models with UNF thread and SAE port connections.
- Minimum working pressure for Collet-Lok® system is 100 bar.

* This product is made to order. Please contact Enerpac for delivery information before specifying in your design.

Collet-Lok® sequence



Step 1
Pressurize port #1.
Plunger turns 90° and clamps part.

Step 2
Keep port #1 pressurized.
Pressurize port #2.
Plunger will be locked in clamped position.

Step 3
Depressurize port #1 and #2.
Uncouple cylinder from hydraulic power source.
Part will be held in place.

Step 4
Pressurize port #3.
Plunger will be unlocked and the clamp force released.

Step 5
Keep port #3 pressurized.
Pressurize port #4.
Plunger will extend and turn to its original position.

Product dimensions in mm [⌲⌖]

Left turning models *	A	B	C	C1	D Ø	D1 Ø	F Ø	H1	H2	H3
▼ Lower flange										
MPFL-50V	201,2	177	171,2	25	58	85	19	10	12,5	–
MPFL-100V	222,9	194,7	192,9	25	68	100	22,3	10	12,5	–
MPFL-300V	322	280	275	25	89,8	130	34,9	11	12,5	–
▼ Threaded body										
MPTL-100V	213,2	185	121,3	90,5	M48 x 1,5	64	22,3	31,5	67	75,5
MPTL-300V	310,5	268,5	163	115	M80 x 2,0	89	34,9	38	92	100,5

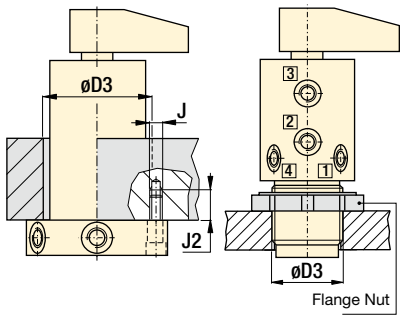
Note: Dimensions shown with standard clamp arm.
* For nonrotational model replace "L" with "N". Example: MPFN-100V.

Installation dimensions
in mm

Clamping force [1] kN	Fixture hole Ø D3	Mounting thread J mm	Minimum depth J2
▼ Lower flange			
4,4	58,4 ±0,3	M6 x 1	18
8,9	68,6 ±0,3	M8 x 1,25	19
37,8	90,5 ±0,3	M10 x 1,5	19

Clamping force [1] kN	Fixture hole Ø D3	Mounting flange Sold separately ▶ 87	Mounting nut Sold separately ▶ 86
▼ Threaded body			
8,9	M48 x 1,5	MF-482	FN-482
37,8	M80 x 2	MF-802	FN-802

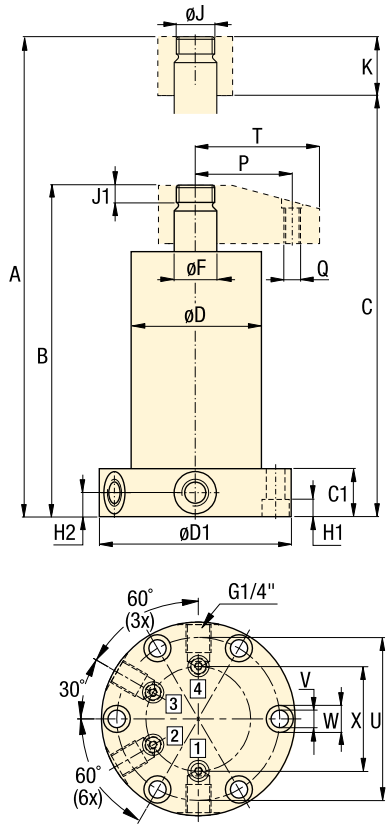
[1] With standard clamp arm.



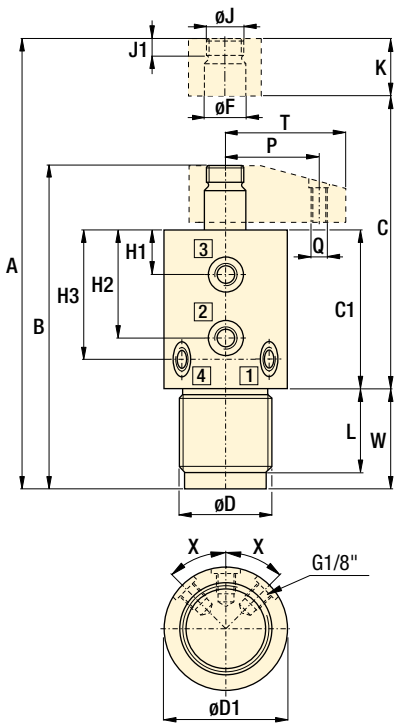
Oil port functions

1 90° Rotation and clamp
2 Locks system
3 Unlocks system
4 Unclamp and 90° rotation

MPF models



MPT models

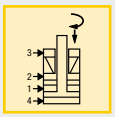


X = 45° MPT-100 models
X = 30° MPT-300 models

J	J1	K	L	P	Q	T	U Ø	V Ø	W	X Ø	kg	Right turning models
												Lower flange ▼
M16 x 1,5	8	30	–	40	M8 x 1,25	54	70,1	9	Ø 14	48,0	2,3	MPFR-50V*
M20 x 1,5	9	30	–	50	M10 x 1,5	64	84,1	9	Ø 14	54,1	3,5	MPFR-100V*
M33 x 2,0	10	47	–	70	M16 x 2	93	112,1	11	Ø 17	96,1	12,0	MPFR-300V*
												Threaded body ▼
M20 x 1,5	9	30	41,5	50	M10 x 1,5	64	–	–	61,9	–	3,0	MPTR-100V*
M33 x 2,0	10	47	85	70	M16 x 2	93	–	–	99,5	–	11,0	MPTR-300V*

Force: 4,4 - 37,8 kN
Stroke: 24,0 - 42,0 mm
Pressure: 100 - 350 bar

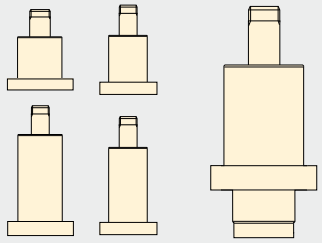
E Cilindros giratorios
F Vérins de bridage pivotants
D Schwenkspannzylinder



Custom Options Available

Intermediate capacities

Different flange locations



Flexible Machining Systems
See Yellow Pages (224)

Options

Clamp arms
14 ▶


Collet-Lok® work supports
16 ▶


Sequence valves
152 ▶


Accessories
86 ▶


Important

Minimum unlock pressure must be at least 105 bar above lock pressure.

Swing cylinders, MA-series *Dimensions & options*

Force: 4,4 - 37,8 kN

Pressure: 100 - 350 bar

(E) Brazos de amarre
(F) Bras de bridage
(D) Spannarme

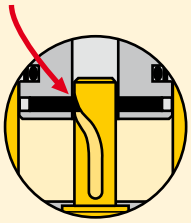
Important

Do not exceed maximum oil flow. If flow rates are exceeded, swing cylinder indexing mechanism may be permanently damaged.

When designing custom clamp arms, the flow rates must be further reduced. This rating should be in proportion to the mass and the center of gravity of the clamp arm.

Example:
If the mass of the arm is twice that of the long arm, flow rates must be reduced by 50%.

Index mechanisme



Options

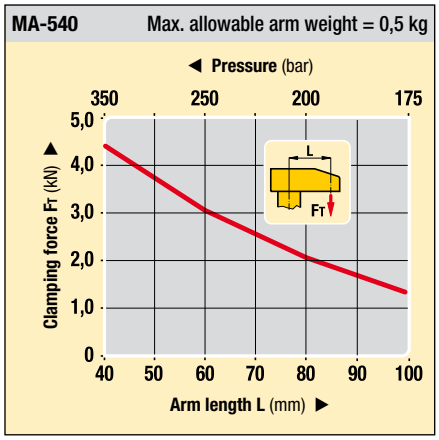
Gauges ▯190 ▶

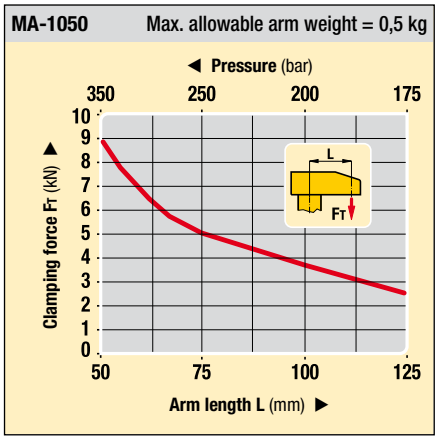
Flow control valves ▯155 ▶

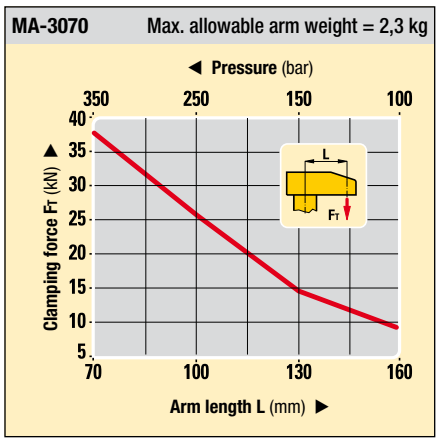
Sequence valves ▯152 ▶

Determine the right size of your Collet-Lok® swing cylinder

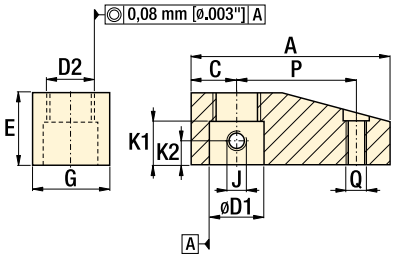
The maximum operating pressure, clamping force and length of the clamp arm will determine your size of swing cylinder. The real operating pressure is a function of both the clamp arm length and clamping force.
In the diagrams below you select the required clamp arm length and clamping force. The use of different length clamp arms requires reduction in apllied pressure and resulting clamp force. The diagrams below show this relation.







MA models **Standard clamp arms for Collet-Lok® swing clamps**



Product dimensions in mm [⌲ ◎]

Clamp. force kN	Model number	A	C	D1 ø	D2	E	G	J	K1	K2	P	Q	kg
▼ **Standard clamp arms for Collet-Lok® swing clamps**													
4,4	**MA-540**	74,7	18,0	19,02-19,05	M16 x 2	30	32	M8 x 1,25	19	10	40	M8 x 1,25	0,5
8,9	**MA-1050**	83,0	19,0	22,30-22,33	M20 x 1,5	30	35	M8 x 1,25	18	10	50	M10 x 1,5	0,5
37,8	**MA-3070**	128,0	35,0	34,97-35,00	M33 x 2	47	59	M8 x 1,25	32	17	70	M16 x 2	2,3

Special Collet-Lok® Examples

Special configurations are available

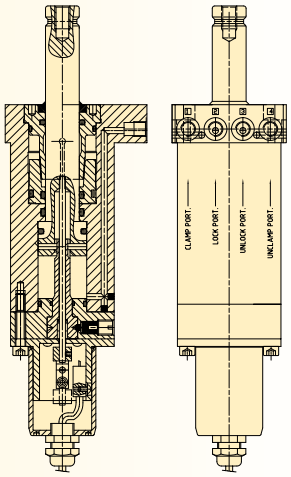
Model: MPFL100PE001-S

Body style: Upper flange

Clamp capacity: 9 kN (2000 lbs)

Clamping stroke: 18 mm (.71 in.)

Special feature: Position sensing



Model: MPFN300VE002

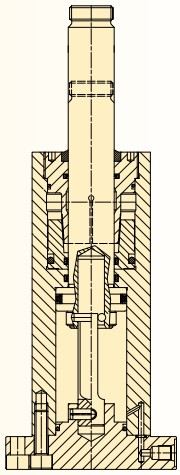
Body style: Lower flange

Clamp capacity: 39 kN (8800 lbs)

Clamping stroke (straight):

57,4 mm (2.25 in.)

Special feature: Viton seals
Long stroke



Model: MPFL200VE100

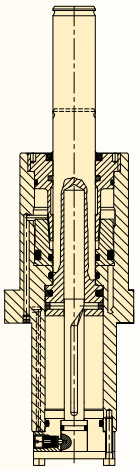
Body style: Mid-body flange

Clamp capacity: 20 kN (3900 lbs)

Clamping stroke (left hand):

63,5 mm (2.50 inch)

Special feature: Viton seals
Long stroke
Mid-flange body



Special features for Swing Cylinders *

Enerpac can design Collet-Lok® cylinders with special features to meet the needs of your production fixtures:

- Special mounting
- Special manifold port location
- Longer stroke
- Special rotation
- Internal clutch to protect rotation mechanism
- Viton seals
- Special rod end
- Position sensing

* Special features also available for Collet-Lok® Push Cylinders and Work Supports.