

# Cylinder Speed Charts



## Cylinder Speed

This chart will help you calculate the time required for an Enerpac cylinder to lift a load when powered by a 700 bar Enerpac hydraulic pump. The Cylinder Speed Chart can also be used to determine the pump type and model best suited for an application when you know the plunger speed required.

To determine:

### Cylinder plunger speed

An RC-308 cylinder (30 ton) is powered by an Economy electric pump. While lifting the load, the cylinder plunger travels at 1,3 mm per second.

30 ton		50 ton		Pump Type	
No Load	Load	No Load	Load		
13	1,3	7,7	0,7	Economy	

While extending towards the load, the cylinder plunger travels at 13 mm per second.

To determine:

### Best matching pump

Your 30 ton cylinder needs to move a load at a speed of 1,3 mm per second. Simply go down from the top of the chart, to the value of 1,3 mm per second. Follow the chart to the right to find that the Economy electric pump is most suitable for your application.

30 ton		50 ton		Pump Type	
No Load	Load	No Load	Load		
13	1,3	7,7	0,7	Economy	

## Millimetres of Cylinder Plunger Travel per Hand Pump Plunger Stroke

Cyl. Capacity ►	5 ton		10 ton		15 ton		25 ton		30 ton		50 ton		Pump Type
▼ Power Source	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load	
Manual	3,9	3,9	1,7	1,7	1,2	1,2	0,7	0,7	0,6	0,6	0,3	0,3	P-391
	17,6	3,9	7,8	1,7	5,5	1,2	3,4	0,7	2,6	0,6	1,6	0,3	P-392
	25,3	3,8	11,2	1,7	7,9	1,2	4,9	0,7	3,7	0,6	2,3	0,3	P-80

## Millimetres per Second of Cylinder Plunger Travel

Cyl. Capacity ►	5 ton		10 ton		15 ton		25 ton		30 ton		50 ton		Pump Type
▼ Power Source	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load	
Electric (speed based on 50 Hz)	86	8,3	38	3,7	27	2,6	17	1,6	13	1,3	7,7	0,7	Economy
Air (speed based on 6,9 bar air pressure)	28	3,4	12	1,5	8,8	1,1	5,3	0,7	4,2	0,5	2,5	0,3	Turbo

**No Load** indicates the plunger speed as the plunger extends towards the load (1st stage).

**Load** indicates the plunger speed as the load is lifted at a system pressure of 700 bar (2nd stage).

**Example:** At what speed (V) will the RC-308 (30 ton) cylinder move when powered by an Economy electric pump?

RC-308 Cylinder Effective Area = 42,1 cm<sup>2</sup>

Economy electric pump oil Flow (no load) = 3310 cm<sup>3</sup>/min

$$\text{Speed } V = \frac{3310 \text{ cm}^3/\text{min} \times 10}{42,1 \times 60} = 13,1 \text{ mm/sec}$$

$$\text{Cylinder Plunger Speed (mm/sec)} = \frac{\text{Pump Oil Flow (cm}^3/\text{min)} \times 10}{\text{Cylinder Effective Area (cm}^2) \times 60}$$