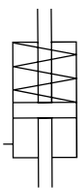
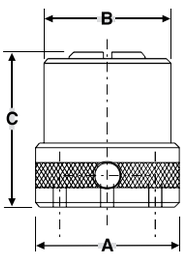
020 SERIES

Hydraulic Power Clamps | Thru-Hole Hydraulic Ram Product Overview

By inserting a rod through the hollow piston, these cylinders can be used to push or pull depending on the orientation of the ram. They will actuate a rod of any length or shape and are extremely effective in translating power to a remote location. Greater forces are generated in these thru-hole rams because of their larger piston area.

Symbol





Features:

- Larger piston diameter for greater clamping forces
- Hardened steel piston and rod
- Single-acting for simple plumbing
- Optional threaded inserts
- Optional mounting plate
  (permits mounting ram with a single cap screw)

Model no.	RAM I.D.*	Port	Stroke	Force at 3,000 PSIG	Oil Displacement	Dimensions		
						A	B	C
020-011-011DE	0.38	SAE #2	0.38	4,380 lbs.	0.547 cu. in.	2.13	1.88	2.25
020-012-021DE	0.50	SAE #4	0.50	8,100 lbs.	1.35 cu. in.	3.00	2.63	2.88
020-013-031DE	0.63	SAE #4	0.63	12,066 lbs.	2.51 cu. in.	3.25	3.00	3.63

* Clearance for rod or bolt of given dimension.

Maximum input pressure 3,500 PSIG.

Accessories

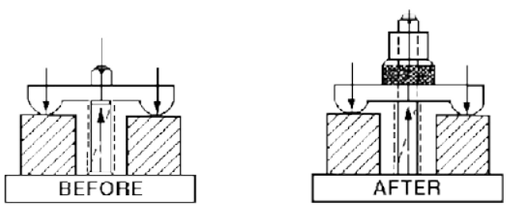
All size thru-hole rams are supplied with a thru-hole insert threaded into the top. Optional threaded inserts, inch or metric, are also available.

RAM no.	Thru-Hole Insert (supplied)
020-011-011DE	705384
020-012-021DE	705512
020-013-031DE	705634

Loads Trasmitted by Various Diameter Screws		
Bolt Size	Wrench Length	F-lbs. (Average)
1/4 UNF	4.00	2,400 lbs.
1/4 UNF	4.00	1,920 lbs.
3/8 UNF	5.75	3,000 lbs.
3/8 UNF	5.75	2,920 lbs.
1/2 UNF	8.00	4,200 lbs.
1/2 UNF	8.00	3,640 lbs.
5/8 UNF	9.00	5,600 lbs.
5/8 UNF	9.00	5,600 lbs.
3/4 UNF	9.00	4,800 lbs.
3/4 UNF	11.00	4,200 lbs.
7/8 UNF	12.00	50,400 lbs.

To determine how much force is needed to replace a manual clamp, use this chart as a guide.

A thru-hole ram easily converts a manual strap clamp into an automatic hydraulic powered clamp. Usually a longer bolt is the only part needed to make this conversion.



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Hydraulic Power Clamps | Thru-Hole Hydraulic Rams Technical Information

Calculation of Forces Using Straps and Levers

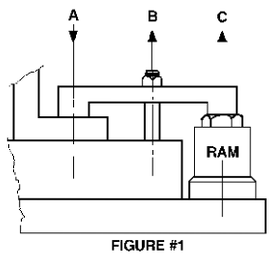


FIGURE #1

Figure #1
When the distance AB is equal to the distance BC the force upward from Model 020-011-011DE Ram "C" is equal to the downward force
"A" on the part.

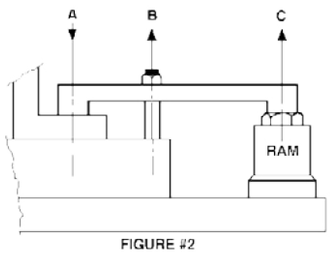


FIGURE #2

Figure #2
The downward force "A" is equal to the upward force "C" times a ratio of the distance BC:AB.
Example:
AB = 2", BC = 4", Force "C" = 1,000 lbs.

Force "A" = Force "C" x $\frac{BC}{AB}$

"A" = 1,000 lbs. x $\frac{4}{2}$

"A" = 2,000 lbs.

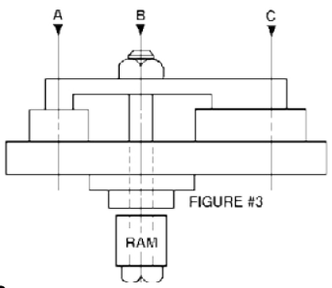


Figure #3
When Force "B" from Model 020-011-011DE Hollow Bore is divided between "A" & "C", the forces at "A" & "C" are in inverse ratio to the distance AB & BC respectively.

Force "A" = Force "B" x $\frac{BC}{AB}$

Force "C" = Force "B" x $\frac{AB}{AC}$

Example:
AB = 2", BC = 4," Force "B" = 1,000 lbs.

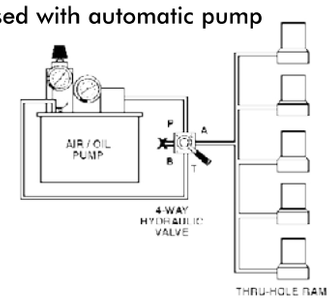
Force "A" = 1,000 lbs. x $\frac{4}{6}$ = 666.7 lbs.

Force "C" = 1,000 lbs. x $\frac{2}{6}$ = 333.3 lbs.

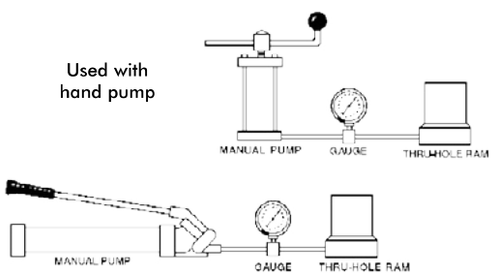
Power Sources

Thru-hole Rams can be powered by automatic pumps, hand pumps, boosters or existing machine hydraulics.

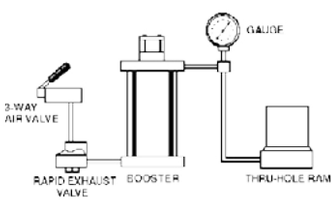
Used with automatic pump



Used with hand pump



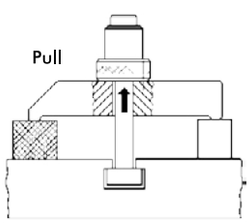
Used with booster



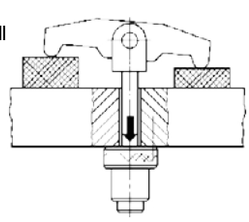
Multiple Uses

Thru-hole Rams can be used to push or pull depending on the position of the ram.

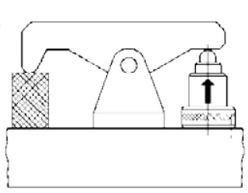
Pull



Pull



Push



Pull