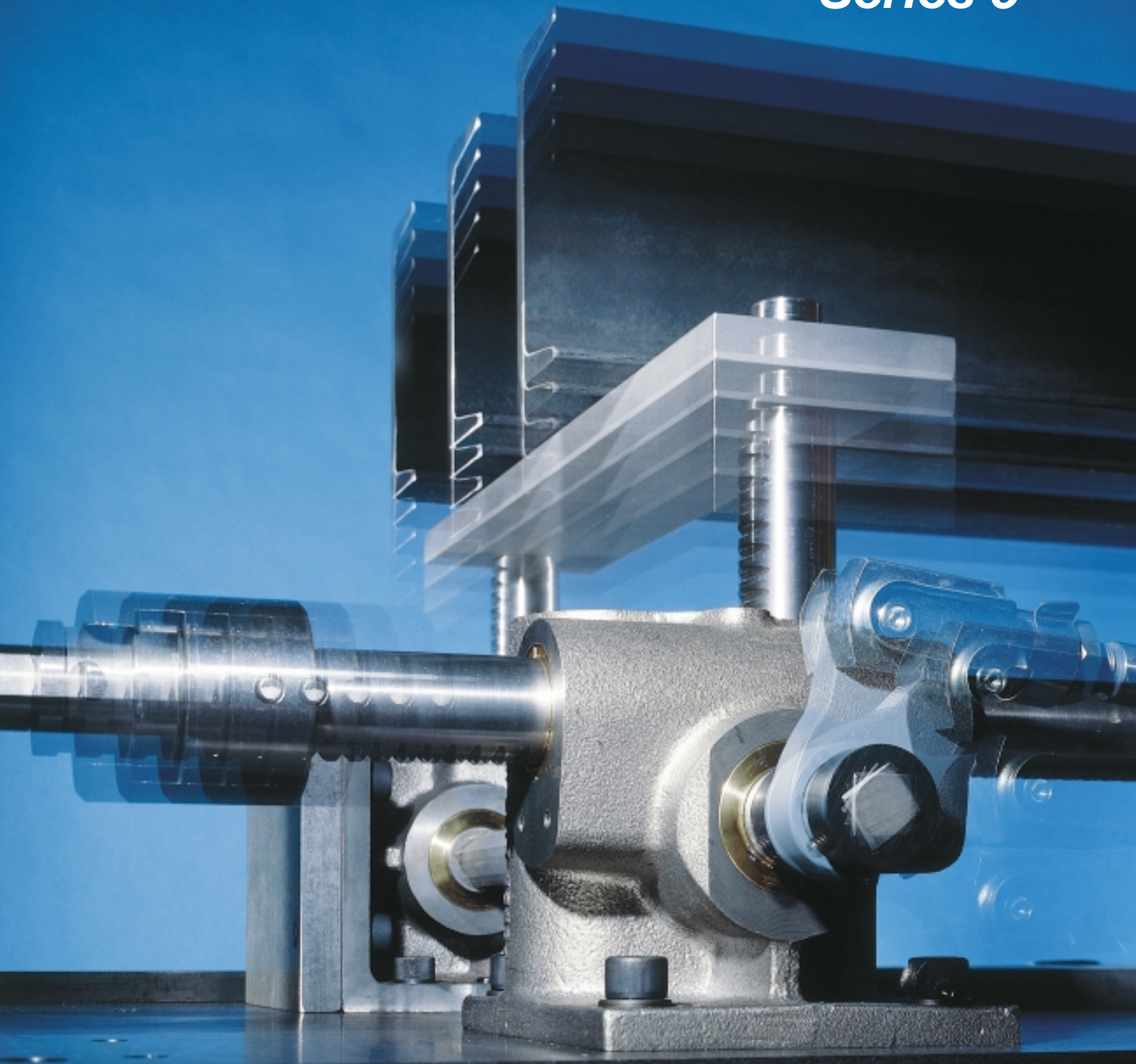


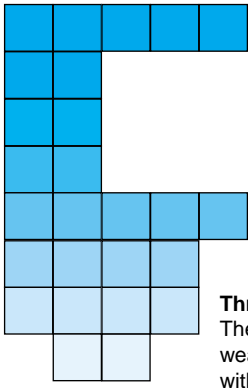
Power Lift[®] Actuator

Catalog No. 95C117A
Dimensions in inches and millimeters

Series 5



Synchronized Rack & Pinion Lifters



Improved Lifting Capacity
Engineered to accept greater torques and masses, Series Five Lifters can accept up to four times the load of other units. PCI recommends using Premium Rack with the Premium Unit.

Dual Rack Locations
Vertical rack is shown in the standard position "R". An optional rack location "L" is supplied for opposite hand installation.

Threaded Rack Bearing
The rack is supported by wear resistant bearings filled with graphite lubrication for long life. If worn, bearings can be rotated 180° to extend lifter life without replacing the bearings.

Rugged Housing
The one-piece ductile iron casting features an exclusive Lifetime Warranty. (See opposite page for details.)

Unique Gear Lubrication
A graphite assembly transmits lubrication directly to the pinion reducing friction and wear.

Superior Hub Bearing
Highly precise double sealed ball bearings reduce friction and wear. Installed in all Series Five Lifters as standard equipment.

"Floating" Gear and Hub Assembly
The SQ Hub- features independent gears engaged by a retractable drive shaft for simplified lifter set-up and rack timing.

Improved Unit Alignment
To more easily align and dowel units during installation, a pair of unobstructed dowel holes are provided in the mounting base.

LOAD UNIT	Max. Load Capacity	Max. Shear Load	Load Applications
Basic Unit Model 5A, 5B	180 Kg. (400 lb.)	317 Kg. (700 lb.)	<ul style="list-style-type: none"> All general lifting Long runs
Premium Unit Model 5A, 5B	272 Kg. (600 lb.)	475 Kg. (1050 lb.)	<ul style="list-style-type: none"> High-volume, long runs Heavy power drive units

GEAR UNIT	Gear Hub	Gear Pitch Diameter	Module Pressure Angle	Gear Force (width)	Ratio	Rack Travel 360° Gear Rotation	Maximum Torque Limits	Recommended Torque Limits
Basic Unit Model 5A, 5B	SQ (Square) or SDH (Solid)	40mm (1.575")	2.5-20 (10 Pitch)	25(.97")	1:1	125(4.95")	66 Nm. (551 in. lb.)	35.6 Nm (315 in. lb.)
Premium Unit Model 5A, 5B	SQ (Square) or SDH (Solid)	40mm (1.575")	2.5-20 (10 Pitch)	25(.97")	1:1	125(4.95")	93.4 Nm. (827 in. lb.)	53.3 Nm (472 in. lb.)

Introduction

Dependable Synchronized Rack & Pinion Lifters

For more than 35 years, Power Components Inc., (PCI) has manufactured products used in automation. Among these products is a family of rack and pinion lifter units known as "Power Lift[®] Actuators."

Power Lift[®] Actuators convert linear to rotary or rotary to linear motion when connected with a power source, such as an air cylinder or motor.

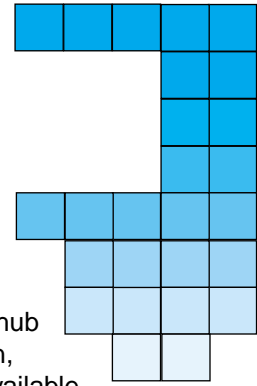
Designed for limited space applications, the Power Lift[®] Actuator provides synchronized multi-point motion to raise, lower, clamp, push, pull, check, position, or actuate any unit load or fixture.

Series Five Lifters are metric, lube-free, round rack units manufactured on the latest CNC equipment to ensure dimensional accuracy.

Our patented lifters are the result of CAD/CAM design efforts, extensive research and development, as well as continuous testing. Their value as a reliable and durable automation tool is well known.

To facilitate installation layouts, Series Five Lifters are available on CD-ROM. Components are in-stock and available for quick shipment.

Unique Design Features



Lifting Capacity

All Series Five Power Lift[®] Actuators are designed for trouble-free operation with minimal service and wear. PCI Single (5A) and Double (5B) Units are available in two lifting capacities: Basic Unit (X), and the Premium Unit (Z).

Basic Unit – The Basic Unit meets the requirements of most all-purpose, general lifting applications and has a maximum load capacity of 180 Kg. (400 lb.).

Premium Unit – For extreme load conditions, such as the master unit in a drive chain, the Premium Unit has a 272 Kg. (600 lb.) load capacity. The Premium rack is recommended for use with the Premium Unit to obtain optimum load capacity.

Permanent Lubrication & Superior Wear Resistance

Permanent lubrication is used with every working component of the Series Five to minimize friction and wear.

Hub Bearings – The Series Five is the only lifter available with high-quality sealed ball bearings as a standard component on the gear hub. These bearings are sealed on both faces to prevent contamination. The grease within reduces friction, and tests have shown it is the best bearing to prolong the life and durability of the unit.

Gear Lubrication – PCI's Series Five is the only non-lube lifter available with a graphite assembly transmitting lubrication directly to the pinion, where the work is performed. This exclusive feature dramatically extends the life of the unit.

Rack Lubrication – Racks are supported by threaded rack bushings with graphite-filled grooves for reduced friction and wear. Locating the graphite inside the bushing, instead of outside, assures that lubrication is always present on the wear surface.

Simplified Rack Timing

SQ-"Floating" Gear & Hub Assembly – Power Components, Inc., originated the "floating" gear and hub assembly which simplifies the timing of multiple lifting units. Our horizontal and vertical racks in the 5B Double Units can be adjusted independently by disengaging a square (SQ)

drive shaft from a hollow gear and hub assembly. If timing is not a concern, solid (SDH) drive shafts are also available. For rack information see page 8.

Lifetime Warranty

Minimal Service & Maintenance – The Series Five carries an exclusive Lifetime Warranty on its rugged ductile iron casting. Absolutely no part of the casting is used as a wear surface. Series Five Lifters also offer the following advantages.

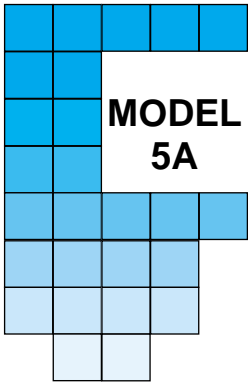
1. The O.D. of the rack bearing is threaded for easy installation.
2. Rack bearing life can be extended by simply rotating the bushing 180°.
3. No special tools are required for installation or adjustment.
4. Rack bearings are interchangeable in both 5A and 5B Units.

Improved Debris Protection

Rack Cover – For lifters operating in hostile environments, we recommend using a bellows boot cover to ensure maximum contamination protection from debris. See page 10 for more information.

LIFETIME WARRANTY on Casting

POWER COMPONENTS, INC. (PCI) warrants that the casting on any Series Five Power Lift Actuator delivered after January 1, 1990 (the "Product") will never fail or need replacement under normal usage. If the casting fails under normal usage, PCI will, at its option, repair or replace the casting upon return of the Product to PCI. PCI shall not be liable for any incidental or consequential damages or loss caused by any failure of the Product, or any costs incurred in connection with removal and/or reinstallation of the Product.



**MODEL
5A**

Unit Weight
6.7 Kg. (14 lb.)
without racks

Single Unit

Available in a Basic Unit or Premium Unit, the 5A Single Model features two mounting faces and may be positioned horizontally, vertically or inverted.

Alternative Gear & Hub Types—Model 5A-SQ (top photo) has the standard “floating” or suspended gear and hub design. To operate, a 19mm (.75”) square drive shaft must be installed through the entire gear and hub assembly. The SQ gear simplifies timing by allowing racks and gears to be positioned independently while the square drive shaft is retracted.

Model 5A-SDH one piece solid gear (bottom photo) has extended round hubs.

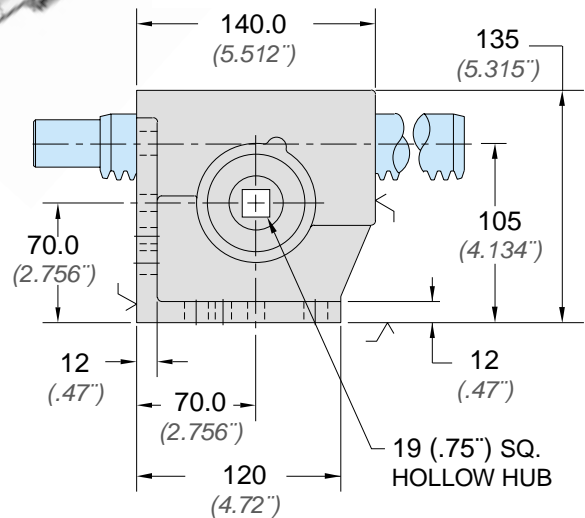
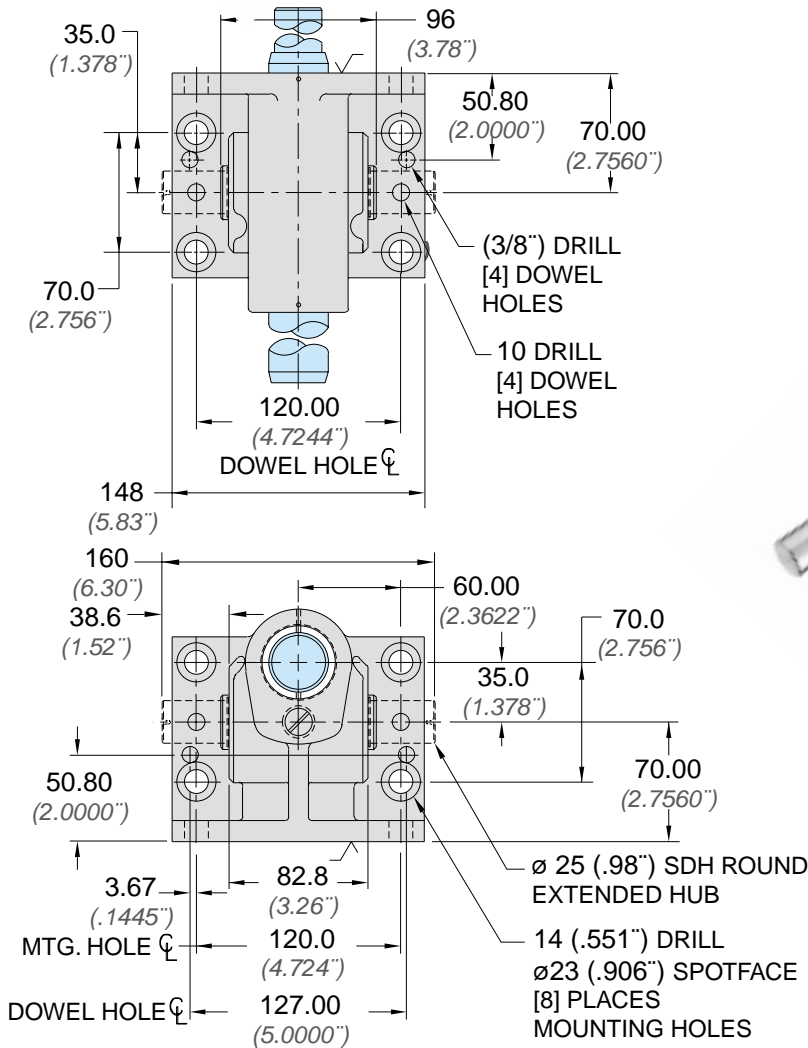
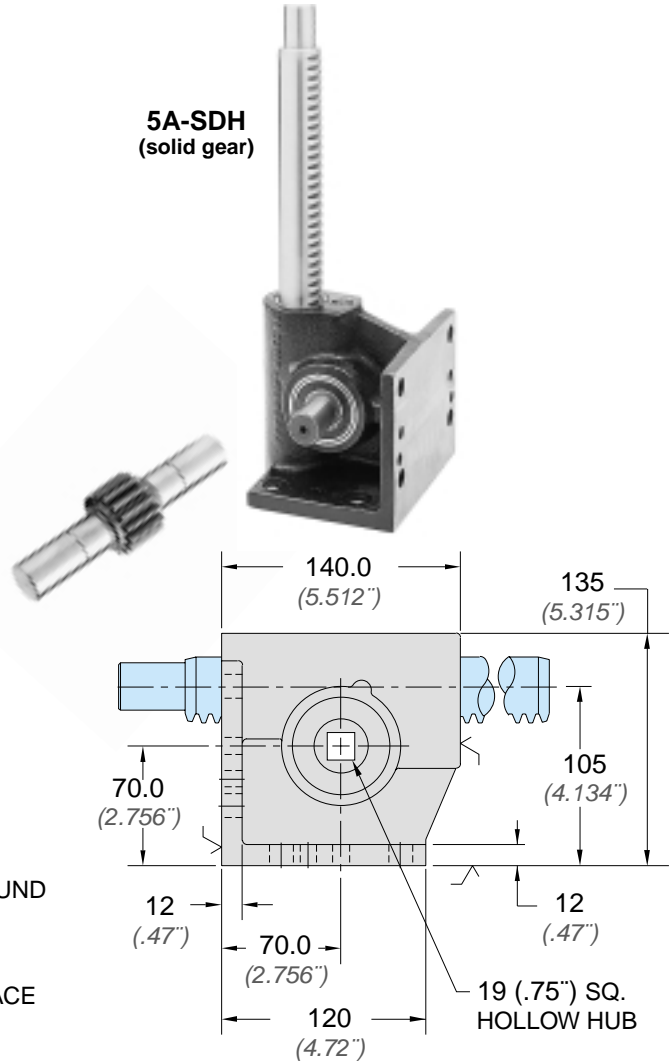
Alignment—Two sets of dowel holes are supplied on each mounting face. The original set is compatible with earlier Series Five versions. The alternative set of dowel holes offers greater drilling convenience for dowling and alignment at assembly.

Racks—Unit 5A has a single rack location and can be operated in a vertical or horizontal position depending on the application. Racks are sold separately.

5A-SQ
(floating gear
for easy timing)



5A-SDH
(solid gear)



Double Unit

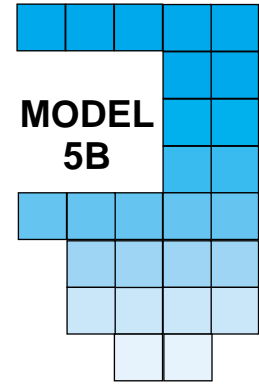
PCI 5B Double Unit has one mounting face and operates with two pieces of round rack. Choose from the Basic Unit or Premium Unit. The unit may be mounted horizontally, vertically or inverted.

Alternative Gear & Hub Types—Model 5B-SQ (top photo) features the standard “floating” gear and hub design. To operate, a 19mm (.75”) square drive shaft must be installed through the entire gear and hub assembly. The SQ gear simplifies timing by allowing racks and gears to be positioned independently while the square drive shaft is retracted.

Model 5B-SDH one piece solid gear (bottom photo) has extended round hubs.

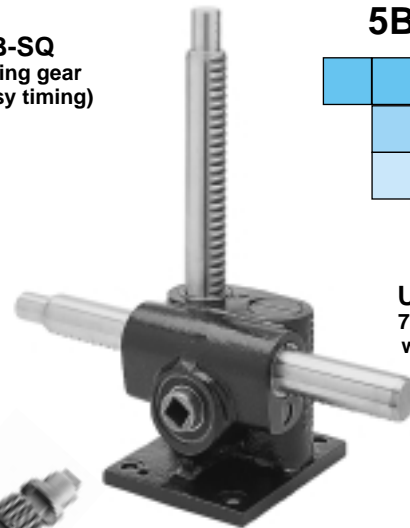
Alignment—Two pairs of dowel holes are supplied on the mounting face. The original set is compatible with earlier Series Five Units. The alternative set of dowel holes offers greater drilling convenience for dowling and alignment at assembly.

Racks—Model 5B has two vertical rack locations and is assembled with the rack bearing in standard location, “R”. However, by specifying rack location “L” in the part number when ordering (see page 11), the unit is assembled with the rack bearing in the alternate location. When using both rack positions, specify “RL” when ordering. Racks are sold separately.

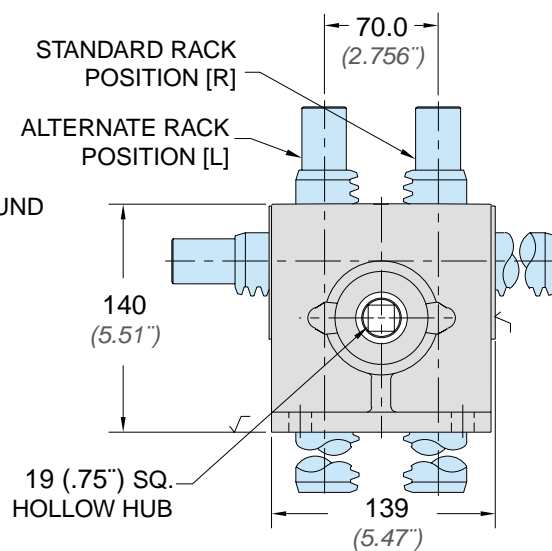
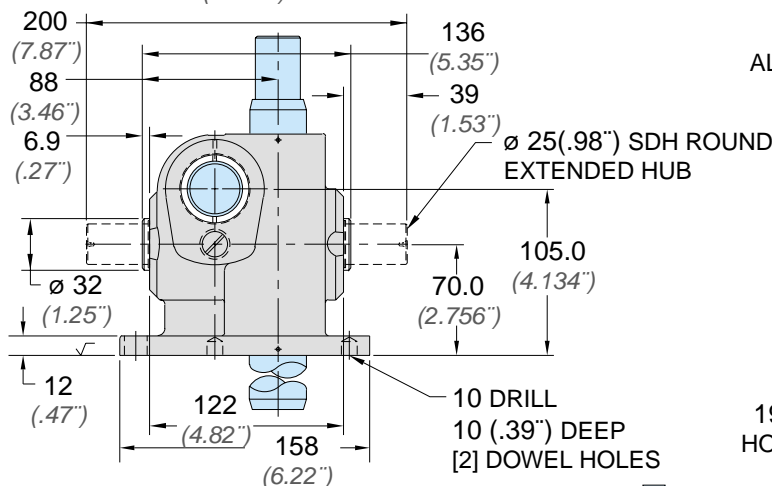
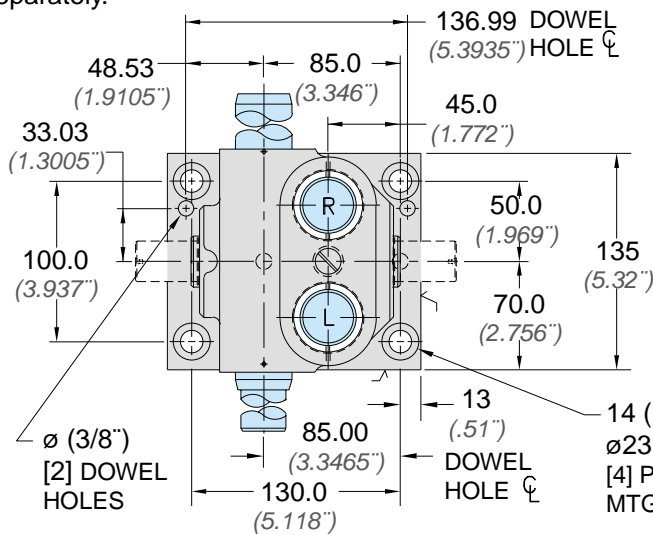
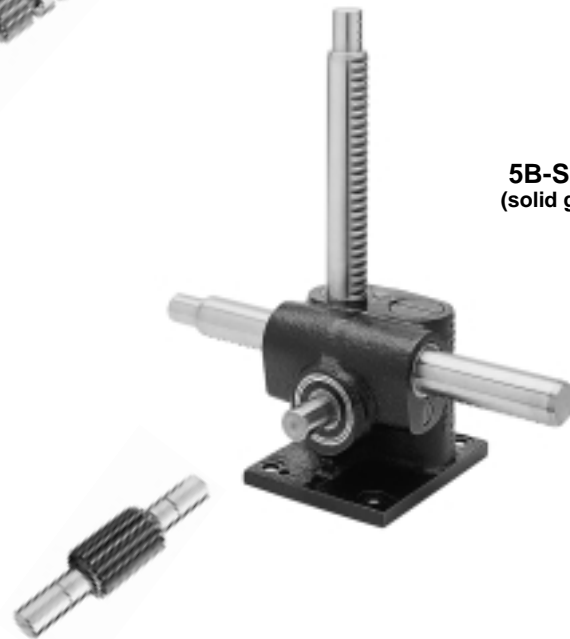


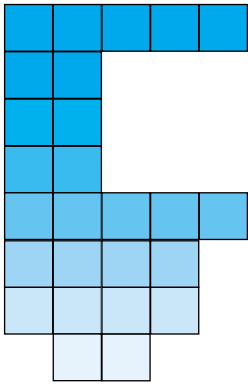
Unit Weight
7.7 Kg. (17 lb.)
without racks

5B-SQ
(floating gear
for easy timing)



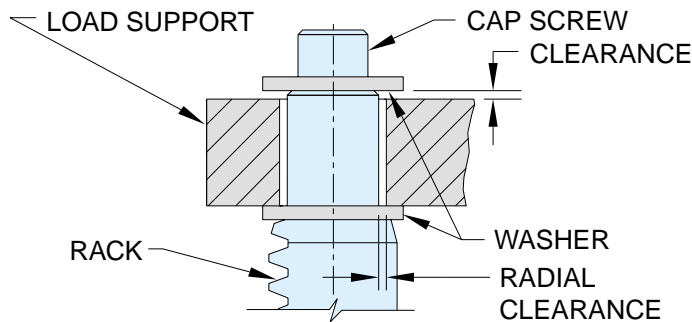
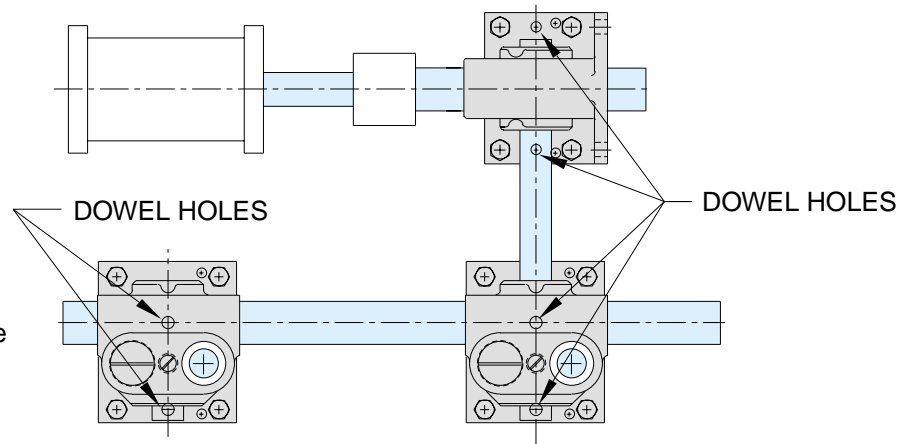
5B-SDH
(solid gear)





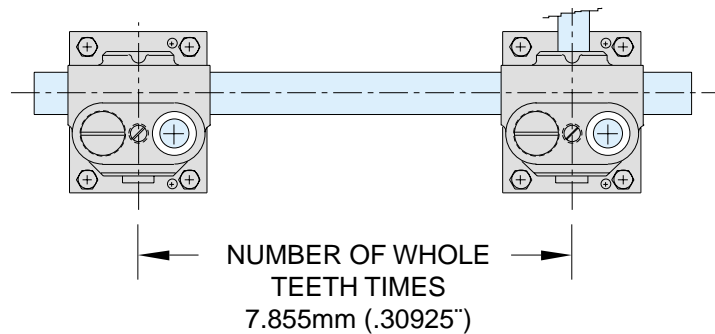
Installation Guidelines

Dowel Lifts—When positioning units, use the dowel pins as a guide to ensure proper unit and rack alignment.



Vertical Rack Connection—To prevent binding of the bushings and gears during operation, rack connections must have adequate clearance. This allows for freedom of movement, rotation, misalignment, tolerance stack-up and out of parallel motion.

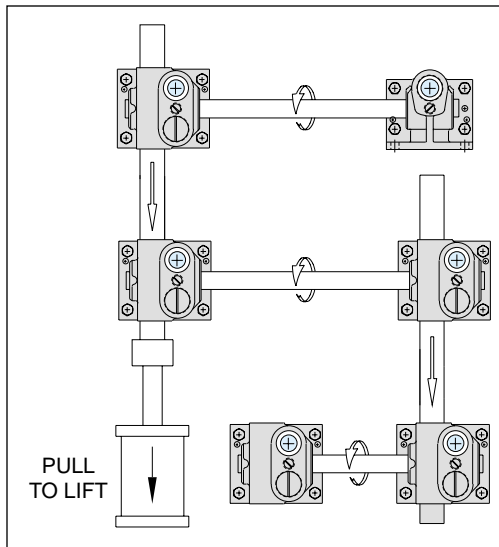
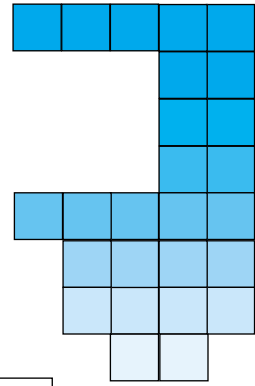
Rack Timing—To time the vertical racks in each unit, the distance between lifting units coupled with a single rack should be positioned apart, in tooth pitch increments. However, if units are far enough apart but still require a precise location, two R100 style racks coupled with a tube could be used. The coupling tube can be adjusted and pinned to the racks.



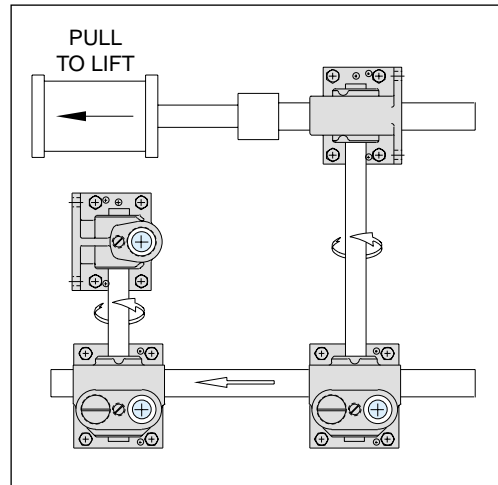
For installation help, contact Power Component's Engineering Department at (734) 207-2200

Applications

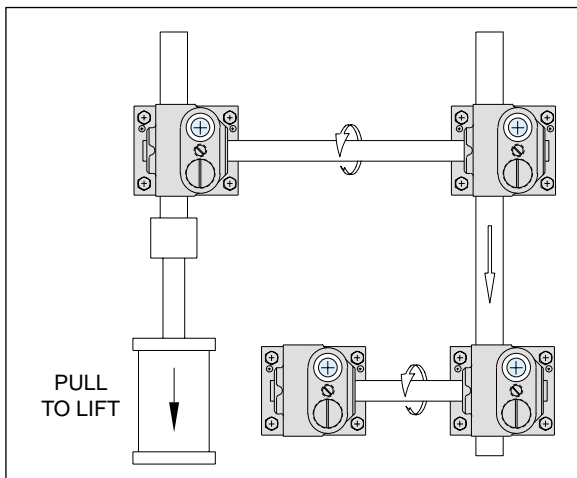
The following are a few examples of Power Lift® Actuator applications. In some cases, the networks need to be routed around obstructions or arranged to deliver lifting forces at inaccessible locations. Where loads require, PCI recommends the Premium lifter as the master unit in a drive chain, as this unit receives the most force. PCI recommends whenever possible pull-to-lift applications. If you have a special requirement, contact the factory to discuss your specific needs.



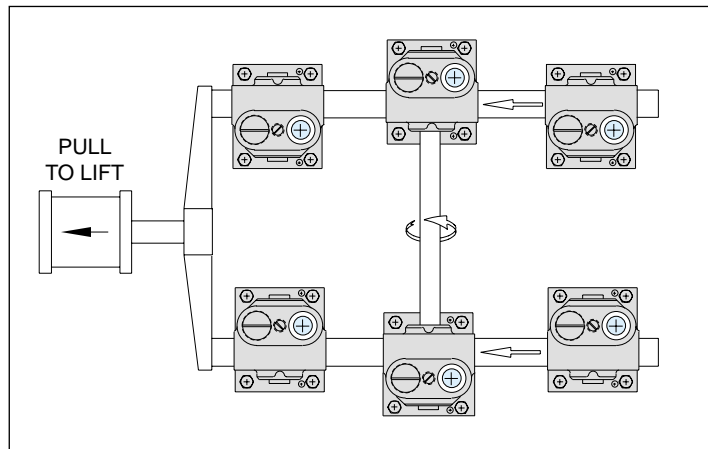
A six point lift direct drive to two chain systems.



A three point lift input with slave unit to drive chain.



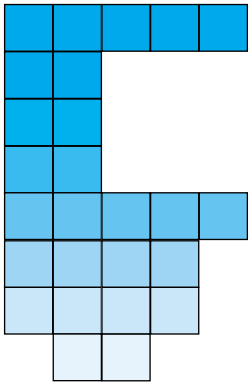
A four point lift drive chain.



Six point lift tandem direct to all units. Two units are joined with a 19mm (.75") square drive shaft to synchronize movements.

Consider Power Lift® Actuators for these and other lifting needs:

- Lift loads for forklift pickup
- Rotate objects in welding fixtures
- Raise for pallet and warehouse stacking
- Lift workpieces from metal stamping presses
- Manipulate conveyORIZED products during assembly



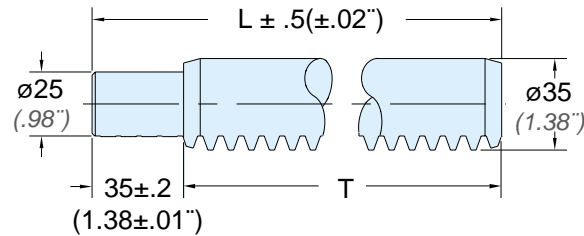
Rack Specifications

The rack is an essential component of the Power Lift® Actuator unit. PCI's racks are made from a high-grade alloy steel, available in standard lengths, and are designed to withstand maximum load and wear in all applications. Non-standard rack lengths may be manufactured upon request; see ordering information below.

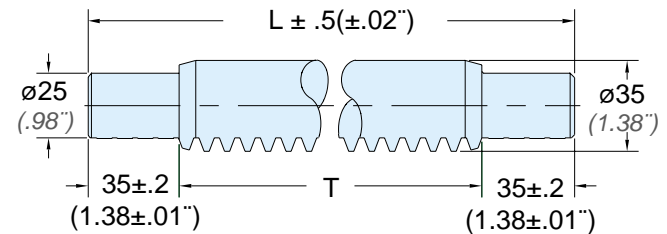
Basic —The Basic rack is suitable for typical applications and is available in four styles.

Premium —PCI's Premium rack is suitable for heavy-duty applications (i.e. when maximum durability of a drive unit is required for excessive loads) and is also available in four styles. *PCI recommends using the Premium Rack with the Premium Unit for optimum lifting capacity.*

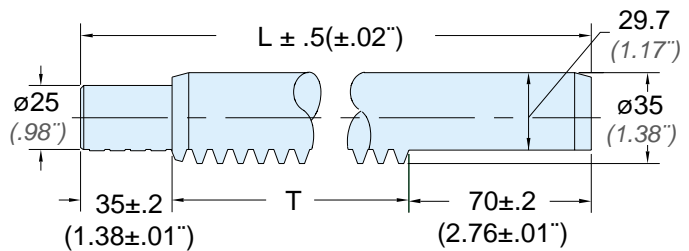
STYLE R100 RACK				
Furnished with one machined end.				
MAX. STROKE	PART NO.	NO. OF TEETH	LENGTH ("L")	LENGTH OF TEETH ("T")
100(3.94")	R110	36	316(12.44")	281(11.06")
160(6.30")	R116	44	379(14.92")	344(13.54")
200(7.87")	R120	49	418(16.46")	383(15.08")
250(9.84")	R125	55	465(18.31")	430(16.93")



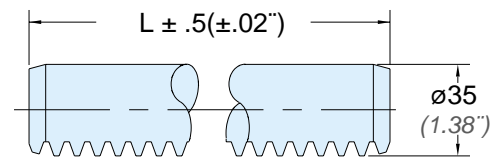
STYLE R200 RACK				
Furnished with two machined ends.				
MAX. STROKE	PART NO.	NO. OF TEETH	LENGTH ("L")	LENGTH OF TEETH ("T")
100(3.94")	R210	35	343(13.50")	273(10.75")
160(6.30")	R216	43	406(15.98")	336(13.23")
200(7.87")	R220	48	445(17.52")	375(14.76")
250(9.84")	R225	54	492(19.37")	422(16.61")



STYLE R300 RACK				
Furnished with two machined ends. One end is milled flat for a setting pin when units are timed for multipoint lift application.				
MAX. STROKE	PART NO.	NO. OF TEETH	LENGTH ("L")	LENGTH OF TEETH ("T")
100(3.94")	R310	27	316(12.44")	211(8.31")
160(6.30")	R316	35	379(14.92")	274(10.79")
200(7.87")	R320	40	418(16.46")	313(12.32")
250(9.84")	R325	46	465(18.31")	360(14.17")

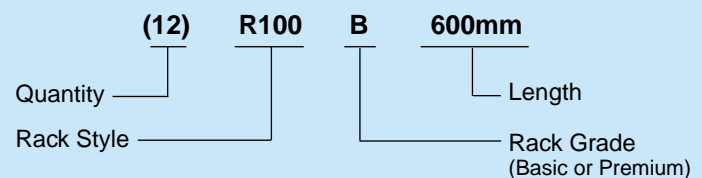


STYLE R400 RACK				
Rack is not furnished with machined ends.				
MAX. STROKE	PART NO.	NO. OF TEETH	LENGTH ("L")	LENGTH OF TEETH ("T")
100(3.94")	R410	36	281(11.06")	
160(6.30")	R416	44	344(13.54")	
200(7.87")	R420	49	383(15.08")	
250(9.84")	R425	55	430(16.93")	



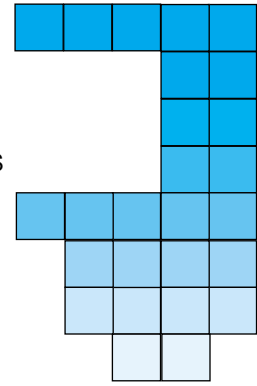
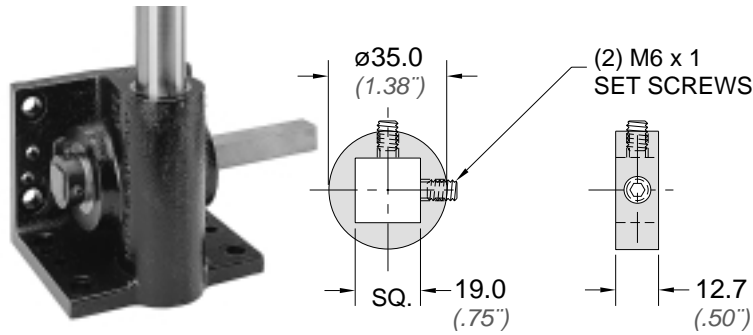
To order non-standard rack lengths; specify quantity, rack style, rack grade (Basic or Premium), and length. (i.e. (12)-R100-B-600mm).

Ordering Example:

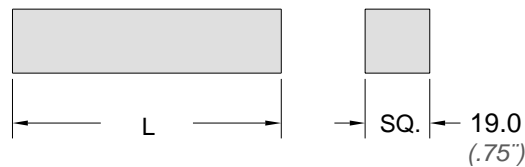


Accessories

Stop Collar—PCI's SC-75 stop collar prevents the 19mm (.75") square drive shaft from "walking out" of the Power Lift® unit. Two set screws aligned at 90° firmly lock the stop collar onto the shaft.

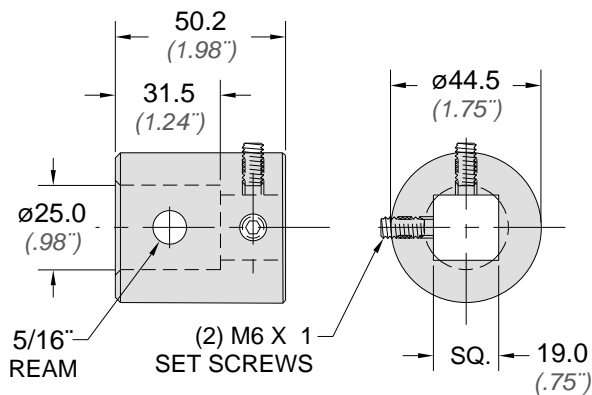


Square Drive Shaft—The SDS-“L” drive shaft is used to link the Power Lift® Actuator with the 19mm (.75") square hub. The shaft allows the vertical and horizontal racks to be adjusted independently for simplified timing and set-up. Shaft length may be manufactured to customer's specifications.

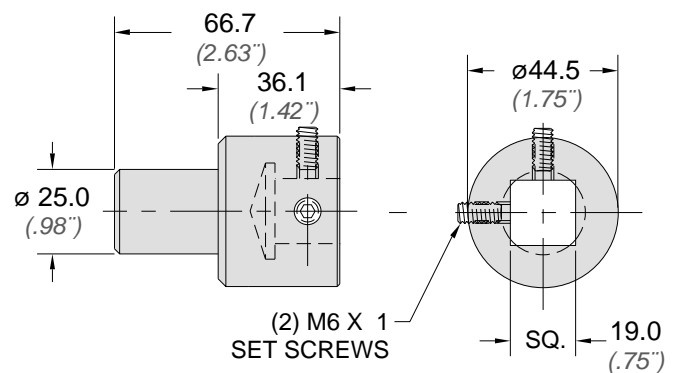


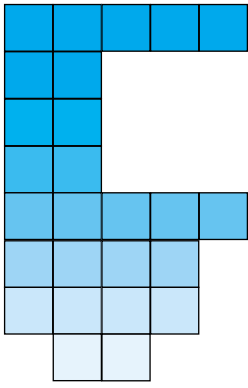
SQ to SDH Hub Couplers

Female —With the SC-5 female coupler, an SQ square shaft can be joined to an SDH solid round shaft. Two set screws aligned at 90° firmly lock the female connector onto the shaft.

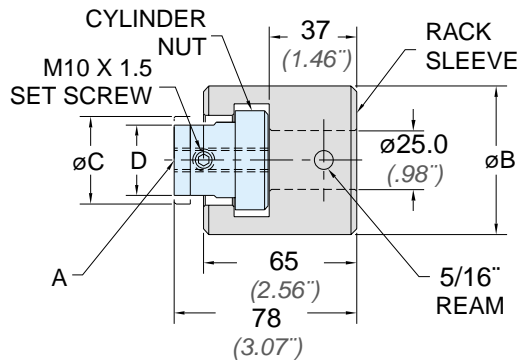


Male — With the SC-6 male coupler, an SQ square shaft can be joined to an SDH solid round shaft. Two set screws aligned at 90° firmly lock the male connector onto the shaft.





Accessories

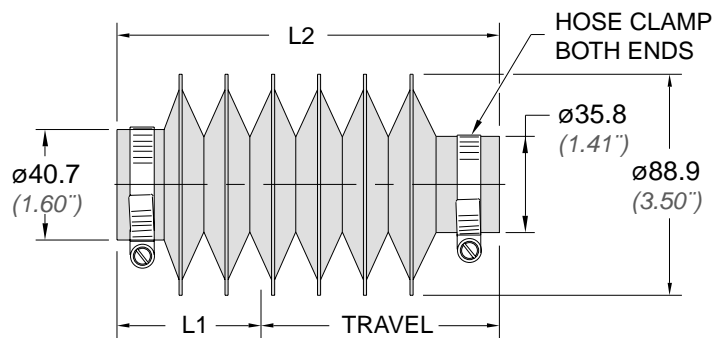


Cylinder to Rack Connector—In a drive application, the cylinder to rack connector provides added stability by accommodating the slight misalignment between the cylinder and the rack.



PART NO.	A (internal thread)	B	C	D (across flats)
CRC-20	Blank	63(2.48")	42(1.65")	36(1.42")
CRC-21	3/4" - 16	"	"	"
CRC-22	7/8" - 14	"	"	"
CRC-23	1" - 14	"	"	"
CRD-24	M16 x 1.5	"	"	"
CRC-25	M20 x 1.5	"	"	"
CRC-26	M27 x 2.0	"	"	"
CRC-30	Blank	80(3.15")	57(2.24")	50(1.97")
CRC-31	1 1/4" - 12	"	"	"
CRC-32	1 1/2" - 12	"	"	"
CRC-33	M30 X 2.0	"	"	"
CRC-34	M36 X 2.0	"	"	"

PART NUMBER	TRAVEL	L1 (minimum)	L2 (maximum)
HCG-6	152.4(6")	55.4(2.18")	207.8 (8.18")
HCG-8	203.2(8")	57.9(2.28")	261.1 (10.28")
HCG-10	254.0(10")	60.5(2.38")	314.5 (12.38")

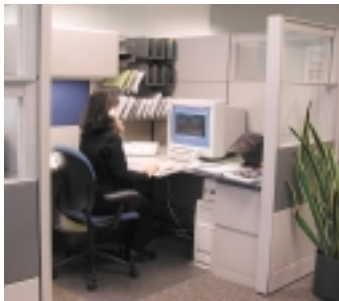


Rack covers, which include all mounting hardware, (rack cover, two hose clamps and bushing) can be ordered as listed above. Lengths not listed may be manufactured upon request, contact the factory for more information.

Rack Cover—Constructed from an advanced neoprene-cotton material, the PCI rack cover protects rack teeth by preventing metal chips and other foreign materials from jamming in the teeth. A volute spring style rack cover is also available.



Ordering Information



Power Components, Inc. is committed to producing innovative, quality products with superior customer service.

Phone: (734) 207-2200
Fax: (734) 207-2222

Quantity

Specify the number of Power Lift® Actuators

Series

Series 5

Model

A—Single
B—Double

Unit Type

X—Basic Unit
Z—Premium Unit

Alternative Gear Type

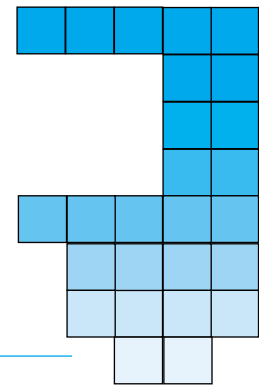
Determine style of hub (SQ or SDH). If not specified when ordered, the standard SQ hub is supplied.

Optional Rack Location

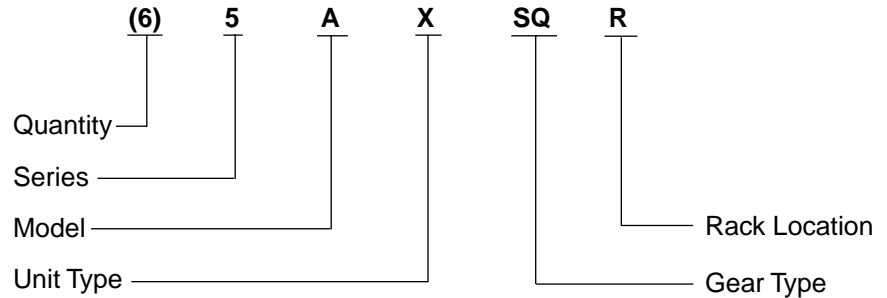
Double units are assembled with the rack in the standard position "R". If the alternative location will be used, specify "L" when ordering. If using both vertical rack positions, specify "RL" when ordering.

Accessories

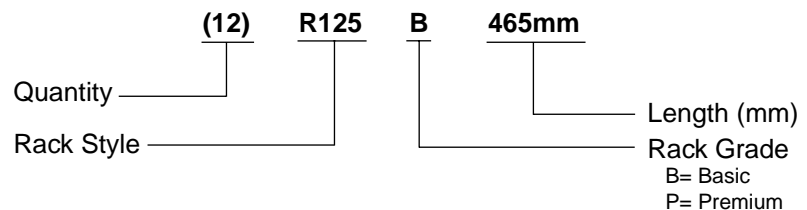
Stop Collar
Square Drive Shaft
Hub Coupler M (Male)
Hub Coupler F (Female)
Rack Connector
Rack Cover



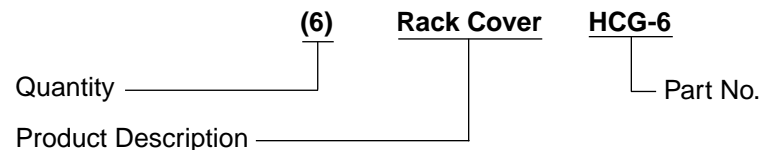
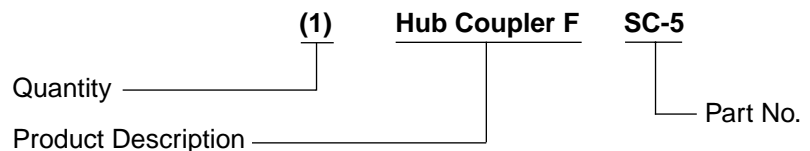
Power Lift® Actuator Unit



Racks



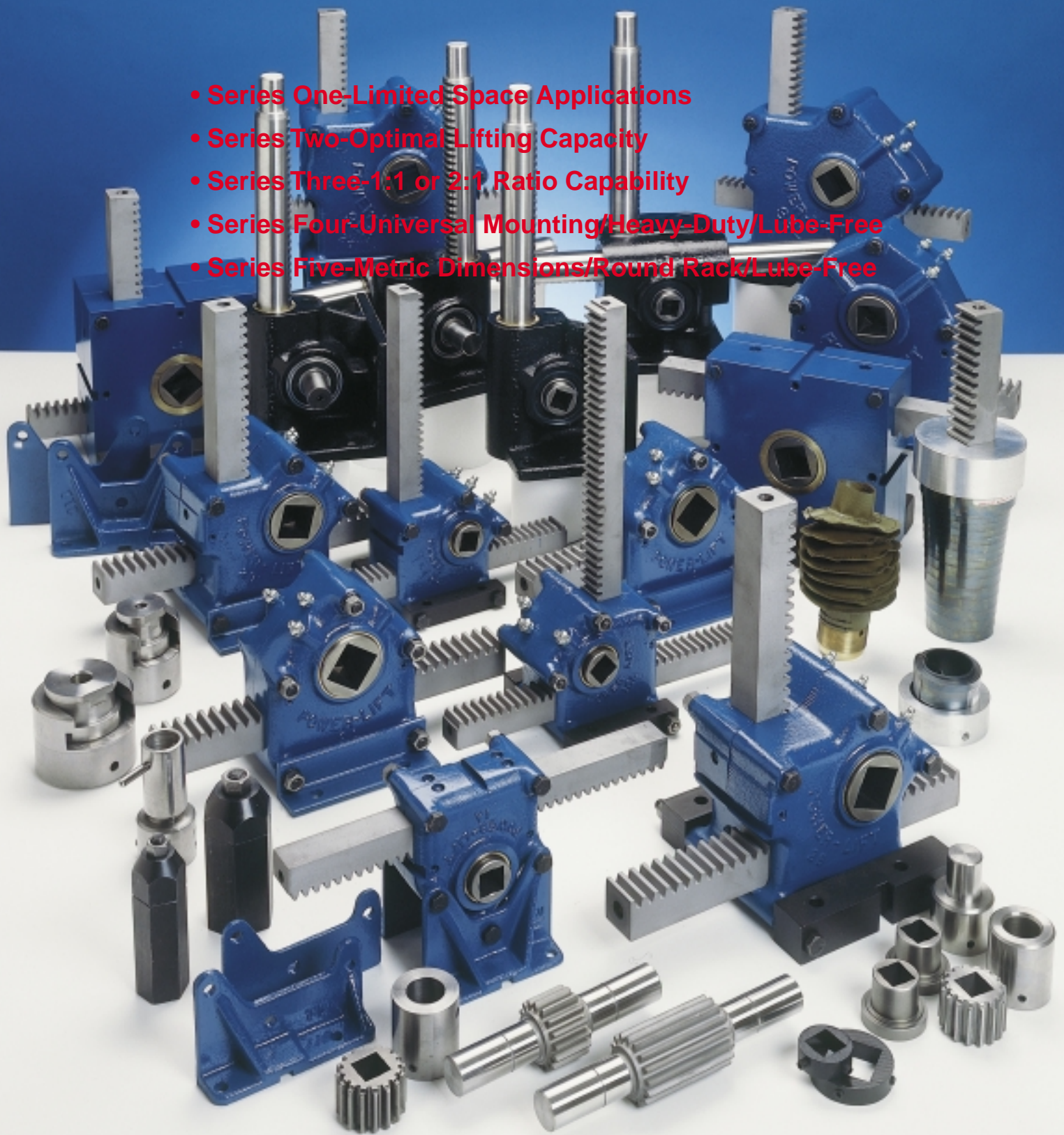
Accessories




All illustrations and drawings accurately represent the product at the time this catalog was printed. In order to maintain our high quality standards and customer expectations, product changes may occur during the life of this catalog without prior notice.

Power Lift® Actuators

- Series One-Limited Space Applications
- Series Two-Optimal Lifting Capacity
- Series Three-1:1 or 2:1 Ratio Capability
- Series Four-Universal Mounting/Heavy-Duty/Lube-Free
- Series Five-Metric Dimensions/Round Rack/Lube-Free



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