

Catalog 1270-1



**Hydraulic Riveters,
Punches, and Generators**

Parker Hy-Power...

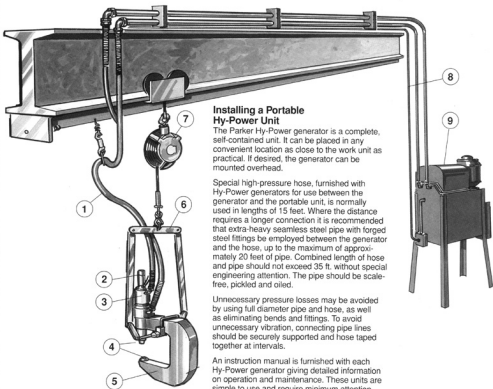
The silent, low-cost, universally acclaimed production problem solver, combining easy-to-use power equipment with a compact 5000 psi power source.

Hy-Power is a complete product line that offers you an economical, convenient way of performing many kinds of production operations quickly, easily and efficiently. A well proven rugged system, Hy-Power includes a broad variety of units to solve your production problems. Hy-Power is known and acclaimed the world over as the most durable, the most versatile, the *best* hydraulic power equipment available.

Uses for Hy-Power are many. From its beginning as a portable riveter over six decades ago, the Hy-Power line has become much broader in application. Riveting, punching, de-riveting, pressing, marking, coining, blanking, shearing, bending, forming...these are only a few of the things you can do with Hy-Power.

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Installing a Portable Hy-Power Unit

The Parker Hy-Power generator is a complete, self-contained unit. It can be placed in any convenient location as close to the work unit as practical. If desired, the generator can be mounted overhead.

Special high-pressure hose, furnished with Hy-Power generators for use between the generator and the portable unit, is normally used in lengths of 15 feet. Where the distance requires a longer connection it is recommended that extra-heavy seamless steel pipe with forged steel fittings be employed between the generator and the hose, up to the maximum of approximately 20 feet of pipe. Combined length of hose and pipe should not exceed 35 ft. without special engineering attention. The pipe should be scale-free, pickled and oiled.

Unnecessary pressure losses may be avoided by using full diameter pipe and hose, as well as eliminating bends and fittings. To avoid unnecessary vibration, connecting pipe lines should be securely supported and hose taped together at intervals.

An instruction manual is furnished with each Hy-Power generator giving detailed information on operation and maintenance. These units are simple to use and require minimum attention.

- | | |
|----------------------|---------------------------------|
| 1. Flexible Hose | 6. Hanger |
| 2. Control Button | 7. Balancer with Wire Rope |
| 3. Hy-Power Cylinder | 8. Electric Control Cord |
| 4. Rivet Sets | 9. Hydraulic Pressure Generator |
| 5. "C" Frame | |

Operating the System

Quiet, Automatic Cycle

The Hy-Power Generator does the work! Hold the control buttons depressed and the generator operates through one complete cycle automatically:

- (A) Rapid advance of the ram at low pressure until it touches the work,
- (B) Short power stroke at full pressure,
- (C) Automatic reversal and rapid return of ram to starting position. To repeat the cycle, the buttons are released and again depressed.

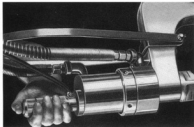
Safe, Simple Control

The finger-tip control is designed to follow the natural reaction of the operator: "Push down to go," "Release to retract." The operator has complete control and may interrupt the cycle instantly at any point by simply releasing the push buttons. The ram will automatically return to its starting position unless the cycle is started again by depressing the buttons. If the buttons are depressed, the generator will complete one cycle only.

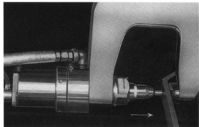
Standard unit designs utilize dual control buttons to require the use of two hands for safety. Each control button is connected to the pressure generator through a single, low-voltage, heavy-duty, rubber covered cable. In portable units, one button is located on the end of the handle which extends from the work cylinder, and the other on the C-Frame.

Fast Operation

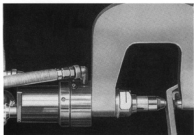
The generator controls are responsive and react instantly. The short operating cycle makes possible the fast operation of work tools. Total elapsed time for the operating cycle of typical Hy-Power Riveters ranges from 1½ to 4 seconds, depending on size. High production rates can be maintained almost continuously wherever handling of the work permits.



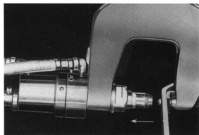
Push button under operator's thumb provides complete control. Pictures illustrate riveting cycle.



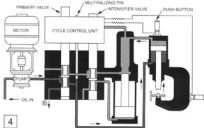
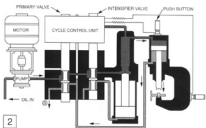
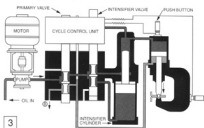
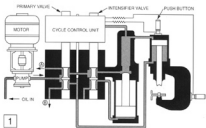
Pressing buttons moves ram up to work at fast speed using primary hydraulic pressure.



Hydraulic pressure is automatically intensified and the rivet is completely formed.



At peak hydraulic pressure (adjustable), the ram reverses automatically and returns to starting position. Total elapsed time approximately 2½ seconds for ¼" cold rivet.



Operating Cycle

The operation of the Hy-Power system is illustrated by the four schematic diagrams showing a Hydraulic Pressure Generator in combination with a Standard Portable Riveter. Following is an explanation of the various steps in the operating cycle.

1. Neutral Position

With the motor running and the oil circulating in the system at no-load pressure, the normal position of the control valves is as shown in Figure 1. The oil delivered by the constant volume pump flows back to the reservoir through outlets "A" and "B".

2. Advance Stroke

Pressing both the electric push buttons energizes the one solenoid in the Cycle Control Unit. This shifts the Primary Valve of the circuit and directs oil through the top of the riveter cylinder at primary (pump) pressure. This advances the ram rapidly toward the rivet.

3. Full Power Stroke

As the ram contacts the rivet and meets resistance, the hydraulic pressure builds up to the full primary pressure of

approximately 1000 psi. This increased pressure shifts the Intensifier Valve and directs the flow of oil to the bottom of the Intensifier Cylinder. As the intensifier piston moves upward, the plunger in the upper chamber intensifies the hydraulic pressure to approximately 5000 psi. Which completes the heading of the rivet. This maximum pressure is adjustable with a pressure switch which is typically factory preset.

4. Return Stroke

When the maximum hydraulic pressure for which the machine is adjusted is reached, the Cycle Control Unit shifts the Primary Valve above its neutral position reversing the oil flow in the circuit and returns the Intensifier Valve to its original position. Oil then flows to the lower end of the riveter cylinder, retracts the cylinder ram to the "up" position, and simultaneously pushes the intensifier piston and plunger down to its starting position. At this point, a momentary buildup in pressure causes the Cycle Control Unit to shift the Primary Valve into neutral position by acting on the Neutralizing Pin.

Riveting with Hy-Power

Application Data

Riveting

Correctly formed rivet heads are produced by applying the right amount of force with properly designed rivet sets. The force required depends on the size of the rivet, whether it is cold or hot, the material in the rivet, the degree of hardness, and the desired shape of the driven head. Overdriving should be avoided. Annealed rivets should be used.

Cold riveting is usually preferred whenever practical. Squeezing the rivet cold with controlled hydraulic force causes the shank to swell and completely fill the hole before the head is formed, resulting in a tighter rivet. The rivet is work hardened in this process, increasing its strength and producing a rivet unexcelled for tightness and dependability. Hot riveting is used as a means of reducing pressure requirements when driving very large rivets. Riveting pressures for hot riveting average about half those required for the same rivets cold.

Of the various factors affecting the amount of force required, the shape of the head formed is one of the most important. Use of the modified cone head is recommended because of lower force requirements and other reasons discussed under Rivet Sets on page 21. The table lists the forces required for cold forming the modified cone head on annealed carbon steel rivets of various sizes. The table also lists the recommended riveter sizes. Where counter-sunk or button heads are to be formed, greater force is required.

The required length of the rivet to be used depends on various factors. A length approximately equal to $1\frac{1}{2}$ times the diameter of the shank should extend above the plate before the head is formed for average conditions. Greater length may be required for longer grips. Where counter-sunk heads are to be formed, the length is often determined by test.

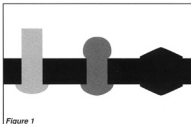


Figure 1

Steps in Forming A Rivet

Figure 1 above shows steps in the Parker "hydraulic squeeze" method of cold forming a modified cone head rivet. Left, the original rivet. Center, head partially formed. Right, the completed rivet show in cross-section. Note how the shank swells under pressure, completely filling the hole. Under this cold flow, a slight fillet forms under the driven head, increasing its strength. The preformed button head is also reshaped to conform to the appearance of the modified cone head.

Cold Riveting Pressures

Rivet Size	Annealed Carbon Steel Grade ASTM A502 or A31		303 Stainless Steel	
	Force Required (Modified Cone or Flat Head)	Recommended Riveter Size	Force Required (Modified Cone or Flat Head)	Recommended Riveter Size
$\frac{1}{8}$ "	4 $\frac{1}{2}$ tons	7 $\frac{1}{2}$ tons	5 tons	10 tons
$\frac{1}{4}$ "	7 $\frac{1}{2}$ tons	10 tons	9 tons	12 $\frac{1}{2}$ tons
$\frac{3}{8}$ "	11 $\frac{1}{2}$ tons	12 $\frac{1}{2}$ tons	14 tons	17 $\frac{1}{2}$ tons
$\frac{1}{2}$ "	16 $\frac{1}{2}$ tons	17 $\frac{1}{2}$ tons	20 tons	25 tons
$\frac{5}{8}$ "	22 tons	25 tons	27 tons	35 tons
$\frac{3}{4}$ "	29 tons	35 tons	35 $\frac{1}{2}$ tons	50 tons
$\frac{7}{8}$ "	46 tons	50 tons	55 $\frac{1}{2}$ tons	75 tons
$1\frac{1}{8}$ "	66 tons	75 tons	79 $\frac{1}{2}$ tons	100 tons
$1\frac{1}{4}$ "	90 tons	100 tons	—	—

Hot Riveting Pressures

Under average conditions and at proper rivet temperature, pressures required for driving hot rivets will run about 50% of those required for driving the same sizes of rivets cold when forming the same types of rivet heads.

Aluminum Rivets

Because the aluminum alloys used in making aluminum rivets vary widely in hardness and ductility, consult the handbooks of the manufacturers of these rivets for riveting pressures.

Hole Punching With Hy-Power

Hy-Power Tonnage Requirements

The tonnages necessary to punch holes of various diameters through different gauges of mild steel with a 25-ton-per-sq.in. shear strength are shown below. Tonnage requirements for materials with different shear strengths can be computed by selecting the proper chart multiplier from table at right. For example: a 1/2 in. dia. hole in 1/2 in. thick stainless steel would require 19.7 x 1.5 = 29.5 tons. The required tonnages for straight cuts or odd-shaped holes can be calculated by multiplying the length of the cut-edge in inches x the material thickness x the shearing strength in tons. This will give the tonnage requirements when using flat punches. When the punch or die has shear equal to the material thickness, the tonnage required will be reduced about 33%.

Shearing Strength of Material in Tons per sq. in. Chart Multiplier

Aluminum, half hard sheet	9.5	0.38
Brass, half hard sheet	20.0	0.80
Copper, rolled	14.0	0.56
Steel, Mild	25.0	1.00
Steel, 50 Carbon	40.0	1.60
Steel, Cold Drawn	30.0	1.20
Steel, Stainless—18-8	38.0	1.50

PLEASE NOTE: The tonnage figures in the table below do not include the recommended + 25% safety factor.

Tons Pressure Required To Punch Mild Steel Plate

(Does not include recommended 25% safety factor)

Metal Gauge	Thick in in.	1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	15/16	1
20	0.036	0.35	0.53	0.71	0.88	1.1	1.2	1.4	1.6	1.8	1.9	2.1	2.3	2.5	2.7	2.8
18	0.048	0.47	0.71	0.94	1.2	1.4	1.7	1.9	2.1	2.4	2.6	2.8	3.1	3.3	3.5	3.8
1/16 or 16	0.060	0.59	0.89	1.2	1.5	1.8	2.1	2.4	2.7	2.9	3.2	3.5	3.8	4.1	4.4	4.7
14	0.075	0.74	1.1	1.5	1.9	2.2	2.6	2.9	3.3	3.7	4.1	4.4	4.8	5.2	5.5	5.9
12	0.105	1.0	1.6	2.1	2.6	3.1	3.6	4.1	4.7	5.2	5.7	6.2	6.7	7.2	7.7	8.3
1/8 or 11	0.120	1.2	1.8	2.4	3.0	3.5	4.1	4.7	5.3	5.9	6.5	7.1	7.7	8.3	8.8	9.4
10	0.135		2.0	2.7	3.3	4.0	4.6	5.3	6.0	6.6	7.3	8.0	8.6	9.3	10.0	10.6
3/16	0.187		2.8	3.7	4.6	5.5	6.5	7.4	8.3	9.2	10.02	11.1	12.0	12.9	13.8	14.8
1/4	0.250			4.9	6.2	7.4	8.6	9.8	11.0	12.3	13.5	14.8	16.0	17.2	18.5	19.7
5/16	0.312				7.8	9.2	10.8	12.3	13.8	15.4	16.9	18.4	20.0	21.5	23.0	24.6
3/8	0.375					11.1	13.0	14.8	16.6	18.5	20.3	22.1	24.0	25.8	27.7	29.5
1/2	0.500						17.2	19.7	22.1	24.6	27.1	29.5	32.0	34.4	36.9	39.4
5/8	0.625									30.8	33.8	36.9	40.0	43.0	46.1	49.2
3/4	0.750										40.6	44.3	48.0	51.9	55.4	59.0
7/8	0.875											51.6	56.0	60.2	64.6	69.0
1	1.000												64.0	68.8	73.8	78.8

Parker Hy-Power Punching vs. Drilling cost comparison

(Average savings using single-hole portable punch)

Diameter of Hole Punched	Percentage of Savings			
	0	25	50	75
1/2" thru 1/4"	24% Lower Cost			
1/2" thru 3/8"	43% Lower Cost			
1/2" thru 1/2"	57% Lower Cost			
1 1/4" thru 3/4"	70% Lower Cost			
1 1/4" thru 1 1/4"	88%			

Parker Hy-Power Riveters...

A model for every application —
Standard and Custom Made

*Simple two-handle push button control for worker safety and ease of operation.

Heavy duty, 5000 psi Hy-Power cylinders. Cylinder cap and body are heat treated steel alloy with precision ground bores.

Specially designed locking nut machined from high strength alloy steel.

Cylinder Rod is induction case hardened, precision ground alloy steel.

Expertly designed and carefully crafted rivet sets of many standard types.

High quality, high pressure hose assemblies for 5000 psi. service and easy installation.

17 1/2-Ton
Standard
Portable Riveter

High strength, heat treated alloy steel forged C-Frame. C-Frames are highly polished to exact standards to reduce stress concentrations.

*NOTE: Second control push button is normally located along this portion of C-Frame.

Hy-Power Portable Riveters

The Hy-Power portable riveter, teamed up with the Hy-Power Generator is the simple, fast, quiet and economical method of squeeze riveting.

Hy-Power portable riveters incorporate an alloy steel "C" frame, processed and heat treated to the exact standards essential to the superior performance of a quality Parker Hy-Power unit.

The Hy-Power method of fast, silent, hydraulic squeeze riveting has become the accepted standard for hundreds of manufacturers the world over. Its high speed, automatic

cycle, long service life, and push button control make it an extraordinary power source for riveting operations.

Hy-Power Custom Riveters

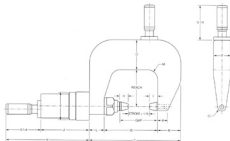
Our engineering staff can put over six decades of experience in Hy-Power hydraulic units to work for you. For the really unusual riveting problem, this engineering service is available and ready to solve any unique production problems.

For more on Parker Hy-Power's custom riveter design capabilities, see page 22.

Parker Hy-power Fluidpower Assembly

313 South Park Drive
St. Marys, OH 45885
(419) 394-7486





Model No.	Capacity Tons	Reach, Inches	Gap Rem To Anvil	Strokes Inches	Average Time Per Cycle Seconds	Weight Less Hose & Suspension (Approx) LBS	Dimensions—In inches for standard forged steel yeeks.													
							A	B	C	D	E	F	G	H	I	J	K	L	M	N
7 1/2-2 1/2	7 1/2	2 1/2	5/16	3	1 1/2 to 2	32	1 1/2	6 1/2	10 1/2	2 1/2	2 1/2	1 1/2	3/4	3/4	7/16	13/16	2	1	2 1/2	
7 1/2-4	7 1/2	4	5/16	3	1 1/2 to 2	40	1 1/2	6 1/2	10 1/2	3 1/2	2 1/2	1 1/2	3/4	3/4	7/16	13/16	2	1	2 1/2	
7 1/2-6	7 1/2	6	5/16	3	1 1/2 to 2	49	1 1/2	6 1/2	11 1/2	3 1/2	2 1/2	1 1/2	3/4	3/4	7/16	13/16	2	1	2 1/2	
7 1/2-8	7 1/2	8	5/16	3	1 1/2 to 2	61	1 1/2	6 1/2	11 1/2	3 1/2	2 1/2	2	3/4	3/4	7/16	13/16	2	1 1/2	3 1/2	
7 1/2-10	7 1/2	10	5/16	3	1 1/2 to 2	72	1 1/2	6 1/2	11 1/2	4	2 1/2	2	3/4	3/4	7/16	13/16	2	1 1/2	3 1/2	
10-2 1/2	10	2 1/2	5/16	3	1 1/2 to 2	36	1 1/2	6 1/2	10 1/2	3 1/2	3 1/2	1 1/2	3/4	3/4	7/16	12 1/2	2	1	2 1/2	
10-4	10	4	5/16	3	1 1/2 to 2	45	1 1/2	6 1/2	11 1/2	3 1/2	3 1/2	2	3/4	3/4	7/16	12 1/2	2	1 1/2	3 1/2	
10-6	10	6	5/16	3	1 1/2 to 2	57	1 1/2	6 1/2	11 1/2	3 1/2	3 1/2	2	3/4	3/4	7/16	12 1/2	2	1 1/2	3 1/2	
10-8	10	8	5/16	3	1 1/2 to 2	68	1 1/2	6 1/2	12	4	3 1/2	2	3/4	3/4	7/16	12 1/2	2	1 1/2	3 1/2	
10-10	10	10	5/16	3	1 1/2 to 2	78	1 1/2	6 1/2	12 1/2	4 1/2	3 1/2	2	3/4	3/4	7/16	12 1/2	2	1 1/2	4	
10-12	10	12	5/16	3	1 1/2 to 2	102	1 1/2	6 1/2	12 1/2	5	3 1/2	2 1/2	3/4	3/4	7/16	12 1/2	2	1 1/2	4 1/2	
10-14	10	14	5/16	3	1 1/2 to 2	128	1 1/2	6 1/2	13 1/2	5 1/2	3 1/2	2 1/2	3/4	3/4	7/16	12 1/2	2	2	4 1/2	
10-16	10	16	5/16	3	1 1/2 to 2	150	1 1/2	6 1/2	13 1/2	5 1/2	3 1/2	2 1/2	3/4	3/4	7/16	12 1/2	2	2	5 1/2	
12 1/2-6	12 1/2	6	5/16	3	2 to 2 1/2	71	1 1/2	7 1/2	13 1/2	4	4 1/2	2	3/4	3/4	7/16	12 1/2	2 1/2	1	3 1/2	
12 1/2-8	12 1/2	8	5/16	3	2 to 2 1/2	102	1 1/2	7 1/2	14 1/2	5	4 1/2	2 1/2	3/4	3/4	7/16	12 1/2	2 1/2	1	4 1/2	
12 1/2-10	12 1/2	10	5/16	3	2 to 2 1/2	125	1 1/2	7 1/2	14 1/2	5 1/2	4 1/2	2 1/2	3/4	3/4	7/16	12 1/2	2 1/2	1 1/2	4 1/2	
12 1/2-12	12 1/2	12	5/16	3	2 to 2 1/2	140	1 1/2	7 1/2	15 1/2	6	4 1/2	2 1/2	3/4	3/4	7/16	12 1/2	2 1/2	1 1/2	4 1/2	
12 1/2-14	12 1/2	14	5/16	3	2 to 2 1/2	168	1 1/2	7 1/2	15 1/2	6 1/2	4 1/2	3	3/4	3/4	7/16	12 1/2	2 1/2	1 1/2	4 1/2	
12 1/2-16	12 1/2	16	5/16	3	2 to 2 1/2	201	1 1/2	7 1/2	15 1/2	6 1/2	4 1/2	3	3/4	3/4	7/16	12 1/2	2 1/2	1 1/2	4 1/2	
17 1/2-6	17 1/2	6	5/16	3	2 1/2 to 3	72	1 1/2	7 1/2	13 1/2	4	4 1/2	2	3/4	3/4	7/16	12 1/2	2 1/2	2 1/2	5 1/2	
17 1/2-8	17 1/2	8	5/16	3	2 1/2 to 3	103	1 1/2	7 1/2	14 1/2	5	4 1/2	2 1/2	3/4	3/4	7/16	12 1/2	2 1/2	2 1/2	5 1/2	
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17 1/2-12	17 1/2	12	5/16	3	2 1/2 to 3	141	1 1/2	7 1/2	15 1/2	6	4 1/2	2 1/2	3/4	3/4	7/16	12 1/2	2 1/2	2	5 1/2	
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25-12	25	12	5/16	3 1/2	2 1/2 to 3	215	1 1/2	9 1/2	17 1/2	7	5	3	3/4	3/4	7/16	13 1/2	2 1/2	2	5 1/2	
25-14	25	14	5/16	3 1/2	2 1/2 to 3	242	1 1/2	9 1/2	18 1/2	7 1/2	5	3	3/4	3/4	7/16	13 1/2	2 1/2	2	5 1/2	
25-16	25	16	5/16	3 1/2	2 1/2 to 3	279	1 1/2	9 1/2	19 1/2	8 1/2	5 1/2	3	3/4	3/4	7/16	13 1/2	2 1/2	2	5 1/2	
35-6	35	6	7/16	3 1/2	3 to 4	187	2	10 1/2	17 1/2	6 1/2	5	3	3/4	3/4	7/16	14 1/2	3	2 1/2	6 1/2	
35-8	35	8	7/16	3 1/2	3 to 4	220	2	10 1/2	18 1/2	6 1/2	5 1/2	3	3/4	3/4	7/16	14 1/2	3	2 1/2	6 1/2	
35-10	35	10	7/16	3 1/2	3 to 4	245	2	10 1/2	19 1/2	7	5 1/2	3	3/4	3/4	7/16	14 1/2	3	2 1/2	6 1/2	
35-12	35	12	7/16	3 1/2	3 to 4	300	2	10 1/2	19 1/2	7 1/2	6 1/2	3 1/2	3/4	3/4	7/16	14 1/2	3	2 1/2	6 1/2	
35-14	35	14	7/16	3 1/2	3 to 4	344	2	10 1/2	20 1/2	8	6 1/2	3 1/2	3/4	3/4	7/16	14 1/2	3	2 1/2	7	
35-16	35	16	7/16	3 1/2	3 to 4	391	2	10 1/2	20 1/2	8 1/2	6 1/2	3 1/2	3/4	3/4	7/16	14 1/2	3	2 1/2	7 1/2	
50-6	50	6	8 1/16	4	3 to 4	286	2 1/2	12 1/2	21 1/2	8 1/2	6 1/2	3 1/2	3/4	3/4	7/16	15 1/2	4	2 1/2	8 1/2	
50-8	50	8	8 1/16	4	3 to 4	327	2 1/2	12 1/2	22 1/2	7 1/2	6 1/2	3 1/2	3/4	3/4	7/16	15 1/2	4	2 1/2	8 1/2	
50-10	50	10	8 1/16	4	3 to 4	377	2 1/2	12 1/2	23 1/2	8	6 1/2	3 1/2	3/4	3/4	7/16	15 1/2	4	2 1/2	8 1/2	
50-12	50	12	8 1/16	4	3 to 4	440	2 1/2	12 1/2	23 1/2	8 1/2	6 1/2	3 1/2	3/4	3/4	7/16	15 1/2	4	2 1/2	8 1/2	
50-14	50	14	8 1/16	4	3 to 4	491	2 1/2	12 1/2	24 1/2	9 1/2	6 1/2	3 1/2	3/4	3/4	7/16	15 1/2	4	2 1/2	8 1/2	
50-16	50	16	8 1/16	4	3 to 4	569	2 1/2	12 1/2	24 1/2	9 1/2	6 1/2	4 1/2	3/4	3/4	7/16	15 1/2	4	2 1/2	8 1/2	
75*																				
100*																				

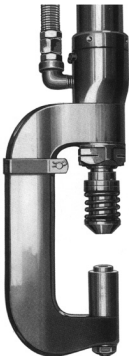
*Cylinders with stroke less than standard will be furnished with cap end or head end piston spacer. Gap dimension decreases correspondingly with addition of cap end spacer, but remains unchanged with addition of head end spacer.

**SPECIFICATIONS: Portable riveters and cylinder assemblies are also available in 75 and 100 ton sizes. Owing to variations in requirements in the larger sizes, it is not practical to list them here. For engineering recommendations, furnish detailed information on work requirements.

*Dimensions H and I are minimum; the maximum dimensions for each is 3". See page 21 for typical rivet set dimensions and special notes.

Parker Hy-Power Punches...

Efficiently punch holes in steel or aluminum —
Up to 11 times faster than drilling at a fraction
of the cost...



Portable
Punch/
Spring
Stripper

Hy-Power Punches

Hy-Power punches are fast. Cycling as quickly as 1 1/2 seconds. Hy-Power hydraulic portable punches are up to 11 times faster than drilling. They come in models that punch up to 8 holes simultaneously—even through multiple thicknesses of steel and/or aluminum. And they punch a smooth burr-free hole; leaving only easy-to-reclaim “slugs” instead of messy drill shavings.

All this adds up to remarkable cost savings. Savings as great as 89% in the average application, using a single-hole Hy-Power punch (see chart, page 14). With a multi-hole punch you could save even more.

Hy-Power Punches are reliable. Proven Parker quality, engineering, and hydraulic know-how combine to give you punching equipment designed for years of trouble-free, economical operation.

Hy-Power Punches are precise and quiet. Although compact and portable, Hy-Power punches operate at 5000 psi. This, teamed with Parker's silent and precise hydraulic operation, gives you smooth, burr-free, undistorted holes. With no shock loading on the unit.

Hy-Power Punches are flexible. You can easily punch miscellaneous holes in varying locations. And, extended C-frame models let you punch holes in long cylindrical sections, irregular-shaped assemblies, and other difficult work pieces.

Hy-Power Punches are portable. With a Hy-Power portable punch, you eliminate expensive, time-consuming handling of large, unwieldy assemblies. Simple easy-to-use, inexpensive hangers position the unit with minimal effort, and allow the unit to be stored out of the way...saving valuable floor space.

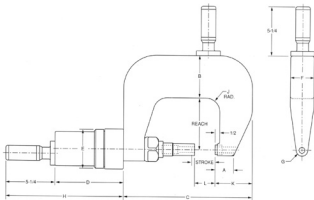
Strippers

Strippers are used to strip the punch from the work after the hole has been made. You can choose from fixed or spring type mechanical strippers, or the polyurethane fixed stripper. The polyurethane stripper provides the added advantage of clamping multiple thicknesses together during punching, as well as serving as a low-cost, silent, efficient stripper.

Parker Hy-power
Fluidpower Assembly

313 South Park Drive
St. Marys, OH 45885
(419) 394-7486


Motion & Control



Model No.	Capacity Tons	Reach Inches	Stroke Inches	Average Time Per Cycle Seconds	Weight Loss Suspension Loss (Approx) LBS	Dimensions—For standard alloy steel C-frames. All dimensions are in inches.										
						A	B	C	D	E	F	G	H	J	K	L
7 1/2-2 1/2	2 1/2	2 1/2	3	1 1/2 to 2	42	2	2 1/2	10 1/2	7 1/2	2 1/2	2 1/2	1/2	13 1/2	1	2 1/2	2 1/2
7 1/2-4	7 1/2	4	3	1 1/2 to 2	52	2	3	10 1/2	7 1/2	2 1/2	2 1/2	1/2	13 1/2	1	2 1/2	2 1/2
7 1/2-6	7 1/2	6	3	1 1/2 to 2	62	2	3 1/2	11 1/2	7 1/2	2 1/2	2 1/2	1/2	13 1/2	1 1/2	3	2 1/2
7 1/2-8	7 1/2	8	3	1 1/2 to 2	76	2	4	11 1/2	7 1/2	2 1/2	2 1/2	1/2	13 1/2	1 1/2	3 1/2	2 1/2
10-2 1/2	10	2 1/2	3	1 1/2 to 2	44	2	2 1/2	10 1/2	7 1/2	3 1/2	2 1/2	1/2	12 1/2	1	2 1/2	2 1/2
10-4	10	4	3	1 1/2 to 2	54	2	3 1/2	11	7 1/2	3 1/2	2 1/2	1/2	12 1/2	1	2 1/2	2 1/2
10-6	10	6	3	1 1/2 to 2	65	2	3 1/2	11 1/2	7 1/2	3 1/2	2 1/2	1/2	12 1/2	1 1/2	3 1/2	2 1/2
10-8	10	8	3	1 1/2 to 2	79	2	4 1/2	11 1/2	7 1/2	3 1/2	2 1/2	1/2	12 1/2	1 1/2	3 1/2	2 1/2
12 1/2-4	12 1/2	4	3	2 to 2 1/2	74	2 1/2	4	13 1/2	7 1/2	4 1/2	2 1/2	1/2	12 1/2	1	3 1/2	2 1/2
12 1/2-6	12 1/2	6	3	2 to 2 1/2	90	2 1/2	4 1/2	14	7 1/2	4 1/2	2 1/2	1/2	12 1/2	1 1/2	4 1/2	2 1/2
12 1/2-8	12 1/2	8	3	2 to 2 1/2	108	2 1/2	5	14 1/2	7 1/2	4 1/2	2 1/2	1/2	12 1/2	1 1/2	5	2 1/2
12 1/2-10	12 1/2	10	3	2 to 2 1/2	132	2 1/2	5 1/2	15 1/2	7 1/2	4 1/2	2 1/2	1/2	12 1/2	2	5 1/2	2 1/2
17 1/2-4	17 1/2	4	3	2 1/2 to 3	76	2 1/2	4	13 1/2	7 1/2	4 1/2	2 1/2	1/2	12 1/2	1	3 1/2	2 1/2
17 1/2-6	17 1/2	6	3	2 1/2 to 3	92	2 1/2	4 1/2	14	7 1/2	4 1/2	2 1/2	1/2	12 1/2	1 1/2	4 1/2	2 1/2
17 1/2-8	17 1/2	8	3	2 1/2 to 3	110	2 1/2	5	14 1/2	7 1/2	4 1/2	2 1/2	1/2	12 1/2	1 1/2	5	2 1/2
17 1/2-10	17 1/2	10	3	2 1/2 to 3	134	2 1/2	5 1/2	15 1/2	7 1/2	4 1/2	2 1/2	1/2	12 1/2	2	5 1/2	2 1/2
25-4	25	4	3 1/2	2 1/2 to 3	120	2 1/2	4	14 1/2	8 1/2	5	3 1/2	1	13 1/2	1 1/2	3 1/2	3 1/2
25-6	25	6	3 1/2	2 1/2 to 3	145	2 1/2	4 1/2	15 1/2	8 1/2	5	3 1/2	1	13 1/2	2	4 1/2	3 1/2
25-8	25	8	3 1/2	2 1/2 to 3	175	2 1/2	5 1/2	16 1/2	8 1/2	5	3 1/2	1	13 1/2	2	5	3 1/2
25-10	25	10	3 1/2	2 1/2 to 3	228	2 1/2	6	16 1/2	8 1/2	5	3 1/2	1	13 1/2	2	5 1/2	3 1/2
35-4	35	4	3 1/2	3 to 4	186	3	4 1/2	17 1/2	9 1/2	5 1/2	4	1 1/2	14 1/2	1 1/2	4 1/2	3 1/2
35-6	35	6	3 1/2	3 to 4	220	3	5 1/2	18 1/2	9 1/2	5 1/2	4	1 1/2	14 1/2	2 1/2	4 1/2	3 1/2
35-8	35	8	3 1/2	3 to 4	260	3	6	19 1/2	9 1/2	5 1/2	4	1 1/2	14 1/2	2 1/2	5 1/2	3 1/2
35-10	35	10	3 1/2	3 to 4	296	3	6 1/2	19 1/2	9 1/2	5 1/2	4	1 1/2	14 1/2	2 1/2	6 1/2	3 1/2
50-6	50	6	4	3 to 4	345	3 1/2	5 1/2	21 1/2	11 1/2	6 1/2	5	1 1/2	16 1/2	2 1/2	5 1/2	3 1/2
50-8	50	8	4	3 to 4	397	3 1/2	6 1/2	22 1/2	11 1/2	6 1/2	5	1 1/2	16 1/2	2 1/2	6	3 1/2
50-10	50	10	4	3 to 4	445	3 1/2	7 1/2	22 1/2	11 1/2	6 1/2	5	1 1/2	16 1/2	3	6 1/2	3 1/2

*For units over 50 tons consult factory

Parker Hy-Power De-Riveters...

Efficiently remove badly squeezed or bent rivets in seconds — without damaging the work piece...



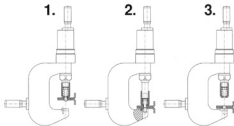
Hy-Power De-Riveters

Now you can remove a badly squeezed or bent rivet in seconds. And not only that, you can remove it without damaging the workpiece or the hole.

Hy-Power de-riveters incorporate all of the world class design features of Parker Hy-Power riveters, see page 6. De-riveters are available in standard portable models from 7½ to 100 tons powered by 5000 psi Hy-Power generators.

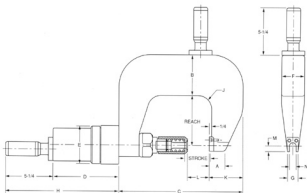
How the De-Riveter works:

1. The locating sleeve on the ram is positioned over the manufactured rivet head.
2. The ram advances, bringing the C-frame anvil up against the plate with its U-slot surrounding the offset rivet head. The ram continues advancing, punching out the rivet.
3. The ram returns, carrying the rivet head which is stripped from the punch when the ram is fully retracted.



Parker Hy-Power De-Riveters

Standard De-Riveters Dimensions/Model Numbers



Model No.	Capacity Tons	Reach inches	Stroke inches	Average Time Per Cycle Seconds	Weight Less Hose And Suspension (Approx) LBS	Dimensions—for standard alloy steel C-frames. All dimensions are in inches.												
						A	B	C	D	E	F	G	H	J	K	L	M	N
7 1/2-2 1/2	7 1/2	2 1/2	3	1 1/2 to 2	42	1 1/2	2 1/2	10 1/2	7 1/2	2 1/2	2 1/2	1 1/2	13 1/2	1	2 1/2	2 1/2	1/2	1/2
7 1/2-4	7 1/2	4	3	1 1/2 to 2	52	1 1/2	3	11	7 1/2	2 1/2	2 1/2	1 1/2	13 1/2	1	2 1/2	2 1/2	1/2	1/2
7 1/2-6	7 1/2	6	3	1 1/2 to 2	62	1 1/2	3 1/2	11 1/2	7 1/2	2 1/2	2 1/2	1 1/2	13 1/2	1 1/2	2 1/2	2 1/2	1/2	1/2
7 1/2-8	7 1/2	8	3	1 1/2 to 2	76	1 1/2	4	11 1/2	7 1/2	2 1/2	2 1/2	1 1/2	13 1/2	1 1/2	3 1/2	2 1/2	1/2	1/2
10-2 1/2	10	2 1/2	3	1 1/2 to 2	44	1 1/2	2 1/2	10 1/2	7 1/2	3 1/2	2 1/2	1 1/2	12 1/2	1 1/2	3 1/2	2 1/2	1/2	1/2
10-4	10	4	3	1 1/2 to 2	54	1 1/2	3 1/2	11 1/2	7 1/2	3 1/2	2 1/2	1 1/2	12 1/2	1 1/2	3 1/2	2 1/2	1/2	1/2
10-6	10	6	3	1 1/2 to 2	65	1 1/2	3 1/2	11 1/2	7 1/2	3 1/2	2 1/2	1 1/2	12 1/2	1 1/2	3 1/2	2 1/2	1/2	1/2
10-8	10	8	3	1 1/2 to 2	79	1 1/2	4 1/2	12	7 1/2	3 1/2	2 1/2	1 1/2	12 1/2	1 1/2	3 1/2	2 1/2	1/2	1/2
12 1/2-4	12 1/2	4	3	2 to 2 1/2	76	2 1/2	3 1/2	13 1/2	7 1/2	4 1/2	2 1/2	1 1/2	12 1/2	1	3 1/2	2 1/2	1/2	1
12 1/2-6	12 1/2	6	3	2 to 2 1/2	92	2 1/2	4 1/2	14 1/2	7 1/2	4 1/2	2 1/2	1 1/2	12 1/2	1 1/2	4 1/2	2 1/2	1/2	1
12 1/2-8	12 1/2	8	3	2 to 2 1/2	110	2 1/2	5	15 1/2	7 1/2	4 1/2	2 1/2	1 1/2	12 1/2	1 1/2	3 1/2	2 1/2	1/2	1
12 1/2-10	12 1/2	10	3	2 to 2 1/2	135	2 1/2	5 1/2	16 1/2	7 1/2	4 1/2	2 1/2	1 1/2	12 1/2	2	5 1/2	2 1/2	1/2	1
17 1/2-4	17 1/2	4	3	2 1/2 to 3	78	2 1/2	4	13 1/2	7 1/2	4 1/2	2 1/2	1 1/2	12 1/2	1	3 1/2	2 1/2	1/2	1 1/2
17 1/2-6	17 1/2	6	3	2 1/2 to 3	94	2 1/2	4 1/2	14 1/2	7 1/2	4 1/2	2 1/2	1 1/2	12 1/2	1 1/2	4 1/2	2 1/2	1/2	1 1/2
17 1/2-8	17 1/2	8	3	2 1/2 to 3	112	2 1/2	5	15 1/2	7 1/2	4 1/2	2 1/2	1 1/2	12 1/2	1 1/2	4 1/2	2 1/2	1/2	1 1/2
17 1/2-10	17 1/2	10	3	2 1/2 to 3	137	2 1/2	5 1/2	16 1/2	7 1/2	4 1/2	2 1/2	1 1/2	12 1/2	2	5 1/2	2 1/2	1/2	1 1/2
25-4	25	4	3 1/2	2 1/2 to 3	124	2 1/2	4	15 1/2	7 1/2	5	3 1/2	2 1/2	13 1/2	1 1/2	3 1/2	2 1/2	1/2	1 1/2
25-6	25	6	3 1/2	2 1/2 to 3	150	2 1/2	4	16 1/2	7 1/2	5	3 1/2	2 1/2	13 1/2	2	4 1/2	2 1/2	1/2	1 1/2
25-8	25	8	3 1/2	2 1/2 to 3	180	2 1/2	5 1/2	17	7 1/2	5	3 1/2	2 1/2	13 1/2	2	4 1/2	2 1/2	1/2	1 1/2
25-10	25	10	3 1/2	2 1/2 to 3	223	2 1/2	6	17 1/2	7 1/2	5	3 1/2	2 1/2	13 1/2	2	5 1/2	2 1/2	1/2	1 1/2
35-4	35	4	3 1/2	3 to 4	168	2 1/2	4 1/2	16 1/2	7 1/2	5 1/2	4	2 1/2	14 1/2	1 1/2	3 1/2	2 1/2	1/2	1 1/2
35-6	35	6	3 1/2	3 to 4	222	2 1/2	5 1/2	18 1/2	7 1/2	5 1/2	4	2 1/2	14 1/2	2 1/2	4 1/2	2 1/2	1/2	1 1/2
35-8	35	8	3 1/2	3 to 4	263	2 1/2	6	19 1/2	7 1/2	5 1/2	4	2 1/2	14 1/2	2 1/2	5 1/2	2 1/2	1/2	1 1/2
35-10	35	10	3 1/2	3 to 4	300	2 1/2	6 1/2	20 1/2	7 1/2	5 1/2	4	2 1/2	14 1/2	2 1/2	5 1/2	2 1/2	1/2	1 1/2
50-6	50	6	4	3 to 4	348	3 1/2	5 1/2	21 1/2	11 1/2	6 1/2	5	3 1/2	16 1/2	2 1/2	5	3 1/2	1	2
50-8	50	8	4	3 to 4	398	3 1/2	6 1/2	22 1/2	11 1/2	6 1/2	5	3 1/2	16 1/2	2 1/2	5 1/2	3 1/2	1	2
50-10	50	10	4	3 to 4	446	3 1/2	7 1/2	23 1/2	11 1/2	6 1/2	5	3 1/2	16 1/2	3	6 1/2	3 1/2	1	2

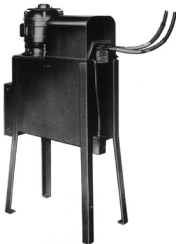
*For units over 50 tons consult factory

Parker Hy-power
Fluidpower Assembly
313 South Park Drive
St. Marys, OH 45885
(419) 394-7486

Parker
Motion & Control

Parker Hy-Power Generators...

Fast, durable and efficient — the heart of the Hy-Power system



Series J Hydraulic Pressure Generators



Series JL Hydraulic Pressure Generators

Standard "J", "JL", and "JB" Series

The Hy-Power generator is a uniquely different power source — combining motor, pump, oil reservoir, control valves, and high pressure intensifier in one self-contained, compact unit.

Standard Hy-Power generators are available in three basic models. These are designated as series "J", "JL" and series "JB". Each generator consists of an electrically controlled, hydro-mechanical, multi-valve unit; a direct-coupled motor pump unit to supply primary pressure at approximately 1000 psi; and an intensifier which increases working pressures to a maximum of 5000 psi, adjustable down to 1500 with an adjustable pressure switch.

Series "J" hydraulic pressure generators are available with three different pump and motor combinations, suitable for use on Hy-Power riveters, punches and other units, up to 35 tons capacity.

Series "JL" hydraulic pressure generators are designed with larger tanks for reduced temperature operation in high cycle applications. The JL is available in 35 ton and is standard for 50 ton models.

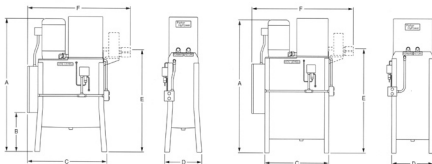
The larger series "JB" generator are available with two different pump and motor combinations for applications ranging up to a maximum of 100 tons.

Where a variety of rivet sizes are encountered and frequent pressure adjustments are essential, or where an extra-wide pressure range is desired, series "K" and "KB" generators are available. These are identical to series "J" and "JB" except they incorporate a unique pressure control unit. Consult factory for recommendations.

Transfer valve

Where it is more convenient to use one generator to operate two separate work units, Hy-Power hydraulic pressure generators can be supplied with a solenoid-operated transfer valve. This transfer valve operates automatically with electrical interlocks to deliver hydraulic pressure to one unit at a time, depending on which control buttons are depressed. This is a precision product especially designed and built to meet the unusual requirements of this high pressure application.

The Hy-Power generator is often used with units other than standard riveters, and our engineers will gladly make recommendations.



Generator** Model No.	Pump Size, Gpm	Motor Size, HP	Reservoir Capacity, Gallons	Usable Intensifier Capacity, Cubic Inches	Hose or E.H. Pipe Size, Inches, I.P.T.	Approx Net Weight in Lbs. (Less Oil and Hose)	Dimensions, Inches					
							A	B	C	D	E	F
J-35-5-3	5	3	32	6.4	1/2	555	59 1/2	13 1/2	33	15 1/2	40 1/4	42
J-35-8-5	8	5	32	6.4	1/2	555	59 1/2	13 1/2	33	15 1/2	40 1/4	42
J-35-11-7 1/2	11	7 1/2	32	6.4	1/2	555	59 1/2	13 1/2	33	15 1/2	40 1/4	42
JL-35-11-7 1/2	11	7 1/2	72	6.4	1/2	700	59 1/2	10 1/2	33	20	40 1/4	42
JL-50-5-3	5	3	72	23.5	1/2	800	60 1/4	13 1/2	33	20	40 1/4	45
JL-50-8-5	8	5	72	23.5	1/2	800	60 1/4	13 1/2	33	20	40 1/4	45
JL-50-11-7 1/2	11	7 1/2	72	23.5	1/2	800	60 1/4	13 1/2	33	20	40 1/4	45

Generator Selection

Series "J", "JL" and "JB" generators are furnished where production operations do not require frequent pressure adjustments.

Series "K" and "KB" generators are of an adjustable pressure type. The dial type pressure control unit permits adjustment of maximum pressure from 5000 psi down to 1500 psi. They are otherwise identical to the corresponding "J" and "JB" models.

Generators may be equipped with an auxiliary Transfer Valve at extra cost. Valve permits operating alternately two separate units from a single generator.

*Dimension "F" applies to generators equipped with Transfer Valve.

Vertical N.E.M.A. frame, ball-bearing, T.E.F.C. motors are standard equipment.

**To determine correct generator size, compare usable Intensifier Capacity as shown in this table in cubic inches with the amount of intensified oil needed (piston area x intensified pressure stroke) to move the selected Hy-Power cylinder ram through the intensified pressure stroke.

Parker Hy-Power Cylinders...

Compact heavy duty hydraulic cylinders specifically designed for 5000 psi service



2" Bore — Model 7 1/2



2 1/2" Bore — Model 10



2 1/2" Bore — Model 12 1/2



3" Bore — Model 17 1/2



3 1/2" Bore — Model 25



4 1/4" Bore — Model 35



5" Bore — Model 50



6 1/2" Bore — Model 75



7 1/4" Bore — Model 100

Hy-Power Cylinders For Industry

Hy-Power cylinders are compact units designed especially for service using hydraulic pressures to 5000 psi on push stroke applications.

The cylinder body is heat-treated alloy steel with a precision ground bore. The piston rod is alloy steel, case-hardened and ground.

The rod moves through an alloy steel, heat-treated, chrome plated, cylinder cap and gland bearing. The gland packing is self adjusting. An original floating-type piston is accurately fitted with step seal piston rings, ensuring maximum service.

Hy-Power cylinders can be quoted in varying stroke lengths for your specialized applications.

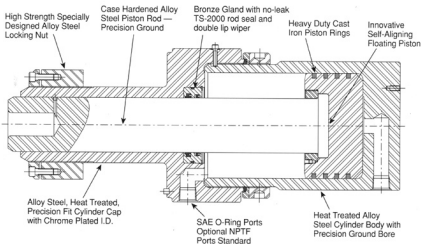
Standard Specifications/Features

1. Bore sizes 2" to 7 1/4"
2. Hydraulic service to 5000 psi push/1000 psi pull with a design factor of 4:1
3. Heat Treated Alloy Steel Cylinder Body with a precision ground bore
4. Case hardened precision ground alloy steel piston rod
5. Heavy duty-long life cast iron piston rings
6. High strength alloy steel locking nut
7. Alloy steel-precision fit cylinder cap chrome plated on the I.D.
8. Available in several standard stroke lengths
9. Bronze gland with no-leak TS-2000 rod seal and double lip wiper

Customer Applications

Production engineers and tool designers frequently select Hy-Power cylinders and generators to be incorporated in riveting, punching or pressing units of their own design. Hy-Power cylinders are ideal for this purpose because they are available in a range of sizes at moderate cost. The output forces available are extremely high for cylinders of this size and weight. Parkers lock-nut mounting method simplifies installation and affords unusual adaptability.

Parker will gladly cooperate with your engineers in the proper selection of Hy-Power cylinders and generators.



How to Order Hy-Power Cylinders

Hy-Power cylinders are available in 9 standard models as shown on page 14. Each model has a standard stroke length as shown in table A below. Stroke lengths shorter than standard for a given model may be ordered. Spacers will be used to shorten the stroke. Overall dimensions for each model would remain as shown in table 1 on page 16.

Model	Bore	Push Tonnage @5000 psi	Standard Stroke
Model 7 ¹ / ₂ "	2"	7 ¹ / ₂	3"
Model 10"	2 ¹ / ₂ "	10	3"
Model 12 ¹ / ₂ "	2 ¹ / ₂ "	12 ¹ / ₂	3"
Model 17 ¹ / ₂ "	3"	17 ¹ / ₂	3" or 4"
Model 25"	3 ¹ / ₂ "	25	3 ¹ / ₂ "
Model 35"	2 ¹ / ₂ "	35	3 ¹ / ₂ "
Model 50"	5"	50	4"
Model 75"	6 ¹ / ₂ "	75	6"
Model 100	7 ¹ / ₂ "	100	6"

Order by model number and state required stroke

Envelopes and Mounting Dimensions

Envelope and Mounting Dimensions — see table 1

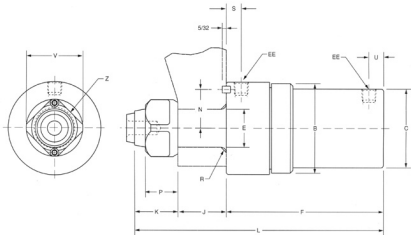


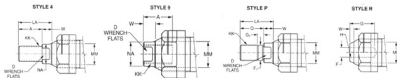
Table 1 — Envelope and Mounting Dimensions

Bore	Capacity Tons@ 5000 psi	Stroke	Wgt	B	C	E	F	J	K	L	EE NPT	EE SAE	N	P	R	S	U	V	Z
2	7½	3	16	2½	2½	1.625	7½	2	1¼	11½	½	#8	1½	1¼	¼	1¼	¼	2½	2 SQ.
2½	10	3	18	3¼	2½	1.625	7½	2	1¼	10½	½	#8	1½	1¼	¼	1¼	¼	2½	2 SQ.
2½	12½	3	20	4¼	3¼	1.875	7½	2½	2	11½	½	#8	1½	1½	¼	¼	¼	2½	2½ SQ.
3	17½	3	21	4¼	3¼	1.875	7½	2½	2	11½	½	#8	1½	1½	¼	¼	¼	2½	2½ SQ.
3	17½	4	23	4¼	3¼	1.875	8½	2½	2	12½	½	#8	1½	1½	¼	¼	¼	2½	2½ SQ.
3½	25	3½	36	5	4¼	2.500	8½	2½	2½	13½	½	#10	2¼	1¼	¼	¼	¼	3½	3 HEX.
4¼	35	3½	66	5½	5	2.875	9½	3	2½	14½	½	#10	2½	2	¼	¼	¼	4	3½ HEX.
5	50	4	98	6½	6	3.500	11½	4	3	18½	¾	#12	3¼	2½	¼	1¼	1¼	5½	4½ SQ.
6¼	75	6	238	9½	7¼	4.750	14¼	5	3¼	23	¾	#12	3½	3¼	¼	1¼	1¼	6½	6½ RND.
7¼	100	6	311	10½	8¼	5.000	15¼	5¼	4¼	25¼	¾	#12	4½	3½	¼	1¼	1¼	7½	7½ RND.

*Cylinder with strokes less than standard are furnished with spacers (at extra cost).

**NPTF ports are furnished as standard. S.A.E. straight thread ports are optional at extra cost.

*E" dimensions—.001" to—.002".



Parker Thread Style 4 (NFPA Style SM)

A rod end high strength stud is supplied on thread style 4 through 2 1/2" dia piston rods. Larger sizes or special rod ends are recommended where the workpiece is secure against the shoulder. When the workpiece is not shouldered, style 4 rod ends are recommended through 2 1/2" dia. piston rods. Use style 9 for applications where female rod ends are required. If rod end is not specified, style 4 will be supplied.

Parker Thread Style 9 (NFPA Style SF)

Style P American Standard Screw Threads

Threaded rod end to attach various types of tools and dies.

Style R

Shank hole rod ends are constructed to receive rivet sets.

Special Style 3

Special rod end; thread, rod eye, blanks, extension, etc.

To order specify "Style 3" and give desired dimensions for KK or T, A and LA. If otherwise, furnish dimensional sketch.

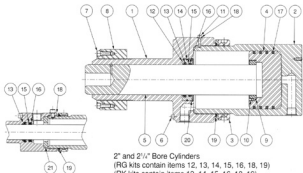
Table 2 — Rod End Dimensions

Bore	Rod Dia. Size	Style Rod	Thread		A	D	F	F ₁	G	G ₁	H	LA	NA	Q	W	
			KK	T												
2	1 1/2	4	1/2-16	—	1 1/2	5/8	—	—	—	—	—	1 1/2	1 1/2	—	1/2	
		9	1/2-16	—	1 1/2	5/8	—	—	—	—	—	—	1 1/2	—	1/2	
		P	—	1/2-14	—	1 1/2	5/8	—	905	1/2	—	—	1 1/2	—	1 1/2	1/2
2 1/4	1 1/2	R	—	—	—	—	500	—	1 1/2	—	1/2	—	—	—	1/2	
		4	1/2-16	—	1 1/2	5/8	—	—	—	—	—	—	1 1/2	—	1/2	
		9	1/2-16	—	1 1/2	5/8	—	—	—	—	—	—	1 1/2	—	1/2	
2 1/2	1 1/2	P	—	—	—	—	—	905	—	1/2	—	—	—	—	1/2	
		R	—	—	—	—	500	—	1 1/2	—	1/2	—	—	—	1/2	
		4	1-14	—	1 1/2	1 1/2	—	—	—	—	—	—	2 1/2	1 1/2	—	1/2
3	1 1/2	9	1-14	—	1 1/2	1 1/2	—	—	—	—	—	—	1 1/2	—	1/2	
		P	—	1 1/2-12	—	1 1/2	—	1,155	—	1/2	—	—	1 1/2	—	1/2	
		R	—	—	—	—	825	—	1 1/2	—	1/2	—	—	—	1/2	
3 1/2	1 1/2	4	1-14	—	1 1/2	1 1/2	—	—	—	—	—	2 1/2	1 1/2	—	1/2	
		9	1-14	—	1 1/2	1 1/2	—	—	—	—	—	—	1 1/2	—	1/2	
		P	—	1 1/2-12	—	1 1/2	—	1,155	—	1/2	—	—	1 1/2	—	1/2	
4	2 1/2	R	—	—	—	—	825	—	1 1/2	—	1/2	—	—	—	1/2	
		4	1 1/2-12	—	2	1 1/2	—	—	—	—	—	—	2 1/2	1 1/2	—	1/2
		9	1 1/2-12	—	2	1 1/2	—	—	—	—	—	—	1 1/2	—	1/2	
4 1/2	2 1/2	P	—	—	—	—	—	1,405	—	1/2	—	—	—	—	1/2	
		R	—	—	—	—	750	—	1 1/2	—	1/2	—	—	—	1/2	
		4	1 1/2-12	—	2 1/2	1 1/2	—	—	—	—	—	—	3 1/2	2 1/2	—	1/2
5	2 1/2	9	1 1/2-12	—	2 1/2	1 1/2	—	—	—	—	—	—	—	—	1/2	
		P	—	—	—	—	—	—	1,624	—	1/2	—	—	—	1/2	
		R	—	—	—	—	875	—	1 1/2	—	1/2	—	—	—	1/2	
6	3 1/2	4	1 1/2-12	—	3	2 1/2	—	—	—	—	—	—	—	—	1	
		9	1 1/2-12	—	3	2 1/2	—	—	—	—	—	—	—	—	1	
		P	—	—	—	—	—	—	1,874	—	1/2	—	—	—	1	
7	3 1/2	R	—	—	—	—	1,125	—	2	—	1/2	—	—	—	1/2	
		4	2 1/2-12	—	3 1/2	2 1/2	—	—	—	—	—	—	—	—	1	
		9	2 1/2-12	—	3 1/2	2 1/2	—	—	—	—	—	—	—	—	1	
7 1/2	3 1/2	P	—	—	—	—	—	—	2,374	—	1/2	—	—	—	1	
		R	—	—	—	—	1,375	—	2 1/2	—	1/2	—	—	—	1/2	
		4	2 1/2-12	—	3 1/2	3 1/2	—	—	—	—	—	—	—	—	1	
8	3 1/2	9	2 1/2-12	—	3 1/2	3 1/2	—	—	—	—	—	—	—	—	1	
		P	—	—	—	—	—	—	—	2,624	—	1/2	—	—	1	
		R	—	—	—	—	1,500	—	2 1/2	—	1/2	—	—	—	1/2	

"F" dimensions = .001" "F₁" dimensions = .001"

Seal Kits
Parts Identification

**Parker Hy-Power
Cylinders**



Symbol	Part Name
1	Cylinder Cap
2	Cylinder Body
3	Gland Nut
4	Piston Body
5	Piston Rod
6	Locating Pin
7	Cap Screw - Locknut
8	Locknut
9	Clamp Ring
10	Set Screw-Clamp Ring
11	Cap Screw - Cyl. Cap
12	Gland Cartridge
13	Wiperseal
14	O Ring
15	Back-up Washer on 1½ and 2½ rods only
16	Leaseal
17	Piston Ring
18	Lock-O Seal
19	Gasket
20	Retaining Ring
21	Bearing Ring - 2" Bore Cyl. Only

Bore Size	Rod Dia.	RG Gland Cartridge Kit Numbers**	RK Seals Only Kit Numbers**	PR Piston Rings Kit Numbers
		Includes RK Kit	Contains Seals	
2	1½	---	L-7242-1*	L-7251
2 ¼	1½	---	L-7243-1*	L-7252
2½	1½	L-6502-1	L-7244-1*	L-7253
3	1½	L-6502-1	L-7245-1*	L-7254
3½	1½	L-6507-1	L-7246-1*	L-7255
4½	2½	L-6508-1	L-7247-1*	L-7256
5	2½	L-2200-1	L-7248-1*	L-7257
6½	3½	L-6601-1	L-7249-1*	L-7258
7½	3½	L-7284-1	L-7250-1*	L-7259

*Sym. 14 not included in seal kit
**Kit numbers listed above identify class 1 seals only. To order kits with class 5 seals, substitute "5" for "1" as last digit of kit number.

How to Order Seal Kits

When ordering seal kits, call out kit number listed above, and if your fluid or temperature conditions differ from standard service, call out the name of the fluid and temperature

Service kits of expendable parts for Hy-Power Series fluid power cylinders are in stock to insure prompt delivery.

Standard Seals—Class 1 Service Kits are standard, and contains seals of Nitrile (Buna-N) elastomers for standard fluid service. These seals are suitable for use when air, hydraulic (mineral-type) oil, water-glycol fluid or water-in-oil emulsions are the operating medium.

The recommended operating temperature range for Class 1 seals is -10°F. to +165°F. These seals will function at temperature up to 200°F. with reduced life.

Special Seals—Class 5 Service Kits contain seals of fluoro-carbon elastomers (Viton®) for special fluid service. These seals are especially suitable for straight synthetic phosphate ester and phosphate ester base (fire resistant) fluids. They can also be used when air, hydraulic oil, water-glycol or water-in-oil emulsions are the operating medium.

The recommended operating temperature range for Class 5 seals is -10°F. to +250°F. These seals will function at temperature up to 400°F. with reduced life.

To order Class 1 or 5, specify operating medium and use kit numbers listed in the table.

*Registered trademark of E.I. duPont de Nemours & Co., Inc.

**Parker Hy-power
Fluidpower Assembly**

313 South Park Drive
St. Marys, OH 45885
(419) 394-7486



Theoretical Push and Pull Forces for Hy-Power Series Hydraulic Cylinders 5000 PSI Push, 1000 psi Pull, Maximum Pressure 4 to 1 Safety Factor*

Cyl. Bore Size (inches)	Piston Area (sq. in.)	Cylinder Push Force in Pounds at Various Pressures									Minor Piston Area (sq. in.)	Cylinder Pull Force 1000 psi (Max.) 1000
		1000	1500	2000	2500	3000	3500	4000	4500	5000		
2	3.14	3,140	4,720	6,280	7,850	9,420	11,000	12,560	14,180	15,700	2.15	2,150
2 1/4	3.97	3,970	5,955	7,940	9,920	11,910	13,900	15,880	17,850	19,850	2.98	2,980
2 1/2	4.91	4,910	7,365	9,820	12,275	14,730	17,185	19,640	22,095	24,550	3.43	3,430
3	7.06	7,060	10,590	14,120	17,650	21,180	24,710	29,240	31,770	35,300	5.58	5,580
3 1/4	10.32	10,320	15,480	20,640	25,800	30,960	36,120	41,280	46,440	51,600	7.90	7,900
4 1/4	14.20	14,200	21,300	28,400	35,500	42,600	49,700	56,800	63,900	71,000	10.70	10,700
5	19.60	19,600	29,400	39,200	49,000	58,800	68,600	78,400	88,200	98,000	14.70	14,700
6 1/4	30.70	30,700	46,050	61,400	76,750	92,100	107,450	122,800	138,150	153,500	21.06	21,060
7 1/4	41.30	41,300	61,950	82,600	103,250	123,900	144,550	165,200	185,850	206,500	31.66	31,660

*Hy-Power Series cylinders are recommended for pressure to 5000 PSI push and 1000 PSI pull for heavy duty service with hydraulic oil. The 4:1 safety factor is conservative for continuous severe applications. Stroke

should be considered because of the limiting effect it may have on these ratings.

Cycle Times Cylinder/Generator Combinations

Cylinder	Stroke	J-35 5-3	J-35 8-5	JL-50 8-5	J-35 11-7 1/2	JL-50 11-7 1/2	JB-50 18-10	JB-100 27-15
7 1/2	3	1 1/2	1 1/4	1 1/4	1	1		
10	3	2	1 1/4	1 1/4	1 1/2	1 1/2		
12 1/2	3	2	1 1/2	1 1/2	1 3/4	1 3/4		
17 1/2	3	2 1/2	2	2	1 1/2	1 1/2		
17 1/2	4	3 1/4	2 1/2	2 1/2	1 3/4	1 3/4		
25	3 1/2	4	3	3	2 1/2	2 1/2		
35	3 1/2	5	3 1/2	3 1/2	3	3		
50	4					4	3	
75	6							4
100	6							5

Time in Seconds

Hangers For Yokes

Hangers for portable Hy-Power yoke riveters, punches and assembly units are designed to permit positioning of the yoke with minimum effort. Most requirements can be met by using one of the five standard types of hangers illustrated. These are simple, easy to use, and inexpensive.

Bail Type Hanger. Yoke can be rotated around pin "A" at bottom of hanger. Cylinder can be moved up or down.

Universal Cradle Type Hanger. Yoke may be rotated up or down and in addition can be rotated nearly 90 degrees to either side as indicated by two arrows in left view.

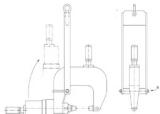
Trunnion Type Hanger. Yoke can be rotated nearly 360 degrees in a vertical plane around axis B-B.

Eye Bolt. An eye bolt may be used for hanging portable C-Frame riveters.

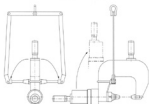
All hangers are designed for attaching to an overhead cable or hoist. Where practical, the use of a balancer is recommended.

Balancers

In many production operations, particularly on assembly lines, it is helpful to be able to raise the portable yoke riveter, punch, or unit out of the way of oncoming work, then easily lower it to the work position. An overhead balancer is ideal for this purpose. There are many types of balancers available to balance the weight of the yoke. Air type balancers are ideal, and are recommended for units weighing more than 260lbs. Parker will recommend the proper size balancer for your application.



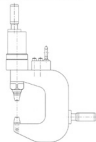
Bail Type Hanger



Universal Cradle Type Hanger



Trunnion Type Hanger



Eye-Bolt Type Hanger

Standard Rivet Sets

Parker rivet sets are expertly designed and carefully made for maximum results with Hy-Power riveters. A great variety are made to meet a wide range of applications. Experience engineering, skillful workmanship, correct material, and the proper heat treatment are essential to maximum rivet set life.

Rivet set faces most commonly used are illustrated. Standard sizes of these types, shown in the accompanying table, satisfy most requirements, although endless varieties are made for special purposes.

The "formed" head is made by the rivet manufacturer, and the "driven" head is made with the riveter. For cold riveting, the modified cone head is usually recommended whenever practical. The head is generally preferred for the following reasons:

1. Less force is required. Button, round or countersunk heads require additional force, and often cause buckling of sheet or bulging of the edge of the piece, due to the radical expansion of the shank.
2. Rivet sets for modified cone heads center the rivet shank, and maintain concentricity between the driven head and the shank.
3. The modified cone head provides tensile strength greater than the tensile strength of the shank.
4. The appearance of the modified cone head is good, and the driven head is not affected by slight variations in the rivet shank length.

General practice is to use modified cone head rivet sets for both the formed and driven head. In this way, the head may be driven with either the ram or the anvil set. Then both heads will be uniform in appearance.

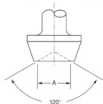
The formed flat head has similar characteristics to the modified cone. However, eccentricity of the driven head may occur unless considerable care is taken. For flat head or countersunk rivets, serrated sets are recommended.

How to Specify Rivet Sets:

1. Indicate: (a) rivet diameter, (b) type of formed and driven head, (c) material, and (d) whether rivet is driven hot or cold. If head is other than one of the standard heads listed above, give dimensions of formed head.
2. State rating of the riveting unit, in tons capacity, and specifications or model number, if standard. (For replacement sets on existing riveters, give serial number of unit.)

Rivet Set Height—Normal, two medium height sets or one high and one minimum height are used. See table. Good practice allows 1/16" between sets at a minimum stroke to eliminate contact.

Modified Cone Head



Button Head



Countersink or Flathead



Dimensions of Standard Rivet Sets

Rivet Size, Diameter	Dimensions in Inches				
	A	B	C	D	E
3/16"	11/32	11/64	11/32	3/8	1/2
1/4"	7/16	15/64	23/64	5/32	5/8
5/16"	9/16	19/64	9/16	13/64	3/4
3/8"	11/16	23/64	43/64	15/64	7/8
7/16"	3/4	27/64	25/32	9/32	1 1/16
1/2"	7/8	31/64	29/32	5/16	1 1/16
5/8"	1 1/16	19/32	1 1/8	13/32	1 1/2
3/4"	1 5/16	23/32	1 11/32	31/64	1 3/4
7/8"	1 1/2	27/32	1 27/64	9/16	2
1"	1 3/4	41/64	1 13/16	43/64	2 1/4

Standard Rivet Set Heights

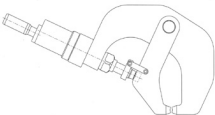
Rivet Size, Diameter	Riveters, Tons Capacity				
	7 1/2-10	12 1/2-17 1/2	25	35	50
Minimum	1/2"	1/2"	1/4"	1"	1 1/2"
High	1 1/2"	2"	2 1/2"	3"	3 1/2"
Medium	1"	1 1/4"	1 3/8"	2"	2 3/8"

Design Capabilities

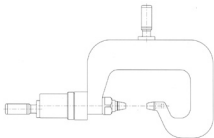
Custom C-Frames — The Right Shape for the Job

Parker's design engineers are ready to assist you in designing an efficient, reliable custom riveter, de-riveter, or punch to meet your application requirements. Parker Hy-Power alloy steel C-Frames are available in a great variety of shapes and sizes. Hundreds of special designs are made to meet unusual clearance conditions. The chief

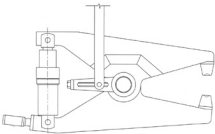
consideration is the shape required to reach the work; where the requirements are not apparent from an ordinary examination of the application, actual part samples or layouts of the assembly should be submitted.



Portable Offset Cylinder Type Riveter



Portable Goose Neck Type Riveter



Alligator Yoke Type Riveter

**Call With
Your Application
Today!**

The Hy-Power Generator

The standard generator is built in the size and capacities as specified on page 13. The first number following the letter symbol in the generator model code indicates the nominal maximum tonnage of applied force for riveting for which a particular size generator is recommended. For example, The Model J-35 is normally recommended for up to a 35 ton riveter.

Where an extra wide pressure range is desired, a dial type pressure control unit is available. For this option the letter K replaces the letter J in the model number.

Where it is necessary and practical to use one generator to operate two separate units, such as one punch and one riveting unit, an optional transfer valve is available as shown on page 12.

Generators are normally furnished with legs. They may be furnished with casters or custom legs if required.

The generator is normally equipped for 230 or 460 volts, 3 phase, 60 hertz circuits. For special orders it can be equipped for other voltages and frequencies.

The Hy-Power Unit

Standard Hy-Power riveters, punches, and de-riveters are

shown in this catalog on pages 6 through 11. To order these standard units specify the model numbers shown in the dimensional tables on these pages. For standard units with special reach and gap requirements, specify the model number and the required reach and gap—see pages 6 through 11. For custom C-Frame shape and types refer to the information on page 22. Custom units can be designed to fit your application.

Hy-Power Cylinders

To order Hy-Power cylinders refer to page 15.

Guide To Ordering Parker Hy-Power Equipment

Generators:

1. Model _____
2. Volts _____, phase _____, hertz _____
3. Transfer Valve. Yes _____ No _____

Unit:

1. Portable _____
2. Tonnage _____
3. If Standard, Model _____
4. Reach _____ Gap _____
5. Cylinder stroke _____
6. State special requirements, if any.

Rivet Sets:

1. See "How to specify Rivet Sets" on Page 22.

Suspension Type::

1. Ball
2. Cradle
3. Trunion
4. Eye Bolt

For assistance in planning your Hy-Power installation, call (419) 394-7486 or Fax (419) 394-7486

Offer of Sale

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7. Special Tooling: A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture items sold pursuant to this contract. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the items sold hereunder, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

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9. Taxes: Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount thereof shall be in addition to the amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller thereon upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

10. Indemnity for Infringement of Intellectual Property Rights: Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets (hereinafter "Intellectual Property Rights"). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that an item sold pursuant to this contract infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, Buyer shall defend and indemnify Seller for all costs, expenses or judgments resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

11. Force Majeure: Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter "Events of Force Majeure"). Events of Force Majeure shall include without limitation, accidents, acts of God, strikes or labor disputes, acts, laws, rules or regulations of any government or governmental agency, fires, floods, delays or failures in delivery of carriers or suppliers, shortages of materials and any other cause beyond Seller's control.

12. Entire Agreement/Governing Law: The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of the sale of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.