

# Selecting the swing cylinder for your applications

Clamp arms transmit the force generated by swing cylinders



▶ The clamp arms transmit the force generated by the swing cylinder to the workpiece. Clamp arms are available in a variety of lengths. After you have determined the required clamp arm length and the clamping force you can select the swing cylinder type and mounting method.

The maximum clamp arm length of a given size of swing clamp is limited. This limitation is due to the bending moment on the plunger. The bending moment applied to the plunger is a function of the real clamping force and length of the clamp arm. Never exceed the maximum pressure or flow for any given clamp arm length. Excessive weight will limit flow.

The unique Enerpac swing clamp and patented clamp arm guarantee the lowest frictional losses and most efficient clamp design available on the market today.

■ Hydraulic fixture with swing cylinders on two faces for more efficient production.



## **i** Determine the right size of your swing cylinder

### Clamp arm length and clamping force

The maximum operating pressure, clamping force and length of clamp arm will determine your size of swing clamp. The real operating pressure is a function of both the arm length and clamping force.

In the chart below you select the required clamp arm length and clamping force. The use of different length clamp arms requires reduction in applied pressure and resulting clamp force. The diagrams on the next page show this relation.

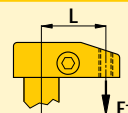
### Pivoting T-arms

#### Oil flow versus arm length

The distribution of the clamp arm force is based upon the length of the T-arm as measured from the pivoting point.

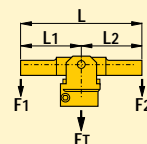
### **!** Important

When using the standard and long clamp arms from the CAS and CAL series consult the diagrams shown on the next page.



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When using T-arms use the formula below.



$$L = L1 + L2 \quad F1 = Ft \times \frac{L2}{L1 + L2}$$

$$Ft = F1 + F2 \quad F2 = Ft \times \frac{L1}{L1 + L2}$$

For diagrams of allowable oil flow vs T-arm length see:

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## **globe** Product selection

Clamp arm length L mm min. - max.	Clamping force F <sub>T</sub> kN max. - min	For Swing Cylinder Model	With Clamp Arm Model number
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### ▼ Swing Cylinders SU, SL, ST and SC series

25 - 78	2,2 - 0,5	22	CAS, CAL-22
40 - 130	5,6 - 1,0	52	CAS, CAL-52
45 - 155	9,0 - 2,2	92	CAS, CAL-92
51 - 157	11,6 - 2,0	121, 122	CAS-121, CAL-122
55 - 173	18,7 - 4,0	202	CAS, CAL-202
68 - 175	33,8 - 9,0	352	CAS, CAL-352

### ▼ Collet-Lok® Swing Cylinders MP series

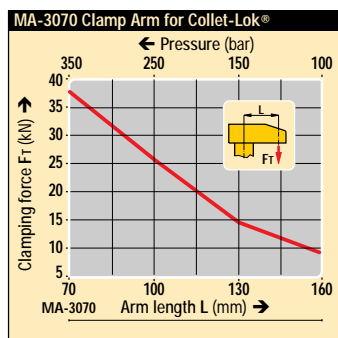
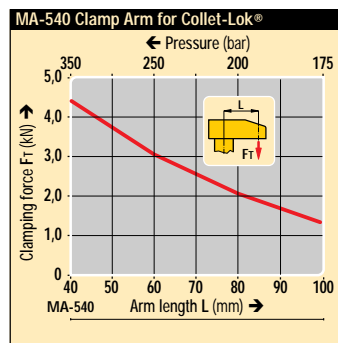
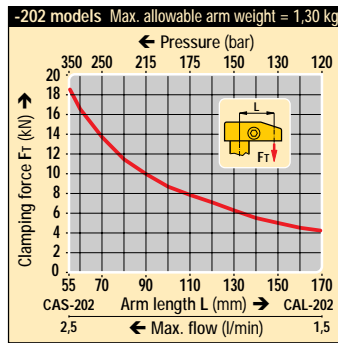
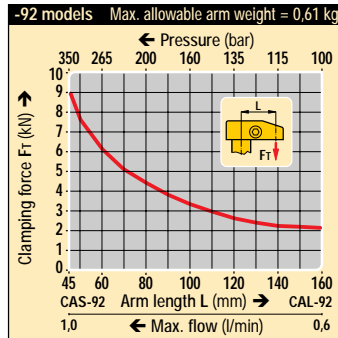
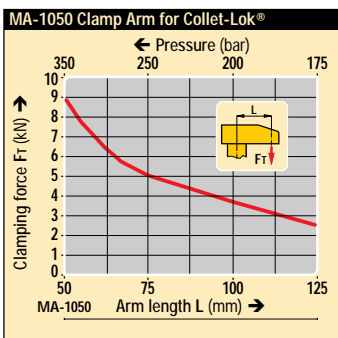
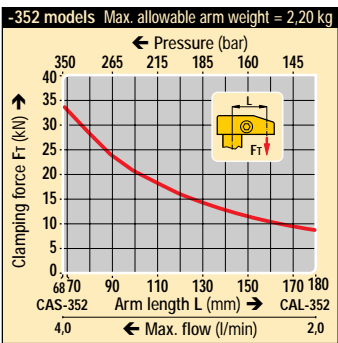
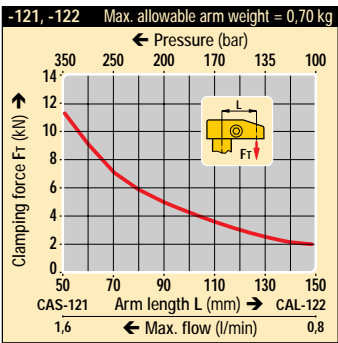
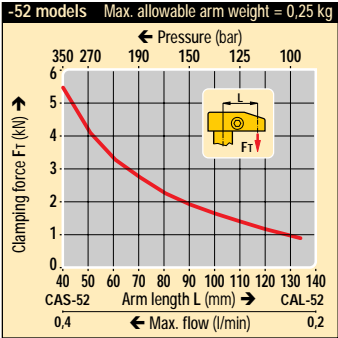
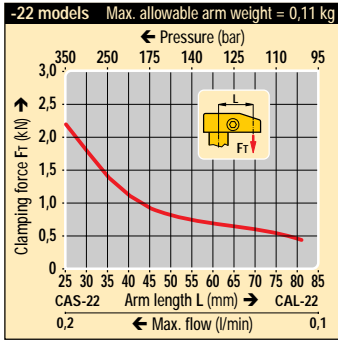
40 - 100	4,1 - 1,1	50	MA-540
50 - 125	8,9 - 2,5	100	MA-1050
70 - 160	37,8 - 9,5	300	MA-3070

### ▼ Pivoting T-arms for SU, SL, ST and SC series swing cylinders

152 <sup>1)</sup>	2 x 2,8	52	CAC, CAPT-52
203 <sup>1)</sup>	2 x 4,5	92	CAC, CAPT-92
203 <sup>1)</sup>	2 x 5,8	122	CAC, CAPT-122
203 <sup>1)</sup>	2 x 9,3	202	CAC, CAPT-202
228 <sup>1)</sup>	2 x 16,9	352	CAC, CAPT-352

<sup>1)</sup> Lmax. for T-arms.

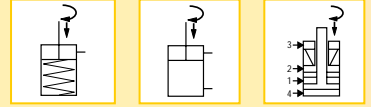
# Selection Swing Cylinders & Clamp Arms



Arm length: 25 - 175 mm

Clamp force: 0,5 - 37,8 kN

- E** Cilindros giratorios
- F** Vérins de bridage pivotants
- D** Schwenkspannzylinder



## Important

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

Do not exceed maximum operating pressure. If operating pressures are exceeded swing cylinder and other components may be permanently damaged.

## Options

Swing cylinders

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Collet-Lok® swing cylinders

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Clamp arms

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For actual clamping force at reduced pressures, we invite you to download our "Swing Clamp Selection Tool" through the Internet at [www.enerpac.com](http://www.enerpac.com).