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Prices in this catalog supersede those found in the Hercules Sealing Products 2008 Seal, Kit, and Cylinder Catalogs.

INTRODUCTION

The Corporate Office of Hercules Sealing Products, located in Clearwater, Florida, is an ISO 9001 registered distributor of hydraulic and pneumatic seals, seal kits and components for mobile and industrial applications. Hercules provides seal products used in hydraulic cylinders to a variety of industries for equipment such as: dump and refuse trucks, construction equipment, material handling, industrial plant applications, farm, and logging equipment. Industry leading technical catalogs provide application, dimensional, material specifications, and prices for products.

A technical sales force with 8:00 A.M. to 8:00 P.M. EST hours of operation, special freight rates, and an Engineering Department will provide you with unparalleled service. Hercules Sealing Products suppliers are leaders in the fluid power industry and are continually rated and monitored based on the quality of their products and attention to customer service. Component products such as cylinders, power units and accessories are also available.

Corporate Office
1016 North Belcher Road
Clearwater, FL 33765
Seals: 1-800-777-5617
727-796-1300
Fax: 1-800-759-6391
727-797-8849
Email: Hercules@HerculesUS.com

Central Canada
30 Saunders Road
Barrie, ON L4N 9A8
Phone: 1-800-665-7325
(705) 739-6735
Fax: 1-800-565-6990
(705) 739-6731
Email: Barrie@HerculesCN.com

Quebec & East
3180 Miller Avenue
Donval, QJ H9P 1K5
Phone: 1-800-565-6534
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Fax: 1-800-263-9533
(514) 683-9533
Email: Donval@HerculesCN.com

Edmonton
16439 - 117 Ave NW
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Phone: 1-877-487-1170
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(780) 487-7021
Email: Edmonton@HerculesCN.com

China
No. 1-5-901, Jilayi Apartment
Weijin Road
Heping District
Tianjin, China
Phone: +86 (22) 2783-2866
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EUROPE
Hoolstraat 47
4847 AA
Teteringen
The Netherlands
Phone: +31 (0) 76 5873540
Fax: +31 (0) 76 5717310
sales@HerculesEU.com
info@srijdersbv.com

HERCULES ORDERING INFORMATION

DOMESTIC CUSTOMER SERVICE

SATISFACTION

Total customer satisfaction is our goal. Please call with any questions or problems. Your input helps us to improve our service. We want to be your most reliable supplier.

HOW TO OPEN AN ACCOUNT WITH US - SAME DAY CREDIT APPROVAL

1. Copy and fill out the credit application found on page iv of this catalog.
2. Fax completed and signed Credit Application and your sales tax exempt certificate (if applicable) for processing to 1-800-759-6391.
3. We will notify you by phone, or fax, of credit approval and limits. — If you need additional information call our Accounting Department at 1-800-244-5617.

HOW TO ORDER FROM US

Hercules® offers Toll Free phone and fax lines to make ordering as easy as possible. We encourage faxing your order to us Toll Free at 1-800-759-6391 to eliminate any possible error. Our technical sales staff is also available TOLL FREE from 8 AM to 8 PM E.S.T. to take your order, assist you in finding the correct part, or answer any questions you may have. You may also mail your order or use Hercules™ Toll Free Fax.

SHIPMENT / DELIVERY

Every order we receive is classified as a RUSH. You tell us how fast you need it. Shipping agreements with UPS and FedEx allow us to offer substantial freight discounts.

PRICE QUOTATIONS/NON-CATALOG ITEMS

Hercules® is constantly adding parts to inventory. If you need a part that is not listed in our catalog, call, fax, or send us a sample of the part you need, roughly how many pieces are required, and we will source, quote, order, and stock the parts for you. Call or fax us anytime for price and delivery on hard-to-find or non-catalog items. Formal quotations for product and freight costs are gladly furnished upon request.

CREDIT CARDS

Hercules® now accepts the following credit cards: Mastercard, Visa, American Express, American Express Corporate Procurement.

INTERNATIONAL CUSTOMER SERVICE

MAILING ADDRESS

HERCULES® SEALING PRODUCTS INC.
1016 North Belcher Road
Clearwater, FL 33765 USA

PHONE / FAX NUMBERS

PHONE: (727) 796-1300
FAX: (727) 797-8849

E-MAIL/WEBSITE

hercules@herculesus.com
http://www.herculesus.com

PAYMENT

Payment for all products must be in U.S. dollars.

PLACING ORDERS FOR SHIPMENT

1. Fax, mail, email or telephone order to Hercules®, specifying method of shipment.
2. Hercules® will fax or email order value to you. All prices are in U.S. dollars.
3. Wire transfer funds to:
HB Sealing Products, Inc.
Fifth Third Bank
Cincinnati, OH USA

Account Number: 7420280153
Routing Number: 042000314
Swift: FTBCUS3C



4. All orders must be paid for in U.S. dollars.
Payment will be accepted in the form of a wire transfer (in advance), on a letter of credit or a U.S.A. credit card (Mastercard, Visa, American Express)

SHIPMENT / DELIVERY

Hercules® will gladly ship by the carrier of your choice. Please specify any special shipping requirements you may have. All shipments are FOB Clearwater, FL, USA, unless otherwise specified or prearranged. Additional charges may be incurred for inbound freight and/or special packaging.

PRICE QUOTATIONS/NON-CATALOG ITEMS

Call, fax or email us anytime for price and delivery. Formal quotations are gladly furnished upon request.

QUALITY

Hercules® has achieved a worldwide reputation as an organization committed to providing products and services that continually meet or exceed the needs and expectations of our customers. Hercules® is an ISO 9001 registered company.

ANTI-DEFAMATION POLICY

All equipment manufacturer's names, part numbers and descriptions are used for reference purposes only. We do not imply that any part shown is the product of these manufacturers. We also do not imply that the list price shown is exactly that of the manufacturer.

TERMS AND CONDITIONS

BACKORDERS

Backorders will be shipped per customer request including freight charges.

CREDITS

Our payment terms for all open accounts are NET 30 days. Accounts outstanding over 30 days are reviewed daily. All accounts that reach 30 days past due (60 days from invoice date) will be automatically changed to a COD account until the past due amounts are paid. At 45 days past due (75 days from invoice date) all orders and backorders will automatically be put on credit hold until full payment is received.

RETURNS

Before you return any item, please call our customer service desk to obtain a Return Material Authorization (RMA) and Number. Our Receiving Department cannot accept a return without an RMA Number. Parts must be returned within 30 days of receipt of goods. Returned items are subject to a 20% restocking charge. All returns are subject to inspection by our Quality Control Department and may be rejected if not in resalable condition. Special order items are non-returnable. Cancellations are only allowed on standard catalog products. All custom supplied products can not be canceled.

ORDER CANCELLATIONS

If you need to cancel an order, please call the sales person who entered your order or the first available sales representative and have the order number you wish to cancel ready. A customer service representative will then call and provide you with an order cancellation number. An order will not be considered cancelled without a cancellation number.

EXCLUSION OF WARRANTIES; LIMITATIONS OF DAMAGES

EXCEPT AS PROVIDED IN THE NEXT SECTION (TITLED HERCULES BRAND PRODUCTS CYLINDER WARRANTY”) ANY WARRANTIES ON THE PRODUCTS SOLD BY H B SEALING PRODUCTS ARE THOSE MADE BY THE MANUFACTURER. EXCEPT AS PROVIDED IN THE “HERCULES BRAND PRODUCTS CYLINDER WARRANTY”, H B SEALING PRODUCTS HEREBY EXPRESSLY DISCLAIMS ALL WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. H B SEALING PRODUCTS NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR IT ANY LIABILITY IN CONNECTION WITH THE SALE OF ITS PRODUCTS.

IN NO EVENT SHALL H.B. SEALING PRODUCTS BE LIABLE TO BUYER FOR ANY INDIRECT, SPECIAL, OR CONSEQUENTIAL DAMAGES, INCLUDING (WITHOUT LIMITATION) LOST PROFITS, COSTS OF DELAY, PERSONAL INJURY, PROPERTY DAMAGE OR LIABILITIES TO BUYER OR THIRD PARTIES ARISING FROM ANY SOURCE. THIS LIMITATION ON DAMAGES SHALL APPLY TO ALL PRODUCTS SOLD BY H B SEALING PRODUCTS, INCLUDING HERCULES BRAND PRODUCTS CYLINDERS. IN THE EVENT, THAT, NOTWITHSTANDING THE TERMS OF THIS SECTION, H.B. SEALING PRODUCTS IS FOUND LIABLE FOR DAMAGES BASED ON ANY DEFECT OR NONCONFORMITY IN PRODUCTS SOLD BY IT, INCLUDING HERCULES BRAND PRODUCTS CYLINDERS, ITS TOTAL LIABILITY FOR EACH DEFECTIVE OR NONCONFORMING PRODUCT SHALL NOT EXCEED THE PRICE PAID BY BUYER FOR SUCH DEFECTIVE PRODUCT.

HERCULES BRAND PRODUCTS CYLINDER WARRANTY

H B Sealing Products herein supplies a limited express warranty to its buyers who purchase standard or custom Hercules Brand Products Cylinders (“Cylinders”). H B Sealing Products warrants that such Cylinders are free from defects in material and workmanship for a period of 12 months from the date the Cylinders are shipped from H B Sealing Products’ facility. H B Sealing Products will repair or replace, at its sole option, Cylinders that are found to be defective in material or workmanship upon inspection by H B Sealing Products personnel when the Cylinders have been used under conditions for which the Cylinders were designed to operate. No warranty will be in effect for any of the following reasons:

- Chemical attack, corrosion or erosion;
- Non-compatible or dirty hydraulic fluid;
- Seal degradation due to contamination (including hydraulic fluids), excessive heat or misapplication;
- Excessive side loading;
- Maintenance or disassembly of the cylinder if performed by anyone other than H B Sealing Products personnel without H B Sealing Products’ permission, prior to the date of warranty expiration;
- Removal of the H B Sealing Products ID tag indicating bore, stroke, and other information concerning traceability; or Instances of improper installation or misapplication of the Cylinders.

Due to the variety of operating conditions and applications for the Cylinders and H B Sealing Products’ related products, H B Sealing Products recommends that Buyer analyze all aspects of the application and carefully select the correct cylinder product to fit the buyer’s application. Buyer is solely responsible for the cylinder product selection in assessing that all performance, safety and warning requirements of the application are met. **IMPROPER CYLINDER PRODUCT SELECTION, MISAPPLIED ENGINEERING OR IMPROPER USE OF THE CYLINDERS AND RELATED PRODUCTS DESCRIBED HEREIN MAY CAUSE DEATH, PERSONAL INJURY AND/OR PROPERTY DAMAGE.** H B Sealing Products does not imply or represent that the Cylinders will work properly in any customer application. No sales agent of H B Sealing Products shall have the right to determine warranty periods, terms or conditions for Cylinders if such statements by the sales agents are different from those included herein. Buyer understands that H B Sealing Products will not be held liable for any other costs or damages including any charges for removal, installation, assembly or any other charges in connection with the replacement or repair of the Cylinders. All returned products must have, before being returned to H B Sealing Products, an “RMA” (return material authorization) number assigned to it by H B Sealing Products’ customer service department.

THE WARRANTY STATED IN THIS SECTION IS H.B. SEALING PRODUCTS’ SOLE AND EXCLUSIVE WARRANTY PERTAINING TO THE CYLINDERS, AND H.B. SEALING PRODUCTS HEREBY DISCLAIMS ANY OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE FOR THE CYLINDERS.



CREDIT APPLICATION

ERCULES SEALING PRODUCTS
1016 NORTH BELCHER ROAD
CLEARWATER, FLORIDA 33765 USA

TOLL FREE: 1-800-777-5617
(727) 796-1300
FAX (800) 330-5617

Please Indicate Type of Request:	
<input type="checkbox"/> Catalog	<input type="checkbox"/> Net 30
<input type="checkbox"/> COD	(24 hour wait)
<input type="checkbox"/> Credit Card	

COMPANY INFORMATION

Company Name: _____			
Billing Address: _____	City: _____	State: _____	Zip: _____
Shipping Address: _____	City: _____	State: _____	Zip: _____
Branch Office: _____	DBA: _____		
Phone: _____	Fax: _____		
Business Structure (Sole Ownership, Partnership, Corporation): _____			
Type of Business: _____	Year Business Established: _____	At Current Address Since: _____	
Federal ID#: _____	President/Owner SSN: _____		
Owner/President: _____			
Primary Contact Person: _____	Title: _____		
Controller: _____			

BANK REFERENCES

Bank Name and Address: _____	
Account #: _____	Contact Name & Phone: _____

TRADE REFERENCES

Firm Name: _____	City, State: _____	Phone/Fax: _____
1: _____		
2: _____		
3: _____		

CREDIT AGREEMENT

I understand the following and will abide by your company regulations:

1. Notify Hercules Sealing Products of any changes in ownership of our company.
2. If granted credit, our company agrees to pay all invoices within 30 days of invoice date.
3. It is agreed that our company will pay 1.5% per month which is 18% yearly for all past due balances.
4. It is agreed that our account will become COD if we fail to pay invoices within the above stated terms.
5. Our company financial condition is satisfactory and we can meet all financial obligations.
6. There are no lawsuits or judgements against me at this present time. If our company defaults on payment of any outstanding valid invoices we agree to pay attorney and/or collection expenses.

Credit Amount Requested

I AGREE TO PAY MY ACCOUNT WITHIN THE TERMS AND AUTHORIZE YOU TO OBTAIN SUCH INFORMATION YOU MAY REQUIRE CONCERNING THIS APPLICATION.

DATE _____ SIGNED _____
 X _____ TITLE _____

PERSONAL GUARANTEE

REFERRAL INFORMATION

HOW DID YOU LEARN ABOUT HERCULES SEALING PRODUCTS? PLEASE CIRCLE ONE:

Trade Show: _____	Magazine: _____	Previous Employer: _____	Hercules Customer: _____	Website: _____
Other: _____				

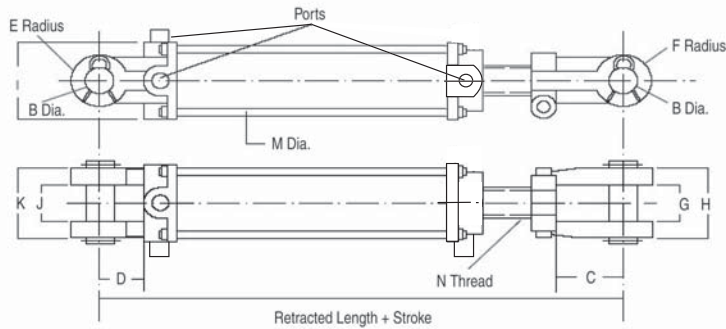
DO NOT WRITE IN THIS BOX - FOR HERCULES USE ONLY			
Customer #: _____	Type: _____	Territory: _____	
Copies: _____	SIC: _____	Date Added: _____	

HTR TIE-ROD CYLINDERS

Hercules Brand Cylinders

THE HTR LINE

Pressure Ratings: 2" - 4" Bore = 2500 PSI, 5" Bore = 2000 PSI



FEATURES:

- Ductile iron piston.
- Ductile iron gland, drilled oil passages.
- Honed steel tube, precision finished for extended seal life.
- High tensile, hard chrome plated rod.
- Ductile iron end mounts, female clevises with pins and clips included.
- Tube Seal: O-ring
- Rod Seal: Deep polypak with B lip design; metal canned wiper.
- 2-Piece 93A urethane piston seal, with a 70A nitrile energizer.
- All Seals: Manufactured to US specifications.

BORE (INCH)	B	C	D	E	F	G = J
2.0	1.015	2.125	1.625	1.000	1.000	1.142
2.5	1.015	2.125	1.625	1.000	1.000	1.142
3.0	1.015	2.125	1.625	1.125	1.000	1.142
3.5	1.015	2.125	1.625	1.125	1.125	1.142
4.0	1.015	2.125	1.625	1.125	1.125	1.142
5.0	1.015	2.125	2.250	1.250	1.500	1.260

* For quantities above 50 pieces, call Hercules for special pricing.

"A" = Agricultural application

PART NUMBER	BORE (INCH)	STROKE	ROD DIA (INCH)	H	I	K	M	N	TUBE OD	PORTS (NPTF)	PIN CTR RETRACT-ED	WT LBS.	LIST PRICE	RESELLER PRICE
HTR-2004	2.0	4	1-1/8	2.520	2.835	2.520	M10	1-1/8-12UNF	2.375	3/8 NPT	14.25	14.30	\$ 78.66	\$ 45.36
HTR-2006	2.0	6	1-1/8	2.520	2.835	2.520	M10	1-1/8-12UNF	2.375	3/8 NPT	16.25	15.84	85.92	49.55
HTR-2008	2.0	8	1-1/8	2.520	2.835	2.520	M10	1-1/8-12UNF	2.375	3/8 NPT	18.25	17.60	87.59	50.51
HTR-2008A	2.0	8	1-1/8	2.520	2.835	2.520	M10	1-1/8-12UNF	2.375	3/8 NPT	20.25	17.60	83.54	48.18
HTR-2010	2.0	10	1-1/8	2.520	2.835	2.520	M10	1-1/8-12UNF	2.375	3/8 NPT	20.25	18.70	96.61	55.71
HTR-2012	2.0	12	1-1/8	2.520	2.835	2.520	M10	1-1/8-12UNF	2.375	3/8 NPT	22.25	20.24	94.93	54.75
HTR-2014	2.0	14	1-1/8	2.520	2.835	2.520	M10	1-1/8-12UNF	2.375	3/8 NPT	24.25	22.00	106.91	61.66
HTR-2016	2.0	16	1-1/8	2.520	2.835	2.520	M10	1-1/8-12UNF	2.375	3/8 NPT	26.25	23.54	110.01	63.44
HTR-2018	2.0	18	1-1/8	2.520	2.835	2.520	M10	1-1/8-12UNF	2.375	3/8 NPT	28.25	25.08	117.18	67.58
HTR-2020	2.0	20	1-1/8	2.520	2.835	2.520	M10	1-1/8-12UNF	2.375	3/8 NPT	30.25	26.62	121.76	70.22
HTR-2024	2.0	24	1-1/8	2.520	2.835	2.520	M10	1-1/8-12UNF	2.375	3/8 NPT	34.25	29.70	133.24	76.84
HTR-2048	2.0	48	1-1/4	2.520	2.835	2.520	M10	1-1/8-12UNF	2.375	3/8 NPT	58.25	35.00	254.63	146.85
HTR-2504	2.5	4	1-1/8	2.520	3.150	2.520	M10	1-1/8-12UNF	2.875	3/8 NPT	14.25	16.28	90.06	51.94
HTR-2506	2.5	6	1-1/8	2.520	3.150	2.520	M10	1-1/8-12UNF	2.875	3/8 NPT	16.25	18.04	90.06	51.94
HTR-2508	2.5	8	1-1/8	2.520	3.150	2.520	M10	1-1/8-12UNF	2.875	3/8 NPT	18.25	20.24	94.42	54.45
HTR-2508A	2.5	8	1-1/4	2.520	3.150	2.520	M10	1-1/8-12UNF	2.875	3/8 NPT	20.25	22.00	94.42	54.45
HTR-2510	2.5	10	1-1/8	2.520	3.150	2.520	M10	1-1/8-12UNF	2.875	3/8 NPT	20.25	21.34	105.54	60.87
HTR-2512	2.5	12	1-1/8	2.520	3.150	2.520	M10	1-1/8-12UNF	2.875	3/8 NPT	22.25	23.10	118.58	68.39
HTR-2514	2.5	14	1-1/8	2.520	3.150	2.520	M10	1-1/8-12UNF	2.875	3/8 NPT	24.25	24.86	124.90	72.03
HTR-2516	2.5	16	1-1/8	2.520	3.150	2.520	M10	1-1/8-12UNF	2.875	3/8 NPT	26.25	26.62	129.86	74.89
HTR-2518	2.5	18	1-1/8	2.520	3.150	2.520	M10	1-1/8-12UNF	2.875	3/8 NPT	28.25	28.38	135.43	78.10
HTR-2520	2.5	20	1-1/8	2.520	3.150	2.520	M10	1-1/8-12UNF	2.875	3/8 NPT	30.25	30.14	141.35	81.52
HTR-2524	2.5	24	1-1/8	2.520	3.150	2.520	M10	1-1/8-12UNF	2.875	3/8 NPT	34.25	33.66	152.82	88.13
HTR-2536	2.5	36	1-1/4	2.520	3.150	2.520	M10	1-1/4-12UNF	2.875	3/8 NPT	46.25	38.25	201.45	116.18
HTR-3004	3.0	4	1-1/4	2.600	3.740	2.520	M12	1-1/4-12UNF	3.375	1/2 NPT	14.25	21.56	103.56	59.72
HTR-3006	3.0	6	1-1/4	2.600	3.740	2.520	M12	1-1/4-12UNF	3.375	1/2 NPT	16.25	23.76	103.56	59.72
HTR-3008	3.0	8	1-1/4	2.600	3.740	2.520	M12	1-1/4-12UNF	3.375	1/2 NPT	18.25	26.62	105.63	60.92
HTR-3008A	3.0	8	1-3/8	2.600	3.740	2.520	M12	1-1/4-12UNF	3.375	1/2 NPT	20.25	27.50	107.82	62.18

CYLINDERS



HTR TIE-ROD CYLINDERS

Hercules Brand Cylinders

THE HTR LINE

Pressure Ratings: 2" - 4" Bore = 2500 PSI, 5" Bore = 2000 PSI

* For quantities above 50 pieces, call Hercules for special pricing.

"A" = Agricultural application

CYLINDERS

PART NUMBER	BORE (INCH)	STROKE	ROD DIA (INCH)	H	I	K	M	N	TUBE OD	PORTS (NPTF)	PIN CTR RETRACT-ED	WT LBS.	LIST PRICE	RESELLER PRICE
HTR-3010	3.0	10	1-1/4	2.600	3.740	2.520	M12	1-1/4-12UNF	3.375	1/2 NPT	20.25	28.16	\$ 119.38	\$ 68.84
HTR-3012	3.0	12	1-1/4	2.600	3.740	2.520	M12	1-1/4-12UNF	3.375	1/2 NPT	22.25	30.36	129.86	74.89
HTR-3014	3.0	14	1-1/4	2.600	3.740	2.520	M12	1-1/4-12UNF	3.375	1/2 NPT	24.25	32.56	135.63	78.22
HTR-3016	3.0	16	1-1/4	2.600	3.740	2.520	M12	1-1/4-12UNF	3.375	1/2 NPT	28.25	34.76	141.19	81.43
HTR-3016A	3.0	16	1-3/8	2.600	3.740	2.520	M12	1-1/4-12UNF	3.375	1/2 NPT	31.50	42.90	156.51	90.26
HTR-3018	3.0	18	1-1/4	2.600	3.740	2.520	M12	1-1/4-12UNF	3.375	1/2 NPT	28.25	36.96	146.86	84.70
HTR-3020	3.0	20	1-1/4	2.600	3.740	2.520	M12	1-1/4-12UNF	3.375	1/2 NPT	30.25	39.16	164.95	95.12
HTR-3024	3.0	24	1-1/4	2.600	3.740	2.520	M12	1-1/4-12UNF	3.375	1/2 NPT	34.25	43.34	178.76	103.09
HTR-3030	3.0	30	1-1/4	2.600	3.740	2.520	M12	1-1/4-12UNF	3.375	1/2 NPT	40.25	48.00	213.51	123.13
HTR-3036	3.0	36	1-1/2	2.600	3.740	2.520	M12	1-1/4-12UNF	3.375	1/2 NPT	46.25	54.55	233.19	134.48
HTR-3048	3.5	48	1-1/2	2.600	4.130	2.520	M12	1-1/4-12UNF	3.875	1/2 NPT	58.25	74.69	277.64	160.11
HTR-3504	3.5	4	1-1/4	2.600	4.134	2.520	M12	1-1/4-12UNF	3.875	1/2 NPT	14.25	23.32	129.77	74.84
HTR-3506	3.5	6	1-1/4	2.600	4.134	2.520	M12	1-1/4-12UNF	3.875	1/2 NPT	16.25	25.52	123.11	71.00
HTR-3508	3.5	8	1-1/4	2.600	4.134	2.520	M12	1-1/4-12UNF	3.875	1/2 NPT	18.25	28.82	124.10	71.57
HTR-3508A	3.5	8	1-3/8	2.600	4.134	2.520	M12	1-1/4-12UNF	3.875	1/2 NPT	20.25	29.70	126.39	72.89
HTR-3510	3.5	10	1-1/4	2.600	4.134	2.520	M12	1-1/4-12UNF	3.875	1/2 NPT	20.25	29.92	135.63	78.22
HTR-3512	3.5	12	1-1/4	2.600	4.134	2.520	M12	1-1/4-12UNF	3.875	1/2 NPT	22.25	32.34	143.52	82.77
HTR-3514	3.5	14	1-1/4	2.600	4.134	2.520	M12	1-1/4-12UNF	3.875	1/2 NPT	24.25	34.76	154.61	89.16
HTR-3516	3.5	16	1-1/4	2.600	4.134	2.520	M12	1-1/4-12UNF	3.875	1/2 NPT	28.25	37.18	162.94	93.97
HTR-3516A	3.5	16	1-3/8	2.600	4.134	2.520	M12	1-1/4-12UNF	3.875	1/2 NPT	31.50	50.60	177.16	102.17
HTR-3518	3.5	18	1-1/4	2.600	4.134	2.520	M12	1-1/4-12UNF	3.875	1/2 NPT	28.25	39.60	172.06	99.23
HTR-3520	3.5	20	1-1/4	2.600	4.134	2.520	M12	1-1/4-12UNF	3.875	1/2 NPT	30.25	42.02	180.87	104.31
HTR-3524	3.5	24	1-1/2	2.600	4.134	2.520	M12	1-1/4-12UNF	3.875	1/2 NPT	34.25	51.70	209.15	120.62
HTR-3530	3.5	30	1-1/2	2.600	4.130	2.520	M12	1-1/4-12UNF	3.875	1/2 NPT	40.25	55.00	278.88	160.83
HTR-3532	3.5	32	1-1/2	2.600	4.130	2.520	M12	1-1/4-12UNF	3.875	1/2 NPT	42.25	58.00	259.99	149.93
HTR-3536	3.5	36	1-1/2	2.600	4.130	2.520	M12	1-1/4-12UNF	3.875	1/2 NPT	46.25	62.00	313.11	180.57
HTR-3548	3.5	48	1-1/2	2.600	4.130	2.600	M12	1-1/4-12UNF	3.875	1/2 NPT	58.25	74.69	350.30	202.02
HTR-4004	4.0	4	1-1/4	2.600	4.724	2.600	M12	1-1/4-12UNF	4.375	1/2 NPT	14.25	29.48	167.15	96.40
HTR-4006	4	6	1-1/4	2.600	4.724	2.600	M12	1-1/4-12UNF	4.375	1/2 NPT	16.25	33.60	163.58	94.34
HTR-4008	4.0	8	1-1/4	2.600	4.724	2.600	M12	1-1/4-12UNF	4.375	1/2 NPT	18.25	35.86	151.40	87.31
HTR-4008A	4.0	8	1-1/4	2.600	4.724	2.600	M12	1-1/4-12UNF	4.375	1/2NPT	20.25	37.40	161.51	93.14
HTR-4010	4.0	10	1-1/4	2.600	4.724	2.600	M12	1-1/4-12UNF	4.375	1/2 NPT	20.25	37.84	176.46	101.76
HTR-4012	4.0	12	1-1/4	2.600	4.724	2.600	M12	1-1/4-12UNF	4.375	1/2 NPT	22.25	40.70	187.63	108.21
HTR-4014	4.0	14	1-1/4	2.600	4.724	2.600	M12	1-1/4-12UNF	4.375	1/2 NPT	24.25	43.56	203.36	117.28
HTR-4016	4.0	16	1-1/4	2.600	4.724	2.600	M12	1-1/4-12UNF	4.375	1/2 NPT	26.25	46.42	210.86	121.60
HTR-4016A	4.0	16	1-3/4	2.600	4.724	2.600	M12	1-1/4-12UNF	4.375	1/2NPT	31.50	57.20	210.86	121.60
HTR-4018	4.0	18	1-1/2	2.600	4.724	2.600	M12	1-1/4-12UNF	4.375	1/2 NPT	28.25	50.60	219.08	126.34
HTR-4020	4.0	20	1-1/2	2.600	4.724	2.600	M12	1-1/4-12UNF	4.375	1/2 NPT	30.25	53.46	228.94	132.03
HTR-4024	4.0	24	1-1/2	2.600	4.724	2.600	M12	1-1/4-12UNF	4.375	1/2 NPT	32.25	59.18	243.87	140.64
HTR-4024-2	4.0	24	2	2.600	4.724	2.600	M12	1-1/4-12UNF	4.375	1/2 NPT	34.25	68.00	260.33	150.13
HTR-4026	4.0	26	1-3/4	2.600	4.724	2.600	M12	1-1/4-12UNF	4.375	1/2 NPT	36.25	72.00	291.50	168.11
HTR-4030	4.0	30	1-3/4	2.600	4.724	2.600	M12	1-1/4-12UNF	4.375	1/2 NPT	40.25	75.00	312.38	180.15
HTR-4030-2	4.0	30	2	2.600	4.724	2.600	M12	1-1/4-12UNF	4.375	1/2 NPT	40.25	78.00	349.15	201.36
HTR-4036	4.0	36	1-3/4	2.600	4.724	2.600	M12	1-1/4-12UNF	4.375	1/2 NPT	46.25	82.00	353.08	203.62
HTR-4048	4.0	48	1-3/4	2.600	4.724	2.600	M12	1-1/4-12UNF	4.375	1/2 NPT	58.25	98.00	363.81	209.81
HTR-5004	5.0	4	1-1/2	2.677	6.000	3.500	M16	1-1/4-12UNF	5.453	1/2 NPT	16.25	53.46	268.37	154.77
HTR-5006	5.0	6	1-1/2	2.677	6.000	3.500	M16	1-1/4-12UNF	5.453	1/2 NPT	18.25	56.76	284.94	164.32

NORTH AMERICA
PHONE 1-800-777-5617
FAX 1-800-759-6391

SALES OFFICE HOURS
8 A.M. TO 8 P.M. EASTERN TIME
www.HerculesUS.com

WORLDWIDE
PHONE 1-727-796-1300
FAX 1-727-797-8849



HTR TIE-ROD CYLINDERS

Hercules Brand Cylinders

THE HTR LINE

Pressure Ratings: 2" - 4" Bore = 2500 PSI, 5" Bore = 2000 PSI

* For quantities above 50 pieces, call Hercules for special pricing.

"A" = Agricultural application

PART NUMBER	BORE (INCH)	STROKE	ROD DIA (INCH)	H	I	K	M	N	TUBE OD	PORTS (NPTF)	PIN CTR RETRACT-ED	WT LBS.	LIST PRICE	RESELLER PRICE
HTR-5008	5.0	8	1-1/2	2.677	6.000	3.500	M16	1-1/4-12UNF	5.453	1/2 NPT	20.25	61.16	\$ 285.10	\$ 164.42
HTR-5010	5.0	10	1-1/2	2.677	6.000	3.500	M16	1-1/4-12UNF	5.453	1/2 NPT	22.25	63.36	314.77	181.53
HTR-5012	5.0	12	2	2.677	6.000	3.500	M16	1-1/4-12UNF	5.453	1/2 NPT	24.25	73.04	336.78	194.22
HTR-5014	5.0	14	2	2.677	6.000	3.500	M16	1-1/4-12UNF	5.453	1/2 NPT	26.25	77.00	364.87	210.42
HTR-5016	5.0	16	2	2.677	6.000	3.500	M16	1-1/4-12UNF	5.453	1/2 NPT	28.25	81.18	385.79	222.48
HTR-5018	5.0	18	2	2.677	6.000	3.500	M16	1-1/4-12UNF	5.453	1/2 NPT	30.25	85.14	406.70	234.54
HTR-5020	5.0	20	2	2.677	6.000	3.500	M16	1-1/4-12UNF	5.453	1/2 NPT	32.25	89.10	427.58	246.59
HTR-5024	5.0	24	2	2.677	6.000	3.500	M16	1-1/4-12UNF	5.453	1/2 NPT	36.25	97.24	395.18	227.90
HTR-5030	5.0	30	2	2.677	6.000	3.500	M16	1-1/4-12UNF	5.453	1/2 NPT	42.25	109.56	550.20	317.30

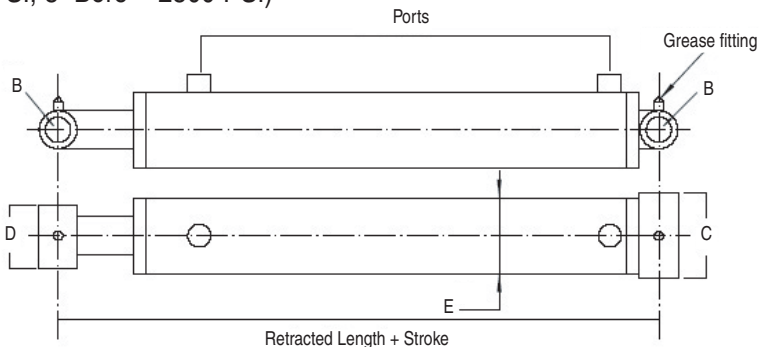
CYLINDERS

HMW MECHANICAL WELDED CYLINDERS

Hercules Brand Cylinders

THE HMW LINE

2500 and 3000 PSI DOUBLE ACTING CYLINDERS (4" Bore = 3000 PSI, 5" Bore = 2500 PSI)



FEATURES:

- Honed tubing
- Heavy duty welded construction
- Chromed, ground & polished piston rod
- Cast iron piston & gland
- Pin eye mounting on both ends
- Loaded u-seal & urethane wiper in gland
- O-ring/backup washers & u-seals for piston seals
- Threaded gland retainer
- Standard color is black

Bore	B	C	D	E	Ports(NPT)
1.50	0.77	2.25	2.00	2.0	1/4 NPT
2.00	1.02	2.75	2.25	2.5	3/8 NPT
2.50	1.02	3.25	2.25	3.0	1/2 NPT
3.00	1.02	3.75	2.25	3.5	1/2 NPT
3.50	1.27	4.25	2.25	4.0	1/2 NPT
4.00	1.52	4.75	2.50	4.5	1/2 NPT
5.00	1.77	5.75	3.25	5.5	1/2 NPT

* For quantities above 50 pieces, call Hercules for special pricing.

PART NUMBER	BORE	STROKE (INCH)	ROD DIA (INCH)	PIN CENTERS RETRACTED (INCH)	PIN CENTERS EXTENDED (INCH)	WEIGHT LBS	LIST PRICE	RESELLER PRICE
HMW-1504	1.50	4	1"	12.00	16.00	9.04	\$ 103.65	\$ 59.78
HMW-1506	1.50	6	1"	14.00	20.00	10.14	113.83	65.65
HMW-1508	1.50	8	1"	16.00	24.00	11.47	122.84	70.84
HMW-1510	1.50	10	1"	18.00	28.00	12.79	130.50	75.26
HMW-2008	2.00	8	1-1/4"	16.00	24.00	13.45	114.05	65.77
HMW-2010	2.00	10	1-1/4"	18.00	28.00	15.21	121.47	70.05
HMW-2012	2.00	12	1-1/4"	20.00	32.00	16.98	127.10	73.30
HMW-2014	2.00	14	1-1/4"	22.00	36.00	18.74	134.16	77.37
HMW-2016	2.00	16	1-1/4"	24.00	40.00	20.51	144.38	83.26
HMW-2018	2.00	18	1-1/4"	26.00	44.00	22.27	152.54	87.97
HMW-2020	2.00	20	1-1/4"	28.00	48.00	24.03	158.58	91.46
HMW-2024	2.00	24	1-1/4"	32.00	56.00	27.56	173.05	99.80
HMW-2028	2.00	28	1-1/4"	36.00	64.00	31.09	179.97	103.79
HMW-2030	2.00	30	1-1/4"	38.00	68.00	32.85	217.99	125.72
HMW-2032	2.00	32	1-1/4"	40.00	72.00	34.84	232.82	134.27
HMW-2036	2.00	36	1-1/4"	44.00	80.00	38.37	242.77	140.00
HMW-2040	2.00	40	1-1/4"	48.00	88.00	41.90	269.43	155.38
HMW-2048	2.00	48	1-1/4"	56.00	104.00	48.95	322.56	186.02
HMW-2508	2.50	8	1-1/2"	16.00	24.00	19.85	124.00	71.51
HMW-2510	2.50	10	1-1/2"	18.00	28.00	21.83	132.79	76.58
HMW-2512	2.50	12	1-1/2"	20.00	32.00	24.03	137.33	79.20
HMW-2514	2.50	14	1-1/2"	22.00	36.00	26.24	147.49	85.06
HMW-2516	2.50	16	1-1/2"	24.00	40.00	28.44	152.94	88.20

HMW MECHANICAL WELDED CYLINDERS

Hercules Brand Cylinders

THE HMW LINE

2500 and 3000 PSI DOUBLE ACTING CYLINDERS (4" Bore = 3000 PSI, 5" Bore = 2500 PSI)

* For quantities above 50 pieces, call Hercules for special pricing.

PART NUMBER	BORE	STROKE (INCH)	ROD DIA (INCH)	PIN CENTERS RETRACTED (INCH)	PIN CENTERS EXTENDED (INCH)	WEIGHT LBS	LIST PRICE	RESELLER PRICE
HMW-2518	2.50	18	1-1/2"	26.00	44.00	30.65	\$ 160.19	\$ 92.38
HMW-2520	2.50	20	1-1/2"	28.00	48.00	32.85	173.05	99.80
HMW-2524	2.50	24	1-1/2"	32.00	56.00	37.26	186.00	107.27
HMW-2528	2.50	28	1-1/2"	36.00	64.00	41.45	205.39	118.45
HMW-2530	2.50	30	1-1/2"	38.00	68.00	43.66	230.04	132.66
HMW-2532	2.50	32	1-1/2"	40.00	72.00	45.86	247.63	142.81
HMW-2536	2.50	36	1-1/2"	44.00	80.00	50.27	256.14	147.72
HMW-2540	2.50	40	1-1/2"	48.00	88.00	54.68	294.63	169.91
HMW-2548	2.50	48	1-1/2"	56.00	104.00	63.28	372.08	214.58
HMW-3008	3.00	8	1-1/2"	16.00	24.00	24.70	138.70	79.99
HMW-3010	3.00	10	1-1/2"	18.00	28.00	27.12	150.01	86.51
HMW-3012	3.00	12	1-1/2"	20.00	32.00	29.55	163.34	94.20
HMW-3014	3.00	14	1-1/2"	22.00	36.00	31.97	170.40	98.27
HMW-3016	3.00	16	1-1/2"	24.00	40.00	34.40	177.82	102.55
HMW-3018	3.00	18	1-1/2"	26.00	44.00	36.82	184.60	106.46
HMW-3020	3.00	20	1-1/2"	28.00	48.00	39.25	195.00	112.45
HMW-3024	3.00	24	1-1/2"	32.00	56.00	44.10	218.22	125.85
HMW-3028	3.00	28	1-1/2"	36.00	64.00	48.95	242.31	139.74
HMW-3030	3.00	30	1-1/2"	38.00	68.00	51.38	252.40	145.56
HMW-3032	3.00	32	1-1/2"	40.00	72.00	53.58	266.22	153.53
HMW-3036	3.00	36	1-1/2"	44.00	80.00	58.43	285.87	164.86
HMW-3040	3.00	40	1-1/2"	48.00	88.00	63.28	341.19	196.77
HMW-3048	3.00	48	1-1/2"	56.00	104.00	72.99	378.99	218.56
HMW-3508	3.50	8	1-3/4"	18.00	26.00	32.63	163.34	94.20
HMW-3510	3.50	10	1-3/4"	20.00	30.00	35.72	170.40	98.27
HMW-3512	3.50	12	1-3/4"	22.00	34.00	38.81	180.06	103.84
HMW-3514	3.50	14	1-3/4"	24.00	38.00	41.67	188.22	108.55
HMW-3516	3.50	16	1-3/4"	26.00	42.00	44.76	209.05	120.56
HMW-3518	3.50	18	1-3/4"	28.00	46.00	47.63	221.68	127.85
HMW-3520	3.50	20	1-3/4"	30.00	50.00	50.72	233.61	134.72
HMW-3524	3.50	24	1-3/4"	34.00	58.00	56.67	251.89	145.26
HMW-3528	3.50	28	1-3/4"	38.00	66.00	62.62	293.71	169.38
HMW-3530	3.50	30	1-3/4"	40.00	70.00	65.71	321.55	185.44
HMW-3532	3.50	32	1-3/4"	42.00	74.00	68.80	331.77	191.33
HMW-3536	3.50	36	1-3/4"	46.00	82.00	74.75	361.04	208.21
HMW-3540	3.50	40	1-3/4"	50.00	90.00	80.70	378.94	218.54
HMW-3548	3.50	48	1-3/4"	58.00	106.00	92.61	429.94	247.94
HMW-4008	4.00	8	2"	18.00	26.00	40.79	193.16	111.39
HMW-4010	4.00	10	2"	20.00	30.00	44.54	214.91	123.94
HMW-4012	4.00	12	2"	22.00	34.00	48.29	228.52	131.79
HMW-4014	4.00	14	2"	24.00	38.00	51.82	247.71	142.85
HMW-4016	4.00	16	2"	26.00	42.00	55.57	257.01	148.22
HMW-4018	4.00	18	2"	28.00	46.00	59.09	267.18	154.08
HMW-4020	4.00	20	2"	30.00	50.00	62.84	279.00	160.90
HMW-4024	4.00	24	2"	34.00	58.00	70.12	293.48	169.25
HMW-4028	4.00	28	2"	38.00	66.00	77.40	335.94	193.74
HMW-4030	4.00	30	2"	40.00	70.00	81.14	360.30	207.79

CYLINDERS



HMW MECHANICAL WELDED CYLINDERS

Hercules Brand Cylinders

THE HMW LINE

2500 and 3000 PSI DOUBLE ACTING CYLINDERS (4" Bore = 3000 PSI, 5" Bore = 2500 PSI)

* For quantities above 50 pieces, call Hercules for special pricing.

PART NUMBER	BORE	STROKE (INCH)	ROD DIA (INCH)	PIN CENTERS RETRACTED (INCH)	PIN CENTERS EXTENDED (INCH)	WEIGHT LBS	LIST PRICE	RESELLER PRICE
HMW-4032	4.00	32	2"	42.00	74.00	84.67	\$ 379.26	\$ 218.72
HMW-4036	4.00	36	2"	46.00	82.00	91.95	404.83	233.46
HMW-4040	4.00	40	2"	50.00	90.00	99.23	433.35	249.91
HMW-4048	4.00	48	2"	58.00	106.00	114.00	506.93	292.35
HMW-5008	5.00	8	2-1/2"	20.00	28.00	71.88	296.89	171.22
HMW-5010	5.00	10	2-1/2"	22.00	32.00	76.07	332.78	191.91
HMW-5012	5.00	12	2-1/2"	24.00	36.00	80.48	375.55	216.58
HMW-5014	5.00	14	2-1/2"	26.00	40.00	84.67	407.43	234.97
HMW-5016	5.00	16	2-1/2"	28.00	44.00	89.08	432.36	249.34
HMW-5018	5.00	18	2-1/2"	30.00	48.00	93.49	457.69	263.95
HMW-5020	5.00	20	2-1/2"	32.00	52.00	97.68	480.08	276.86
HMW-5024	5.00	24	2-1/2"	36.00	60.00	106.28	497.35	286.82
HMW-5028	5.00	28	2-1/2"	40.00	68.00	115.10	520.34	300.08
HMW-5030	5.00	30	2-1/2"	42.00	72.00	119.29	541.75	312.43
HMW-5032	5.00	32	2-1/2"	44.00	76.00	123.70	587.45	338.78
HMW-5036	5.00	36	2-1/2"	48.00	84.00	132.30	619.43	357.22
HMW-5040	5.00	40	2-1/2"	52.00	92.00	140.90	690.47	398.19
HMW-5048	5.00	48	2-1/2"	60.00	108.00	158.10	763.26	440.17

CYLINDERS

HARVESTER DUMP TRAILER CYLINDERS

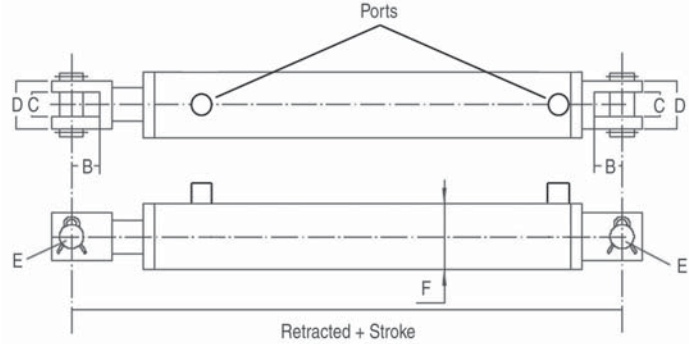
For the Metagro® line of Harvester Dump Trailers

PART NUMBER	APPLICATION	TUBE	ROD	CLOSED	OPEN	STROKE	LIST PRICE
HMW-406285-0-JIC	DUMP	4 X 4 - 1/2	3	84.52	147.35	62.85	\$ 898.87
HMW-406285-90-JIC	LIFT	4 X 4 - 1/2	3	84.52	147.35	62.85	898.87

CLEVIS WELDED CYLINDERS

Hercules Brand Cylinders THE HCW LINE

2500 and 3000 PSI DOUBLE ACTING CYLINDERS (4" Bore = 3000 PSI, 5" Bore = 2500 PSI)



FEATURES:

- Skived, honed tubing
- Heavy duty welded construction
- Chromed, ground & polished piston rod will operate at full pressure through 16" stroke
- Cast iron piston, cast steel butt, gland & clevis
- Loaded u-seal & urethane wiper in gland, u-seal on piston
- Threaded gland
- Pins & clips included
- Standard color is black
- Stroke control may be installed on 8" strokes

Bore	B	C	D	E	F	Ports(NPT)
2.00	2.125	1.125	2.07	1.00	2.5	3/8 NPT
2.50	2.125	1.125	2.07	1.00	3.0	1/2 NPT
3.00	2.125	1.125	2.07	1.00	3.5	1/2 NPT
3.50	2.125	1.125	2.07	1.00	4.0	1/2 NPT
4.00	2.000	1.125	2.07	1.00	4.5	1/2 NPT
5.00	2.000	1.500	2.44	1.00	5.5	1/2 NPT

* For quantities above 50 pieces, call Hercules for special pricing.

PART NUMBER	BORE	STROKE (INCH)	ROD DIA (INCH)	PIN CENTERS RETRACTED (INCH)	PIN CENTERS EXTENDED (INCH)	WEIGHT LBS	LIST PRICE	RESELLER PRICE
HCW-2004	2.00	4	1-1/4"	14.25	18.25	12.79	\$ 107.46	\$ 61.97
HCW-2006	2.00	6	1-1/4"	16.25	22.25	14.55	107.46	61.97
HCW-2008	2.00	8	1-1/4"	20.25	28.25	16.32	114.05	65.77
HCW-2010	2.00	10	1-1/4"	20.25	30.25	17.86	121.47	70.05
HCW-2012	2.00	12	1-1/4"	22.25	34.25	19.40	127.10	73.30
HCW-2014	2.00	14	1-1/4"	24.25	38.25	21.17	134.16	77.37
HCW-2016	2.00	16	1-1/4"	26.25	42.25	22.93	144.38	83.26
HCW-2018	2.00	18	1-1/4"	28.25	46.25	24.48	153.13	88.31
HCW-2020	2.00	20	1-1/4"	30.25	50.25	26.24	158.58	91.46
HCW-2024	2.00	24	1-1/4"	34.25	58.25	29.55	173.05	99.80
HCW-2028	2.00	28	1-1/4"	38.25	66.25	32.85	179.97	103.79
HCW-2030	2.00	30	1-1/4"	40.25	70.25	34.62	217.99	125.72
HCW-2032	2.00	32	1-1/4"	42.25	74.25	36.16	232.82	134.27
HCW-2034	2.00	34	1-1/4"	44.25	78.25	37.93	238.05	137.28
HCW-2036	2.00	36	1-1/4"	46.25	82.25	39.69	242.77	140.00
HCW-2504	2.50	4	1-1/2"	14.25	18.25	16.98	116.53	67.20
HCW-2506	2.50	6	1-1/2"	16.25	22.25	19.18	116.53	67.20
HCW-2508	2.50	8	1-1/2"	20.25	28.25	21.39	124.00	71.51
HCW-2510	2.50	10	1-1/2"	20.25	30.25	23.37	132.79	76.58
HCW-2512	2.50	12	1-1/2"	22.25	34.25	25.58	137.33	79.20
HCW-2514	2.50	14	1-1/2"	24.25	38.25	27.78	147.49	85.06
HCW-2516	2.50	16	1-1/2"	26.25	42.25	29.77	152.94	88.20
HCW-2518	2.50	18	1-1/2"	28.25	46.25	31.97	160.19	92.38
HCW-2520	2.50	20	1-1/2"	30.25	50.25	34.18	173.05	99.80
HCW-2524	2.50	24	1-1/2"	34.25	58.25	38.37	186.00	107.27
HCW-2528	2.50	28	1-1/2"	38.25	66.25	42.56	205.39	118.45

CYLINDERS



CLEVIS WELDED CYLINDERS

Hercules Brand Cylinders

THE HCW LINE

2500 and 3000 PSI DOUBLE ACTING CYLINDERS (4" Bore = 3000 PSI, 5" Bore = 2500 PSI)

* For quantities above 50 pieces, call Hercules for special pricing.

PART NUMBER	BORE	STROKE (INCH)	ROD DIA (INCH)	PIN CENTERS RE-TRACTED (INCH)	PIN CENTERS EXTENDED (INCH)	WEIGHT LBS	LIST PRICE	RESELLER PRICE
HCW-2530	2.50	30	1-1/2"	40.25	70.25	44.76	\$ 230.04	\$ 132.66
HCW-2532	2.50	32	1-1/2"	42.25	74.25	46.97	247.63	142.81
HCW-2534	2.50	34	1-1/2"	44.25	78.25	48.95	251.89	145.26
HCW-2536	2.50	36	1-1/2"	46.25	82.25	51.16	256.14	147.72
HCW-3004	3.00	4	1-1/2"	14.25	18.25	21.83	130.09	75.02
HCW-3006	3.00	6	1-1/2"	16.25	22.25	24.26	130.09	75.02
HCW-3008	3.00	8	1-1/2"	20.25	28.25	26.90	138.70	79.99
HCW-3010	3.00	10	1-1/2"	20.25	30.25	29.11	150.01	86.51
HCW-3012	3.00	12	1-1/2"	22.25	34.25	31.53	163.34	94.20
HCW-3014	3.00	14	1-1/2"	24.25	38.25	33.96	170.40	98.27
HCW-3016	3.00	16	1-1/2"	26.25	42.25	36.60	177.82	102.55
HCW-3018	3.00	18	1-1/2"	28.25	46.25	39.03	184.60	106.46
HCW-3020	3.00	20	1-1/2"	30.25	50.25	41.45	194.99	112.45
HCW-3024	3.00	24	1-1/2"	34.25	58.25	46.31	218.22	125.85
HCW-3028	3.00	28	1-1/2"	38.25	66.25	51.16	242.31	139.74
HCW-3030	3.00	30	1-1/2"	40.25	70.25	53.58	252.39	145.56
HCW-3032	3.00	32	1-1/2"	42.25	74.25	56.23	266.22	153.53
HCW-3034	3.00	34	1-1/2"	44.25	78.25	58.65	276.07	159.21
HCW-3036	3.00	36	1-1/2"	46.25	82.25	61.08	285.87	164.86
HCW-3504	3.50	4	1-3/4"	14.25	18.25	26.24	153.86	88.73
HCW-3506	3.50	6	1-3/4"	16.25	22.25	29.33	153.86	88.73
HCW-3508	3.50	8	1-3/4"	20.25	28.25	32.41	163.34	94.20
HCW-3510	3.50	10	1-3/4"	20.25	30.25	35.50	170.40	98.27
HCW-3512	3.50	12	1-3/4"	22.25	34.25	38.59	180.06	103.84
HCW-3514	3.50	14	1-3/4"	24.25	38.25	41.67	188.22	108.55
HCW-3516	3.50	16	1-3/4"	26.25	42.25	44.76	209.05	120.56
HCW-3518	3.50	18	1-3/4"	28.25	46.25	48.07	221.68	127.85
HCW-3520	3.50	20	1-3/4"	30.25	50.25	51.16	233.61	134.72
HCW-3524	3.50	24	1-3/4"	34.25	58.25	57.33	251.89	145.26
HCW-3528	3.50	28	1-3/4"	38.25	66.25	63.50	293.71	169.38
HCW-3530	3.50	30	1-3/4"	40.25	70.25	66.59	321.55	185.44
HCW-3532	3.50	32	1-3/4"	42.25	74.25	69.90	331.77	191.33
HCW-3534	3.50	34	1-3/4"	44.25	78.25	72.99	346.42	199.78
HCW-3536	3.50	36	1-3/4"	46.25	82.25	76.07	361.04	208.21
HCW-4004	4.00	4	2"	14.25	18.25	30.65	186.66	107.65
HCW-4006	4.00	6	2"	16.25	22.25	34.40	186.66	107.65
HCW-4008	4.00	8	2"	20.25	28.25	39.25	186.66	107.65
HCW-4010	4.00	10	2"	20.25	30.25	42.12	214.91	123.94
HCW-4012	4.00	12	2"	22.25	34.25	46.08	228.52	131.79
HCW-4014	4.00	14	2"	24.25	38.25	50.05	247.71	142.85
HCW-4016	4.00	16	2"	26.25	42.25	53.80	257.01	148.22
HCW-4018	4.00	18	2"	28.25	46.25	57.77	267.18	154.08
HCW-4020	4.00	20	2"	30.25	50.25	61.52	279.00	160.90
HCW-4024	4.00	24	2"	34.25	58.25	69.46	293.48	169.25
HCW-4028	4.00	28	2"	38.25	66.25	77.18	335.94	193.74
HCW-4030	4.00	30	2"	40.25	70.25	81.14	360.30	207.79
HCW-4032	4.00	32	2"	42.25	74.25	84.89	379.26	218.72

NORTH AMERICA
PHONE 1-800-777-5617
FAX 1-800-759-6391

SALES OFFICE HOURS
8 A.M. TO 8 P.M. EASTERN TIME
www.HerculesUS.com

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PHONE 1-727-796-1300
FAX 1-727-797-8849

CLEVIS WELDED CYLINDERS

Hercules Brand Cylinders

THE HCW LINE

2500 and 3000 PSI DOUBLE ACTING CYLINDERS (4" Bore = 3000 PSI, 5" Bore = 2500 PSI)

* For quantities above 50 pieces, call Hercules for special pricing.

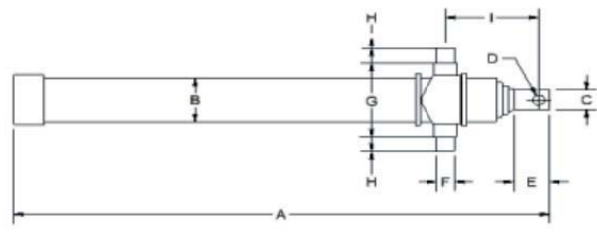
PART NUMBER	BORE	STROKE (INCH)	ROD DIA (INCH)	PIN CENTERS RE-TRACTED (INCH)	PIN CENTERS EXTENDED (INCH)	WEIGHT LBS	LIST PRICE	RESELLER PRICE
HCW-4034	4.00	34	2"	44.25	78.25	88.86	\$ 392.04	\$ 226.09
HCW-4036	4.00	36	2"	46.25	82.25	92.61	402.01	231.84
HCW-5004	5.00	4	2-1/2"	16.25	20.25	63.95	305.66	176.28
HCW-5006	5.00	6	2-1/2"	18.25	24.25	68.36	305.66	176.28
HCW-5008	5.00	8	2-1/2"	20.25	28.25	72.77	317.66	183.20
HCW-5010	5.00	10	2-1/2"	22.25	32.25	77.18	332.78	191.91
HCW-5012	5.00	12	2-1/2"	24.25	36.25	81.59	375.55	216.58
HCW-5014	5.00	14	2-1/2"	26.25	40.25	86.00	407.43	234.97
HCW-5016	5.00	16	2-1/2"	28.25	44.25	90.41	432.36	249.34
HCW-5018	5.00	18	2-1/2"	30.25	48.25	94.82	457.69	263.95
HCW-5020	5.00	20	2-1/2"	32.25	52.25	99.23	480.08	276.86
HCW-5024	5.00	24	2-1/2"	36.25	60.25	108.05	497.35	286.82
HCW-5028	5.00	28	2-1/2"	40.25	68.25	116.87	520.34	300.08
HCW-5030	5.00	30	2-1/2"	42.25	72.25	121.28	541.75	312.43
HCW-5032	5.00	32	2-1/2"	44.25	76.25	125.69	587.45	338.78
HCW-5034	5.00	34	2-1/2"	46.25	80.25	130.10	603.43	348.00
HCW-5036	5.00	36	2-1/2"	48.25	84.25	134.51	619.43	357.22

CYLINDERS

THE HTC LINE

3000 PSI SINGLE ACTING CYLINDERS

7 Tons and 12 Tons Inverse



PART NUMBER	CAPACITY	STROKE	CLOSED (A)	B	C	D	E	F	G	H	I	PORT	WEIGHT LBS.	LIST PRICE	RESELLER PRICE
HTC-3378	7 TONS	78"	35.5"	4	2	1.0625	2.25	1.25	6.5	1.25	7	1/2" NPT	108 LBS	\$ 550.94	\$ 317.73
HTC-3390	7 TONS	90"	39.5"	4	2	1.0625	2.5	1.25	6.5	1.25	7	1/2" NPT	100 LBS	585.88	337.88
HTC-33108	7 TONS	108"	45"	4	2	1.0625	2.5	1.25	6.5	1.25	7	1/2" NPT	120 LBS	634.00	365.63
HTC-4378	12 TONS	78"	34.75"	5	2	1.0625	2.25	1.5	7.5	1.5	7	1/2" NPT	129 LBS	689.48	397.63
HTC-4390	12 TONS	90"	38.75"	5	2	1.0625	2.25	1.5	7.5	1.5	7	1/2" NPT	129 LBS	730.30	421.17
HTC-43108	12 TONS	108"	44.75"	5	2	1.0625	2.25	1.5	7.5	1.5	7	1/2" NPT	156 LBS	788.79	454.89
HTC-43120	12 TONS	120"	48.75"	5	2	1.0625	2.25	1.5	7.5	1.5	7	1/2" NPT	167 LBS	854.55	492.82
SEAL KIT NUMBER	SERIES		LIST PRICE												
HTC-756045K	HTC 33 Series		\$ 60.76												
HTC-927560K	HTC 43 Series		88.33												

See page 25 for a complete list of Power Units and pricing.

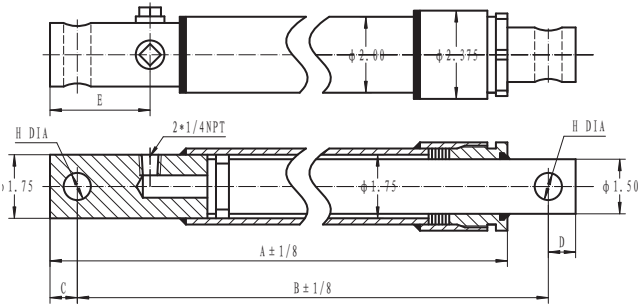
SNOW PLOW CYLINDERS

Hercules Snow Plow Cylinders

SNOW PLOW SINGLE ACTING CYLINDERS

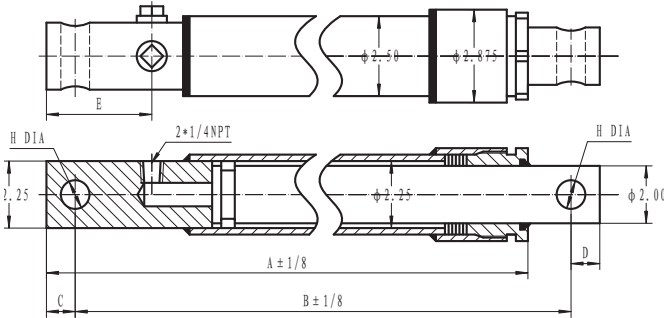


- FEATURES:**
- Ductile iron piston.
 - Ductile iron gland, drilled oil passages.
 - Honed steel tube, precision finished for extended seal life.
 - High tensile, hard chrome plated rod.
 - Tube Seal: O-ring
 - Rod Seal: Vee packing and ST wiper.
 - 2-Piece 93A urethane piston seal, with a 70A nitrile energizer.
 - All Seals: Manufactured to US specifications.



CYLINDERS

PART NUMBER	DESCRIPTION	A	B	C & D	E	H	WT LBS.	LIST PRICE	RESELLER PRICE
HSPM-1506-0625	MYER 1.5" X 6"	11-7/8	12.00	11/16	2.00	5/8	12	\$ 74.94	\$ 43.22
HSPM-1510-0625	MYER 1.5" X 10"	15-7/8	16-1/4	11/16	2.00	5/8	14	85.30	49.19
HSPM-1512-0625	MYER 1.5" X 12"	17-7/8	18.00	11/16	2.00	5/8	15	90.21	52.03
HSPW-1506-0750	WESTERN 1.5" X 6"	12-5/8	13.00	11/16	2-3/4	3/4	12	74.94	43.22
HSPW-1508-0750	WESTERN 1.5" X 8"	14-5/8	15-1/4	11/16	2-3/4	3/4	13	80.48	46.42
HSPW-1510-0750	WESTERN 1.5" X 10" X 3/4"	16-5/8	17-1/4	11/16	2-3/4	3/4	14	85.30	49.19
HSPW-1510-1000	WESTERN 1.5" X 10" X 1"	16-5/8	17-1/2	11/16	2-3/4	1.00	14	85.30	49.19
HSPA-1510-0750	ARTIC 1.5" X 10"	16-5/8	17.00	3/4	2-3/4	3/4	14	85.30	76.86
HSPA-1512-0750	ARTIC 1.5" X 12"	16-5/8	19.00	3/4	2-3/4	3/4	15	90.21	76.86
HSPF-1512-1000	FISHER 1.5" X 12"	18-7/16	19-3/8	3/4	2-5/8	1.00	15	90.21	76.86
HSPF-1510-1000	FISHER & DIAMOND 1.5" X 10"	16-3/8	17-1/4	3/4	2-11/16	1.00	14	90.21	76.86
SEAL KIT NUMBER	DESCRIPTION	LIST PRICE							
HC181-SK-SP150	1-1/2" ROD CYLINDER	\$ 7.23							
HC181-SK-SP200	2" ROD CYLINDER	8.71							

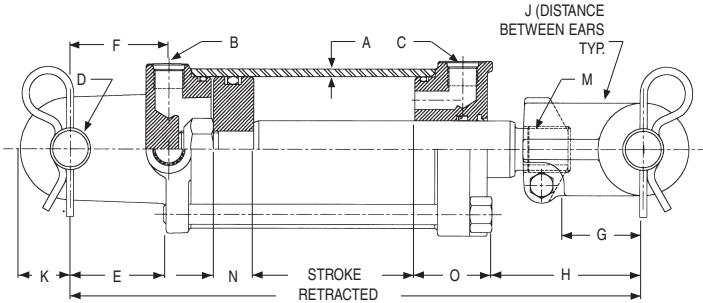


PART NUMBER	DESCRIPTION	A	B	C & D	E	H	WT LBS.	LIST PRICE	RESELLER PRICE
HSPM-2012-0625	MYER 2.0" X 12"	17-1/4	18.00	3/4	2-3/16	5/8	18	\$ 115.03	\$ 66.34
HSPW-2016-1000	WESTERN & DIAMOND 2.0" X 16"	22-5/8	23-5/8	11/16	2-3/4	1.00	21	133.27	76.86
HSPW-2006-0750	WESTERN 2.0" X 6"	12-5/8	13-3/16	3/4	2-3/4	3/4	13	97.88	56.45
HSPW-2010-1000	WESTERN 2.0" X 10"	16-5/8	17-1/4	11/16	2-3/4	1.00	16	111.73	64.43
HSPF-2016-125	FISHER 2.0" X 16"	22-1/2	23-1/4	7/8	2-3/4	1-1/4	20	133.28	76.86

TIE-ROD CYLINDERS



THE ROYAL PLATE LINE 3000 PSI DOUBLE ACTING TIE ROD CYLINDERS



FEATURES:

- Honed tubing (SAE-9000 & SAE 9100 series have cylinder finish tubing)
- Heavy duty, high strength tie rods
- Chromed, ground & polished piston rod will operate at full pressure through 16" stroke
- Cast iron piston, ductile iron butt, gland & clevis
- Carboxylated nitrile u-cup & urethane wiper in gland
- Pins & clips included
- Standard color is red
- Stroke control may be installed on 8" strokes
- Side ports available on request at no additional cost

"A" = Agricultural application

PTR	MFGR NO.	BORE	STROKE	ROD DIA.	RE-TRACT. DIMEN.	A	B/C PORT SIZE	D	E	F	G	H	J	K	M	N	O	SHIP WT.	LIST PRICE	PRICE 1-9 PCS	PRICE 10+ PCS
PTR-2004	8404	2	4	1	14 1/4	1/8	3/4-16 SAE	1.015	2 5/16	2 7/16	1 13/16	3 1/4	1.06	15/16	1-14	7/8	2 1/4	18	\$ 166.11	\$ 107.97	\$ 99.67
PTR-2006	8406	2	6	1	16 1/4	1/8	3/4-16 SAE	1.015	2 5/16	2 7/16	1 13/16	3 1/4	1.06	15/16	1-14	7/8	2 1/4	19	169.73	110.32	101.84
PTR-2008	8408	2	8	1	20 1/4	1/8	3/4-16 SAE	1.015	2 5/16	2 7/16	1 13/16	3 1/4	1.06	15/16	1-14	7/8	2 1/4	20	174.89	113.68	104.94
PTR-2010	8410	2	10	1	20 1/4	1/8	3/4-16 SAE	1.015	2 5/16	2 7/16	1 13/16	3 1/4	1.06	15/16	1-14	7/8	2 1/4	21	178.99	116.34	107.39
PTR-2012	9012	2	12	1 1/8	22 1/4	1/8	3/4-16 SAE	1.015	2 7/16	2 3/8	1 13/16	3 1/4	1.06	15/16	1 1/8-12	7/8	2 3/8	25	207.90	135.13	124.74
PTR-2014	9014	2	14	1 1/8	24 1/4	1/8	3/4-16 SAE	1.015	2 7/16	2 3/8	1 13/16	3 1/4	1.06	15/16	1 1/8-12	7/8	2 3/8	26	212.23	137.95	127.34
PTR-2016A	9016	2	16	1 1/8	31 1/2	1/8	3/4-16 SAE	1.015	2 7/16	2 3/8	1 13/16	8 1/2	1.06	15/16	1 1/8-12	7/8	2 3/8	28	221.63	144.06	132.98
PTR-2018	9018	2	18	1 1/8	28 1/4	1/8	3/4-16 SAE	1.015	2 7/16	2 3/8	1 13/16	3 1/4	1.06	15/16	1 1/8-12	7/8	2 3/8	29	227.54	147.90	136.53
PTR-2020	9020	2	20	1 1/8	30 1/4	1/8	3/4-16 SAE	1.015	2 7/16	2 3/8	1 13/16	3 1/4	1.06	15/16	1 1/8-12	7/8	2 3/8	31	238.62	155.10	143.17
PTR-2024	9024	2	24	1 1/8	34 1/4	1/8	3/4-16 SAE	1.015	2 7/16	2 3/8	1 13/16	3 1/4	1.06	15/16	1 1/8-12	7/8	2 3/8	35	250.53	162.85	150.32
PTR-2030	9030	2	30	1 1/8	40 1/4	1/8	3/4-16 SAE	1.015	2 7/16	2 3/8	1 13/16	3 1/4	1.06	15/16	1 1/8-12	7/8	2 3/8	39	276.79	179.91	166.08
PTR-2506	7006	2 1/2	6	1 1/8	16 1/4	1/8	3/4-16 SAE	1.015	2 7/16	2 3/8	1 13/16	3 1/4	1.06	15/16	1 1/8-12	1	2 3/8	22	184.18	119.72	110.51
PTR-2508	9108	2 1/2	8	1 1/4	20 1/4	1/8	3/4-16 SAE	1.015	2 7/16	2 3/8	1 13/16	5 1/4	1.06	15/16	1 1/8-12	1	2 3/8	25	209.72	136.31	125.83
PTR-2510	9110	2 1/2	10	1 1/4	20 1/4	1/8	3/4-16 SAE	1.015	2 7/16	2 3/8	1 13/16	3 1/4	1.06	15/16	1 1/8-12	1	2 3/8	26	217.77	141.55	130.66
PTR-2512	9112	2 1/2	12	1 1/4	22 1/4	1/8	3/4-16 SAE	1.015	2 7/16	2 3/8	1 13/16	3 1/4	1.06	15/16	1 1/8-12	1	2 3/8	27	230.78	150.01	138.47
PTR-2514	9114	2 1/2	14	1 1/4	24 1/4	1/8	3/4-16 SAE	1.015	2 7/16	2 3/8	1 13/16	3 1/4	1.06	15/16	1 1/8-12	1	2 3/8	29	237.04	154.08	142.23
PTR-2516	9116	2 1/2	16	1 1/4	31 1/2	1/8	3/4-16 SAE	1.015	2 7/16	2 3/8	1 13/16	8 1/2	1.06	15/16	1 1/8-12	1	2 3/8	33	248.37	161.44	149.02
PTR-2518	9118	2 1/2	18	1 1/4	28 1/4	1/8	3/4-16 SAE	1.015	2 7/16	2 3/8	1 13/16	3 1/4	1.06	15/16	1 1/8-12	1	2 3/8	34	259.80	168.87	155.88
PTR-2520	9120	2 1/2	20	1 1/4	30 1/4	1/8	3/4-16 SAE	1.015	2 7/16	2 3/8	1 13/16	3 1/4	1.06	15/16	1 1/8-12	1	2 3/8	36	266.09	172.96	159.65
PTR-2524	9124	2 1/2	24	1 1/4	34 1/4	1/8	3/4-16 SAE	1.015	2 7/16	2 3/8	1 13/16	3 1/4	1.06	15/16	1 1/8-12	1	2 3/8	39	285.71	185.71	171.42
PTR-2530	9130	2 1/2	30	1 1/4	40 1/4	1/8	3/4-16 SAE	1.015	2 7/16	2 3/8	1 13/16	3 1/4	1.06	15/16	1 1/8-12	1	2 3/8	44	314.51	204.43	188.70
PTR-3006	7106	3	6	1 1/8	16 1/4	1/8	3/4-16 SAE	1.015	2 7/16	2 7/16	1 13/16	3 3/4	1.06	15/16	1 1/8-12	1	1 15/16	24	203.45	132.24	122.07
PTR-3008	9208	3	8	1 3/8	20 1/4	3/16	3/4-16 SAE	1.015	2 7/16	2 7/16	1 13/16	5 3/4	1.06	15/16	1 1/8-12	1	1 15/16	32	228.02	148.22	136.81
PTR-3010	9210	3	10	1 3/8	20 1/4	3/16	3/4-16 SAE	1.015	2 7/16	2 7/16	1 13/16	3 3/4	1.06	15/16	1 1/8-12	1	1 15/16	33	238.01	154.70	142.80
PTR-3012	9212	3	12	1 3/8	22 1/4	3/16	3/4-16 SAE	1.015	2 7/16	2 7/16	1 13/16	3 3/4	1.06	15/16	1 1/8-12	1	1 15/16	33	249.70	162.31	149.82
PTR-3014	9214	3	14	1 3/8	24 1/4	3/16	3/4-16 SAE	1.015	2 7/16	2 7/16	1 13/16	3 3/16	1.06	15/16	1 1/8-12	1	1 15/16	35	261.13	169.74	156.68
PTR-3016	10616	3	16	1 3/8	26 1/4	3/16	3/4-16 SAE	1.015	2 7/16	2 7/16	1 13/16	3 3/4	1.06	1 1/4	1 1/8-12	1	1 15/16	29	276.20	179.53	165.72
PTR-3016A	9216	3	16	1 3/8	31 1/2	3/16	3/4-16 SAE	1.015	2 7/16	2 7/16	1 13/16	9	1.06	15/16	1 1/8-12	1	1 15/16	39	274.49	178.42	164.69
PTR-3018	9218	3	18	1 3/8	28 1/4	3/16	3/4-16 SAE	1.015	2 7/16	2 7/16	1 13/16	3 3/4	1.06	15/16	1 1/8-12	1	1 15/16	42	284.26	184.77	170.56
PTR-3020	9220	3	20	1 3/8	30 1/4	3/16	3/4-16 SAE	1.015	2 7/16	2 7/16	1 13/16	3 3/4	1.06	15/16	1 1/8-12	1	1 15/16	45	299.44	194.63	179.66
PTR-3024	9224	3	24	1 3/8	34 1/4	3/16	3/4-16 SAE	1.015	2 7/16	2 7/16	1 13/16	3 3/4	1.06	15/16	1 1/8-12	1	1 15/16	47	324.62	211.01	194.77
PTR-3030	9230	3	30	1 3/8	40 1/4	3/16	3/4-16 SAE	1.015	2 7/16	2 7/16	1 13/16	3 3/4	1.06	15/16	1 1/8-12	1	1 15/16	53	369.67	240.29	221.80
PTR-3036	9236	3	36	1 3/8	46 1/4	3/16	3/4-16 SAE	1.015	2 7/16	2 7/16	1 13/16	3 3/4	1.06	15/16	1 1/8-12	1	1 15/16	61	414.96	269.72	248.98
PTR-3048	9248	3	48	1 3/8	58 1/4	3/16	3/4-16 SAE	1.015	2 7/16	2 7/16	1 13/16	3 3/4	1.06	15/16	1 1/8-12	1	1 15/16	66	511.56	332.51	306.94
PTR-3508A	9308A	3 1/2	8	1 3/8	20 1/4	3/16	3/4-16 SAE	1.015	2 3/8	2 7/16	1 13/16	5 3/4	1.06	1 1/4	1 5/16-12	1	1 13/16	35	247.40	160.81	148.44

CYLINDERS



TIE-ROD CYLINDERS



THE ROYAL PLATE LINE

3000 PSI DOUBLE ACTING TIE ROD CYLINDERS

"A" = Agricultural application

CYLINDERS

PTR	MFGR NO.	BORE	STROKE	ROD DIA.	RE-TRACT. DIMEN.	A	B/C PORT SIZE	D	E	F	G	H	J	K	M	N	O	SHIP WT.	LIST PRICE	PRICE 1-9 PCS	PRICE 10+ PCS
PTR-3510	9310A	3 1/2	10	1 3/8	20 1/4	3/16	3/4-16 SAE	1.015	2 3/8	2 7/16	1 13/16	3 3/4	1.06	1 1/4	1 5/16-12	1	1 13/16	36	\$ 259.45	\$ 168.64	\$ 155.67
PTR-3512	9312A	3 1/2	12	1 3/8	22 1/4	3/16	3/4-16 SAE	1.015	2 3/8	2 7/16	1 13/16	3 3/4	1.06	1 1/4	1 5/16-12	1	1 13/16	38	274.38	178.35	164.63
PTR-3514	9314A	3 1/2	14	1 3/8	24 1/4	3/16	3/4-16 SAE	1.015	2 3/8	2 7/16	1 13/16	3 3/4	1.06	1 1/4	1 5/16-12	1	1 13/16	41	289.08	187.90	173.45
PTR-3516A	9316A	3 1/2	16	1 3/8	31 1/2	3/16	3/4-16 SAE	1.015	2 3/8	2 7/16	1 13/16	9	1.06	1 1/4	1 5/16-12	1	1 13/16	46	306.42	199.17	183.85
PTR-3518	9318A	3 1/2	18	1 3/8	28 1/4	3/16	3/4-16 SAE	1.015	2 3/8	2 7/16	1 13/16	3 3/4	1.06	1 1/4	1 5/16-12	1	1 13/16	47	316.89	205.98	190.14
PTR-3520	9320A	3 1/2	20	1 3/8	30 1/4	3/16	3/4-16 SAE	1.015	2 3/8	2 7/16	1 13/16	3 3/4	1.06	1 1/4	1 5/16-12	1	1 13/16	49	333.06	216.49	199.83
PTR-3524	9324A	3 1/2	24	1 3/8	34 1/4	3/16	3/4-16 SAE	1.015	2 3/8	2 7/16	1 13/16	3 3/4	1.06	1 1/4	1 5/16-12	1	1 13/16	54	365.92	237.85	219.55
PTR-3530	9330A	3 1/2	30	1 3/8	40 1/4	3/16	3/4-16 SAE	1.015	2 3/8	2 7/16	1 13/16	3 3/4	1.06	1 1/4	1 5/16-12	1	1 13/16	64	417.13	271.13	250.28
PTR-3536	9336A	3 1/2	36	1 3/8	46 1/4	3/16	3/4-16 SAE	1.015	2 3/8	2 7/16	1 13/16	3 3/4	1.06	1 1/4	1 5/16-12	1	1 13/16	66	424.60	275.99	254.76
PTR-3548	9348A	3 1/2	48	1 3/8	58 1/4	3/16	3/4-16 SAE	1.015	2 3/8	2 7/16	1 13/16	3 3/4	1.06	1 1/4	1 5/16-12	1	1 13/16	73	580.70	377.45	348.42
PTR-4008	9408	4	8	1 3/4	20 1/4	3/16	3/4-16 SAE	1.015	2 5/16	2 7/16	1 7/8	5 1/4	1.06	1 1/4	1 1/2-12	1	1 13/16	45	327.03	212.57	196.22
PTR-4008-1.5R	8608	4	8	1 1/2	20 1/4	3/16	3/4-16 SAE	1.015	2 5/16	2 7/16	1 7/8	5 1/4	1.06	1 1/4	1 1/2-12	1	1 13/16	42	287.63	186.96	172.58
PTR-4010	9410	4	10	1 3/4	20 1/4	3/16	3/4-16 SAE	1.015	2 5/16	2 7/16	1 7/8	3 1/4	1.06	1 1/4	1 1/2-12	1	1 13/16	48	341.25	221.81	204.75
PTR-4012	9412	4	12	1 3/4	22 1/4	3/16	3/4-16 SAE	1.015	2 5/16	2 7/16	1 7/8	3 1/4	1.06	1 1/4	1 1/2-12	1	1 13/16	49	370.39	240.76	222.24
PTR-4014	9414	4	14	1 3/4	24 1/4	3/16	3/4-16 SAE	1.015	2 5/16	2 7/16	1 7/8	3 1/4	1.06	1 1/4	1 1/2-12	1	1 13/16	51	376.28	244.58	225.77
PTR-4016	108816	4	16	1 3/4	26 1/4	3/16	3/4-16 SAE	1.015	2 5/16	2 7/16	1 7/8	3 1/4	1.06	1 1/4	1 1/2-12	1	1 13/16	48	397.00	258.05	238.20
PTR-4016A	9416	4	16	1 3/4	31 1/2	3/16	3/4-16 SAE	1.015	2 5/16	2 7/16	1 7/8	8 1/2	1.06	1 1/4	1 1/2-12	1	1 13/16	61	397.00	258.05	238.20
PTR-4018	9418	4	18	1 3/4	28 1/4	3/16	3/4-16 SAE	1.015	2 5/16	2 7/16	1 7/8	3 1/4	1.06	1 1/4	1 1/2-12	1	1 13/16	62	411.35	267.38	246.81
PTR-4020	9420	4	20	1 3/4	30 1/4	3/16	3/4-16 SAE	1.015	2 5/16	2 7/16	1 7/8	3 1/4	1.06	1 1/4	1 1/2-12	1	1 13/16	72	428.80	278.72	257.28
PTR-4024	9424	4	24	1 3/4	34 1/4	3/16	3/4-16 SAE	1.015	2 5/16	2 7/16	1 7/8	3 1/4	1.06	1 1/4	1 1/2-12	1	1 13/16	74	453.50	294.78	272.10
PTR-4030	9430	4	30	1 3/4	40 1/4	3/16	3/4-16 SAE	1.015	2 5/16	2 7/16	1 7/8	3 1/4	1.06	1 1/4	1 1/2-12	1	1 13/16	77	505.89	328.83	303.53
PTR-4036	9436	4	36	1 3/4	46 1/4	3/16	3/4-16 SAE	1.015	2 5/16	2 7/16	1 7/8	3 1/4	1.06	1 1/4	1 1/2-12	1	1 13/16	83	558.40	362.96	335.04
PTR-4048	9448	4	48	1 3/4	58 1/4	3/16	3/4-16 SAE	1.015	2 5/16	2 7/16	1 7/8	3 1/4	1.06	1 1/4	1 1/2-12	1	1 13/16	109	663.43	431.23	398.06
PTR-5008	9508	5	8	2	20 1/4	1/4	7/8-16 SAE	1.265	2 3/4	2 5/8	2	4	1.06	1 1/4	1 1/2-12	1	2 1/2	67	469.27	305.03	281.56
PTR-5012	9512	5	12	2	24 1/4	1/4	7/8-16 SAE	1.265	2 3/4	2 5/8	2	4	1.06	1 1/4	1 1/2-12	1	2 1/2	75	510.36	331.73	306.21
PTR-5014	9514	5	14	2	26 1/4	1/4	7/8-16 SAE	1.265	2 3/4	2 5/8	2	4	1.06	1 1/4	1 1/2-12	1	2 1/2	80	530.94	345.11	318.56
PTR-5016A	9516	5	16	2	31 1/2	1/4	7/8-16 SAE	1.265	2 3/4	2 5/8	2	7 1/4	1.06	1 1/4	1 1/2-12	1	2 1/2	84	558.29	362.89	334.98
PTR-5018	9518	5	18	2	28 1/4	1/4	7/8-16 SAE	1.265	2 3/4	2 5/8	2	4	1.06	1 1/4	1 1/2-12	1	2 1/2	90	572.03	371.82	343.22
PTR-5020	9520	5	20	2	32 1/4	1/4	7/8-16 SAE	1.265	2 3/4	2 5/8	2	4	1.06	1 1/4	1 1/2-12	1	2 1/2	95	592.61	385.20	355.57
PTR-5024	9524	5	24	2	36 1/4	1/4	7/8-16 SAE	1.265	2 3/4	2 5/8	2	4	1.06	1 1/4	1 1/2-12	1	2 1/2	100	620.69	403.45	372.41
PTR-5030	9530	5	30	2	42 1/4	1/4	7/8-16 SAE	1.265	2 3/4	2 5/8	2	4	1.06	1 1/4	1 1/2-12	1	2 1/2	108	685.49	445.57	411.29
PTR-5036	9536	5	36	2	48 1/4	1/4	7/8-16 SAE	1.265	2 3/4	2 5/8	2	4	1.06	1 1/4	1 1/2-12	1	2 1/2	118	754.12	490.18	452.47
PTR-5048	9548	5	48	2	60 1/4	1/4	7/8-16 SAE	1.265	2 3/4	2 5/8	2	4	1.06	1 1/4	1 1/2-12	1	2 1/2	161	907.84	590.09	544.70

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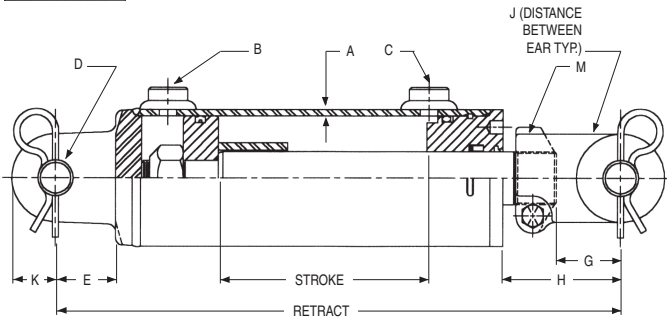
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THE SWORD LINE 3000 PSI DOUBLE ACTING CYLINDERS



FEATURES:

- Skived, honed tubing
- Heavy duty welded construction
- Chromed, ground & polished piston rod will operate at full pressure through 16" stroke
- Cast iron piston, cast steel butt, gland & clevis
- Carboxylated nitrile u-cup & urethane wiper in gland, crown seal on piston
- Square ring gland retainer provides positive lock
- Pins & clips included
- Standard color is white
- Stroke control may be installed on 8" strokes

"A" = Agricultural application

PCW	MFGR. NO.	BORE	STROKE	ROD DIA.	RE-TRACT. DIMEN.	A	B/C PORT SIZE	D	E	G	H	J	K	M	SHIP WT.	LIST PRICE	PRICE 1-9 PCS	PRICE 10+ PCS
PCW-2008	42008	2	8	1 1/8	20 1/4	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	5 9/16	1 1/16	1	1 1/8 12	10	\$ 280.27	\$ 182.18	\$ 168.16
PCW-2010	42010	2	10	1 1/8	20 1/4	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	3 9/16	1 1/16	1	1 1/8 12	20	288.49	187.52	173.09
PCW-2012	42012	2	12	1 1/8	22 1/4	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	3 9/16	1 1/16	1	1 1/8 12	22	296.30	192.60	177.78
PCW-2016A	42016	2	16	1 1/8	31 1/2	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	8 13/16	1 1/16	1	1 1/8 12	25	321.25	208.81	192.75
PCW-2020	42020	2	20	1 1/8	30 1/4	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	3 9/16	1 1/16	1	1 1/8 12	28	335.95	218.36	201.57
PCW-2024	42024	2	24	1 1/8	34 1/4	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	3 9/16	1 1/16	1	1 1/8 12	31	306.18	199.02	183.71
PCW-2508	42508	2 1/2	8	1 1/4	20 1/4	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	5 9/16	1 1/16	1	1 1/8 12	21	294.97	191.73	176.98
PCW-2510	42510	2 1/2	10	1 1/4	20 1/4	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	3 9/16	1 1/16	1	1 1/8 12	22	303.40	197.21	182.04
PCW-2512	42512	2 1/2	12	1 1/4	22 1/4	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	3 9/16	1 1/16	1	1 1/8 12	23	312.31	203.00	187.39
PCW-2516	42516	2 1/2	16	1 1/4	31 1/2	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	8 13/16	1 1/16	1	1 1/8 12	27	338.35	219.93	203.01
PCW-2520	42520	2 1/2	20	1 1/4	30 1/4	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	3 9/16	1 1/16	1	1 1/8 12	31	356.29	231.59	213.77
PCW-2524	42524	2 1/2	24	1 1/4	34 1/4	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	3 9/16	1 1/16	1	1 1/8 12	35	374.36	243.33	224.61
PCW-3008	43008	3	8	1 3/8	20 1/4	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	5 9/16	1 1/16	1 1/8	1 1/8 12	23	317.02	206.06	190.21
PCW-3010	43010	3	10	1 3/8	20 1/4	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	3 9/16	1 1/16	1 1/8	1 1/8 12	26	333.99	217.09	200.40
PCW-3012	43012	3	12	1 3/8	22 1/4	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	3 9/16	1 1/16	1 1/8	1 1/8 12	28	344.00	223.60	206.40
PCW-3016A	43016	3	16	1 3/8	31 1/2	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	8 13/16	1 1/16	1 1/8	1 1/8 12	33	363.41	236.22	218.04
PCW-3020	43020	3	20	1 3/8	30 1/4	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	3 9/16	1 1/16	1 1/8	1 1/8 12	39	386.88	251.47	232.13
PCW-3024	43024	3	24	1 3/8	34 1/4	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	3 9/16	1 1/16	1 1/8	1 1/8 12	43	430.86	280.06	258.52
PCW-3508	43508	3 1/2	8	1 1/2	20 1/4	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	5 3/8	1 1/16	1 1/4	1 1/2 12	29	344.35	223.83	206.61
PCW-3510	43510	3 1/2	10	1 1/2	20 1/4	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	3 3/8	1 1/16	1 1/4	1 1/2 12	31	359.29	233.54	215.57
PCW-3512	43512	3 1/2	12	1 1/2	22 1/4	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	3 3/8	1 1/16	1 1/4	1 1/2 12	33	374.11	243.17	224.47
PCW-3516A	43516	3 1/2	16	1 1/2	31 1/2	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	8 3/8	1 1/16	1 1/4	1 1/2 12	38	415.42	270.02	249.25
PCW-3520	43520	3 1/2	20	1 1/2	30 1/4	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	3 3/8	1 1/16	1 1/4	1 1/2 12	43	444.35	288.83	266.61
PCW-3524	43524	3 1/2	24	1 1/2	34 1/4	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	3 3/8	1 1/16	1 1/4	1 1/2 12	48	476.98	310.04	286.19
PCW-4008	44008	4	8	1 3/4	20 1/4	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	5 3/8	1 1/8	1 1/4	1 1/2 12	40	409.05	265.88	245.43
PCW-4010	44010	4	10	1 3/4	20 1/4	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	3 3/8	1 1/8	1 1/4	1 1/2 12	43	426.52	277.24	255.91
PCW-4012	44012	4	12	1 3/4	22 1/4	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	3 3/8	1 1/8	1 1/4	1 1/2 12	45	443.73	288.43	266.24
PCW-4016A	44016	4	16	1 3/4	31 1/2	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	8 3/8	1 1/8	1 1/4	1 1/2 12	54	491.81	319.67	295.08
PCW-4020	44020	4	20	1 3/4	30 1/4	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	3 3/8	1 1/8	1 1/4	1 1/2 12	58	527.22	342.69	316.33
PCW-4024	44024	4	24	1 3/4	34 1/4	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	3 3/8	1 1/8	1 1/4	1 1/2 12	60	562.74	365.78	337.64
PCW-4030	44030	4	30	1 3/4	40 1/4	3/16	1/2 NPTF	1.015	1 3/4	1 13/16	3 3/8	1 1/8	1 1/4	1 1/2 12	65	616.22	400.54	369.73

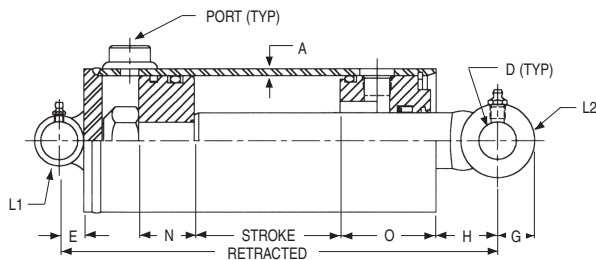
CYLINDERS

WELDED CYLINDERS



THE ROYAL LINE

2500 PSI DOUBLE ACTING CYLINDERS



FEATURES:

- Honed tubing
- Heavy duty welded construction
- Chromed, ground & polished piston rod
- Cast iron piston & gland
- Pin eye mounting on both ends
- Quad ring/backup washer & urethane wiper in gland
- O-ring/backup washers & cast iron ring for piston seals
- Truarc type gland retainer
- Standard color is red

CYLINDERS

PMW	MFGR. NO.	BORE	STROKE	ROD DIA.	RE-TRACT. DIMEN.	PORT SIZE	A	D	E	G	H	L1	L2	N	O	SHIP WT.	LIST PRICE	PRICE 1-9 PCS	PRICE 10+ PCS
PMW-2508	5408	2 1/2	8	1 3/8	16	3/8 NPTF	3/16	.760	9/16	3/4	2 9/16	3	1 3/8	1 1/4	2 1/2	17	\$ 253.91	\$ 165.04	\$ 152.34
PMW-2512	5412	2 1/2	12	1 3/8	20	3/8 NPTF	3/16	.760	9/16	3/4	2 9/16	3	1 3/8	1 1/4	2 1/2	20	266.78	173.41	160.07
PMW-2516	5416	2 1/2	16	1 3/8	24	3/8 NPTF	3/16	.760	9/16	3/4	2 9/16	3	1 3/8	1 1/4	2 1/2	23	280.65	182.42	168.39
PMW-2520	5420	2 1/2	20	1 3/8	28	3/8 NPTF	3/16	.760	9/16	3/4	2 9/16	3	1 3/8	1 1/4	2 1/2	27	279.58	181.72	167.75
PMW-2524	5424	2 1/2	24	1 3/8	32	3/8 NPTF	3/16	.760	9/16	3/4	2 9/16	3	1 3/8	1 1/4	2 1/2	30	306.07	198.95	183.64
PMW-2530	5430	2 1/2	30	1 3/8	38	3/8 NPTF	3/16	.760	9/16	3/4	2 9/16	3	1 3/8	1 1/4	2 1/2	35	325.21	211.39	195.13
PMW-2532	5432	2 1/2	32	1 3/8	40	3/8 NPTF	3/16	.760	9/16	3/4	2 9/16	3	1 3/8	1 1/4	2 1/2	41	336.19	218.52	201.71
PMW-2536	5436	2 1/2	36	1 3/8	44	3/8 NPTF	3/16	.760	9/16	3/4	2 9/16	3	1 3/8	1 1/4	2 1/2	44	350.27	227.67	210.16
PMW-2542	5442	2 1/2	42	1 3/8	50	3/8 NPTF	3/16	.760	9/16	3/4	2 9/16	3	1 3/8	1 1/4	2 1/2	47	404.36	262.83	242.62
PMW-3008	8308	3	8	1 1/2	16	1/2 NPTF	3/16	1.015	11/16	1	2 5/16	3 1/2	1 1/2	1 1/4	2 5/8	22	282.92	183.90	169.75
PMW-3012	8312	3	12	1 1/2	20	1/2 NPTF	3/16	1.015	11/16	1	2 5/16	3 1/2	1 1/2	1 1/4	2 5/8	26	306.66	199.33	184.00
PMW-3016	8316	3	16	1 1/2	24	1/2 NPTF	3/16	1.015	11/16	1	2 5/16	3 1/2	1 1/2	1 1/4	2 5/8	31	333.64	216.87	200.19
PMW-3020	8320	3	20	1 1/2	28	1/2 NPTF	3/16	1.015	11/16	1	2 5/16	3 1/2	1 1/2	1 1/4	2 5/8	35	357.25	232.21	214.35
PMW-3024	8324	3	24	1 1/2	32	1/2 NPTF	3/16	1.015	11/16	1	2 5/16	3 1/2	1 1/2	1 1/4	2 5/8	41	380.86	247.56	228.52
PMW-3030	8330	3	30	1 1/2	38	1/2 NPTF	3/16	1.015	11/16	1	2 5/16	3 1/2	1 1/2	1 1/4	2 5/8	46	415.68	270.19	249.41
PMW-3032	8332	3	32	1 1/2	40	1/2 NPTF	3/16	1.015	11/16	1	2 5/16	3 1/2	1 1/2	1 1/4	2 5/8	48	426.87	277.47	256.12
PMW-3036	8336	3	36	1 1/2	44	1/2 NPTF	3/16	1.015	11/16	1	2 5/16	3 1/2	1 1/2	1 1/4	2 5/8	52	450.13	292.59	270.08
PMW-3040	8340	3	40	1 1/2	48	1/2 NPTF	3/16	1.015	11/16	1	2 5/16	3 1/2	1 1/2	1 1/4	2 5/8	56	461.80	300.17	277.08
PMW-3042	8342	3	42	1 1/2	50	1/2 NPTF	3/16	1.015	11/16	1	2 5/16	3 1/2	1 1/2	1 1/4	2 5/8	59	473.26	307.62	283.95
PMW-3048	8348	3	48	1 1/2	56	1/2 NPTF	3/16	1.015	11/16	1	2 5/16	3 1/2	1 1/2	1 1/4	2 5/8	65	516.97	336.03	310.18
PMW-3508	5508	3 1/2	8	1 1/2	16	1/2 NPTF	3/16	1.015	11/16	1	1 11/16	4	1 1/2	1 1/2	2 5/8	26	338.11	219.77	202.87
PMW-3512	5512	3 1/2	12	1 1/2	20	1/2 NPTF	3/16	1.015	11/16	1	1 11/16	4	1 1/2	1 1/2	2 5/8	29	361.72	235.12	217.03
PMW-3516	5516	3 1/2	16	1 1/2	24	1/2 NPTF	3/16	1.015	11/16	1	1 11/16	4	1 1/2	1 1/2	2 5/8	34	386.88	251.47	232.13
PMW-3520	5520	3 1/2	20	1 1/2	28	1/2 NPTF	3/16	1.015	11/16	1	1 11/16	4	1 1/2	1 1/2	2 5/8	38	411.21	267.29	246.73
PMW-3524	5524	3 1/2	24	1 1/2	32	1/2 NPTF	3/16	1.015	11/16	1	1 11/16	4	1 1/2	1 1/2	2 5/8	44	421.09	273.71	252.65
PMW-3530	5530	3 1/2	30	1 1/2	38	1/2 NPTF	3/16	1.015	11/16	1	1 11/16	4	1 1/2	1 1/2	2 5/8	48	456.85	296.95	274.11
PMW-3532	5532	3 1/2	32	1 1/2	40	1/2 NPTF	3/16	1.015	11/16	1	1 11/16	4	1 1/2	1 1/2	2 5/8	52	468.55	304.56	281.13
PMW-3536	5536	3 1/2	36	1 1/2	44	1/2 NPTF	3/16	1.015	11/16	1	1 11/16	4	1 1/2	1 1/2	2 5/8	56	451.44	293.44	270.87
PMW-3540	5540	3 1/2	40	1 1/2	48	1/2 NPTF	3/16	1.015	11/16	1	1 11/16	4	1 1/2	1 1/2	2 5/8	60	515.66	335.18	309.39
PMW-3542	5542	3 1/2	42	1 1/2	50	1/2 NPTF	3/16	1.015	11/16	1	1 11/16	4	1 1/2	1 1/2	2 5/8	64	527.46	342.85	316.48
PMW-3548	5548	3 1/2	48	1 1/2	56	1/2 NPTF	3/16	1.015	11/16	1	1 11/16	4	1 1/2	1 1/2	2 5/8	70	637.79	414.56	382.67
PMW-4008	5608	4	8	2	17	1/2 NPTF	3/16	1.265	15/16	1 1/4	2	4 1/2	2	1 5/16	2 7/8	35	425.91	276.84	255.54
PMW-4012	5612	4	12	2	21	1/2 NPTF	3/16	1.265	15/16	1 1/4	2	4 1/2	2	1 5/16	2 7/8	41	435.89	283.33	261.54
PMW-4016	5616	4	16	2	25	1/2 NPTF	3/16	1.265	15/16	1 1/4	2	4 1/2	2	1 5/16	2 7/8	48	460.12	299.08	276.07
PMW-4020	5620	4	20	2	29	1/2 NPTF	3/16	1.265	15/16	1 1/4	2	4 1/2	2	1 5/16	2 7/8	56	\$ 483.96	\$ 314.58	\$ 290.38

NORTH AMERICA
PHONE 1-800-777-5617
FAX 1-800-759-6391

SALES OFFICE HOURS
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FAX 1-727-797-8849

WELDED CYLINDERS



THE ROYAL LINE 2500 PSI DOUBLE ACTING CYLINDERS

PMW	MFGR. NO.	BORE	STROKE	ROD DIA.	RE-TRACT. DIMEN.	PORT SIZE	A	D	E	G	H	L1	L2	N	O	SHIP WT.	LIST PRICE	PRICE 1-9 PCS	PRICE 10+ PCS
PMW-4024	5624	4	24	2	33	1/2 NPTF	3/16	1.265	15/16	1 1/4	2	4 1/2	2	1 5/16	2 7/8	62	\$ 503.96	\$ 327.57	\$ 302.38
PMW-4030	5630	4	30	2	39	1/2 NPTF	3/16	1.265	15/16	1 1/4	2	4 1/2	2	1 5/16	2 7/8	72	541.78	352.16	325.07
PMW-4032	5632	4	32	2	41	1/2 NPTF	3/16	1.265	15/16	1 1/4	2	4 1/2	2	1 5/16	2 7/8	74	565.04	367.28	339.02
PMW-4036	5636	4	36	2	45	1/2 NPTF	3/16	1.265	15/16	1 1/4	2	4 1/2	2	1 5/16	2 7/8	80	582.84	378.85	349.70
PMW-4040	5640	4	40	2	49	1/2 NPTF	3/16	1.265	15/16	1 1/4	2	4 1/2	2	1 5/16	2 7/8	85	623.93	405.55	374.36
PMW-4042	5642	4	42	2	51	1/2 NPTF	3/16	1.265	15/16	1 1/4	2	4 1/2	2	1 5/16	2 7/8	92	634.90	412.69	380.94
PMW-4048	5648	4	48	2	57	1/2 NPTF	3/16	1.265	15/16	1 1/4	2	4 1/2	2	1 5/16	2 7/8	100	665.60	432.64	399.36
PMW-4060	5660	4	60	2	69	1/2 NPTF	3/16	1.265	15/16	1 1/4	2	4 1/2	2	1 5/16	2 7/8	120	777.00	505.05	466.20

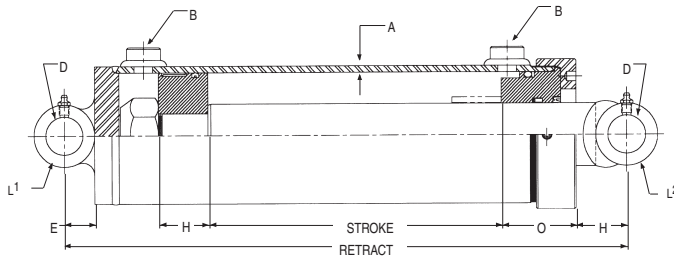
CYLINDERS

WELDED CYLINDERS



THE GLADIATOR LINE

3000 PSI DOUBLE ACTING CYLINDERS



FEATURES:

- Heavy duty welded construction
- 3000 PSI (2:1 safety factor for buckling on 36" stroke and less. Longer stroke consult factory)
- Steel gland cap retainer with lock screw
- 3/4 NPTF full-flow ports
- Standard color is highway yellow
- High grade gray iron piston & gland
- Precision skived tube for long seal life
- All steel spacer tube for bearing length on 48" or more of stroke
- Ground and polished chrome C-1045 steel piston rod for maximum life
- Heavy duty torqued locknut for piston retainer
- Polyurethane "U" cup and heavy duty wiper in gland. Crown seal with bearing rings on piston

CYLINDERS

PMW2	MFGR. NO.	BORE	STROKE	ROD DIA.	RE-TRACT. DIMEN.	A	B PORT SIZE	D	E	H	L1	O	L2	SHIP WT.	LIST PRICE	PRICE 1-9 PCS	PRICE 10+ PCS
PMW-5008	21008	5	8	2 1/2	19	1/4	3/4 NPTF	1.515	1 1/4	1 7/8	5 3/4	2 15/16	4	75	\$ 709.82	\$ 461.38	\$ 425.89
PMW-5012	21012	5	12	2 1/2	23	1/4	3/4 NPTF	1.515	1 1/4	1 7/8	5 3/4	2 15/16	4	85	768.36	499.43	461.01
PMW-5016	21016	5	16	2 1/2	27	1/4	3/4 NPTF	1.515	1 1/4	1 7/8	5 3/4	2 15/16	4	90	802.54	521.65	481.52
PMW-5020	21020	5	20	2 1/2	31	1/4	3/4 NPTF	1.515	1 1/4	1 7/8	5 3/4	2 15/16	4	105	858.45	558.00	515.07
PMW-5024	21024	5	24	2 1/2	35	1/4	3/4 NPTF	1.515	1 1/4	1 7/8	5 3/4	2 15/16	4	115	921.92	599.25	553.15
PMW-5030	21030	5	30	2 1/2	41	1/4	3/4 NPTF	1.515	1 1/4	1 7/8	5 3/4	2 15/16	4	130	1,008.53	655.55	605.12
PMW-5036	21036	5	36	2 1/2	47	1/4	3/4 NPTF	1.515	1 1/4	1 7/8	5 3/4	2 15/16	4	145	1,078.50	701.03	647.10
PMW-5048	21048	5	48	2 1/2	61	1/4	3/4 NPTF	1.515	1 1/4	1 7/8	5 3/4	2 15/16	4	180	1,336.50	868.73	801.90
PMW-5054	21054	5	54	2 1/2	68	1/4	3/4 NPTF	1.515	1 1/4	1 7/8	5 3/4	2 15/16	4	195	1,421.06	923.69	852.63
PMW-5060	21060	5	60	2 1/2	75	1/4	3/4 NPTF	1.515	1 1/4	1 7/8	5 3/4	2 15/16	4	215	1,518.38	986.95	911.03
PMW-6008	22008	6	8	3	19	1/4	3/4 NPTF	1.515	1 1/4	2	6 3/4	3 1/8	4	100	884.34	574.82	530.60
PMW-6012	22012	6	12	3	23	1/4	3/4 NPTF	1.515	1 1/4	2	6 3/4	3 1/8	4	110	932.76	606.29	559.65
PMW-6016	22016	6	16	3	27	1/4	3/4 NPTF	1.515	1 1/4	2	6 3/4	3 1/8	4	125	999.86	649.91	599.92
PMW-6024	22024	6	24	3	35	1/4	3/4 NPTF	1.515	1 1/4	2	6 3/4	3 1/8	4	150	1,157.76	752.54	694.65
PMW-6030	22030	6	30	3	41	1/4	3/4 NPTF	1.515	1 1/4	2	6 3/4	3 1/8	4	170	1,281.71	833.11	769.03
PMW-6036	22036	6	36	3	47	1/4	3/4 NPTF	1.515	1 1/4	2	6 3/4	3 1/8	4	190	1,405.64	913.67	843.38
PMW-6048	22048	6	48	3	61	1/4	3/4 NPTF	1.515	1 1/4	2	6 3/4	3 1/8	4	240	1,803.12	1,172.03	1,081.87
PMW-6054	22054	6	54	3	68	1/4	3/4 NPTF	1.515	1 1/4	2	6 3/4	3 1/8	4	265	1,956.71	1,271.86	1,174.03
PMW-6060	22060	6	60	3	75	1/4	3/4 NPTF	1.515	1 1/4	2	6 3/4	3 1/8	4	290	2,020.65	1,313.42	1,212.39

SINGLE ACTING TELESCOPIC CYLINDERS



These cylinders are available from Custom Hoists, Commercial, Hyco and SHC. Request the manufacturer you want.



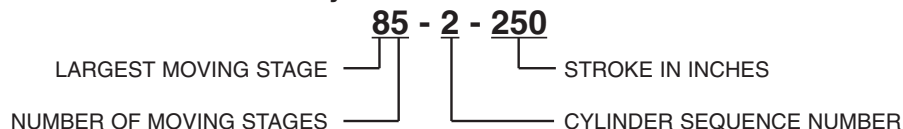
- Features**
- Plunger diameters: 2" thru 9-3/4"
 - Strokes up to 400"
 - One thru six moving stages available
 - Maximum pressure to 2,500 PSI
 - High-quality V-packing to seal high and low pressures
 - Externally threaded head nuts for extra strength, easy seal adjustment
 - Special plunger stops assure full shoulder stop
 - Easy-access bleeder screw, manual or automatic
 - High quality glass-filled nylon or optional bronze bearing rings
 - Dual lip wiper to prevent contamination
 - Wide range of cylinder mountings, including trunions
 - Maximum overlap for stability
 - Chromed plungers available

MANUFACTURERS SERVICE MANUALS ARE AVAILABLE.
CALL FOR DETAILS.

Individual Plunger Lifting Capacities for Single-Acting Telescopic Cylinders

Plunger Dia. (In.)	Cross Section Area (Sq. In.)	Specific Operating Pressures			
		1500 PSI (LBS)	1800 PSI (LBS)	2000 PSI (LBS)	2500PSI (LBS)
2	3.14	4,710	5,672	6,280	7,850
3	7.06	10,590	12,708	14,120	17,650
4	12.56	18,840	22,608	25,120	31,400
5	19.63	29,445	35,334	39,260	49,075
6	28.27	42,405	50,886	56,540	70,675
7	38.48	57,720	69,264	76,960	96,200
8	50.26	75,390	90,468	100,520	125,650
8-1/4	53.50	80,250	96,300	107,000	133,750
9-1/8	65.40	98,100	117,720	130,800	163,500
9-3/4	74.50	111,750	134,100	149,000	186,250

Cylinder Identification



CYLINDERS

SINGLE ACTING TELESCOPIC CYLINDERS

Commercial Intertech

These cylinders are available from Custom Hoists, Commercial, Hyco and SHC. Request the manufacturer you want.

COMMERCIAL FEATURES

- Longer sleeve overlap for improved stability and higher column loading.
- Heavy walled tubing in the first stage offers up to 27% more cross-sectional area providing up to 76% greater tube burst strength than our competition.
- Beveled mating surfaces of the overlap collar and stop ring for greater impact resistance during dumping operations.
- Snap-on, glass-filled bearings that absorb contaminants without damaging the cylinder walls.
- Threaded stop rings for easier servicing and more reliable stopping action.
- External packing nuts to give added support to the tube and make servicing easier.
- Wave springs and chevron packing for positive, self-compensating seals.
- Hytrel rod wipers resist high temperatures without extruding.
- Cast steel pin-eye and rod-end mountings give dependable strength.

MANUFACTURERS SERVICE MANUALS ARE AVAILABLE. CALL FOR DETAILS.

DOUBLE ACTING CYLINDERS:

- Operating pressure up to 2000 psi.
- Main cylinder outside diameter from 3-3/4" to 10-13/16".
- Lifting capacity to 153,180 lbs.
- Chrome-plated sleeves are available on special order.
- Pin-eye and trunion mountings are standard. If other types are required, dimensions must be specified.

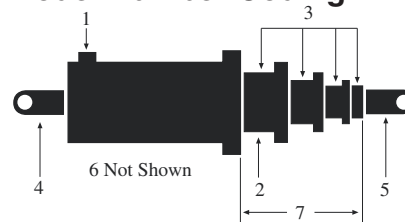
SINGLE ACTING CYLINDERS:

- Operating pressure up to 2000 psi.
- Main cylinder outside diameter from 3-3/4" to 11-1/8".
- All cylinders have NPT ports, unless otherwise specified.
- Lifting capacity to 138,060 lbs.
- Chrome-plated sleeves and plungers are available on special order.
- Pin-eye and trunion mountings are standard. If other types are required, dimensions must be specified.

S.A. Cylinder Information

Sleeve O.D. in inches	Effective Area in sq. inches	Load Capacity lbs. at 2000 p.s.i.	Displacement per in. of stroke in gallons
2.75	5.94	11,880	.026
3.75	11.04	22,080	.048
4.75	17.72	35,440	.077
5.75	25.96	51,920	.112
6.75	35.78	71,560	.155
7.905	48.70	97,400	.210
9.375	69.03	138,060	.299

Model Number Coding



Model Number S84DC-40-161

1. S = Single-acting Type Cylinder
- SD = Double-acting telescopic type
- 8 = 7-7/8" nominal diameter of largest sleeve
- 4 = 4 stages or sleeves
- D = Type of mounting on base end
- C = Type of mounting on rod end
- 40 = Modification or design variation
- 161 = Length of stroke (161")

D.A. Cylinder Information

Sleeve or plunger O.D. (inches)	Bore of Main or Sleeve (inches)	Effective Area extended (sq. inches)	Effective Area retracted (sq. inches)	Load Capacity at 2000 p.s.i. extended (pounds)	Load Capacity at 2000 p.s.i. retracted (pounds)	Displacement per in. of stroke extended (gallons)	Displacement per in. of stroke retracted (gallons)
2.75	3.25	8.295	2.355	16,590	4,710	.036	.010
3.75	4.25	14.186	3.142	28,372	6,284	.061	.014
4.75	5.25	21.648	3.927	43,296	7,854	.094	.017
5.75	6.25	30.680	4.713	61,360	9,426	.133	.020
6.75	7.25	41.282	5.497	82,564	10,994	.179	.024
7.905	8.437	55.680	6.973	111,360	13,946	.242	.030
9.375	9.143	76.590	7.560	153,180	15,120	.331	.038

SINGLE ACTING TELESCOPIC CYLINDERS



These cylinders are available from Custom Hoists, Commercial, Hyco and SHC. Request the manufacturer you want.



Fluid Capacity: Volume To Fully Extend

Plunger Dia. (Inches)	Effective Area (Sq. Inches)	Load Capacity (Lbs. @ 2000 PSI)	Displacement (Gal./In. of Stroke)
3	7.07	14,140	.031
4	12.56	25,120	.054
5	19.63	9,260	.085
6	28.27	56,540	.122
7	38.48	76,960	.166
8.12	51.78	103,560	.224
8.25	53.46	106,920	.231
9.38	69.10	138,200	.299

Follow example to determine displacement of the complete cylinder **Example:** Model 824-200
 8.12 in. plunger .224
 7 in. plunger .166
 6 in. plunger .122
 5 in. plunger .085
 .597
 $.597 \times 200 = 29.8$ Gallons to fully extend
 4

Features

GENERAL DATA
 Operating pressures to 2000 psi. Plunger diameters range from 2" to 9.375". Lifting capacities to 138,200 lbs. Pin-eye mountings standard—trunion type available. Chrome-plated plungers available.

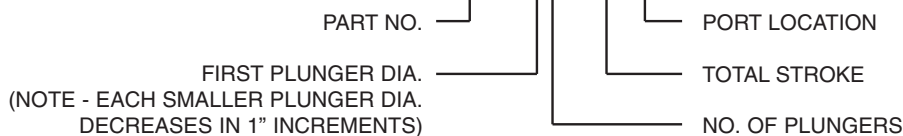
AUTOMATIC AIR BLEEDERS
 Every standard Hycotel single-acting telescopic cylinder comes equipped with an automatic air bleeder. This completely eliminates time-consuming and potentially hazardous manual air bleeding operation.

GUIDE RINGS & RETAINING RINGS
 Hycotel® features replaceable plunger guide rings, designed and balanced to be well lubricated and made of specially compounded material for long wearing performance. The retainer rings work in conjunction with the piston design to be positively locked into stop position grooves when the cylinder is fully extended.

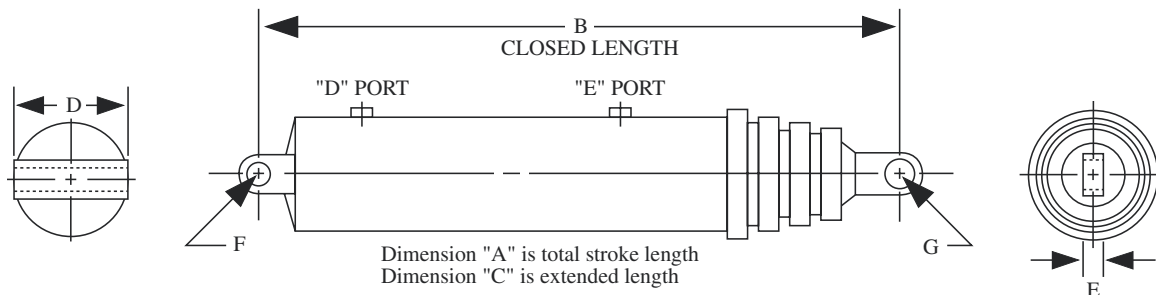
"DUAL-LIP" WIPER
 This dual lip design wiper of Hytrel is a more efficient "dirt wiper." The dual lip provides an improved means of keeping dirt out.

MANUFACTURERS SERVICE MANUALS ARE AVAILABLE. CALL FOR DETAILS.

Cylinder Identification C70000-814-200D



NOTE: "D" and "E" suffix in Part No. represents a specific port location.
 For dimensional data, consult our sales staff.
 A "T" suffix in Part No. represents Trunion Mount.



CYLINDERS

SINGLE ACTING TELESCOPIC CYLINDERS

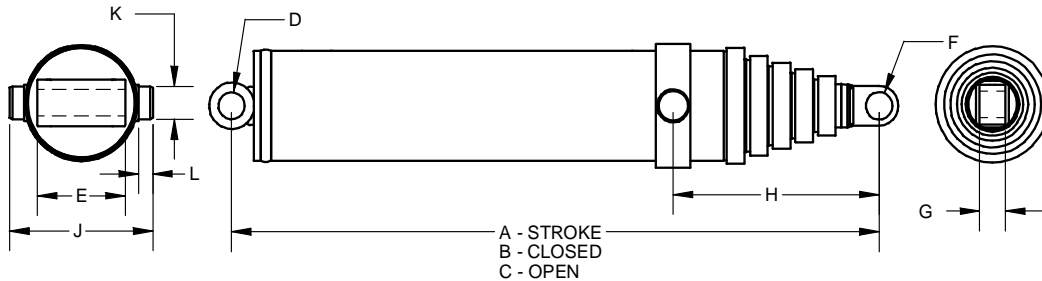
SOUTHERN HYDRAULIC CYLINDER, INC.

These cylinders are available from Custom Hoists, Commercial, Hyco and SHC. Request the manufacturer you want.

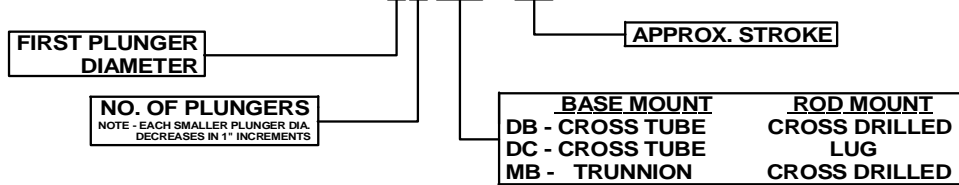
STANDARD SINGLE ACTING TELESCOPIC CYLINDER SPECIFICATIONS

Model Number	Stroke (A)	Closed (B)	Open (C)	Dia. Body	Stage Dia.			(D)	(E)	(F)	(G)	(H)	(J)	(K)	(L)	Ret Vol (Gal)	Ext Vol (Gal)	Dry Wt. (Lbs)
SHC-M32DB-43	40.38	29.69	70.07	4.00	3	2	-	1.50	4.00	1.25	1.88	-	-	-	-	.58	1.46	60
SHC-M32DB-50	46.67	32.84	79.51	4.00	3	2	-	1.50	4.00	1.25	1.88	-	-	-	-	.66	1.68	66
SHC-M42DB-43	39.50	30.19	69.69	5.00	4	3	-	1.50	5.00	1.50	2.75	-	-	-	-	1.06	2.72	86
SHC-M42DB-50	47.25	33.69	80.94	5.00	4	3	-	1.50	5.00	1.50	2.75	-	-	-	-	1.23	3.23	95
SHC-M42MB-50	51.25	35.07	86.32	5.00	4	3	-	-	-	1.50	2.75	8.50	8.81	1.75	.88	1.33	3.50	97
SHC-M42DB-60	57.88	39.07	96.95	5.00	4	3	-	1.50	5.00	1.50	2.75	-	-	-	-	1.48	3.93	109
SHC-M42MB-65	65.00	42.07	107.07	5.00	4	3	-	-	-	1.50	2.75	8.50	8.81	1.75	.88	1.66	4.41	115
SHC-M43MB-74	73.88	34.63	108.51	5.00	4	3	2	-	-	1.25	1.88	8.50	8.81	1.75	.88	1.07	3.45	106
SHC-M43DB-75	67.34	33.62	100.96	5.00	4	3	2	1.50	5.00	1.25	1.88	-	-	-	-	.98	3.15	105
SHC-M43MB-75	68.25	32.75	101.00	5.00	4	3	2	-	-	1.25	1.88	8.50	8.81	1.75	.88	.99	3.19	100
SHC-M43DB-98	89.83	41.13	130.96	5.00	4	3	2	1.50	5.00	1.25	1.88	-	-	-	-	1.29	4.19	124
SHC-M43MB-98	96.42	42.19	138.61	5.00	4	3	2	-	-	1.25	2.00	8.69	8.81	1.75	.88	1.37	4.50	128
SHC-M53DB-60	57.11	29.81	86.92	6.00	5	4	3	1.50	6.25	1.50	2.75	-	-	-	-	1.39	4.56	122
SHC-M53DC-72	72.00	35.13	107.13	6.00	5	4	3	2.00	7.00	1.69	1.63	-	-	-	-	1.72	5.73	142
SHC-M53DB-74	69.14	33.82	102.96	6.00	5	4	3	1.50	6.25	1.50	2.75	-	-	-	-	1.65	5.51	137
SHC-M53MB-74	74.00	34.63	108.63	6.00	5	4	3	-	-	1.50	2.75	8.50	8.81	1.75	.88	1.75	5.89	141
SHC-M53DB-90	86.55	39.63	126.18	6.00	5	4	3	1.50	6.25	1.50	2.75	-	-	-	-	2.02	6.87	159
SHC-M53MB-90	86.06	38.63	124.69	6.00	5	4	3	-	-	1.50	2.75	8.50	8.81	1.75	.88	2.01	6.83	156

ALL ITEMS LISTED ARE STOCK ITEMS. ALL LISTED ITEMS ARE MARION STYLE CYLINDERS.
 PORTS 1/2"-14 NPT ON SERIES 32, 42, 43, & 53 (SHC-M53DC-72, SHC-M53DC-84, & SHC-M53DC-84A USE 3/4"-14 NPT)
 OTHER SIZES AND OPTIONS ARE AVAILABLE.



CYLINDER IDENTIFICATION SHC - M 53 DB - 75



SINGLE ACTING EXTEND LOAD CAPACITY LOAD CAPACITY : LBS @ PSI

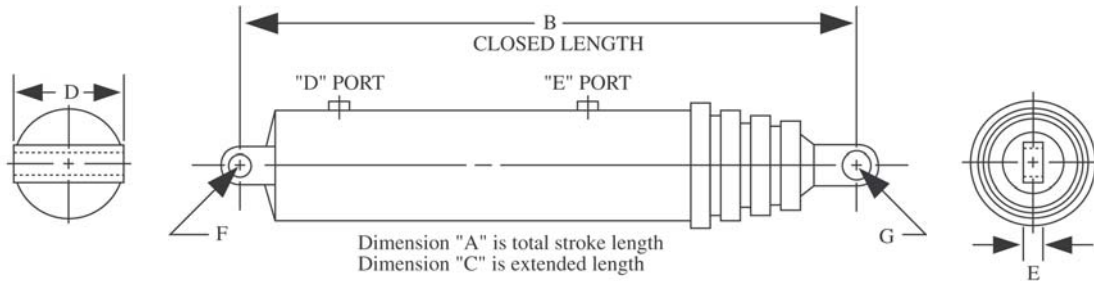
*ALL DIMENSIONS AND CALCULATIONS NOMINAL

PLUNGER DIA.	1500 PSI	2000 PSI	2500 PSI
2	4,700	6,280	7,850
3	10,600	14,130	17,670
4	18,850	25,130	31,410
5	29,450	39,270	49,080
6	42,410	56,540	70,680
7	57,720	76,960	96,210
8.25	80,180	106,910	133,640

CYLINDERS

SINGLE ACTING TELESCOPIC CYLINDER STOCK

These cylinders are available from Custom Hoists, Commercial, Hyco and SHC. Request the manufacturer you want. See page 17-20 for specifications.



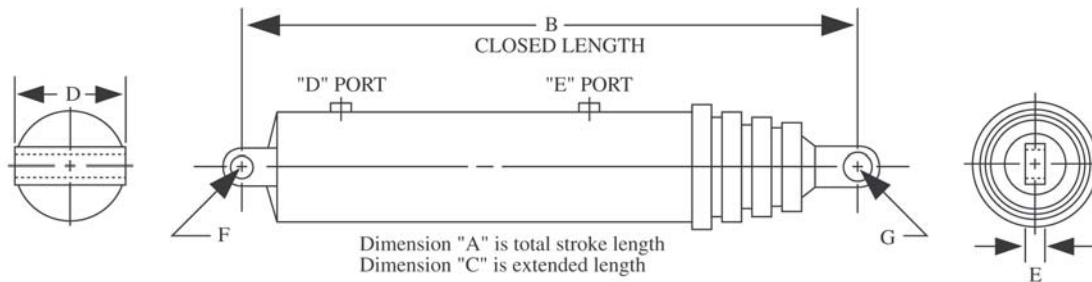
Stroke lengths for Hyco 70,000 series cylinders may be slightly different than those shown in chart. Please call our component group at 1-800-333-5617 for exact 70,000 series stroke lengths.

CYLINDER NO.	A	B	C	D	E	F	G
5372-SA	72.00	37.12	109.12	8.13	1.50	2.00	1.68
5384-SA	84.00	41.12	125.12	8.12	1.50	2.06	1.56
53104-SA	104.00	47.75	151.75	8.13	1.50	2.00	1.68
6384-SA	84.00	41.00	125.00	7.62	2.00	2.12	2.06
63104-SA	103.87	47.62	151.50	7.62	2.00	2.12	2.06
63108-SA	108.00	49.00	157.00	7.625	2.00	2.12	2.06
63111-SA	111.00	50.00	161.00	7.00	2.00	2.00	2.00
63120-SA	120.00	53.00	173.00	7.625	2.00	2.12	2.06
63120-TSA	120.00	53.375	173.375	TRIUNION MOUNT	4.00	N/A	1.56
63126-SA	126.00	55.00	181.00	7.00	2.00	2.12	2.06
D63128-SA	126.50	54.63	181.13	6.75	2.00	2.00	1.63
63140-TSA	139.87	60.00	199.97	TRIUNION MOUNT	4.00	N/A	1.56
64135-SA	134.88	47.13	182.00	8.00	2.69	1.75	1.50
64156-SA	155.87	52.37	208.12	8.00	2.68	1.87	1.56
73110-SA	110.63	50.06	160.69	8.25	2.00	2.00	2.00
73120-SA	120.00	53.12	173.12	8.625	1.50	2.12	2.06
D73126	125.25	55.12	180.37	6.75	2.00	2.00	1.63
73130-SA	130.12	56.50	186.62	8.625	1.50	2.12	2.06
73140-SA	140.00	60.00	200.00	8.25	2.00	2.00	2.00
D73142-SA	142.13	60.75	202.88	6.75	2.00	2.00	1.63
74120-SA	120.00	44.75	164.75	8.625	2.00	2.12	2.06
74135-SA	135.00	48.25	183.25	8.625	2.00	2.12	2.06
74140-SA	140.25	49.25	189.75	8.625	2.00	2.12	2.06
74156-SA	156.00	53.37	209.37	8.625	2.00	2.12	2.06
74161-SA	161.00	54.62	215.62	8.62	2.00	2.12	2.06
74167-SA	167.25	56.25	223.50	8.62	2.00	2.12	2.06
84148-SA	147.75	51.50	199.25	9.50	2.00	2.12	2.06
84156-SA	155.75	53.50	209.25	9.50	2.00	2.12	2.06
84170-SA	169.75	57.00	226.75	9.50	2.00	2.12	2.06
84180-SA	179.75	59.50	239.25	9.50	2.00	2.12	2.06
85170-SA	170.00	49.87	219.87	9.50	2.00	2.12	2.06
85190-SA	190.00	54.00	244.00	9.50	2.00	2.12	2.06
85197-SA	196.13	55.25	251.38	9.50	2.00	2.00	2.00
85220-SA	220.00	60.00	280.00	9.50	2.00	2.12	2.06
85220-TSA	218.25	60.38	278.63	TR	2.00	TR	2.00
85235-SA	235.00	65.00	300.00	9.50	2.00	2.12	2.06
85235-TSA	233.25	63.38	296.33	TR	2.00	TR	2.00
85250-SA	250.00	68.00	318.00	9.50	2.00	2.12	2.06
85250-TSA	248.25	68.38	316.63	TR	2.00	TR	2.00
85265-SA	265.00	71.00	336.00	9.50	2.00	2.12	2.06
85265-TSA	264.25	74.88	339.13	TR	2.00	TR	2.00

CYLINDERS

SINGLE ACTING TELESCOPIC CYLINDER STOCK

These cylinders are available from Custom Hoists, Commercial, Hyco and SHC. Request the manufacturer you want. See page 17-20 for specifications.

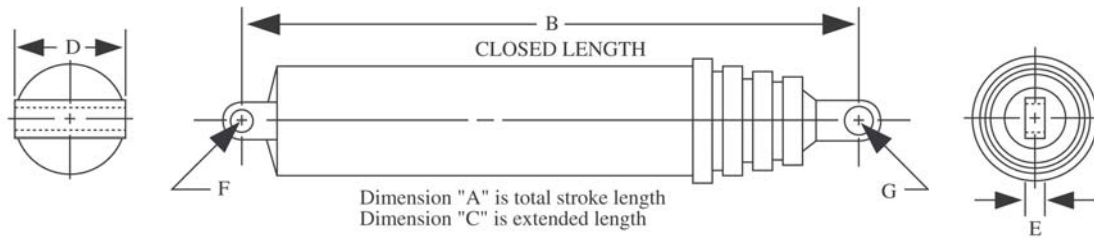


Stroke lengths for Hyco 70,000 series cylinders may be slightly different than those shown in chart. Please call our component group at 1-800-333-5617 for exact 70,000 series stroke lengths.

CYLINDER NO.	A	B	C	D	E	F	G
825190-SA	190.00	54.00	244.00	10.25	2.00	2.12	2.06
825220-SA	220.00	60.00	280.00	10.25	2.00	2.12	2.06
825235-SA	235.00	65.00	300.00	10.25	2.00	2.12	2.06
825250-SA	250.00	68.00	318.00	10.25	2.00	2.12	2.06
825265-SA	264.62	74.50	339.12	10.25	2.00	2.12	2.06
825280-SA	279.62	77.62	357.25	10.25	2.00	2.12	2.06
95220-SA	219.75	60.12	279.87	10.75	2.00	2.12	2.06
95235-SA	234.75	65.00	299.75	10.75	2.00	2.12	2.06
95250-SA	249.75	72.62	322.37	10.75	2.00	2.12	2.06
95265-SA	264.75	75.62	340.37	10.75	2.00	2.12	2.06
975220-SA	219.75	60.00	280.00	12.00	2.00	2.12	2.06
975235-SA	234.75	65.25	300.00	12.00	2.00	2.12	2.06
975250-SA	249.75	72.62	322.37	12.00	2.00	2.12	2.06
HPT53100	99.12	46.25	145.37	7.75	1.50	2.06	1.78
HPT53110	105.12	47.87	153.00	7.75	1.50	2.06	1.78
HPT53120	122.37	54.00	176.37	7.75	1.50	2.06	1.78
HPT53130	127.62	54.50	182.12	7.75	1.50	2.06	1.78
HPT63120	120.75	54.00	174.75	8.00	2.00	2.50	2.25
HPT63130	125.25	55.50	180.75	8.00	2.00	2.50	2.25
HPT63140	138.75	60.00	198.75	8.00	2.00	2.50	2.25
HPT63160	160.12	69.12	229.25	8.00	2.00	2.50	2.25
475	43.12	31.68	74.81	1.50	2.50	3.37	1.81
495	64.75	31.75	96.50	1.50	2.50	3.37	1.81
498	89.50	41.87	131.37	1.50	2.50	3.37	1.81
SHC-M32DB-43	40.13	29.69	69.82	4.00	2.00	1.50	1.25
SHC-M32DB-50	47.94	33.47	81.41	4.00	2.00	1.50	1.25
SHC-M42DB-43	39.50	30.19	69.90	5.00	3.00	1.50	1.50
SHC-M42DB-50	51.25	36.13	87.38	5.00	3.00	1.50	1.50
SHC-M42MB-50	51.25	35.07	86.32	TR	3.00	TR	1.50
SHC-M42DB-60	60.00	40.63	100.63	5.00	3.00	1.50	1.50
SHC-M42MB-65	65.00	42.07	107.07	TR	3.00	TR	1.50
SHC-M43DB-75	68.62	33.69	102.31	5.00	2.00	1.50	1.25
SHC-M43MB-75	68.25	32.50	100.75	TR	2.00	TR	1.25
SHC-M53DB-60	57.75	30.00	87.75	6.00	3.00	1.50	1.50
SHC-M53DB-74	74.00	35.44	109.44	6.00	3.00	1.50	1.50
SHC-M53MB-74	74.00	34.38	108.38	TR	3.00	TR	1.50
SHC-M53MB-90	86.06	38.63	124.69	TR	3.00	TR	1.50

DOUBLE ACTING TELESCOPIC CYLINDERS

These cylinders are available from Custom Hoists, Commercial, and Hyco. Request the manufacturer you want. See page 18, 23 & 24 for specifications.



CYLINDER NO.	A	B	C	D	E	F	G
52112-DA	111.75	75.50	187.25	2.00	2.00	2.01	2.01
53110-DA	109.62	56.75	166.37	2.00	2.00	3.03	1.56
53155-DA	155.75	75.50	231.25	2.00	2.00	2.00	1.50
53182-DA	182.00	81.00	263.00	3.87	6.50	2.00	2.00
6282-DA	82.00	56.50	138.50	2.25	2.25	3.03	3.03
6397-DA	97.12	52.37	149.50	1.50	1.50	1.28	1.28
63108-DA	107.62	50.75	158.37	7.12	3.87	1.78	1.78
63118-DA	118.00	58.50	176.50	3.00	4.00	2.50	2.50
63124-DA	124.50	76.87	201.48	2.00	2.00	2.031	2.06
63132-DA	131.62	62.37	194.00	7.12	3.87	1.78	1.78
63167-DA	167.00	85.25	252.25	4.00	3.69	2.00	2.00
64118-DA	118.13	49.38	167.50	2.25	2.25	1.50	1.50
64136-DA	135.62	49.37	185.00	2.00	2.25	1.56	1.56
64150-DA	150.00	56.56	206.56	2.25	2.25	1.50	1.50
72156-DA	156.12	96.00	252.12	N/A	2.00	N/A	2.06
74131-DA	131.50	53.37	184.87	1.50	1.50	1.28	1.28
74171-DA	171.12	62.37	233.50	7.00	4.00	1.78	1.78
83126-DA	126.00	72.00	198.00	3.00	3.00	2.51	2.51
84176-TD2	176.25	69.00	245.25	TRIUNION MOUNT	2.00	TRIUNION MOUNT	1.75
84176-TD3	176.25	69.00	245.25	TRIUNION MOUNT	2.00	N/A	1.76
84178-DA	178.25	69.00	247.25	2.00	2.00	1.78	1.78
85125-DA	125.00	49.75	174.75	2.50	2.50	2.00	2.00
85156-DA	155.625	55.50	211.125	2.00	2.00	2.00	2.00
85195-DA	195.00	69.37	264.87	2.00	2.00	2.03	2.03
85220-TD2	220.00	69.25	289.25	TRIUNION MOUNT	2.00	N/A	1.76
85220-TD3	220.25	69.25	289.50	TRIUNION MOUNT	2.00	N/A	1.76
85300-DA	300.25	87.37	387.62	1.75	2.00	2.00	2.18
85348-DA	347.87	100.00	447.87	2.00	2.00	2.06	2.18
85378-DA	378.00	104.75	482.75	2.00	2.00	2.12	2.06
86177-DA	176.75	53.37	230.12	1.50	1.50	1.28	1.28
915125-DA	125.00	49.75	174.75	2.50	2.50	2.00	2.00
95160-DA	159.75	61.00	220.75	2.00	2.00	2.02	2.02
96170-DA	169.75	50.625	220.37	2.50	2.50	2.00	2.00
96199-DA	199.12	57.87	257.00	2.00	2.00	2.03	2.03
96412-DA	412.25	99.62	511.87	TRIUNION MOUNT	2.00	TRIUNION MOUNT	2.06
96456-DA	456.50	107.00	563.50	TRIUNION MOUNT	2.00	TRIUNION MOUNT	2.06
974176-DA	176.12	69.12	245.25	3.00	3.00	2.52	2.52
974190-DA	189.62	71.00	260.62	2.25	2.00	2.25	2.02
976199-DA	199.12	57.87	257.00	2.00	2.00	2.03	2.03

CYLINDERS



DOUBLE ACTING TELESCOPIC CYLINDERS

These cylinders weights are average weights for Custom Hoists and Hyco manufactured cylinders. Cylinders manufactured by Commercial Intertech are usually 50-70 pounds heavier than weights listed.

CYLINDER #	WT. (LBS.)	CYLINDER #	WT. (LBS.)	CYLINDER #	WT. (LBS.)	CYLINDER #	WT. (LBS.)
5360-SA	134	825235-SA	725	85220-TD3	764	HL-1-4106	67
5372-SA	160	825250-SA	765	85300-DA	848	HL-1-4108	90
5384-SA	175	825265-SA	795	85348-DA	875	HL-1-4110	105
53104-SA	200	825280-SA	835	85378-DA	952	HL-1-4272	68
6384-SA	215	95220-SA	780	86177-DA	485	HL-1-4305	50
63104-SA	249	95235-SA	825	915125-DA	528	HL-1-4328	185
63108-SA	256	95250-SA	868	95160-DA	740	HL-1-4330	192
63111-SA	260	95265-SA	890	96170-DA	568	HL-1-4339	104
63120-SA	279	975220-SA	858	96199-DA	795	HL-1-4340	175
63120-TSA	279	975235-SA	967	96412-DA	1350	HL-1-4341	85
63126-SA	286	975250-SA	1076	96456-DA	1408	HL-1-4348	170
D63128-SA	278	HPT53100	190	974176-DA	978	HL-1-4884	150
63140-TSA	330	HPT53110	193	974190-DA	995	HL-1-4887	121
64135-SA	260	HPT53120	230	976199-DA	864	LCH-15527	97
64156-SA	310	HPT53130	214	475	102	LCH-2R1006A	168
73110-SA	350	HPT63120	267	495	102	LCH-PO-1166	190
73120-SA	336	HPT63130	270	498	132	LCH-PO-265	102
D73126	355	HPT63140	288	D3021GDA	55	MX-401222	260
73130-SA	358	HPT63160	328	D3526GDA	70	MX-401282	105
73140-SA	404	52112-DA	318	D4021EDA	96	MX-401826	51
D73142-SA	383	53110-DA	246	D4028EDA	105	MX-404614	176
74120-SA	311	53155-DA	307	D4030FDA	96	PG-3128C	67
74135-SA	335	53182-DA	357	D4035HDA	125	PG-6042BDA	239
74140-SA	347	6282-DA	253	D4128EDA	91	PG-7078DA	442
74156-SA	370	6397-DA	275	D4522JDA	84	PKM-1341-LM	61
74161-SA	390	63108-DA	283	D4522EDA	100	PKM-1351-LM	214
74167-SA	390	63118-DA	317	D4526BDA	104	PKM-2162-LM	24
84148-SA	451	63124-DA	383	D4548BDA	165	SHC-M32DB-43	57
84156-SA	455	63132-DA	332	D5532EDA	135	SHC-M32DB-50	63
84170-SA	494	63167-DA	320	DD-BB8133-1	188	SHC-M42DB-43	81
84180-SA	524	64118-DA	280	DD-BB8134-1	150	SHC-M42DB-50	91
85170-SA	450	64136-DA	271	DD-BB8281-1	114	SHC-M42MB-50	100
85190-SA	506	64150-DA	305	DD-BB8374-1	174	SHC-M42DB-60	115
85197-SA	525	72156-DA	630	DD-BB8379-1	110	SHC-M42MB-65	116
85220-SA	567	74131-DA	334	DD-BB8748-1	85	SHC-M43DB-75	98
85220-TSA	585	74171-DA	575	DD-AB19461	368	SHC-M43MB-75	107
85235-SA	619	83126-DA	555	DD-AB19774	110	SHC-M53DB-60	115
85235-TSA	637	84176-TD2	700	DD-AB19775	175	SHC-M53DB-74	137
85250-SA	654	84176-TD3	550	HL-1-4070	83	SHC-M53MB-74	140
85250-TSA	672	84178-DA	560	HL-1-4093	150	SHC-M53MB-90	154
85265-SA	674	85125-DA	510	HL-1-4094	125		
85265-TSA	692	85156-DA	495	HL-1-4100	73		
825190-SA	595	85195-DA	620	HL-1-4101	100		
825220-SA	667	85220-TD2	764	HL-1-4103	119		

POWER UNITS

POWER UNITS

Part Number: HPU12VCHCFVDO2-RC 1 - 9 Pcs: \$386.10 Net Each 10+ Pcs: \$343.20 Net Each 12 VDC 1.8 GPM 3 Gallon Steel Tank Two Button Remote Control 3 Meter Cable Power Up, Gravity Down Adjustable relief valve pre set at 2900 psi	Part Number: HPU12VCHCFVD02-RC 1 - 9 Pcs: \$386.10 Net Each 10+ Pcs: \$343.20 Net Each 12 VDC 1.45 GPM 3 Gallon Steel Tank Two Button Control 3 Meter Cable Power Up, Gravity Down Adjustable relief valve pre set at 2900 psi
Reservoir size accommodates HTC 7-Ton Cylinders (Page 9) or equivalent size cylinder	



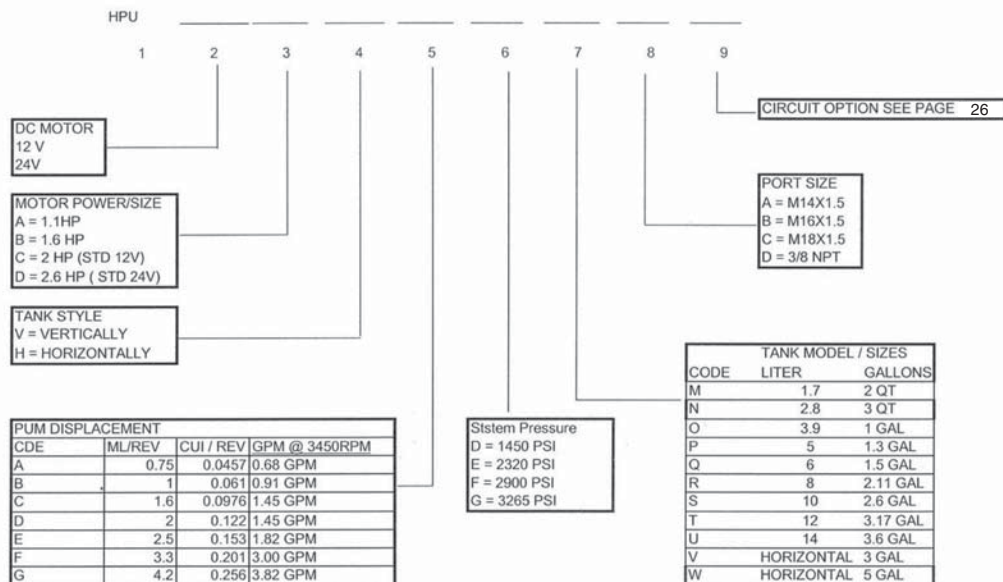
Part Number: HPU12VCHCFWD02-RC 1 - 9 Pcs: \$386.10 Net Each 10+ Pcs: \$343.20 Net Each 12 VDC 1.4 GPM Pump 5 Gallon Steel Tank Two Button Remote Control 3 Meter Cable Power Up, Gravity Down Adjustable relief valve pre set at 2900 psi	Part Number: HPU12VCHCFWD02-RC 1 - 9 Pcs: \$383.09 Net Each 10+ Pcs: \$340.52 Net Each 12 VDC 1.8 GPM 5 Gallon Steel Tank Two Button Control 3 Meter Cable Power Up, Gravity Down Adjustable relief valve pre set at 2900 psi
Reservoir size accommodates HTC 12-Ton Cylinders (Page 9) or equivalent size cylinder	

Part Number: HPU12VCHCFSD02-RC 1 - 9 Pcs: \$328.82 Net Each 10+ Pcs: \$292.28 Net Each Circuit 3 way power up gravity down 12 vdc power source required Steel tank 2.6 gallon capacity Two button remote control Flow rate is 1.45 gpm @ 3450 rpm Adjustable relief valve pre set at 2900 psi	Part Number: HPU12VCHCFSD12-RC 1 - 9 Pcs: \$400.33 Net Each 10+ Pcs: \$355.85 Net Each Circuit 4way three position valve power out & power in 12vdc power source required Steel tank 2.6 gallon capacity Two button remote control Flow rate is 1.45 gpm @3450 rpm Adjustable relief valve pre set at 2900 psi
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Part Number: MTE-D202T-4850-16-25 1 - 9 Pcs: \$341.64 Each 10+ Pcs: \$303.68 Each Specifications are relief valve set at 2000 psi. 1.6 gpm @ 1500 psi 1.8 gallon reservoir Runs on 12 volt DC power Includes 15 ft corded remote control cable Excellent use for truck tailgate, boat lifts, and tow behind dump trailers	Part Number: MTE-D202T-4851-16-25 1 - 9 Pcs: \$410.87 Each 10+ Pcs: \$365.22 Each Specifications are relief valve set at 2000 psi. 1.6 gpm @ 1500 psi 1.8 gallon reservoir Runs on 12 volt DC power Includes 15 ft corded remote control cable Solenoid operation allow for lift, hold, and reverse double acting circuit Motor is reversible, eliminating the use of a troublesome cartridge valve
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POWER UNITS

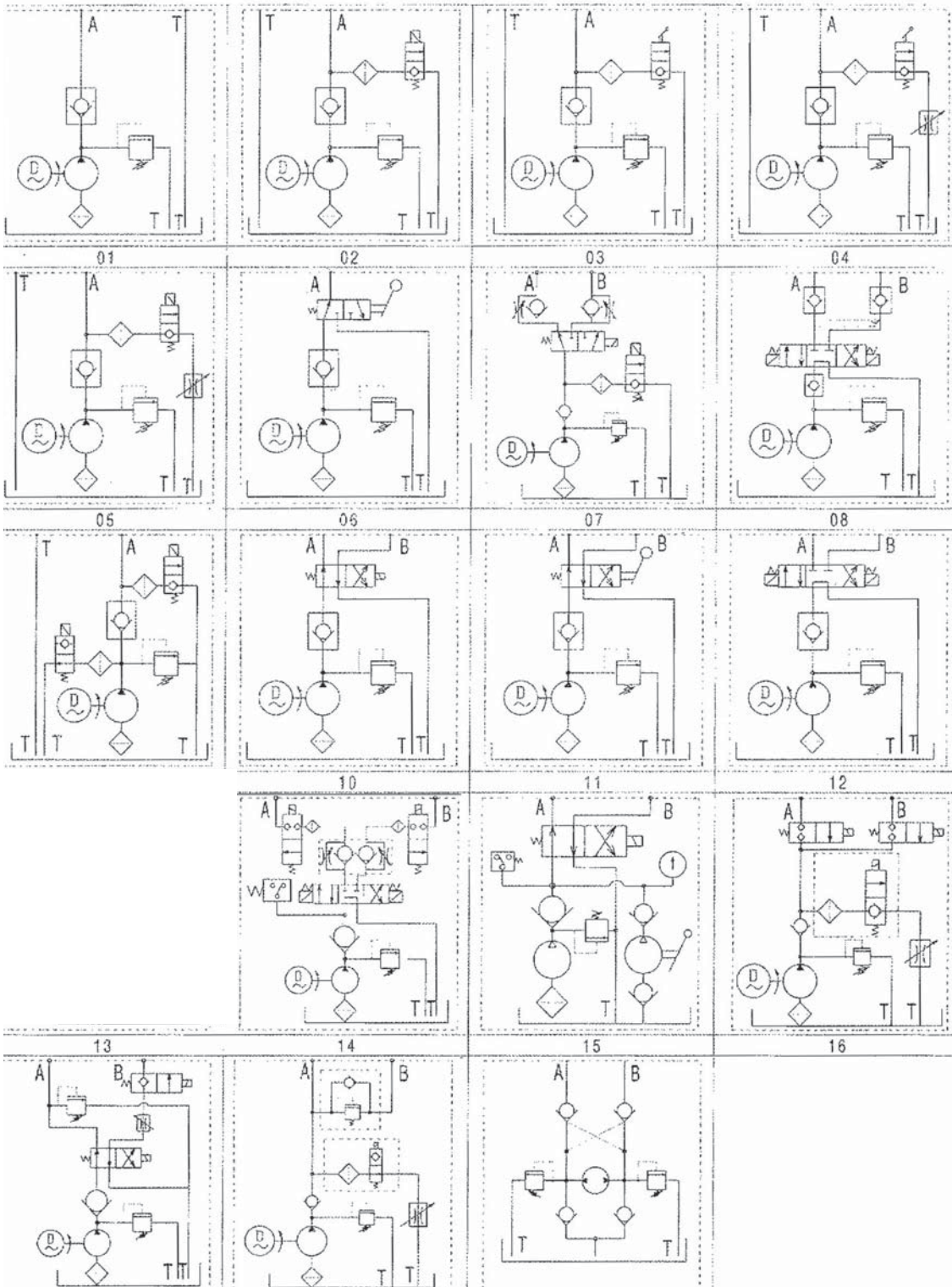
HOW TO CREATE A POWER UNIT PART

















POWER UNITS

Drawing of Circuits - Power Unit Hydraulic Schematic Diagram

POWER UNITS



Key

-  Two Position Manual Valve Spring Centered
-  Check Valve
-  Flow Control Adjustable
-  Two Position Solenoid Valve
-  Pilot Operated Check Valve
-  4 Way 3 Position Solenoid Spring Centered Valve
-  Relief Valve
-  Hydraulic Pump
-  Filter
-  12 VDC Electric Motor
-  Two Position 3 Way Spring Centered Manual Valve
-  Two Position 4 Way Spring Centered Manual Valve
-  Two Position 4 Way Spring Centered Solenoid Valve
-  Pressure Switch

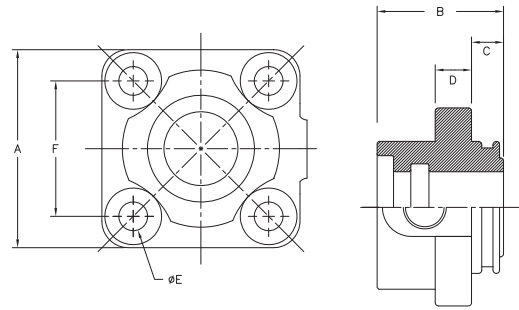
CYLINDER GLANDS AND CAPS

Hercules Brand Component Parts

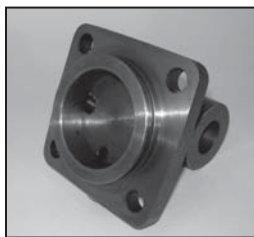
THE HTR LINE



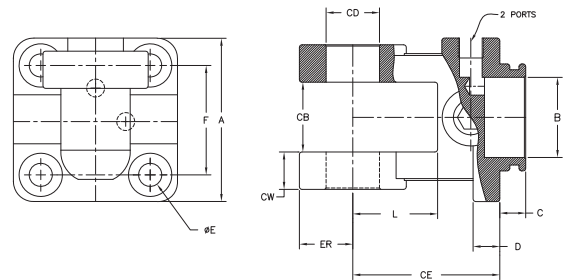
HTR GLANDS



Part Number	Rod	Bore	A	B	C	D	E	F	Port	List Price
HTR-2.0X1.125-GLAND	1.125	2.0	3.07	1.92	0.50	0.52	0.43	2.05	3/8" NPT	\$ 9.41
HTR-2.5X1.125-GLAND	1.125	2.5	3.35	1.92	0.50	0.62	0.43	2.36	3/8" NPT	10.90
HTR-3.0X1.250-GLAND	1.250	3.0	4.05	1.96	0.50	0.73	0.51	2.87	1/2" NPT	12.93
HTR-3.5X1.250-GLAND	1.250	3.5	4.33	1.95	0.50	0.74	0.51	3.19	1/2" NPT	14.38
HTR-3.5X1.500-GLAND	1.500	3.5	4.33	1.95	0.50	0.74	0.51	3.19	1/2" NPT	14.38
HTR-4.0X1.250-GLAND	1.250	4.0	4.72	1.89	0.51	0.98	0.51	3.62	1/2" NPT	18.00
HTR-4.0X1.500-GLAND	1.500	4.0	4.72	1.89	0.51	0.98	0.51	3.62	1/2" NPT	18.00
HTR-4.0X1.750-GLAND	1.750	4.0	4.72	1.89	0.51	0.98	0.51	3.62	1/2" NPT	18.00
HTR-5.0X1.500-GLAND	1.500	5.0	6.30	2.24	0.68	1.18	0.67	4.45	1/2" NPT	30.36
HTR-5.0X2.000-GLAND	2.000	5.0	6.30	2.24	0.68	1.18	0.67	4.45	1/2" NPT	30.36



HTR CAPS



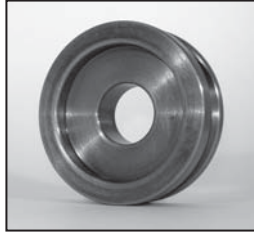
Part Number	Bore	A	B	C	D	E	F	Ports	CB	CD	CE	CW	L	ER	List Price
HTR-2.0 CAP	2.0	3.07	1.50	0.50	0.50	0.43	2.05	3/8" NPT	1.14	1.01	2.84	0.69	1.63	1.00	\$11.12
HTR-2.5 CAP	2.5	3.35	1.77	0.50	0.50	0.43	2.36	3/8" NPT	1.14	1.01	2.84	0.69	1.63	1.00	12.63
HTR-3.0 CAP	3.0	4.05	2.28	0.50	0.50	0.51	2.87	1/2" NPT	1.14	1.01	2.84	0.69	1.63	1.00	13.64
HTR-3.5 CAP	3.5	4.33	2.56	0.50	0.69	0.51	3.19	1/2" NPT	1.14	1.01	2.84	0.69	1.63	1.00	15.55
HTR-4.0 CAP	4.0	4.72	3.00	0.51	0.75	0.51	3.62	1/2" NPT	1.14	1.01	2.88	0.73	1.63	1.13	18.68
HTR-5.0 CAP	5.0	6.30	3.94	0.69	0.75	0.67	4.45	1/2" NPT	1.26	1.01	3.95	1.12	2.25	1.50	32.03

HERCULES BRAND COMPONENT PARTS

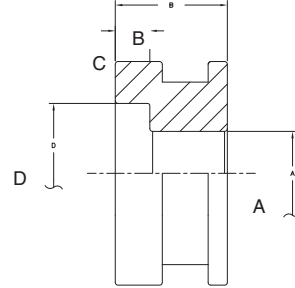
CYLINDER PISTONS/CLEVIS/STROKE ADJUSTERS

Hercules Brand Component Parts

THE HTR LINE



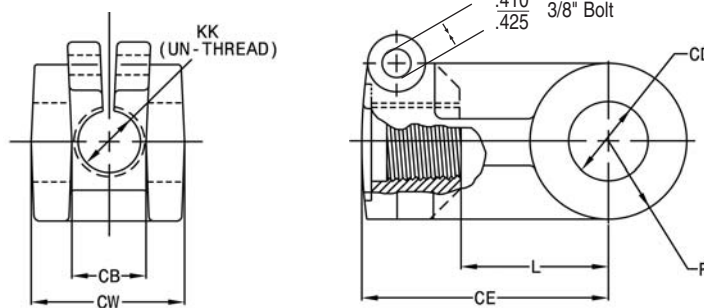
HTR PISTON



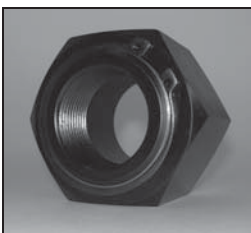
Part Number	Bore	A	B	C	D	List Price
HTR-2.0 PISTON	2.0	0.75	1.00	0.32	1.38	\$ 6.53
HTR-2.5 PISTON	2.5	0.75	1.00	0.32	1.50	7.53
HTR-3.0 PISTON	3.0	1.00	1.00	0.32	2.25	8.24
HTR-3.5 PISTON	3.5	1.00	1.00	0.32	2.76	9.91
HTR-4.0 PISTON	4.0	1.00	1.00	0.32	2.76	12.07
HTR-5.0 PISTON	5.0	1.25	1.89	0.63	3.54	21.06



HTR MOBILE SPLIT CLEVIS



Part Number	Bore	CB	CD	CE	CW	KK	L	R	List Price
HTR-2.0-CLEVIS	2.0	1.12	1.00	3.25	2.62	1-1/8"-12	2.12	1.00	\$ 11.08
HTR-2.5-CLEVIS	2.5	1.12	1.00	3.25	2.62	1-1/8"-12	2.12	1.00	11.08
HTR-3.0-CLEVIS	3.0	1.12	1.00	3.25	2.62	1-1/4"-12	2.12	1.00	13.25
HTR-3.5-CLEVIS	3.5	1.12	1.00	3.25	2.62	1-1/4"-12	2.12	1.00	13.25
HTR-4.0-CLEVIS	4.0	1.12	1.00	3.25	2.62	1-1/4"-12	2.12	1.00	13.25
HTR-5.0-CLEVIS	5.0	1.12	1.89	3.25	2.62	1-1/4"-12	2.12	1.25	14.91



Hercules Brand Stroke Adjusters

PART NUMBER	DESCRIPTION	LIST PRICE
HB-SA-1125	1-1/8" STROKE ADJUSTER	\$ 13.89
HB-SA-1250	1-1/4" STROKE ADJUSTER	15.58
HB-SA-1500	1-1/2" STROKE ADJUSTER	19.36

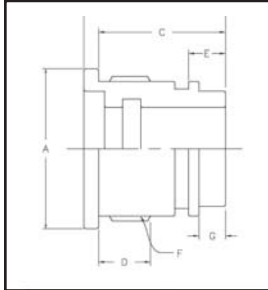
HMW & HCW GLANDS AND PISTONS

Hercules Brand Component Parts

THE HMW & HCW LINE



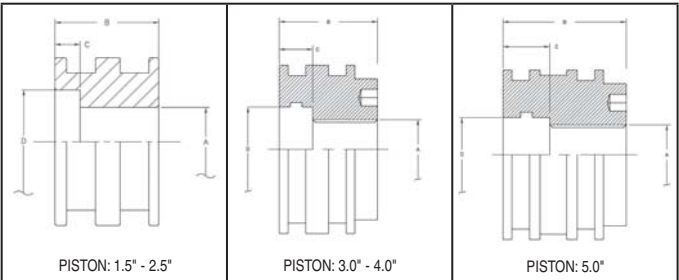
HMW & HCW FOR GLANDS



Part Number	Rod	Bore	A	B	C	D	E	F	G	List Price
HMW-1.5-GLAND	1	1.5	1.97	2.40	1.93	0.79	0.54	M43-2	0.40	\$ 6.98
HMW-2.0-GLAND	1-1/4	2.0	2.44	2.17	1.93	0.79	0.54	M55-2	0.40	7.85
HMW-2.5-GLAND	1-1/2	2.5	2.95	2.17	1.93	0.79	0.54	M68-2	0.40	8.65
HMW-3.0-GLAND	1-1/2	3.0	3.45	2.40	1.93	0.83	0.54	M81-2	0.40	11.54
HMW-3.5-GLAND	1-3/4	3.5	3.94	2.17	1.93	0.83	0.54	M94-2	0.40	13.29
HMW-4.0-GLAND	2	4.0	4.45	2.44	2.20	1.10	0.54	M106-2	0.40	17.97
HMW-5.0-GLAND	2-1/2	5.0	5.45	2.68	2.20	1.10	0.54	M132-2	0.40	26.58



HMW & HCW FOR PISTONS

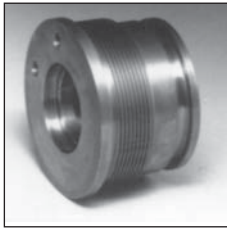


Part Number	Bore	A	B	C	D	List Price
HMW-1.5-PISTON	1.5	0.634	1.22	0.16	0.906	\$ 4.80
HMW-2.0-PISTON	2.0	0.807	1.22	0.30	1.220	5.97
HMW-2.5-PISTON	2.5	0.948	1.38	0.38	1.375	6.46
HMW-3.0-PISTON	3.0	M24-2	2.09	0.71	1.504	10.03
HMW-3.5-PISTON	3.5	M30-2	2.28	0.79	1.755	12.06
HMW-4.0 PISTON	4.0	M36-2	2.28	0.79	2.005	14.89
HMW-5.0 PISTON	5.0	M48-2	2.88	0.98	2.505	22.89

These replacement parts are for HMW & HCW cylinders found on page 3 - 8

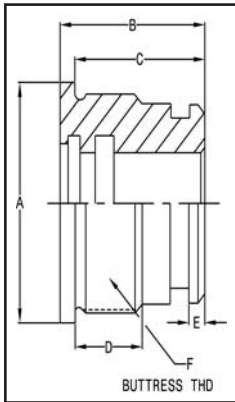
HERCULES BRAND COMPONENT PARTS

MOBILE CYLINDER HEADS



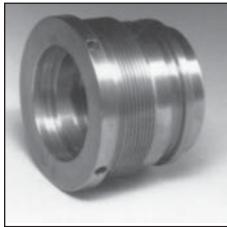
IT Head

Material: 65-45-12
Ductile Iron



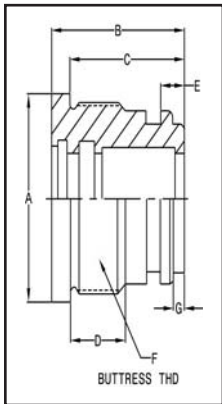
PART NUMBER	BORE +.003" -.003"	ROD +.000" -.003"	A	B	C	D	E	F (BUT- TRESS)	SEAL KIT NUMBER	IT HEAD LIST PRICE
CM-H107277	1.500	1.000	2.00	2.00	1.50	0.75	0.28	1-3/4"-12	CM-SK-H107277	\$ 62.43
CM-H107597	2.000	1.000	2.50	2.12	1.94	1.00	0.12	2-1/4"-12	CM-SK-H107597	62.91
CM-H107598	2.000	1.125	2.50	2.00	1.75	0.75	0.19	2-1/4"-12	CM-SK-H107598	67.11
CM-H107595	2.000	1.250	2.50	2.25	2.00	1.00	0.19	2-1/4"-12	CM-SK-H107595	82.82
CM-H107193	2.500	1.125	3.00	2.00	1.75	0.75	0.19	2-3/4"-12	CM-SK-H107193	86.17
CM-H107194	2.500	1.250	3.00	2.00	1.75	0.75	0.19	2-3/4"-12	CM-SK-H107194	86.96
CM-H107463	2.500	1.500	3.00	2.38	2.00	1.00	0.19	2-3/4"-12	CM-SK-H107463	87.25
CM-H107673	2.500	1.750	3.00	2.25	1.88	0.88	0.28	2-3/4"-12	CM-SK-H107673	199.23
CM-H107157	3.000	1.000	3.50	2.25	2.00	1.00	0.19	3-1/4"-12	CM-SK-H107157	90.63
CM-H107196	3.000	1.250	3.50	2.25	2.00	1.00	0.19	3-1/4"-12	CM-SK-H107196	86.48
CM-H107131	3.000	1.500	3.50	2.25	2.00	1.00	0.19	3-1/4"-12	CM-SK-H107131	91.76
CM-H107189	3.000	1.750	3.50	2.25	2.00	1.00	0.19	3-1/4"-12	CM-SK-H107189	93.39
CM-H107359	3.000	2.000	3.50	2.50	2.00	1.00	0.19	3-1/4"-12	CM-SK-H107359	95.05
CM-H107591	3.250	1.500	3.75	2.25	2.00	1.00	0.19	3-1/2"-12	CM-SK-H107591	103.46
CM-H107592	3.250	1.750	3.75	2.25	2.00	1.00	0.19	3-1/2"-12	CM-SK-H107592	109.92
CM-H107197	3.500	1.250	4.00	2.25	2.00	1.00	0.19	3-3/4"-12	CM-SK-H107197	104.51
CM-H107198	3.500	1.500	4.00	2.25	2.00	1.00	0.19	3-3/4"-12	CM-SK-H107198	111.42
CM-H107108	3.500	1.750	4.00	2.25	2.00	1.00	0.19	3-3/4"-12	CM-SK-H107108	112.79
CM-H107112	3.500	2.000	4.00	2.25	2.00	1.00	0.19	3-3/4"-12	CM-SK-H107112	107.54
CM-H107462	3.500	2.500	4.00	2.50	2.12	1.00	0.25	3-3/4"-12	CM-SK-H107462	113.97
CM-H107130	4.000	1.500	4.50	2.25	2.00	1.00	0.19	4-1/4"-12	CM-SK-H107130	114.71
CM-H107124	4.000	1.750	4.50	2.25	2.00	1.00	0.19	4-1/4"-12	CM-SK-H107124	115.34
CM-H107311	4.000	2.000	4.50	2.25	2.00	1.00	0.19	4-1/4"-12	CM-SK-H107311	115.56
CM-H107331	4.000	2.250	4.50	2.25	2.00	1.00	0.19	4-1/4"-12	CM-SK-H107331	119.22
CM-H107386	4.000	2.500	4.50	2.50	2.12	1.12	0.19	4-1/4"-12	CM-SK-H107386	116.01
CM-H107525	4.000	3.000	4.50	2.50	2.12	1.00	0.25	4-1/4"-12	CM-SK-H107525	110.91
CM-H107199	4.500	1.750	5.00	2.25	2.00	1.00	0.19	4-3/4"-12	CM-SK-H107199	138.40
CM-H107200	4.500	2.000	5.00	2.25	2.00	1.00	0.19	4-3/4"-12	CM-SK-H107200	139.51
CM-H107201	4.500	2.250	5.00	2.25	2.00	1.00	0.19	4-3/4"-12	CM-SK-H107201	138.62
CM-H107528	4.500	3.500	5.00	2.38	2.00	1.00	0.19	4-3/4"-12	CM-SK-H107528	136.36
CM-H107234	5.000	1.750	5.50	2.25	2.00	1.00	0.19	5-1/4"-12	CM-SK-H107234	149.23
CM-H107212	5.000	2.000	5.50	2.25	2.00	1.00	0.19	5-1/4"-12	CM-SK-H107212	139.32
CM-H107204	5.000	2.500	5.50	2.50	2.12	1.12	0.19	5-1/4"-12	CM-SK-H107204	139.87
CM-H107205	5.000	3.000	5.50	2.50	2.12	1.12	0.19	5-1/4"-12	CM-SK-H107205	147.98
CM-H107345	6.000	2.000	6.50	2.50	2.12	1.12	0.19	6-1/4"-12	CM-SK-H107345	149.49
CM-H107206	6.000	2.500	6.50	2.50	2.12	1.12	0.19	6-1/4"-12	CM-SK-H107206	176.94
CM-H107207	6.000	3.000	6.50	2.50	2.12	1.12	0.19	6-1/4"-12	CM-SK-H107207	207.62
CM-H107178	6.000	3.500	6.50	2.50	2.12	1.12	0.19	6-1/4"-12	CM-SK-H107178	220.71
CM-H107328	7.000	3.000	7.50	2.88	2.50	1.12	0.59	7-1/4"-10	CM-SK-H107328	317.89
CM-H107493	7.000	3.500	7.50	2.88	2.50	1.12	0.59	7-1/4"-10	CM-SK-H107493	330.82
CM-H107467	7.000	4.000	7.50	2.88	2.50	1.12	0.59	7-1/4"-10	CM-SK-H107467	384.84
CM-H107466	8.000	4.000	9.00	3.75	3.25	1.50	0.88	8-1/4"-10	CM-SK-H107466	424.46
CM-H107494	8.000	4.500	9.00	3.75	3.25	1.50	0.88	8-1/4"-10	CM-SK-H107494	467.94
CM-H107475	8.000	5.000	9.00	3.75	3.25	1.50	0.88	8-1/4"-10	CM-SK-H107475	733.76

MOBILE CYLINDER HEADS



ITW Head

Material: 65-45-12
Ductile Iron

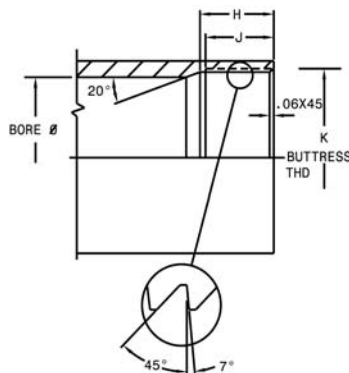


PART NUMBER	BORE +.003" -.003"	ROD +.000" -.003"	A	B	C	D	E	F (BUT- TRESS)	G	SEAL KIT NUMBER	ITW HEAD LIST PRICE
CM-H107729	3.000	1.750	3.50	2.62	2.25	1.00	0.56	3-1/4"-12	0.38	CM-SK-H107729	\$ 102.09
CM-H107548	3.000	2.000	3.50	2.62	2.25	1.00	0.56	3-1/4"-12	0.38	CM-SK-H107548	111.16
CM-H107791	3.500	1.750	4.00	2.62	2.25	1.00	0.56	3-3/4"-12	0.38	CM-SK-H107791	118.30
CM-H107549	3.500	2.000	4.00	2.62	2.25	1.00	0.56	3-3/4"-12	0.38	CM-SK-H107549	112.38
CM-H107550	4.000	2.000	4.50	3.25	2.75	1.25	0.56	4-1/4"-12	0.38	CM-SK-H107550	129.87
CM-H107551	4.000	2.500	4.50	3.25	2.75	1.25	0.56	4-1/4"-12	0.38	CM-SK-H107551	146.30
CM-H107640	4.000	3.000	4.50	3.62	3.12	1.38	0.19	4-1/4"-12	N/A	CM-SK-H107640	155.67
CM-H107716	4.500	2.000	5.00	3.25	2.75	1.25	0.56	4-3/4"-12	0.38	CM-SK-H107716	203.09
CM-H107552	4.500	2.500	5.00	3.25	2.75	1.25	0.56	4-3/4"-12	0.38	CM-SK-H107552	176.62
CM-H107553	4.500	3.000	5.00	3.25	2.75	1.25	0.56	4-3/4"-12	0.38	CM-SK-H107553	160.35
CM-H107630	4.500	3.500	5.00	3.62	3.12	1.38	0.19	4-3/4"-12	N/A	CM-SK-H107630	171.21
CM-H107679	5.000	2.000	5.50	3.00	2.50	1.12	0.56	5-1/4"-12	0.38	CM-SK-H107679	183.66
CM-H107554	5.000	2.500	5.50	3.62	3.12	1.38	0.81	5-1/4"-12	0.56	CM-SK-H107554	182.04
CM-H107555	5.000	3.000	5.50	3.62	3.12	1.38	0.81	5-1/4"-12	0.56	CM-SK-H107555	193.35
CM-H107651	5.000	3.500	5.50	3.62	3.12	1.38	0.81	5-1/4"-12	0.56	CM-SK-H107651	195.96
CM-H107606	5.000	4.000	5.50	3.62	3.12	1.38	0.19	5-1/4"-12	N/A	CM-SK-H107606	189.90
CM-H107611	5.500	2.500	6.00	3.62	3.12	1.38	0.81	5-3/4"-12	0.56	CM-SK-H107611	208.41
CM-H107612	5.500	3.000	6.00	3.62	3.12	1.38	0.81	5-3/4"-12	0.56	CM-SK-H107612	202.93
CM-H107706	5.500	3.500	6.00	3.62	3.12	1.38	0.81	5-3/4"-12	0.56	CM-SK-H107706	199.23
CM-H107583	5.500	4.000	6.00	3.62	3.12	1.38	0.81	5-3/4"-12	0.56	CM-SK-H107583	216.21
CM-H107608	5.500	4.500	6.12	3.62	3.12	1.38	0.19	5-3/4"-12	N/A	CM-SK-H107608	202.33
CM-H107556	6.000	2.500	6.50	3.62	3.12	1.38	0.81	6-1/4"-12	0.56	CM-SK-H107556	232.90
CM-H107557	6.000	3.000	6.50	3.62	3.12	1.38	0.81	6-1/4"-12	0.56	CM-SK-H107557	233.35
CM-H107558	6.000	3.500	6.50	3.62	3.12	1.38	0.81	6-1/4"-12	0.56	CM-SK-H107558	224.15
CM-H107570	6.000	4.000	6.50	3.62	3.12	1.38	0.81	6-1/4"-12	0.56	CM-SK-H107570	247.27
CM-H107584	6.000	4.500	6.50	3.38	2.88	1.25	0.81	6-1/4"-12	0.62	CM-SK-H107584	247.12
CM-H107721	7.000	2.500	7.50	4.25	3.75	1.50	1.03	7-1/4"-10	0.75	CM-SK-H107721	334.78
CM-H107559	7.000	3.000	7.50	4.25	3.75	1.50	1.03	7-1/4"-10	0.75	CM-SK-H107559	578.00
CM-H107560	7.000	3.500	7.50	4.25	3.75	1.50	1.03	7-1/4"-10	0.75	CM-SK-H107560	334.78
CM-H107561	7.000	4.000	7.50	4.25	3.75	1.50	1.03	7-1/4"-10	0.75	CM-SK-H107561	361.84
CM-H107607	8.000	3.500	8.50	4.50	3.75	1.50	1.03	8-1/4"-10	0.75	CM-SK-H107607	481.46
CM-H107562	8.000	4.000	8.50	4.50	3.75	1.50	1.03	8-1/4"-10	0.75	CM-SK-H107562	443.96
CM-H107563	8.000	4.500	8.50	4.50	3.75	1.50	1.03	8-1/4"-10	0.75	CM-SK-H107563	465.85
CM-H107722	8.000	5.000	8.50	4.50	3.75	1.50	1.03	8-1/4"-10	0.075	CM-SK-H107722	438.92
CM-H107605	10.000	4.000	10.50	5.00	4.25	1.50	1.25	10-1/4"-10	1.00	CM-SK-H107605	708.37
CM-H107604	10.000	5.000	10.50	5.00	4.25	1.50	1.25	10-1/4"-10	1.00	CM-SK-H107604	707.80

MOBILE CYLINDER HEADS

IT & ITW Technical Information

Basic information for Internal Buttress
Threads (52 degrees)
H = Length of Thread on Head plus 1/8"
J = Length of Thread on Head plus 1/16"
K = Buttress Thread as determined by Head



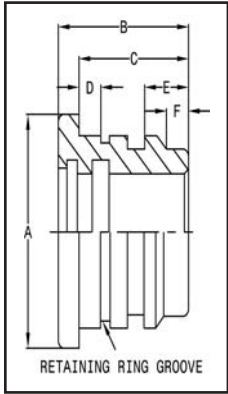
Basic Thread Size	Min. Major Diameter	Pitch Diameter	Minor Diameter
2-1/4"-12	2.2604	2.2000/2.2075	2.1500/2.1575
2-3/4"-12	2.7604	2.7000/2.7080	2.6500/2.6580
3-1/4"-12	3.2604	3.2000/3.2080	3.1500/3.1580
3-1/2"-12	3.5104	3.4500/3.4580	3.4000/3.4080
3-3/4"-12	3.7604	3.7000/3.7080	3.6500/3.6580
4-1/4"-12	4.2604	4.2000/4.2084	4.1500/4.1584
4-3/4"-12	4.7604	4.7000/4.7084	4.6500/4.6584
5-1/4"-12	5.2604	5.2000/5.2084	5.1500/5.1584
5-3/4"-12	5.7604	5.7000/5.7084	5.6500/5.6584
6-1/4"-12	6.2604	6.2000/6.2084	6.1500/6.1584
7-1/4"-10	7.2626	7.1900/7.1995	7.1300/7.1395
8-1/4"-10	8.2626	8.1900/8.1995	8.1300/8.1395
10-1/4"-10	10.2626	10.1900/10.1995	10.1300/10.1395

MOBILE CYLINDER HEADS



TK Head

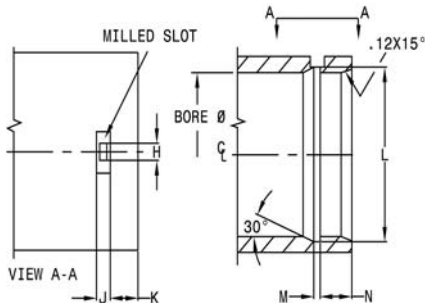
Material: Ductile Iron



TK HEAD	BORE +.003" -.003"	ROD +.000" -.003"	A	B	C	D	E	F	TK HEAD LIST PRICE	TK LOCK WIRE #	TK LOCK WIRE LIST PRICE
CM-H70181	1.500	0.750	1.88	2.00	1.63	0.38	0.63	0.38	\$ 117.02	CM-RR20030	\$ 5.34
CM-H70184	1.500	1.000	1.88	2.00	1.12	0.31	0.19	N/A	117.02	CM-RR20030	5.34
CM-H70093	2.000	1.000	2.38	2.25	1.88	0.44	0.75	0.50	119.61	CM-RR20029	7.15
CM-H70159	2.000	1.125	2.38	2.25	1.88	0.44	0.75	0.44	119.61	CM-RR20029	7.15
CM-H70160	2.000	1.250	2.38	2.50	1.88	0.44	0.75	0.44	119.61	CM-RR20029	7.15
CM-H70161	2.500	1.125	2.88	2.25	1.88	0.44	0.75	0.44	120.31	CM-RR20031	6.83
CM-H70162	2.500	1.250	2.88	2.25	1.88	0.44	0.75	0.38	122.09	CM-RR20031	6.83
CM-H70163	2.500	1.500	2.88	2.25	1.88	0.44	0.75	0.62	123.62	CM-RR20031	6.83
CM-H70861	2.500	1.750	2.88	2.50	1.88	0.44	0.75	0.38	120.56	CM-RR20031	6.83
CM-H70164	3.000	1.250	3.38	2.75	2.25	0.51	0.88	0.50	144.00	CM-RR20027	5.87
CM-H70130	3.000	1.500	3.38	2.75	2.25	0.51	0.88	0.50	119.61	CM-RR20027	5.87
CM-H70560	3.000	1.750	3.38	2.75	2.25	0.51	0.88	0.44	149.23	CM-RR20027	5.87
CM-H70165	3.000	2.000	3.38	2.75	2.25	0.51	0.88	0.44	147.48	CM-RR20027	5.87
CM-H70166	3.500	1.250	3.88	2.75	2.25	0.51	0.88	0.50	135.94	CM-RR20032	6.06
CM-H70089	3.500	1.500	3.88	2.75	2.25	0.51	0.88	0.50	162.89	CM-RR20032	6.06
CM-H70862	3.500	1.750	3.88	2.75	2.25	0.51	0.88	0.50	167.79	CM-RR20032	6.06
CM-H70167	3.500	2.000	3.88	2.75	2.25	0.51	0.88	0.50	162.89	CM-RR20032	6.06
CM-H70115	4.000	1.500	4.50	2.75	2.25	0.44	0.88	0.44	182.71	CM-RR20033	14.13
CM-H70576	4.000	1.750	4.50	2.75	2.25	0.44	0.88	0.44	173.57	CM-RR20033	14.13
CM-H70116	4.000	2.000	4.50	2.75	2.25	0.44	0.88	0.44	182.71	CM-RR20033	14.13
CM-H70168	4.000	2.500	4.50	2.75	2.25	0.44	0.88	0.44	182.71	CM-RR20033	14.13
CM-H70367	4.500	2.000	5.00	2.75	2.25	0.44	0.88	0.44	210.93	CM-RR20087	14.27
CM-H70378	4.500	2.500	5.00	2.75	2.25	0.44	0.88	0.44	194.33	CM-RR20087	14.27
CM-H70379	4.500	3.000	5.00	2.75	2.25	0.44	0.88	0.44	210.93	CM-RR20087	14.27
CM-H70114	5.000	2.000	5.50	3.00	2.50	0.56	0.94	0.50	246.70	CM-RR20039	14.45
CM-H70113	5.000	2.500	5.50	3.00	2.50	0.56	0.94	0.50	246.70	CM-RR20039	14.45
CM-H70107	5.000	3.000	5.50	3.00	2.50	0.56	0.94	0.50	231.92	CM-RR20039	14.45
CM-H70389	5.500	2.000	6.00	3.00	2.50	0.56	0.94	0.50	274.18	CM-RR20089	16.51
CM-H70390	5.500	2.500	6.00	3.00	2.50	0.56	0.94	0.50	274.18	CM-RR20089	16.51
CM-H70391	5.500	3.000	6.00	3.00	2.50	0.56	0.94	0.50	237.68	CM-RR20089	16.51
CM-H70112	6.000	2.000	6.50	3.00	2.50	0.56	0.94	0.50	305.76	CM-RR20040	14.74
CM-H70111	6.000	2.500	6.50	3.00	2.50	0.56	0.94	0.50	305.76	CM-RR20040	14.74
CM-H70108	6.000	3.000	6.50	3.00	2.50	0.56	0.94	0.50	281.95	CM-RR20040	14.74

TK Technical Information

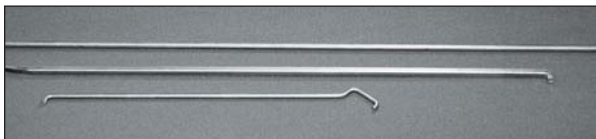
Retaining Groove Information



BORE +.003" -.003"	H	J	K	L +.010" -.000"	M +.005" -.000"	N +.000" -.005"
1.500	0.25	0.25	0.28	1.625	0.125	0.375*
2.000	0.25	0.25	0.34	2.125	0.125	0.438
2.500	0.25	0.25	0.34	2.625	0.125	0.438
3.000	0.25	0.25	0.41	3.125	0.125	0.500
3.500	0.25	0.25	0.41	3.625	0.125	0.500
4.000	0.38	0.25	0.41	4.188	0.188	0.438
4.500	0.38	0.25	0.41	4.688	0.188	0.438
5.000	0.38	0.25	0.53	5.188	0.188	0.562
5.500	0.38	0.25	0.53	5.688	0.188	0.562
6.000	0.38	0.25	0.53	6.188	0.188	0.562

* 0.312 for 1" Rod.

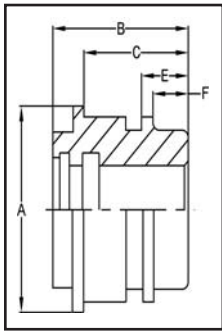
Wind-In Lock Wires



MOBILE CYLINDER HEADS



Material: Ductile Iron

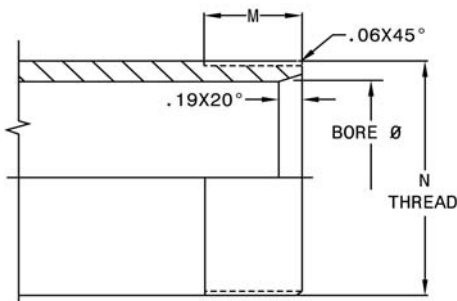


TH Head

PART NUMBER	BORE +.003" -.003"	ROD +.000" -.003"	A	B	C	E	F	SEAL KIT NUMBER	TH HEAD LIST PRICE
CM-H70154	2.000	1.000	2.25	2.38	1.94	0.81	0.62	CM-SK-H70154	\$ 77.69
CM-H70155	2.000	1.125	2.25	2.38	1.94	0.81	0.62	CM-SK-H70155	81.00
CM-H70156	2.000	1.250	2.25	2.38	1.94	0.81	0.62	CM-SK-H70156	81.61
CM-H70157	2.500	1.125	2.75	2.38	1.94	0.81	0.62	CM-SK-H70157	90.30
CM-H70076	2.500	1.250	2.75	2.38	1.94	0.81	0.62	CM-SK-H70076	104.86
CM-H70158	2.500	1.500	2.75	2.38	1.94	0.81	0.62	CM-SK-H70158	106.20
CM-H70462	2.500	1.750	2.75	2.38	2.19	0.81	0.62	CM-SK-H70462	117.18
CM-H70029	3.000	1.250	3.25	2.75	2.19	0.94	0.75	CM-SK-H70029	117.95
CM-H70011	3.000	1.500	3.25	2.75	2.19	0.94	0.75	CM-SK-H70011	117.95
CM-H70814	3.000	1.750	3.25	2.75	2.19	0.94	0.75	CM-SK-H70814	117.95
CM-H70012	3.000	2.000	3.25	2.75	2.56	0.94	0.69	CM-SK-H70012	119.61
CM-H70013	3.500	1.500	3.75	2.75	2.19	0.94	0.75	CM-SK-H70013	126.97
CM-H70504	3.500	1.750	3.75	2.75	2.19	0.94	0.75	CM-SK-H70504	128.02
CM-H70030	3.500	2.000	3.75	2.75	2.19	0.94	0.75	CM-SK-H70030	127.35
CM-H70031	3.500	2.500	3.75	2.75	2.56	0.94	0.75	CM-SK-H70031	128.91
CM-H70014	4.000	1.500	4.25	2.75	2.19	0.94	0.75	CM-SK-H70014	186.83
CM-H70488	4.000	1.750	4.25	2.75	2.19	0.94	0.75	CM-SK-H70488	134.86
CM-H70015	4.000	2.000	4.25	2.75	2.19	0.94	0.75	CM-SK-H70015	135.34
CM-H70032	4.000	2.500	4.25	2.75	2.19	0.94	0.75	CM-SK-H70032	134.77
CM-H70033	4.000	3.000	4.25	2.75	2.56	0.94	0.75	CM-SK-H70033	140.18
CM-H70276	4.500	2.000	4.75	2.75	2.19	0.94	0.75	CM-SK-H70276	158.15
CM-H70310	4.500	2.500	4.75	2.75	2.19	0.94	0.75	CM-SK-H70310	158.88
CM-H70377	4.500	3.000	4.75	2.75	2.19	0.94	0.69	CM-SK-H70377	172.68
CM-H70037	5.000	2.000	5.38	3.00	2.44	1.13	0.88	CM-SK-H70037	181.40
CM-H70038	5.000	2.500	5.38	3.00	2.44	1.13	0.88	CM-SK-H70038	181.72
CM-H70039	5.000	3.000	5.38	3.00	2.44	1.13	0.88	CM-SK-H70039	182.20
CM-H70153	5.500	2.000	5.88	3.00	2.44	1.13	0.88	CM-SK-H70153	275.52
CM-H70142	5.500	2.500	5.88	3.00	2.44	1.13	0.88	CM-SK-H70142	276.83
CM-H70143	5.500	3.000	5.88	3.00	2.44	1.13	0.88	CM-SK-H70143	277.31
CM-H70041	6.000	2.000	6.38	3.00	2.44	1.13	0.88	CM-SK-H70041	271.99
CM-H70042	6.000	2.500	6.38	3.00	2.44	1.13	0.88	CM-SK-H70042	259.02
CM-H70043	6.000	3.000	6.38	3.00	2.44	1.13	0.88	CM-SK-H70043	272.79
CM-H70180	7.000	2.500	7.50	4.00	3.13	1.75	1.50	CM-SK-H70180	283.10
CM-H70176	7.000	3.000	7.50	4.00	3.13	1.75	1.50	CM-SK-H70176	298.21
CM-H70186	7.000	3.500	7.50	4.00	3.13	1.75	1.50	CM-SK-H70186	309.60
CM-H70133	8.000	3.000	8.50	4.00	3.13	1.75	1.50	CM-SK-H70133	667.41
CM-H70195	8.000	3.500	8.50	4.00	3.13	1.75	1.50	CM-SK-H70195	616.57
CM-H70217	8.000	4.000	8.50	4.00	3.13	1.75	1.50	CM-SK-H70217	616.38

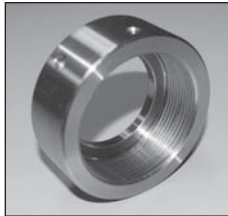
MOBILE CYLINDER HEADS

TH Head Technical Information

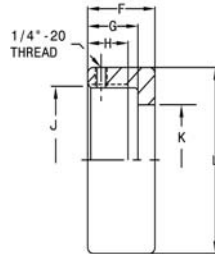


Bores +.003" -.003"	M	N	Thread Major Diameter	Thread Pitch Diameter
2.000	0.81	2-3/8"-12 UN-2A	2.3731/2.3617	2.3191/2.3128
2.500	0.81	2-7/8"-12 UN-2A	2.8731/2.8617	2.8191/2.8127
3.000	1.00	3-1/2"-12 UN-2A	3.4981/3.4867	3.4440/3.4376
3.500	1.00	4"-12 UN-2A	3.9980/3.9866	3.9439/3.9374
4.000	1.00	4-1/2"-12 UN-2A	4.4980/4.4866	4.4439/4.4374
4.500	1.00	5"-12 UN-2A	4.9980/4.9866	4.9439/4.9372
5.000	1.00	5-1/2"-12 UN-2A	5.4980/5.4866	5.4439/5.4372
5.500	1.00	6"-12 UN-2A	5.9979/5.9865	5.9438/5.9369
6.000	1.00	6-5/8"-12 UN-2A	6.6229/6.6115	6.5688/6.5619
7.000	1.25	7-7/8"-12 UN-2A	7.8729/7.8615	7.8188/7.8119
8.000	1.25	8-7/8"-12 UN-2A	8.8729/8.8615	8.8188/8.8119

MOBILE CYLINDER CAPS



TH Cap



Material: 1026 CDS Tubing

PART NUMBER	BORE +.003\"-.003"	F	G	H	J	K	L	LIST PRICE
CM-HC70074	2.000	1.13	0.88	0.69	2-3/8"-12 UN-2B	1.81	3.00	\$ 73.17
CM-HC70075	2.500	1.13	0.88	0.69	2-7/8"-12 UN-2B	2.31	3.50	90.68
CM-HC70008	3.000	1.38	1.00	0.75	3-1/2"-12 UN-2B	2.63	4.00	92.75
CM-HC70009	3.500	1.38	1.00	0.75	4"-12 UN-2B	3.13	4.50	97.66
CM-HC70034	4.000	1.38	1.00	0.75	4-1/2"-12 UN-2B	3.63	5.00	104.35
CM-HC70277	4.500	1.38	1.00	0.75	5"-12 UN-2B	4.13	5.50	111.00
CM-HC70040	5.000	1.38	1.00	0.75	5-1/2"-12 UN-2B	4.63	6.25	122.63
CM-HC70140	5.500	1.38	1.00	0.75	6"-12 UN-2B	5.13	6.75	150.44
CM-HC70044	6.000	1.38	1.00	0.75	6-5/8"-12 UN-2B	5.63	7.50	157.32
CM-HC70174	7.000	2.00	1.38	1.13	7-7/8"-12 UN-2B	6.13	9.00	317.89
CM-HC70132	8.000	2.00	1.38	1.13	8-7/8"-12 UN-2B	7.13	10.00	409.40



Base Plate (medium duty)

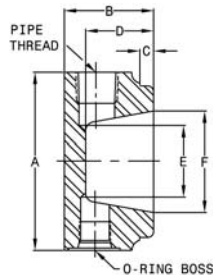


Material: A-36 Plate

PART NUMBER	BORE +.003\"-.003"	A	B	C	LIST PRICE
CM-BP60056	1.500	1.88	0.50	0.25	\$ 31.63
CM-BP60010	2.000	2.38	0.50	0.25	32.14
CM-BP60011	2.500	2.88	0.50	0.25	36.57
CM-BP60012	3.000	3.38	0.59	0.25	39.34
CM-BP60013	3.500	3.88	0.69	0.38	48.35
CM-BP60014	4.000	4.50	0.75	0.38	49.24
CM-BP60437	4.500	5.00	0.88	0.38	65.55
CM-BP60015	5.000	5.56	0.88	0.38	75.46
CM-BP60124	5.500	6.00	0.88	0.38	99.10
CM-BP60016	6.000	6.75	1.00	0.38	98.30
CM-BP60157	7.000	8.00	1.00	0.38	111.55
CM-BP60107	8.000	9.00	1.00	0.38	163.06



Base End (ported)



Material: A-36 Plate

PART NUMBER	BORE +.003\"-.003"	NPT	SAE	A	B	C	D	E	F	LIST PRICE
CM-BEP112380	2.000	3/8"	#6	2.50	1.56	0.25	1.00	1.25	1.45	\$ 137.86
CM-BEP112381	2.500	3/8"	#6	3.00	1.56	0.25	1.00	1.25	1.75	269.50
CM-BEP112382	3.000	1/2"	#8	3.50	1.69	0.25	1.12	1.75	2.19	167.13
CM-BEP112383	3.500	1/2"	#8	4.00	1.69	0.25	1.12	2.00	2.19	172.29
CM-BEP112384	4.000	1/2"	#8	4.50	1.81	0.25	1.35	2.12	2.62	484.32
CM-BEP112385	4.500	1/2"	#8	5.12	1.81	0.25	1.35	2.12	2.62	147.06
CM-BEP112386	5.000	3/4"	#12	5.62	1.94	0.25	1.35	2.38	3.03	385.96
CM-BEP112398	5.500	3/4"	#12	6.25	2.19	0.25	1.50	3.29	4.06	138.79
CM-BEP112387	6.000	3/4"	#12	6.75	2.19	0.25	1.50	3.29	4.06	434.22



Base Plate (heavy duty)



Material: A-36 Plate

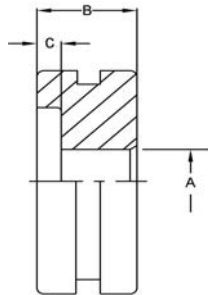
PART NUMBER	BORE +.003\"-.003"	A	B	C	LIST PRICE
CM-BP112527	1.500	2.000	0.50	0.19	\$ 22.93
CM-BP112292	2.000	2.500	0.50	0.12	30.32
CM-BP112209	2.500	3.000	0.62	0.25	33.34
CM-BP112210	3.000	3.500	0.75	0.25	34.34
CM-BP112461	3.250	3.750	0.88	0.25	38.95
CM-BP112211	3.500	4.000	0.88	0.25	39.98
CM-BP112212	4.000	4.500	1.00	0.25	45.81
CM-BP112414	4.000	4.620	1.00	0.25	44.37
CM-BP112213	4.500	5.000	1.12	0.25	55.23
CM-BP112234	5.000	5.500	1.25	0.25	61.73
CM-BP112459	5.000	5.620	1.25	0.25	63.99
CM-BP112214	5.000	5.750	1.25	0.25	57.40
CM-BP112426	5.500	6.120	1.31	0.25	76.22
CM-BP112236	6.000	6.500	1.38	0.25	83.65
CM-BP112512	6.000	6.620	1.38	0.25	82.50
CM-BP112215	6.000	6.750	1.38	0.25	88.62
CM-BP112569	6.500	7.250	1.25	0.25	112.48
CM-BP112364	7.000	8.000	1.44	0.25	126.69
CM-BP112373	8.000	9.000	1.50	0.25	181.21
CM-BP112496	9.000	10.000	1.50	0.38	198.25
CM-BP112467	10.000	11.000	1.50	0.38	270.46

MOBILE CYLINDER PISTONS



Material: Ductile Iron

TM Piston

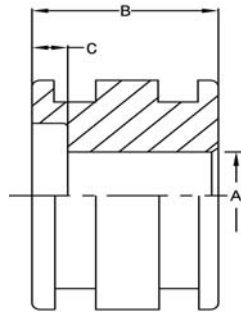


PART NUMBER	BORE +.003" -.003"	A +.002" -.000"	B	C	SEAL KIT NUMBER	TM PISTON LIST PRICE
CM-P70079	1.50	0.626	0.88	N/A	CM-SK-P70079	\$ 34.97
CM-P70055	2.00	0.751	1.00	N/A	CM-SK-P70055	36.79
CM-P70065	2.50	0.751	1.00	N/A	CM-SK-P70065	54.75
CM-P70841	3.00	0.751	1.00	0.25	CM-SK-P70841	56.38
CM-P70872	3.50	1.001	1.00	0.38	CM-SK-P70872	62.75
CM-P70067	4.00	1.001	1.00	N/A	CM-SK-P70067	76.22
CM-P70384	4.50	1.251	1.50	N/A	CM-SK-P70384	100.05
CM-P70090	5.00	1.251	1.50	N/A	CM-SK-P70090	120.34
CM-P70385	5.50	1.501	1.50	N/A	CM-SK-P70385	141.04
CM-P70139	6.00	1.501	1.50	N/A	CM-SK-P70139	183.69



Material: Ductile Iron

TH Piston

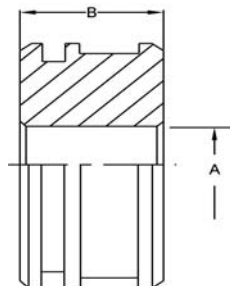


PART NUMBER	BORE +.003" -.003"	A +.002" -.000"	B	C	SEAL KIT NUMBER	TH PISTON LIST PRICE
CM-P70020	1.50	0.626	1.13	N/A	CM-SK-P70020	\$ 50.42
CM-P70005	2.00	0.751	1.50	N/A	CM-SK-P70005	58.26
CM-P70017	2.50	0.751	1.50	N/A	CM-SK-P70017	76.36
CM-P70006	3.00	1.001	1.75	N/A	CM-SK-P70006	78.61
CM-P70007	3.50	1.126	1.75	N/A	CM-SK-P70007	83.68
CM-P70010	4.00	1.251	1.75	N/A	CM-SK-P70010	95.75
CM-P70275	4.50	1.251	1.75	N/A	CM-SK-P70275	104.57
CM-P70018	5.00	1.251	2.00	N/A	CM-SK-P70018	140.69
CM-P70141	5.50	1.501	2.00	N/A	CM-SK-P70141	151.94
CM-P70019	6.00	1.501	2.00	N/A	CM-SK-P70019	157.38
CM-P70175	7.00	1.751	3.00	0.75	CM-SK-P70175	257.60
CM-P70134	8.00	2.001	3.00	0.75	CM-SK-P70134	460.75



Material: 65-45-12
Ductile Iron

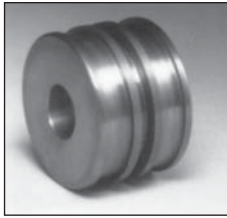
IT (narrow) Piston



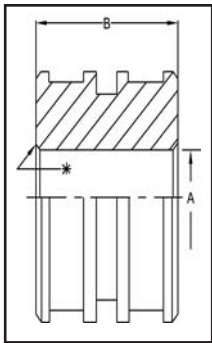
PART NUMBER	BORE +.003" -.003"	A +.002" -.000"	B	SEAL KIT NUMBER	IT PISTON LIST PRICE
CM-P110629	1.500	0.626	1.12	CM-SK-P110629	\$ 38.13
CM-P110238	2.000	0.751	1.25	CM-SK-P110238	50.29
CM-P110239	2.500	0.751	1.25	CM-SK-P110239	51.92
CM-P110240	3.000	0.876	1.25	CM-SK-P110240	55.30
CM-P110608	3.250	1.001	1.25	CM-SK-P110608	74.28
CM-P110241	3.500	1.001	1.25	CM-SK-P110241	76.03
CM-P110242	4.000	1.001	1.25	CM-SK-P110242	78.83
CM-P110384	4.500	1.126	1.50	CM-SK-P110384	99.96
CM-P110212	5.000	1.126	1.50	CM-SK-P110212	101.57

CYLINDER PISTONS

MOBILE CYLINDER PISTONS



Material: 65-45-12
Ductile Iron

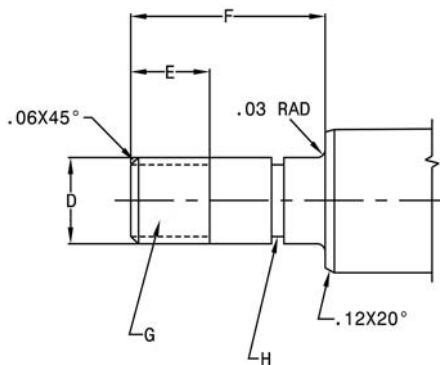


IT (wide) Piston

IT (WIDE) PISTON	BORE +.003"-.003"	A +.002"-.000"	B	SEAL KIT NUMBER	IT PISTON LIST PRICE
CM-P110548	2.000	1.001	2.00	CM-SK-P110548	\$ 85.30
CM-P110596	2.500	0.751	1.88	CM-SK-P110596	55.93
CM-P110121	3.000	1.001	2.00	CM-SK-P110121	61.35
CM-P110288	3.500	1.126	2.00	CM-SK-P110288	60.32
CM-P110287	4.000	1.126	2.00	CM-SK-P110287	71.45
CM-P110537	4.500	1.251	2.00	CM-SK-P110537	73.68
CM-P110248	5.000	1.251	2.00	CM-SK-P110248	85.30
CM-P110511	5.500	1.251	2.12	CM-SK-P110511	121.48
CM-P110249	6.000	1.251	2.12	CM-SK-P110249	129.48
CM-P110607	6.000	1.501	2.12	CM-SK-P110607	129.48
CM-P110312	7.000	1.751	2.12	CM-SK-P110312	170.19
CM-P110479	8.000	2.001	3.12	CM-SK-P110479	373.70
CM-P110683	9.000	2.501	4.38	CM-SK-P110683	482.95
CM-P110634	10.000	2.500	4.38	CM-SK-P110634	631.70

*NOTE: P110479 is counter bored for a (-226) Stub O-ring.
P110634 is counter bored for a (-230) Stub O-ring.
P110683 is counter bored for a (-230) Stub O-ring.

Piston Stub Technical Information



"D" = "A" Diameter of Piston, minus 0.001"/0.003"

"E" = Nut Length + 0.25"

"F" = Piston Width "B" minus Counterbore Depth "C" + Nut Length + 0.12"

"G" = Thread Size to be determined by nut used

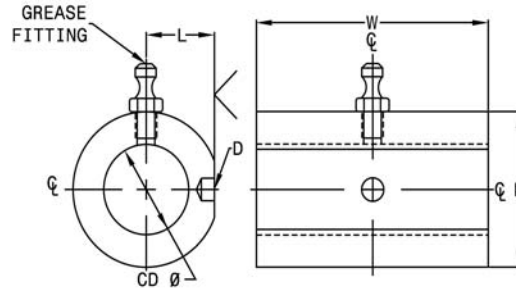
"H" = Located under middle of Piston, 0.098"/0.093" Wide X 0.050"/0.052"

Deep for 1/16 cross section O-ring (000 Series)

Note: Good rule of thumb is to size the stub diameter at least one half the diameter of the rod.

MOBILE MOUNTS

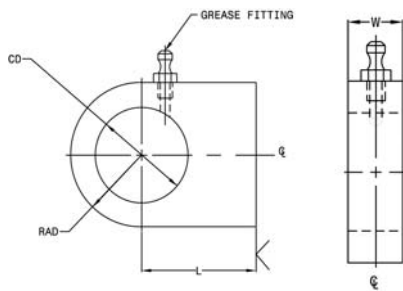
Cross Tube Mount



PART NUMBER	CD	W	B	L	D	LIST PRICE
CM-CT251015	1.00	2.50	1.50	0.69	.250 x .09	\$ 139.20
CM-CT301015	1.00	3.00	1.50	0.69	.250 x .09	63.32
CM-CT351015	1.00	3.50	1.50	0.69	.250 x .09	74.21
CM-CT401015	1.00	4.00	1.50	0.69	.250 x .09	12.93
CM-CT451015	1.00	4.50	1.50	0.69	.250 x .09	124.61
CM-CT271017	1.00	2.75	1.75	0.81	.250 x .15	177.04
CM-CT321017	1.00	3.25	1.75	0.81	.250 x .15	64.06
CM-CT371017	1.00	3.75	1.75	0.81	.250 x .15	174.17
CM-CT421017	1.00	4.25	1.75	0.81	.250 x .15	82.34
CM-CT471017	1.00	4.75	1.75	0.81	.250 x .15	72.36
CM-CT521017	1.00	5.25	1.75	0.81	.250 x .15	74.69
CM-CT271220	1.25	2.75	2.00	0.88	.250 x .15	166.11
CM-CT321220	1.25	3.25	2.00	0.88	.250 x .15	172.48
CM-CT371220	1.25	3.75	2.00	0.88	.250 x .15	177.04
CM-CT421220	1.25	4.25	2.00	0.88	.250 x .15	181.27
CM-CT471220	1.25	4.75	2.00	0.88	.250 x .15	187.62
CM-CT521220	1.25	5.25	2.00	0.88	.250 x .15	130.25
CM-CT601220	1.25	6.00	2.00	0.88	.250 x .15	73.31
CM-CT701220	1.25	7.00	2.00	0.88	.250 x .15	148.17
CM-CT301525	1.50	3.00	2.50	1.13	.250 x .19	170.98
CM-CT421525	1.50	4.25	2.50	1.13	.250 x .19	150.95
CM-CT471525	1.50	4.75	2.50	1.13	.250 x .19	178.79
CM-CT551525	1.50	5.50	2.50	1.13	.250 x .19	125.79
CM-CT601525	1.50	6.00	2.50	1.13	.250 x .19	195.73
CM-CT701525	1.50	7.00	2.50	1.13	.250 x .19	130.09
CM-CT321727	1.75	3.25	2.75	1.25	.250 x .19	100.27
CM-CT471727	1.75	4.75	2.75	1.25	.250 x .19	78.96
CM-CT551727	1.75	5.50	2.75	1.25	.250 x .19	88.81
CM-CT601727	1.75	6.00	2.75	1.25	.250 x .19	112.05
CM-CT701727	1.75	7.00	2.75	1.25	.250 x .19	149.46
CM-CT352030	2.00	3.50	3.00	1.38	.250 x .19	180.06
CM-CT472030	2.00	4.75	3.00	1.38	.250 x .19	89.31
CM-CT552030	2.00	5.50	3.00	1.38	.250 x .19	120.34
CM-CT602030	2.00	6.00	3.00	1.38	.250 x .19	215.04
CM-CT702030	2.00	7.00	3.00	1.38	.250 x .19	260.24

MOBILE MOUNTS

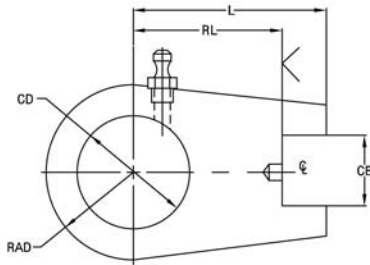
MOBILE WELDED MOUNTS



Material: 50K Min. Yield Plate

Welded Base End Spherical Mount

PART NUMBER	CD	L	RAD	W	PIN DIAMETER	DESIGNED SPHERICAL #	MAX PULL AT YIELD	LIST PRICE
CM-WBES-10	1.625	2.00	1.25	0.75	1.00	SB99100	15,000#	\$ 103.30
CM-WBES-12	2.000	2.00	1.50	0.94	1.25	SB99125	20,000#	117.69
CM-WBES-15	2.437	2.50	1.88	1.12	1.50	SB99150	35,000#	130.92
CM-WBES-17	2.812	2.50	2.00	1.31	1.75	SB99175	35,000#	133.30
CM-WBES-20	3.187	2.75	2.38	1.50	2.00	SB99200	55,000#	159.94
CM-WBES-25	3.937	3.25	3.00	1.88	2.50	SB99250	95,000#	200.67

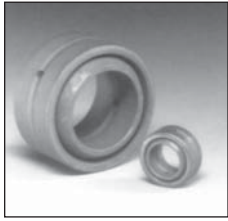


Material: 50K Min. Yield Plate

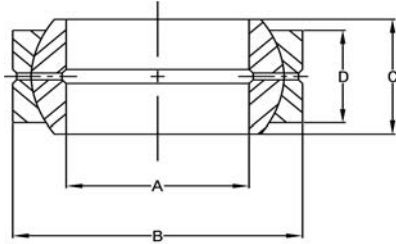
Welded Rod End Spherical Mount

PART NUMBER	CD	L	RAD	W	D	CB	RL	PIN DIAMETER	DESIGNED SPHERICAL #	LIST PRICE
CM-WRES-10	1.625	2.750	1.25	0.75	.250 X .19	1.015	2.12	1.00	SB99100	\$ 103.30
CM-WRES-12	2.000	3.000	1.50	0.94	.250 X .19	1.265	2.25	1.25	SB99125	117.69
CM-WRES-15	2.437	3.250	1.88	1.12	.250 X .19	1.515	2.50	1.50	SB99150	130.92
CM-WRES-17	2.812	3.750	2.00	1.31	.250 X .19	1.515	2.75	1.75	SB99175	133.30
CM-WRES-20	3.187	4.000	2.38	1.50	.250 X .19	2.015	3.00	2.00	SB99200	159.94
CM-WRES-25	3.937	4.750	3.00	1.88	.250 X .19	2.515	3.50	2.50	SB99250	200.67

MOBILE SPHERICAL BEARINGS



Spherical Bearing



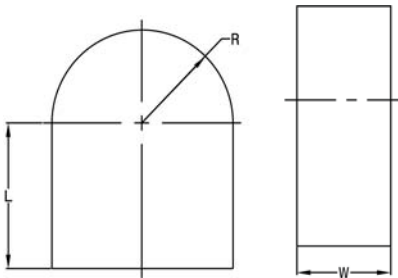
PART NUMBER	A	B	C	D	HOUSING DIAMETER	LIST PRICE
CM-SB99062	0.6245/0.6250	1.0625/1.0620	0.547/0.542	0.469/0.464	1.0614/1.0622	\$ 33.32
CM-SB99075	0.7495/0.7500	1.2495/1.2500	0.656/0.651	0.562/0.557	1.2487/1.2497	33.49
CM-SB99100	0.9995/1.0000	1.6250/1.6245	0.875/0.870	0.750/0.745	1.6237/1.6247	33.82
CM-SB99125	1.2495/1.2500	2.0000/1.9995	1.093/1.087	0.937/0.932	1.9985/1.9997	42.21
CM-SB99137	1.3745/1.3750	2.1875/2.1869	1.187/1.182	1.031/1.026	2.1860/2.1872	50.27
CM-SB99150	1.4995/1.5000	2.4375/2.4369	1.312/1.307	1.125/1.120	2.4360/2.4372	57.95
CM-SB99175	1.7495/1.7500	2.8125/2.8119	1.531/1.526	1.312/1.307	2.8110/2.8122	72.94
CM-SB99200	1.9995/2.0000	3.1875/3.1869	1.750/1.745	1.500/1.495	3.1858/3.1871	95.63
CM-SB99225	2.2495/2.2500	3.5625/3.5617	1.969/1.964	1.687/1.682	3.5607/3.5621	131.28
CM-SB99250	2.4994/2.5000	3.9375/3.9367	2.187/2.182	1.875/1.870	3.9357/3.9371	165.41

MOBILE SPHERICAL BEARINGS

MOBILE WELDED MOUNTS

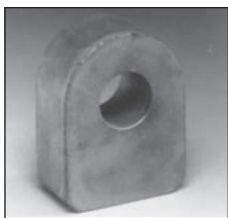


Material: A-36 Plate

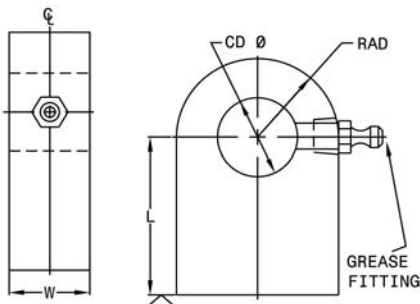


Mounting Lug

PART NUMBER	L	R	W	LIST PRICE
CM-ML296	1.50	1.00	0.50	\$ 9.11
CM-ML297	1.50	1.00	0.62	8.80
CM-ML298	1.50	1.00	0.75	9.65
CM-ML299	1.75	1.25	1.00	12.78
CM-ML301	2.00	1.50	1.00	15.20
CM-ML302	2.50	2.00	1.00	20.55
CM-ML303	1.50	1.00	1.25	17.14
CM-ML304	1.50	1.12	1.50	15.28
CM-ML305	2.00	1.25	1.50	17.84
CM-ML306	1.75	1.50	1.50	18.70
CM-ML307	2.75	1.50	1.50	20.57
CM-ML308	1.75	1.25	2.00	19.74
CM-ML309	2.00	1.50	2.00	23.79
CM-ML310	2.12	1.50	2.00	24.27
CM-ML311	2.25	1.50	2.00	24.91
CM-ML312	3.00	1.50	2.00	29.53
CM-ML313	1.75	1.75	2.00	32.62
CM-ML314	1.88	1.75	2.00	35.33
CM-ML315	2.12	1.75	2.00	33.96
CM-ML316	2.50	1.75	2.00	172.48
CM-ML317	2.75	1.75	2.00	47.90
CM-ML318	3.00	2.00	2.00	51.76
CM-ML319	3.00	2.12	2.00	57.68
CM-ML320	3.12	2.50	2.00	83.46
CM-ML321	2.00	1.12	2.25	34.46
CM-ML322	2.25	1.75	2.25	55.68
CM-ML323	3.00	2.50	2.25	77.23
CM-ML324	3.00	2.50	2.50	69.91
CM-ML325	3.00	2.25	3.00	86.51
CM-ML326	3.00	2.00	3.25	91.80



Material: A-36 Plate



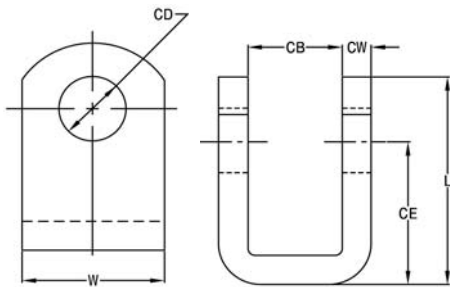
Mounting Lug

PART NUMBER	CD	L	RAD	W	GREASE FITTING	LIST PRICE
CM-ML050100	1.00	2.00	1.00	0.50	N/A	\$ 27.20
CM-ML062100	1.00	2.00	1.00	0.62	N/A	27.20
CM-ML060333	1.00	2.12	1.00	0.75	N/A	36.17
CM-ML100100	1.00	2.00	1.00	1.00	N/A	37.01
CM-ML125100	1.00	2.00	1.00	1.25	1/8" NPT	43.60
CM-ML062125	1.25	2.50	1.25	0.62	N/A	32.04
CM-ML075125	1.25	2.50	1.25	0.75	N/A	37.01
CM-ML100125	1.25	2.50	1.25	1.00	N/A	38.35
CM-ML150125	1.25	2.50	1.25	1.50	1/8" NPT	51.80
CM-ML200125	1.25	2.50	1.25	2.00	1/8" NPT	59.95
CM-ML062150	1.50	2.50	1.50	0.62	N/A	31.59
CM-ML075150	1.50	2.50	1.50	0.75	N/A	36.72
CM-ML150150	1.50	2.50	1.50	1.50	1/8" NPT	58.01
CM-ML200150	1.50	2.50	1.50	2.00	1/8" NPT	60.39
CM-ML250150	1.50	2.50	1.50	2.50	1/8" NPT	69.12
CM-ML200200	2.00	3.00	2.00	2.00	1/8" NPT	88.48
CM-ML250200	2.00	3.00	2.00	2.50	1/8" NPT	106.20

MOBILE WELDED MOUNTS



Material: 1040 HF Bar



Formed Clevis

PART NUMBER	CB	CD	CE	CW	L	W	LIST PRICE
CM-CL3011	0.75	0.50	1.50	0.38	2.25	1.25	\$ 22.71
CM-CL7337	1.06	0.75	2.00	0.38	3.12	1.75	34.85
CM-CL6547	1.25	1.00	2.50	0.50	3.62	2.00	36.69
CM-CL8278	0.88	1.00	2.93	0.50	4.06	2.00	37.27
CM-CL323	1.25	1.00	5.06	0.38	6.06	1.75	33.74
CM-B120753	1.50	1.12	2.12	0.50	3.25	2.25	44.72
CM-B120625	1.62	1.25	2.75	0.75	4.00	2.50	77.69
CM-80003	0.50	N/A	N/A	0.38	2.38	1.00	33.12
CM-80010	1.12	N/A	N/A	0.38	3.50	2.00	33.74
CM-B120829	1.50	N/A	N/A	0.50	3.25	2.50	68.83
CM-80001	1.12	N/A	N/A	0.50	4.00	2.00	27.97
CM-B120672	1.50	N/A	N/A	0.50	4.00	3.00	42.62
CM-B120760	1.12	1.00	2.12	0.62	3.38	2.50	62.24
CM-B120756	1.12	N/A	N/A	0.62	4.25	3.00	59.76
CM-80015	1.25	N/A	N/A	0.62	4.62	2.50	23.09
CM-B120613	1.62	N/A	N/A	0.75	4.00	2.50	50.84
CM-B120614	2.12	N/A	N/A	1.00	5.00	3.00	58.71

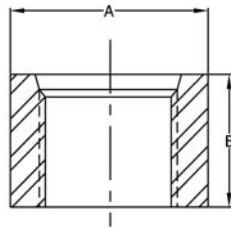
MOBILE WELDED MOUNTS

PORTS/LOCK NUTS



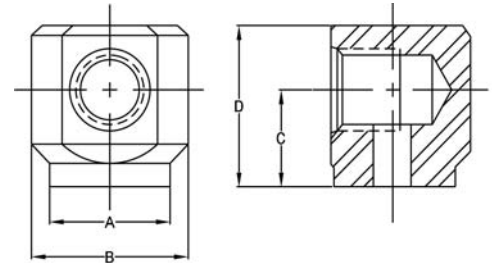
Ports

O-ring Boss Half Coupling Port



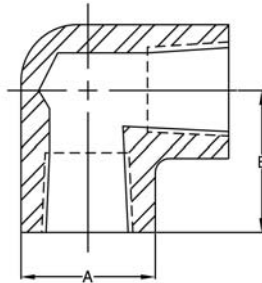
PART NUMBER	PORT SIZE	A	B	LIST PRICE
CM-PO65304	#4 SAE	0.88	1.00	\$ 8.85
CM-PO65305	#5 SAE	0.88	0.75	10.36
CM-PO65306	#6 SAE	1.00	1.00	9.18
CM-PO65308	#8 SAE	1.25	1.06	9.52
CM-PO65310	#10 SAE	1.38	1.06	9.40
CM-PO65312	#12 SAE	1.50	1.28	13.26
CM-PO65314	#14 SAE	1.63	1.25	15.54
CM-PO65316	#16 SAE	1.75	1.28	19.11
CM-PO65320	#20 SAE	2.25	1.28	25.13
CM-PO65324	#24 SAE	2.50	1.00	39.34

90 Degree O-ring Boss Port



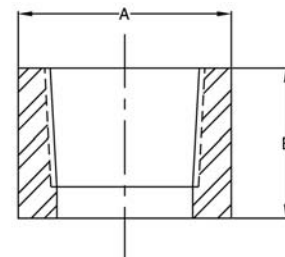
PART NUMBER	BAR SIZE	A	B	C	D	LIST PRICE
CM-PO65604	#4 SAE	0.75	1.12	0.75	1.12	\$20.29
CM-PO65606	#6 SAE	0.87	1.25	0.81	1.25	22.20
CM-PO65608	#8 SAE	1.25	1.62	1.00	1.62	24.30
CM-PO65610	#10 SAE	1.25	1.75	1.12	1.88	27.80
CM-PO65612	#12 SAE	1.50	2.12	1.19	2.00	40.55
CM-PO65616	#16 SAE	1.50	2.25	1.25	2.38	53.45

90 Degree Pipe Thread Port



PART NUMBER	PORT SIZE	A	B	LIST PRICE
CM-PO65225	1/4" NPT	0.75	1.00	\$ 12.61
CM-PO65237	3/8" NPT	0.88	1.00	18.61
CM-PO65250	1/2" NPT	1.12	1.25	28.06
CM-PO65275	3/4" NPT	1.38	1.38	44.94
CM-PO652751	1" NPT	1.75	1.62	67.44

Pipe Thread Half Coupling



PART NUMBER	PORT SIZE	A	B	LIST PRICE
CM-PO65025	1/4" NPT	0.88	1.06	\$ 3.00
CM-PO65037	3/8" NPT	1.00	1.00	3.09
CM-PO65050	1/2" NPT	1.25	1.06	4.14
CM-PO65075	3/4" NPT	1.50	1.28	4.58
CM-PO65100	1" NPT	1.75	1.28	9.18
CM-PO65125	1-1/4" NPT	2.25	1.28	16.40
CM-PO65150	1-1/2" NPT	2.75	1.28	19.69

MOBILE MOUNTS

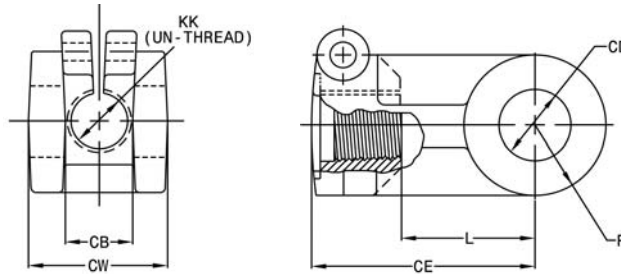


Mobile Split Clevis

PART NUMBER	CB	CD	CE	CW	KK	L	R	LIST PRICE
CM-RC10033	1.12	1.00	3.25	2.62	1-1/16"-12	2.12	1.00	\$ 40.42
CM-RC10034	1.12	1.00	3.25	2.62	1-1/8"-12	2.12	1.00	39.65
CM-RC10035	1.12	1.00	3.25	2.62	1-1/4"-12	2.12	1.00	41.98
CM-RC11312	1.25	1.25	3.25	2.75	1-1/4"-12	2.12	1.25	67.24
CM-RC11412	1.25	1.25	4.00	2.75	1-1/4"-12	2.75	1.25	15.61

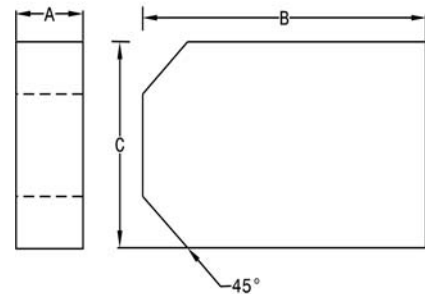
Material: Ductile Iron

Can be used on HTR Cylinders (page 11) or equivalent size cylinders.



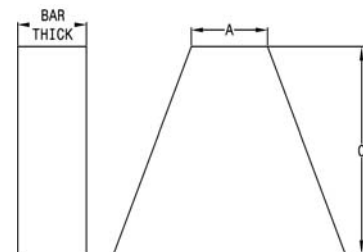
Mounting Ear

PART NUMBER	BAR SIZE	A	B	C	LIST PRICE
CM-ME-100	1/2 x 1-1/4	1/2	1-1/4	1	\$ 4.27
CM-ME-200	5/8 x 2	5/8	2	1-1/2	5.73
CM-ME-300	3/4 x 2-1/2	3/4	2-1/2	2	10.29
CM-ME-400	1 x 3-1/2	1	3-1/2	2-3/4	18.85
CM-ME-500	1-1/4 x 4	1-1/4	4	3-1/2	31.22
CM-ME-600	1-1/4 x 4	1-1/4	4-1/2	4	48.61



Mounting Ear

PART NUMBER	BAR SIZE	A	B	C	LIST PRICE
CM-MEA-100	1/2 x 1-1/4	9/16	1-3/4	1-1/4	\$ 4.53
CM-MEA-200	5/8 x 2	7/8	2-3/4	2	5.73
CM-MEA-300	3/4 x 2-1/2	1-3/8	3-3/4	2-1/2	10.29
CM-MEA-400	1 x 3-1/2	1-3/4	5	3-1/2	18.85
CM-MEA-500	1-1/4 x 4	1-1/4	4	3-1/2	27.87
CM-MEA-600	1-1/4 x 4	1-1/4	6-3/4	4-1/2	48.61



MOBILE MOUNTS

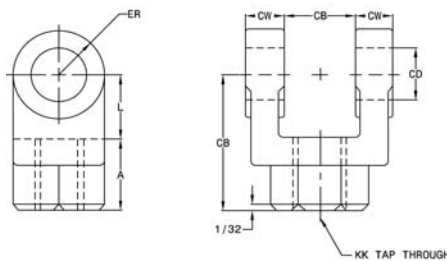
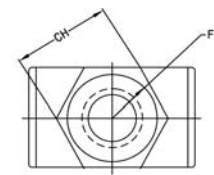
INDUSTRIAL MOUNTS



Rod Clevis

PART NUMBER	CB	CD	CE	CH	CW	F	L	A	KK	ER	LIST PRICE
CM-RC0500	0.765	1/2	1-1/2	1	1/2	1	3/4	3/4	7/16"-20	1/2	\$ 17.99
CM-RC0750	1.265	3/4	2-3/8	1-1/4	5/8	1-1/4	1-1/4	1-1/8	3/4"-16	3/4	38.29
CM-RC1000	1.515	1	3-1/8	1-1/2	3/4	1-1/2	1-1/2	1-5/8	1"-14	1	62.24
CM-RC1375	2.032	1-3/8	4-1/8	2	1	2	2-1/8	2	1-1/4"-12	1-3/8	125.82
CM-RC1750	2.531	1-3/4	4-1/2	2-3/8	1-1/4	2-3/8	2-1/4	2-1/4	1-1/2"-12	1-3/4	154.29
CM-RC2000	2.531	2	5-1/2	2-15/16	1-1/4	2-15/16	2-1/2	3	1-7/8"-12	2	253.48
CM-RC2500	3.032	2-1/2	6-1/2	3-1/2	1-1/2	3-1/2	3	3-1/2	2-1/4"-12	2-1/2	450.33
CM-RC3000	3.032	3	6-3/4	3-7/8	1-1/2	3-7/8	3-1/4	3-1/2	2-1/2"-12	2-3/4	677.79
CM-RC3500	4.032	3-1/2	8-1/2	5	2	5	4	4-1/2	3-1/4"-12	3-1/2	989.34
CM-RC4000	4.532	4	10	6-1/8	2-1/4	6-1/8	4-1/2	5-1/2	4"-12	4	1,727.40

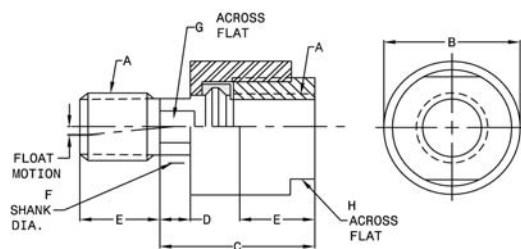
* = Other Thread Sizes Available



Alignment Coupler

ALIGNMENT COUPLER	A	B	C	D	E	F	G	H	MAX PULL YIELD	LIST PRICE
CM-BD-437	7/16"-20	1-1/4	2	1/2	3/4	5/8	1/2	1	10,000	\$ 77.82
CM-BD-500	1/2"-20	1-1/4	2	1/2	3/4	5/8	1/2	1	14,000	77.82
CM-BD-625	5/8"-18	1-1/4	2	1/2	3/4	5/8	1/2	1	19,000	92.28
CM-BD-750	3/4"-16	1-3/4	2-5/16	1/2	1-1/8	31/32	13/16	1-1/2	34,000	70.20
CM-BD-875	7/8"-14	1-3/4	2-5/16	1/2	1-1/8	31/32	13/16	1-1/2	39,000	106.77
CM-BD-1000	1"-14	2-1/2	2-15/16	1/2	1-5/8	1-3/8	1-5/32	2-1/4	64,000	141.58
CM-BD-1250	1-1/4"-12	2-1/2	2-15/16	1/2	1-5/8	1-3/8	1-5/32	2-1/4	78,000	215.32
CM-BD-1500	1-1/2"-12	3-1/4	4-3/8	13/16	2-1/4	1-3/4	1-1/2	3	134,000	555.60
CM-BD-1750	1-3/4"-12	3-1/4	4-3/8	13/16	2-1/4	1-3/4	1-1/2	3	134,000	474.06
CM-BD-1875	1-7/8"-12	3-3/4	5-7/16	7/8	3	2	1-7/8	3-1/2	240,000	590.99

NOTE: Metric Thread Sizes Also Available



1/16 Radial Float 2°
Spherical Motion

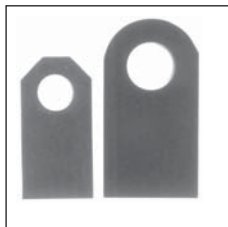
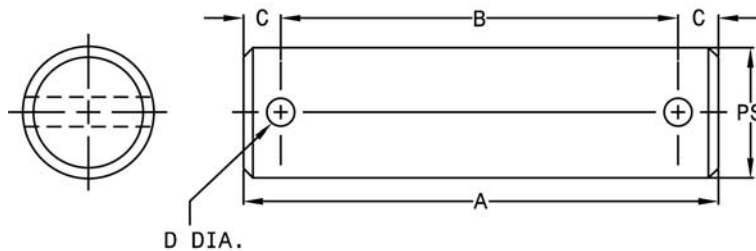
INDUSTRIAL MOUNTS



Pivot Pin

PART NUMBER	PIN SIZE	A	B	C	D	LIST PRICE
CM-PP0500	0.500	2.281	1.938	0.172	0.106	\$ 5.51
CM-PP0750	0.750	3.094	2.719	0.188	0.140	6.37
CM-PP1000	1.000	3.594	3.219	0.188	0.140	15.09
CM-PP1375	1.375	4.656	4.250	0.203	0.173	24.11
CM-PP1750	1.750	5.656	5.250	0.203	0.173	38.25
CM-PP2000	2.000	5.719	5.281	0.219	0.204	46.41
CM-PP2500	2.500	6.781	6.313	0.234	0.219	73.26

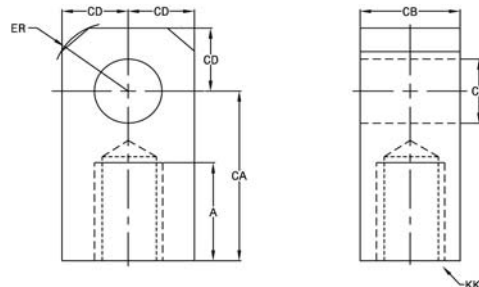
Material: 1144 Steel Nitrotec
Treated Surface



Rod Eyes

PART NUMBER	A	CA	CB	CD	ER	KK	LIST PRICE
CM-RE0500	3/4	1-1/2	3/4	1/2	5/8	7/16"-20	\$ 16.05
CM-RE0750	1-1/8	2-1/16	1-1/4	3/4	7/8	3/4"-16	30.22
CM-RE1000	1-5/8	2-13/16	1-1/2	1	1-3/16	1"-14	49.47
CM-RE1375	2	3-7/16	2	1-3/8	1-9/16	1-1/4"-12	93.23
CM-RE1750	2-1/4	4	2-1/2	1-3/4	2	1-1/2"-12	120.59
CM-RE2000	3	5	2-1/2	2	2-1/2	1-7/8"-12	224.98
CM-RE2500	3-1/2	5-13/16	3	2-1/2	2-13/16	2-1/4"-12	305.37

Material: 05 thru
13, C.F. Bar
Material: 17 thru
40, Steel Plate



INDUSTRIAL MOUNTS

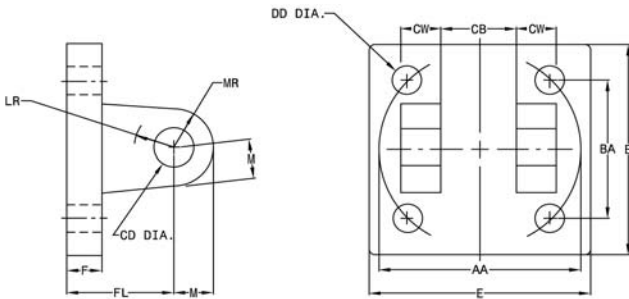
INDUSTRIAL MOUNTS



Clevis Bracket

PART NUMBER	AA	BA	CB	CD	CW	DD	E	F	FL	LR	M	MR	LIST PRICE
CM-BDCB-07	3.6	2-9/16	1.265	3/4	5/8	1/2"-20	3-1/2	5/8	1-7/8	1-1/16	3/4	1-1/16	\$ 107.85
CM-BDCB-10	4.6	3-1/4	1.515	1	3/4	5/8"-18	4-1/2	3/4	2-1/4	1-1/4	1	1-1/8	180.93
CM-BDCB-13	5.4	3-13/16	2.032	1-3/8	1	5/8"-18	5	7/8	3	7/8	1-3/8	1-3/4	305.53
CM-BDCB-20	8.2	5-3/4	2.531	2	1-1/4	1"-14	7-1/2	1	3-12	2-1/8	2	2-1/8	606.23

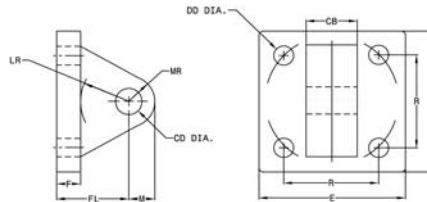
Material: Forging, Weldment, or Ductile Iron



Eye Bracket



Material: Forging, Weldment, or Ductile Iron

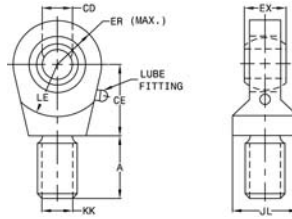


PART NUMBER	CB	CD	DD	E	F	FL	LR	M	MR	R	LIST PRICE
CM-BDEB-05	3/4	1/2	13/32	2-1/2	3/8	1-1/8	3/4	1/2	9/16	1.63	\$ 27.36
CM-BDEB-07	1-1/4	3/4	17/32	3-1/2	5/8	1-7/8	1-1/4	3/4	7/8	2.56	50.58
CM-BDEB-10	1-1/2	1	21/32	4-1/2	3/4	2-1/4	1-1/2	1	1-1/4	3.25	82.57
CM-BDEB-13	2	1-3/8	21/32	5	7/8	3	2-1/8	1-3/8	1-5/8	3.81	141.91
CM-BDEB-17	2-1/2	1-3/4	29/32	6-1/2	7/8	3-1/8	2-1/4	1-3/4	2-1/8	4.95	279.83
CM-BDEB-20	2-1/2	2	1-1/16	7-1/2	1	3-1/2	2-1/2	2	2-7/16	5.75	413.54
CM-BDEB-25	3	2-1/2	1-3/16	8-1/2	1	4	3	2-1/2	3	6.59	527.30
CM-BDEB-30	3	3	1-5/16	9-1/2	1	4-1/4	3-1/4	3	3-1/4	7.50	738.06
CM-BDEB-35	4	3-1/2	1-13/16	12-5/8	1-11/16	5-11/16	4	3-1/2	4-1/8	9.62	1,085.48
CM-BDEB-40	4-1/2	4	2-1/16	14-7/8	1-15/16	6-7/16	4-1/2	4	5-1/4	11.50	2,021.25

INDUSTRIAL MOUNTS

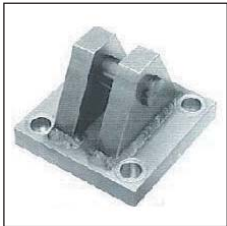


Spherical Rod Eye

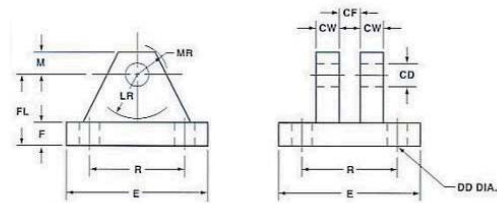


Material: Forging, Weldment, or Ductile Iron

PART NUMBER	CD	A	CE	EX	ER	LE	KK	JL REF	LOAD CAP	SPACER WIDTH	LIST PRICE
CM-RES-05	0.500	11/16	7/8	7/16	7/8	3/4	7/16"-20	7/8	2,600	0.150	\$ 98.90
CM-RES-07	0.750	1	1-1/4	21/32	1-1/4	1-1/16	3/4"-16	1-5/16	9,400	0.250	123.81
CM-RES-10	1.000	1-1/2	1-7/8	7/8	1-3/8	1-7/16	1"-14	1-1/2	16,800	0.250	132.73
CM-RES-13	1.375	2	2-1/8	1-3/16	1-13/16	1-7/8	1-1/4"-12	2	28,600	0.375	187.96
CM-RES-17	1.750	2-1/8	2-1/2	1-17/32	2-3/16	2-1/8	1-1/2"-12	2-1/4	43,000	0.416	482.98
CM-RES-20	2.000	2-7/8	2-3/4	1-3/4	2-5/8	2-1/2	1-7/8"-12	2-3/4	70,000	0.375	645.01



Spherical Clevis Brackets



Material: Steel Weldment

PART NUMBER	E	F	M	R	CD	CF	CW	DD	FL	LR	MR	LIST PRICE
CM-CBS-0500	3.00	.50	.50	2.05	.500	.44	.50	.41	1.50	.94	.62	\$ 102.10
CM-CBS-0750	3.75	.62	.88	2.76	.750	.66	.62	.53	2.00	1.38	1.00	163.36
CM-CBS-1000	5.50	.75	1.00	4.10	1.000	.88	.75	.53	2.50	1.69	1.19	204.18
CM-CBS-1375	6.50	.88	1.38	4.95	1.375	1.19	1.00	.66	3.50	2.44	1.62	306.27
CM-CBS-1750	8.50	1.25	1.75	6.58	1.750	1.53	1.25	.91	4.50	2.88	2.06	557.44
CM-CBS-2000	10.62	1.50	2.00	7.92	2.000	1.75	1.50	.91	5.00	3.31	2.38	875.96

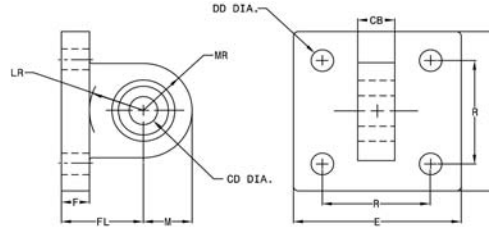
INDUSTRIALS MOUNTS

INDUSTRIAL MOUNTS



Material: Forging,
Weldment, or Ductile Iron

Spherical Eye Bracket

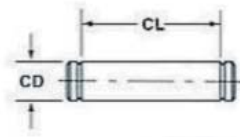


PART NUMBER	CB	CD	DD	E	F	FL	LR	M	MR	R	LIST PRICE
CM-BDS-07	3/4	3/4	17/32	3-1/2	5/8	1-7/8	1-1/4	1-3/16	1-3/16	2.56	\$ 387.90
CM-BDS-10	1	1	21/32	4-1/2	3/4	2-1/4	1-1/2	1-3/8	1-3/8	3.25	458.13
CM-BDS-13	1-3/8	1-3/8	21/32	5	7/8	3	2-1/8	2	2	3.81	744.39



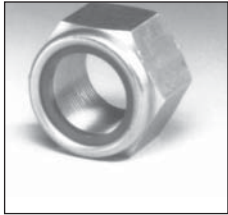
Material: CD1144

Pivot Pins for Spherical Clevis Brackets

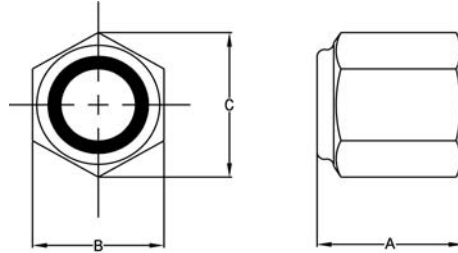


PART NUMBER	CD	CL	LIST PRICE
CM-PPS0500	.4997-.0004	1 9/16	\$ 5.51
CM-PPS0750	.7497-.0005	2.1/32	6.37
CM-PPS1000	.9997-.0005	2 1/2	15.09
CM-PPS1375	1.3746-.0006	3 5/16	24.11
CM-PPS1750	1.7496-.0006	4 7/32	38.25
CM-PPS2000	1.9996-.0007	4 15/16	46.41

INDUSTRIAL COUPLINGS AND NUTS



Nylon Insert Lock Nut



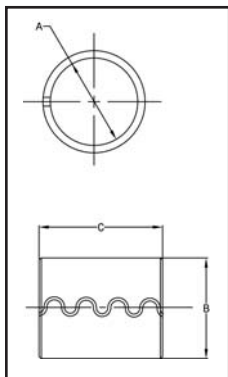
PART NUMBER	BAR SIZE	A	B	C	LIST PRICE
CM-LN45050	1/2"-20	0.60	0.75	0.84	\$ 4.14
CM-LN45062	5/8"-18	0.75	0.94	1.06	4.94
CM-LN45075	3/4"-16	0.88	1.06	1.19	18.03
CM-LN45087	7/8"-14	1.00	1.25	1.40	9.93
CM-LN45100	1"-14	1.06	1.44	1.62	11.56
CM-LN45101	1"-14	0.88	1.62	1.83	16.02
CM-LN45112	1-1/8"-12	1.19	1.62	1.83	11.56
CM-LN45126	1-1/4"-12	1.38	1.81	2.06	21.47
CM-LN45151	1-1/2"-12	1.62	2.19	2.44	21.06
CM-LN45152	1-1/2"-12	0.81	2.19	2.44	22.14
CM-LN45175	1-3/4"-12	1.50	2.75	3.06	47.20
CM-LN45200	2"-12	1.62	3.12	3.50	53.96
CM-LN45225	2-1/4"-12	1.94	3.50	3.94	114.90
CM-LN45226	2-1/4"-12	2.81	3.50	3.94	157.32
CM-LN45250	2-1/2"-12	2.25	4.00	4.60	249.12

INDUSTRIAL COUPLINGS AND NUTS

SPLIT TENSION BUSHINGS/PLUGS/VENTS



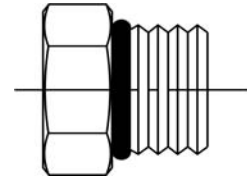
Material: Hardened Spring Steel



Split Tension Bushing

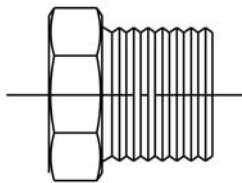
PART NUMBER	A	B	C	HOUSING DIAMETER	LIST PRICE
CM-99507	0.75	1.00	2.00	1.002/1.006	\$ 23.09
CM-99508	0.88	1.00	2.00	1.002/1.006	24.46
CM-99510	1.00	1.25	0.75	1.252/1.256	12.90
CM-99514	1.00	1.25	0.88	1.252/1.256	15.28
CM-99511	1.00	1.25	1.00	1.252/1.256	15.86
CM-99513	1.00	1.25	1.25	1.252/1.256	15.57
CM-99512	1.00	1.25	1.50	1.252/1.256	21.22
CM-99519	1.25	1.50	1.25	1.502/1.506	23.12
CM-99522	1.25	1.50	1.50	1.502/1.506	26.86
CM-99521	1.25	1.50	2.00	1.502/1.506	29.65
CM-99531	1.50	1.75	1.50	1.752/1.756	29.21
CM-99533	1.50	1.75	2.00	1.752/1.756	32.04
CM-99535	1.50	1.75	3.00	1.752/1.756	43.77
CM-99534	1.50	1.88	2.00	1.877/1.881	45.23
CM-995335	1.50	1.75	2.50	1.752/1.756	37.68
CM-99537	1.50	2.00	1.25	2.002/2.006	36.76
CM-995371	1.50	2.00	2.00	2.002/2.006	61.28
CM-99540	1.75	2.00	1.25	2.002/2.006	27.75
CM-995375	1.75	2.00	1.50	2.002/2.006	31.12
CM-99538	1.75	2.00	2.00	2.002/2.006	34.40
CM-99539	1.75	2.00	2.25	2.002/2.006	37.46
CM-995410	1.75	2.00	3.00	2.002/2.006	45.68
CM-99541	1.75	2.25	2.00	2.252/2.256	59.79
CM-99546	2.00	2.38	3.00	2.377/2.381	81.00
CM-99549	2.00	2.25	1.50	2.252/2.256	32.93
CM-99550	2.00	2.25	2.50	2.252/2.256	42.40
CM-99547	2.00	2.50	2.00	2.502/2.506	72.53
CM-99545	2.00	2.50	2.50	2.502/2.506	86.17
CM-99556	2.50	3.00	2.00	3.002/3.006	86.63
CM-99557	2.50	3.00	3.00	3.002/3.006	124.76
CM-99565	3.00	3.50	2.50	3.502/3.506	123.87

Steel Plug (O-Ring Boss)



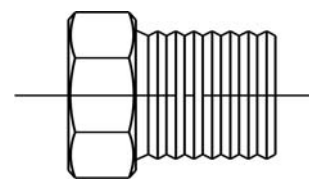
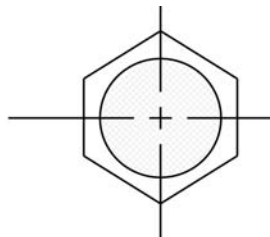
PART NUMBER	PORT SIZE	LIST PRICE
CM-74004	#4 SAE	\$ 1.15
CM-74005	#5 SAE	2.35
CM-74006	#6 SAE	1.32
CM-74008	#8 SAE	1.90
CM-74010	#10 SAE	2.52
CM-74012	#12 SAE	4.79
CM-74014	#14 SAE	9.98
CM-74016	#16 SAE	10.78
CM-74020	#20 SAE	14.15

NPT Air Vent



PART NUMBER	PORT SIZE	LIST PRICE
CM-77002	1/8" NPT	\$ 13.29
CM-77004	1/4" NPT	14.76
CM-77006	3/8" NPT	15.47
CM-77008	1/2" NPT	19.48
CM-77010	3/4" NPT	23.60

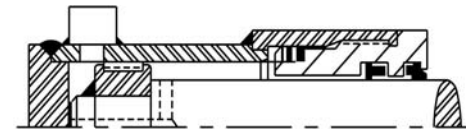
NPT Steel Plug



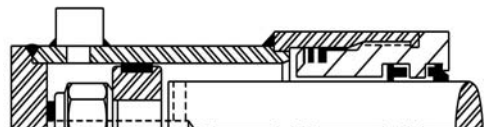
PART NUMBER	PORT SIZE	LIST PRICE
CM-74112	1/8" NPT	\$.62
CM-74125	1/4" NPT	.62
CM-74137	3/8" NPT	.89
CM-74150	1/2" NPT	7.59
CM-74175	3/4" NPT	1.06
CM-74199	1" NPT	2.90
CM-74200	1-1/4" NPT	6.67

DISPLACEMENT CYLINDER COMPONENTS

Displacement Cylinder Components



WELDED STYLE PISTON

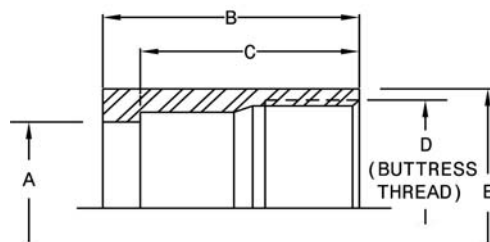


LOCK NUT STYLE PISTON

PISTON DIA.	ROD DIA.	HEAD NUMBER	COLLAR NUMBER	PISTON NUMBER
2.0	1.5	H107463	C132392	P110539
2.5	2.0	H107359	C132463	P110540
3.0	2.5	H107462	C132464	P110541
3.5	3.0	H107525	C132454	P110542
4.0	3.5	H107528	C132465	P110543

NOTE:
SEE IT MOBILE HEADS PAGE

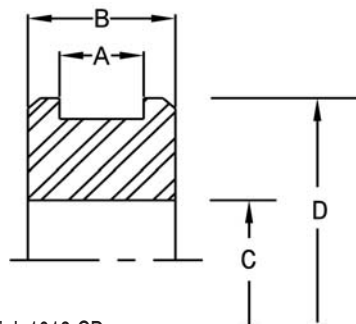
Collar



Material: 1026 DOM

PART NUMBER	A	B	C	D	E	LIST PRICE
CM-C132392	2.311	2.44	2.06	2-3/4"-12	3.00	\$ 266.32
CM-C132463	2.940	2.38	2.12	3-1/4"-12	3.50	225.30
CM-C132464	3.436	2.50	2.25	3-3/4"-12	4.00	167.48
CM-C132454	3.940	2.50	2.25	4-1/4"-12	4.50	CALL

Piston



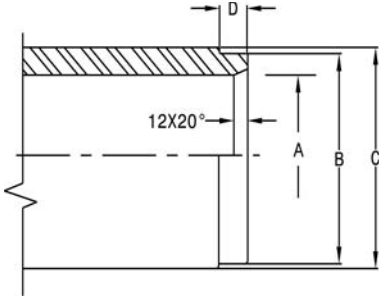
Material: 1018 CD

PART NUMBER	A	B	C	D	E	LIST PRICE
CM-P110539	0.50	0.75	0.876	1.95	SK-P110539	\$ 66.26
CM-P110540	0.50	0.75	1.126	2.45	SK-P110540	61.92
CM-P110541	0.75	1.12	1.501	2.95	SK-P110541	98.78
CM-P110542	0.75	1.12	1.751	3.45	SK-P110542	CALL
CM-P110543	0.75	1.12	2.501	3.95	SK-P110543	CALL

ACCESSORIES

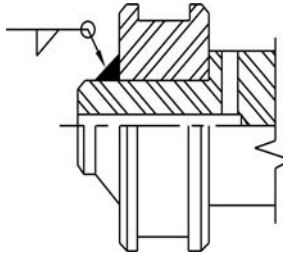
DISPLACEMENT CYLINDER TECHNICAL INFORMATION

Barrel Machining



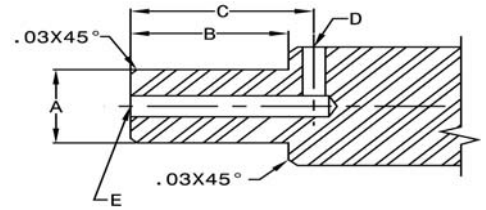
COLLAR NUMBER	A +.003" -.003	B +.001" -.001	C	D	LIST PRICE
C132392	2.000	2.308	2.50	0.38	\$ 266.32
C132463	2.500	2.937	3.00	0.25	225.30
C132464	3.000	3.433	3.50	0.25	167.48
C132454	3.500	3.937	4.00	0.25	CALL
C132465	4.000	4.433	4.50	0.25	CALL

Piston Welding



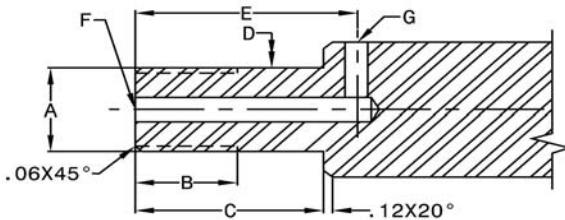
PISTON NUMBER	WELD SIZE	LIST PRICE
P110539	1/4"	\$ 66.26
P110540	1/4"	61.92
C110541	5/16"	CALL
C110542	3/8"	CALL
C110543	3/8"	CALL

Stub (Welded Style)



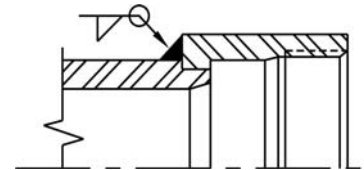
PISTON NUMBER	A +.001" -.001	B	C	D Dia. Drill x Depth	E Dia. Drill x Depth	LIST PRICE
P110539	0.874	1.12	1.31	0.25 x 0.75	0.25 x 1.44	\$ 66.26
P110540	1.124	1.12	1.38	0.31 x 1.00	0.31 x 1.50	61.92
C110541	1.499	1.56	1.81	0.31 x 1.25	0.31 x 2.00	CALL
C110542	1.749	1.62	1.88	0.38 x 1.50	0.38 x 2.00	CALL
C110543	2.499	1.62	1.88	0.38 x 1.75	0.38 x 2.00	CALL

Stub (Lock Nut Style)



PISTON NUMBER	A UN-THD	B	C	D +.001 -.001	E	F Dia. Drill x Depth	G Dia. Drill x Depth	LOCK NUT NUMBER
P110539	7/8"-14	1.25	1.88	0.874	2.12	0.25 x 2.25	0.25 x 0.75	LN45087
P110540	1-1/8"-12	1.44	2.06	1.124	2.38	0.31 x 2.56	0.31 x 1.00	LN45112
C110541	1-1/2"-12	1.88	2.88	1.499	3.19	0.31 x 3.38	0.31 x 1.25	LN45151
C110542	1-3/4"12	1.75	2.75	1.749	3.06	0.38 x 3.31	0.31 x 1.50	LN45175

Collar Welding



COLLAR NUMBER	WELD SIZE	LIST PRICE
C132392	1/4"	\$ 266.32
C132463	1/4"	225.30
C132464	1/4"	167.48
C132454	1/4"	CALL
C132465	5/16"	CALL

ACCESSORIES

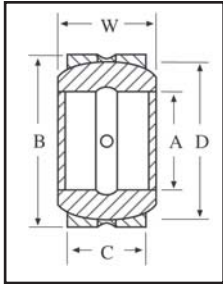
ACCESSORIES

Self Aligning Bearings



Inch

PART NUMBER	A	B	W	C	D	LIST PRICE
HH008ES	1/2	.875	.437	.375	.709	\$ 18.79
HH010ES	5/8	1.062	.547	.469	.899	20.67
HH012ES	3/4	1.250	.656	.562	1.803	19.42
HH014ES	7/8	1.438	.765	.656	1.260	17.53
HH100ES	1	1.625	.875	.750	1.417	16.92
HH104ES	1-1/4	2.000	1.093	.937	1.772	24.42
HH106ES	1-3/8	2.187	1.187	1.031	1.929	36.95
HH108ES	1-1/2	2.438	1.312	1.125	2.165	31.94
HH108ES2RS	1-1/2	2.438	1.312	1.125	2.165	42.58
HH112ES	1-3/4	2.812	1.531	1.312	2.520	43.85
HH112ES2RS	1-3/4	2.812	1.531	1.312	2.520	55.11
HH200ES	2	3.187	1.750	1.500	2.874	59.50
HH200ES2RS	2	3.187	1.750	1.500	2.874	71.40
HH204ES	2-1/4	3.562	1.969	1.687	3.228	81.42
HH204ES2RS	2-1/4	3.562	1.969	1.687	3.228	106.48
HH208ES	2-1/2	3.937	2.187	1.875	3.583	110.24
HH208ES2RS	2-1/2	3.937	2.187	1.875	3.583	137.79
HH212ES	2-3/4	4.375	2.406	2.062	3.937	129.44
HH212ES2RS	2-3/4	4.375	2.406	2.062	3.937	160.34
HH300ES	3	4.750	2.625	2.250	4.331	194.16
HH300ES2RS	3	4.750	2.625	2.250	4.331	221.72
HH304ES	3-1/4	5.125	2.844	2.437	4.685	246.77
HH308ES	3-1/2	5.500	3.062	2.625	5.039	344.47
HH308ES2RS	3-1/2	5.500	3.062	2.625	5.039	382.06
HH312ES	3-3/4	5.875	3.281	2.812	5.394	372.03
HH400ES	4	6.250	3.500	3.000	5.748	502.31
HH400ES2RS	4	6.250	3.500	3.000	5.748	557.42
HH408ES	4-1/2	7.000	3.937	3.375	6.457	657.63
HH500ES	5	7.750	4.375	3.750	7.205	839.26
HH600ES	6	8.750	4.750	4.125	8.150	938.89



ACCESSORIES

Metric

Part Number	A	B	W	C	D	LIST PRICE
MHH20ES	20	35	16	12	29	\$ 23.70
MHH20ES2RS	20	35	16	12	29	26.82
MHH25ES	25	42	20	16	35.5	29.51
MHH25ES2RS	25	42	20	16	35.5	27.54
MHH30ES	30	47	22	18	40.7	31.23
MHH30ES2RS	30	47	22	18	40.7	39.07
MHH35ES	35	55	25	20	47	40.46
MHH35ES2RS	35	55	25	20	47	39.07
MHH40ES	40	62	28	22	53	44.65
MHH40ES2RS	40	62	28	22	53	38.32
MHH45ES2RS	45	68	32	25	60	68.93
MHH50ES	50	75	35	28	66	65.21
MHH50ES2RS	50	75	35	28	66	127.09
MHH60ES	60	90	44	36	80	100.71
MHH70ES	70	105	49	40	92	150.98
MHH70ES2RS	70	105	49	30	92	127.09
MHH80ES	80	120	55	45	105	164.80

ACCESSORIES



SPECIFICATIONS:

- Black epox coated metal shroud with Polyamid sight tube
- Suitable for use with Mineral and Petroleum based hydraulic fluids, lubricants and gasoline
- Maximum operating temperature 194°F 90°C)
- Thermometer Calibration from -20°F to 180°F (-10°C to 80°C)
- SNA 076 has M10 bolts as standard
- SNA 127, SNA 254 has M12 bolts as standard
- Tightening Torque 70"/lb (7.9Nm)

Fluid Level Gauges



PART NUMBER	DESCRIPTION	LIST PRICE
STF-SNA076BS0-10	FLUID LEVEL GAUGE 3" long without thermometer	\$ 14.16
STF-SNA076BST-10	FLUID LEVEL GAUGE 3" long with thermometer	17.28
STF-SNA127BST-12	FLUID LEVEL GAUGE 5" long with thermometer	20.96
STF-SNA127BN012	FLUID LEVEL GAUGE 5" long without thermometer	18.06

SPECIFICATIONS:

- Chrome-Plated Metal Cap
- 30 Mesh Metal Basket
- Cork Gaskets
- Air Flow to 25cfm

Filler Breather



PART NUMBER	DESCRIPTION	LIST PRICE
STF-SES6-P-40-N06	FILLER BREATHER WEATHER PROOFED MINI 40 MICRON 3/8" NPT	\$ 10.59
STF-SES3-P-40-S80	FILLER BREATHER WEATHER PROOFED 40 MICRON 80MM LONG BASKET	12.49
STF-SES3-40-S80	FILLER BREATHER 40 MICRON 80MM LONG BASKET	12.04
STF-SES3L-40-S80	FILLER BREATHER LOCKING TAB 40 MICRON 80MM LONG BASKET	17.84
STF-SES3-40-S150	FILLER BREATHER 40 MICRON 150MM LONG BASKET	14.27
STF-SES6-40-N04	FILLER BREATHER MINI 40 MICRON 1/4" NPT	8.25
STF-SES6-40-N06	FILLER BREATHER MINI 40 MICRON 3/8" NPT	8.25
STF-SES5-40-N12	FILLER BREATHER 40 MICRON 3/4" NPT	11.37

NOTE*(ABOVE FILLER BREATHERS ARE CHROME PLATED THAT ARE NOT WEATHER PROOFED)

ACCESSORIES



Pressure Gauges



- SPECIFICATIONS:**
- Copper alloy bourden tube
 - Dual scales
 - Built in relief valve
 - Operating temperatures
Ambient - 4°F to 140°F (-20°C to 60°C)
Media 150°F (+60°C)
 - Acrylic lens
 - Accuracy = 1.5% of full scale
 - Built in snubber

PART NUMBER	DESCRIPTION	LIST PRICE
STF-SPG-63-3030S	PRESSURE GAUGE 2.5" 30" HG - 30 PSI BOTTOM MOUNT	\$ 22.19
STF-SPG-63-100S	PRESSURE GAUGE 2.5" 100 PSI BOTTOM MOUNT	22.19
STF-SPG-63-160S	PRESSURE GAUGE 2.5" 160 PSI BOTTOM MOUNT	22.19
STF-SPG-63-500S	PRESSURE GAUGE 2.5" 500 PSI BOTTOM MOUNT	22.19
STF-SPG-63-600S	PRESSURE GAUGE 2.5" 600 PSI BOTTOM MOUNT	22.19
STF-SPG-63-1000S	PRESSURE GAUGE 2.5" 1,000 PSI BOTTOM MOUNT	22.19
STF-SPG-63-1500S	PRESSURE GAUGE 2.5" 1,500 PSI BOTTOM MOUNT	22.19
STF-SPG-63-2000S	PRESSURE GAUGE 2.5" 2,000 PSI BOTTOM MOUNT	22.19
STF-SPG-63-3000S	PRESSURE GAUGE 2.5" 3,000 PSI BOTTOM MOUNT	22.19
STF-SPG-63-5000S	PRESSURE GAUGE 2.5" 5,000 PSI BOTTOM MOUNT	22.19
STF-SPG-63-6000S	PRESSURE GAUGE 2.5" 6,000 PSI BOTTOM MOUNT	22.19
STF-SPG-63-10000S	PRESSURE GAUGE 2.5" 10,000 PSI BOTTOM MOUNT	22.19
STF-SPG-63-3000P-U	PRESSURE GAUGE 2.5" 3,000 PSI PANEL MOUNT	26.64
STF-SPG-63-300S	PRESSURE GAUGE 2.5" 300 PSI BOTTOM MOUNT	22.19
STF-SPG-63-5000P-U	PRESSURE GAUGE 2.5" 5,000 PSI PANEL MOUNT	26.64
STF-SPG-100-300P-U	PRESSURE GAUGE 4" 300 PSI PANEL MOUNT	26.64
STF-SPG-100-10000S	PRESSURE GAUGE 4" 10,000 PSI BOTTOM MOUNT	79.43

* 1/4" NPT

ACCESSORIES



NOTES

NOTES

Machined Chrome Rods



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MACHINED CHROME RODS

HERCULES MACHINED CHROME ROD PROGRAM



- One end machined to fit standard Hercules pistons
- One end supplied blank for modification by customer (custom mount)

FEATURES:

- Steel Bar: Cold drawn, stress-relieved carbon steel bar per ASTM A311 Class B – 100,000 psi minimum yield strength. Shaft diameter is turned, ground, polished, induction hardened and chrome plated.
- Surface Hardness: Induction hardened to Rc 50 minimum
Case Depth: 0.050" minimum per ASTM J423
- Plate Thickness: 0.001" minimum hard chrome-plated
- Hardness of Chrome Plate: Rc 68-72
- Surface Finish: 12 RMS maximum
- Packaging: Individually cardboard tube wrapped, inside hard plastic tubing
- Salt Spray Test: 48 hours minimum per ASTM B117
- Machined on one end to accommodate standard Hercules pistons.
Piston styles: IT, ITW, TH, and TM.
- One end square cut to be modified, per application, by customer.

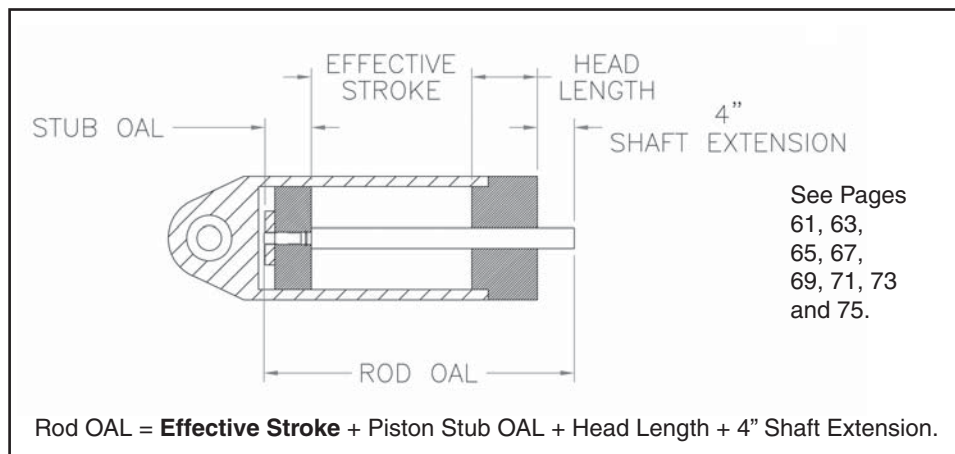
SELECTION CHART OVERVIEW

Rod Dia	Stub Dia	Part # 12" Nominal Stroke* (24" OAL)	List \$	Part # 24" Nominal Stroke* (36" OAL)	List \$	Part # 36" Nominal Stroke* (48" OAL)	List \$	Part # 48" Nominal Stroke* (60" OAL)	List \$	Part # 60" Nominal Stroke (72" OAL)	List \$
0.750	0.625	CR100I-0.75X24-0.62	55.20	CR100I-0.75X36-0.62	80.53	CR100I-0.75X48-0.62	105.82	N/A	N/A	N/A	N/A
1.000	0.750	CR100I-1.00X24-0.75	68.18	CR100I-1.00X36-0.75	98.93	CR100I-1.00X48-0.75	129.69	CR100I-1.00X60-0.75	160.49	N/A	N/A
1.125	0.750	CR100I-1.12X24-0.75	74.58	CR100I-1.12X36-0.75	108.67	CR100I-1.12X48-0.75	144.62	CR100I-1.12X60-0.75	178.67	CR100I-1.12X72-0.75	212.76
1.250	0.750	CR100I-1.25X24-0.75	81.96	CR100I-1.25X36-0.75	119.78	CR100I-1.25X48-0.75	157.64	CR100I-1.25X60-0.75	195.56	CR100I-1.25X72-0.75	233.56
1.500	0.750	CR100I-1.50X24-0.75	107.69	CR100I-1.50X36-0.75	157.64	CR100I-1.50X48-0.75	209.11	CR100I-1.50X60-0.75	259.11	CR100I-1.50X72-0.75	309.24
1.500	1.000	CR100I-1.50X24-1.00	107.69	CR100I-1.50X36-1.00	157.64	CR100I-1.50X48-1.00	209.11	CR100I-1.50X60-1.00	259.11	CR100I-1.50X72-1.00	309.24
1.750	1.000	CR100I-1.75X24-1.00	142.76	CR100I-1.75X36-1.00	209.33	CR100I-1.75X48-1.00	277.24	CR100I-1.75X60-1.00	342.31	CR100I-1.75X72-1.00	408.80
2.000	1.000	CR100I-2.00X24-1.00	147.69	CR100I-2.00X36-1.00	218.04	CR100I-2.00X48-1.00	287.16	CR100I-2.00X60-1.00	357.51	CR100I-2.00X72-1.00	426.67
2.000	1.250	CR100I-2.00X24-1.25	147.69	CR100I-2.00X36-1.25	218.04	CR100I-2.00X48-1.25	287.16	CR100I-2.00X60-1.25	357.51	CR100I-2.00X72-1.25	426.67
2.500	1.250	CR100I-2.50X24-1.25	209.20	CR100I-2.50X36-1.25	308.80	CR100I-2.50X48-1.25	408.36	CR100I-2.50X60-1.25	507.82	CR100I-2.50X72-1.25	606.27
3.000	1.250	CR100I-3.00X24-1.25	283.87	CR100I-3.00X36-1.25	419.29	CR100I-3.00X48-1.25	554.71	CR100I-3.00X60-1.25	690.13	CR100I-3.00X72-1.25	825.51

See page 60 - 75 for prices and head and seal kit options.

* Stroke length is dependent upon selection of piston and head type. See following pages for more details.

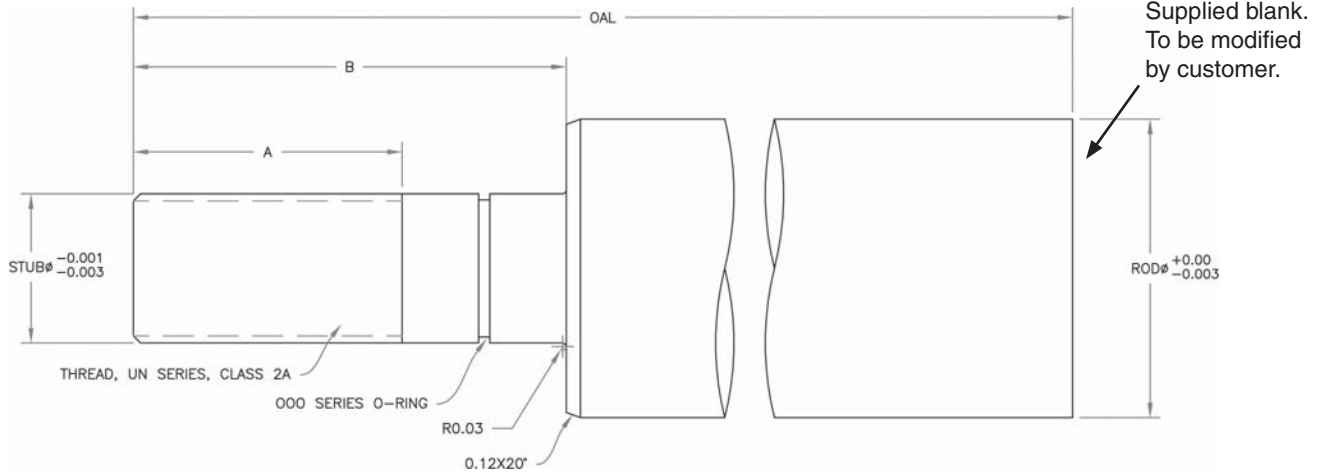
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MACHINED CHROME RODS

HERCULES MACHINED CHROME ROD PROGRAM



PISTON STUB SHAFT DETAIL

Part Number	Rod Dia	Thread	Stub Dia	Thread Length A	Stub Length B	12" Nom Stroke OAL	24" Nom Stroke OAL	36" Nom Stroke OAL	48" Nom Stroke OAL	60" Nom Stroke OAL
CR100I-0.75X(OAL)-0.62	0.750	5/8"-18 UNF	0.625	1.255	2.005	24.00	36.00	48.00	N/A	N/A
CR100I-1.00X(OAL)-0.75	1.000	3/4"-16 UNF	0.750	1.630	2.505	24.00	36.00	48.00	60.00	N/A
CR100I-1.12X(OAL)-0.75	1.125	3/4"-16 UNF	0.750	1.630	2.505	24.00	36.00	48.00	60.00	72.00
CR100I-1.25X(OAL)-0.75	1.250	3/4"-16 UNF	0.750	2.255	2.880	24.00	36.00	48.00	60.00	72.00
CR100I-1.50X(OAL)-0.75	1.500	3/4"-16 UNF	0.750	2.255	2.880	24.00	36.00	48.00	60.00	72.00
CR100I-1.50X(OAL)-1.00	1.500	1"-14 UNS	1.000	2.690	3.185	24.00	36.00	48.00	60.00	72.00
CR100I-1.75X(OAL)-1.00	1.750	1"-14 UNS	1.000	2.690	3.185	24.00	36.00	48.00	60.00	72.00
CR100I-2.00X(OAL)-1.00	2.000	1"-14 UNS	1.000	2.690	3.185	24.00	36.00	48.00	60.00	72.00
CR100I-2.00X(OAL)-1.25	2.000	1-1/4"-12 UNF	1.250	2.255	3.630	24.00	36.00	48.00	60.00	72.00
CR100I-2.50X(OAL)-1.25	2.500	1-1/4"-12 UNF	1.250	2.255	3.630	24.00	36.00	48.00	60.00	72.00
CR100I-3.00X(OAL)-1.25	3.000	1-1/4"-12 UNF	1.250	2.255	3.630	24.00	36.00	48.00	60.00	72.00

See page 60 - 75 for prices and head and seal kit options.

Stub shafts are designed to accommodate standard Hercules piston types. See page 60 - 75 for specific mounting details.

CHROME RODS

MACHINED CHROME RODS

Selection Chart for Pistons, Heads and Seal Kits to Accommodate Machine Chrome Rod

Rod Dia	Thread		Stub Dia	Stub OAL	Thread Lgth	Nut Part #	List \$	Nut Lgth					
0.75	5/8"-18 UNF		0.625	2.005	1.255	CM-LN45062	4.94	0.75					
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
1.5	CM-P110629	38.13	IT Piston	1.12	0.00	CM-SK-P110629	14.47	CM-H70181	117.02	TK Head	2.00	CM-SK-H70181	14.77
1.5	CM-P70020	50.42	TH Piston	1.13	0.00	CM-SK-P70020	14.47	CM-H70181	117.02	TK Head	2.00	CM-SK-H70181	14.77
1.5	CM-P70079	34.97	TM Piston	0.88	0.25	CM-SK-P70079	14.47	CM-H70181	117.02	TK Head	2.00	CM-SK-H70181	14.77

Rod Dia	Thread		Stub Dia	Stub OAL	Thread Lgth	Nut Part #	List \$	Nut Lgth					
1	3/4"-16 UNF		0.75	2.505	1.63	CM-LN45075	18.03	0.88					
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
2	CM-P110238	50.29	IT Piston	1.25	0.25	CM-SK-P110238	14.77	CM-H107597	62.91	IT Head	2.12	CM-SK-H107597	14.77
2	CM-P110238	50.29	IT Piston	1.25	0.25	CM-SK-P110238	14.77	CM-H70093	119.61	TK Head	2.25	CM-SK-H70093	14.77
2	CM-P110238	50.29	IT Piston	1.25	0.25	CM-SK-P110238	14.77	CM-H70154	77.69	TH Head	2.38	CM-SK-H70154	14.77
2	CM-P70005	58.26	TH Piston	1.50	0.00	CM-SK-P70005	14.77	CM-H107597	62.91	IT Head	2.12	CM-SK-H107597	14.77
2	CM-P70005	58.26	TH Piston	1.50	0.00	CM-SK-P70005	14.77	CM-H70093	119.61	TK Head	2.25	CM-SK-H70093	14.77
2	CM-P70005	58.26	TH Piston	1.50	0.00	CM-SK-P70005	14.77	CM-H70154	77.69	TH Head	2.38	CM-SK-H70154	14.77
2	CM-P70055	36.79	TM Piston	1.00	0.50	CM-SK-P70055	14.47	CM-H107597	62.91	IT Head	2.12	CM-SK-H107597	14.77
2	CM-P70055	36.79	TM Piston	1.00	0.50	CM-SK-P70055	14.47	CM-H70093	119.61	TK Head	2.25	CM-SK-H70093	14.77
2	CM-P70055	36.79	TM Piston	1.00	0.50	CM-SK-P70055	14.47	CM-H70154	77.69	TH Head	2.38	CM-SK-H70154	14.77
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
3	CM-P70841	56.38	TM Piston	1.00	0.75	CM-SK-P70841	14.47	CM-H107157	90.63	IT Head	2.25	CM-SK-H107157	14.47

CHROME RODS

For additional dimensional information on pistons and heads see pages 30 - 36.

* Customer must modify per-machined stub length on some piston styles.



MACHINED CHROME RODS

Quick Reference Chart for Effective Stroke of Machined Chrome Rods

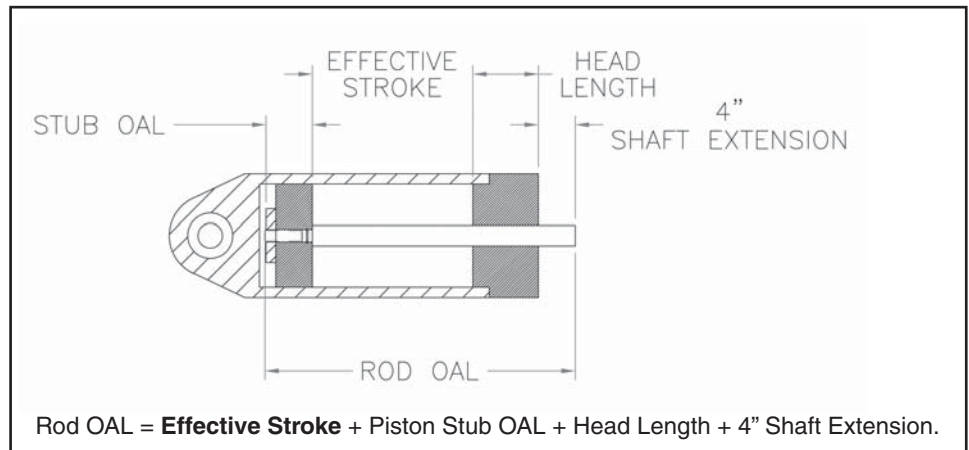
Rod Dia	Part # 12" Stroke	List \$	Part # 24" Stroke	List \$	Part # 36" Stroke	List \$	Part # 48" Stroke	Part # 60" Stroke
0.75	CR1001-0.75X24-0.62	55.20	CR1001-0.75X36-0.62	80.53	CR1001-0.75X48-0.62	105.82	N/A	N/A
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)	
1.5	16.00" Eff. Stroke		28.00" Eff. Stroke		40.00" Eff. Stroke		N/A	
1.5	16.00" Eff. Stroke		28.00" Eff. Stroke		40.00" Eff. Stroke		N/A	
1.5	16.00" Eff. Stroke		28.00" Eff. Stroke		40.00" Eff. Stroke		N/A	

Rod Dia	Part # 12" Stroke	List \$	Part # 24" Stroke	List \$	Part # 36" Stroke	List \$	Part # 48" Stroke	List \$	Part # 60" Stroke	
1	CR1001-1.00X24-0.75	68.18	CR1001-1.00X36-0.75	98.93	CR1001-1.00X48-0.75	129.69	CR1001-1.00X60-0.75	160.49	N/A	
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
2	15.38" Eff. Stroke		27.38" Eff. Stroke		39.38" Eff. Stroke		51.38" Eff. Stroke		N/A	
2	15.25" Eff. Stroke		27.25" Eff. Stroke		39.25" Eff. Stroke		51.25" Eff. Stroke		N/A	
2	15.12" Eff. Stroke		27.12" Eff. Stroke		39.12" Eff. Stroke		51.12" Eff. Stroke		N/A	
2	15.38" Eff. Stroke		27.38" Eff. Stroke		39.38" Eff. Stroke		51.38" Eff. Stroke		N/A	
2	15.25" Eff. Stroke		27.25" Eff. Stroke		39.25" Eff. Stroke		51.25" Eff. Stroke		N/A	
2	15.12" Eff. Stroke		27.12" Eff. Stroke		39.12" Eff. Stroke		51.12" Eff. Stroke		N/A	
2	15.38" Eff. Stroke		27.38" Eff. Stroke		39.38" Eff. Stroke		51.38" Eff. Stroke		N/A	
2	15.25" Eff. Stroke		27.25" Eff. Stroke		39.25" Eff. Stroke		51.25" Eff. Stroke		N/A	
2	15.12" Eff. Stroke		27.12" Eff. Stroke		39.12" Eff. Stroke		51.12" Eff. Stroke		N/A	
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke		48" Nominal Stroke		60" Nominal Stroke (72" OAL)	
3	15.25" Eff. Stroke		27.25" Eff. Stroke		39.25" Eff. Stroke		51.25" Eff. Stroke		N/A	

CHROME RODS

* Stroke length is dependent upon selection of piston and head type. See following pages for more details.

EFFECTIVE STROKE CALCULATION





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MACHINED CHROME RODS

Selection Chart for Pistons, Heads and Seal Kits to Accommodate Machine Chrome Rod

Rod Dia	Thread		Stub Dia	Stub OAL	Thread Lgth	Nut Part #	List \$	Nut Lgth					
1.25	3/4"-16 UNF		0.75	2.88	2.255	CM-LN45075	18.03	0.88					
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
2	CM-P110238	50.29	IT Piston	1.25	0.62	CM-SK-P110238	14.77	CM-H107595	82.82	IT Head	2.25	CM-SK-H107595	14.77
2	CM-P110238	50.29	IT Piston	1.25	0.62	CM-SK-P110238	14.77	CM-H70156	81.61	TH Head	2.38	CM-SK-H70156	14.77
2	CM-P110238	50.29	IT Piston	1.25	0.62	CM-SK-P110238	14.77	CM-H70160	119.61	TK Head	2.50	CM-SK-H70160	14.77
2	CM-P70005	58.26	TH Piston	1.50	0.38	CM-SK-P70005	14.77	CM-H107595	82.82	IT Head	2.25	CM-SK-H107595	14.77
2	CM-P70005	58.26	TH Piston	1.50	0.38	CM-SK-P70005	14.77	CM-H70156	81.61	TH Head	2.38	CM-SK-H70156	14.77
2	CM-P70005	58.26	TH Piston	1.50	0.38	CM-SK-P70005	14.77	CM-H70160	119.61	TK Head	2.50	CM-SK-H70160	14.77
2	CM-P70055	36.79	TM Piston	1.00	0.88	CM-SK-P70055	14.47	CM-H107595	82.82	IT Head	2.25	CM-SK-H107595	14.77
2	CM-P70055	36.79	TM Piston	1.00	0.88	CM-SK-P70055	14.47	CM-H70156	81.61	TH Head	2.38	CM-SK-H70156	14.77
2	CM-P70055	36.79	TM Piston	1.00	0.88	CM-SK-P70055	14.47	CM-H70160	119.61	TK Head	2.50	CM-SK-H70160	14.77
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
2.5	CM-P110239	51.92	IT Piston	1.25	0.62	CM-SK-P110239	14.47	CM-H107194	86.96	IT Head	2.00	CM-SK-H107194	14.47
2.5	CM-P110239	51.92	IT Piston	1.25	0.62	CM-SK-P110239	14.47	CM-H70076	104.86	TH Head	2.38	CM-SK-H70076	14.77
2.5	CM-P110239	51.92	IT Piston	1.25	0.62	CM-SK-P110239	14.47	CM-H70162	122.09	TK Head	2.25	CM-SK-H70162	14.77
2.5	CM-P110596	55.93	ITW Piston	1.88	0.00	CM-SK-P110596	3.52	CM-H107194	86.96	IT Head	2.00	CM-SK-H107194	14.47
2.5	CM-P110596	55.93	ITW Piston	1.88	0.00	CM-SK-P110596	3.52	CM-H70076	104.86	TH Head	2.38	CM-SK-H70076	14.77
2.5	CM-P110596	55.93	ITW Piston	1.88	0.00	CM-SK-P110596	3.52	CM-H70162	122.09	TK Head	2.25	CM-SK-H70162	14.77
2.5	CM-P70017	76.36	TH Piston	1.50	0.38	CM-SK-P70017	16.14	CM-H107194	86.96	IT Head	2.00	CM-SK-H107194	14.47
2.5	CM-P70017	76.36	TH Piston	1.50	0.38	CM-SK-P70017	16.14	CM-H70076	104.86	TH Head	2.38	CM-SK-H70076	14.77
2.5	CM-P70017	76.36	TH Piston	1.50	0.38	CM-SK-P70017	16.14	CM-H70162	122.09	TK Head	2.25	CM-SK-H70162	14.77
2.5	CM-P70065	54.75	TM Piston	1.00	0.88	CM-SK-P70065	14.47	CM-H107194	86.96	IT Head	2.00	CM-SK-H107194	14.47
2.5	CM-P70065	54.75	TM Piston	1.00	0.88	CM-SK-P70065	14.47	CM-H70076	104.86	TH Head	2.38	CM-SK-H70076	14.77
2.5	CM-P70065	54.75	TM Piston	1.00	0.88	CM-SK-P70065	14.47	CM-H70162	122.09	TK Head	2.25	CM-SK-H70162	14.77
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
3	CM-P70841	56.38	TM Piston	1.00	1.12	CM-SK-P70841	14.47	CM-H107196	86.48	IT Head	2.25	CM-SK-H107196	14.47
3	CM-P70841	56.38	TM Piston	1.00	1.12	CM-SK-P70841	14.47	CM-H70029	117.95	TH Head	2.75	CM-SK-H70029	14.77
3	CM-P70841	56.38	TM Piston	1.00	1.12	CM-SK-P70841	14.47	CM-H70164	144.00	TK Head	2.75	CM-SK-H70164	14.77

CHROME RODS

For additional dimensional information on pistons and heads see pages 30 - 36.

* Customer must modify per-machined stub length on some piston styles.

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MACHINED CHROME RODS

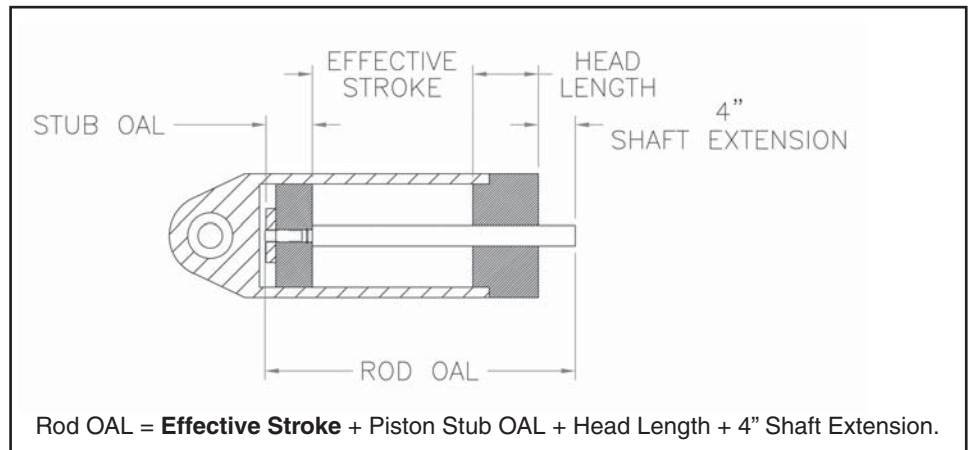
Quick Reference Chart for Effective Stroke of Machined Chrome Rods

Rod Dia	Part # 12" Stroke	List \$	Part # 24" Stroke	List \$	Part # 36" Stroke	List \$	Part # 48" Stroke	List \$	Part # 60" Stroke	List \$
1.25	CR1001-1.25X24-0.75	81.96	CR1001-1.25X36-0.75	119.78	CR1001-1.25X48-0.75	157.64	CR1001-1.25X60-0.75	195.56	CR1001-1.25X72-0.75	233.56
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
2	14.87" Eff. Stroke		26.87" Eff. Stroke		38.87" Eff. Stroke		50.87" Eff. Stroke		62.87" Eff. Stroke	
2	14.74" Eff. Stroke		26.74" Eff. Stroke		38.74" Eff. Stroke		50.74" Eff. Stroke		62.74" Eff. Stroke	
2	14.62" Eff. Stroke		26.62" Eff. Stroke		38.62" Eff. Stroke		50.62" Eff. Stroke		62.62" Eff. Stroke	
2	14.87" Eff. Stroke		26.87" Eff. Stroke		38.87" Eff. Stroke		50.87" Eff. Stroke		62.87" Eff. Stroke	
2	14.74" Eff. Stroke		26.74" Eff. Stroke		38.74" Eff. Stroke		50.74" Eff. Stroke		62.74" Eff. Stroke	
2	14.62" Eff. Stroke		26.62" Eff. Stroke		38.62" Eff. Stroke		50.62" Eff. Stroke		62.62" Eff. Stroke	
2	14.87" Eff. Stroke		26.87" Eff. Stroke		38.87" Eff. Stroke		50.87" Eff. Stroke		62.87" Eff. Stroke	
2	14.74" Eff. Stroke		26.74" Eff. Stroke		38.74" Eff. Stroke		50.74" Eff. Stroke		62.74" Eff. Stroke	
2	14.62" Eff. Stroke		26.62" Eff. Stroke		38.62" Eff. Stroke		50.62" Eff. Stroke		62.62" Eff. Stroke	
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
2.5	15.12" Eff. Stroke		27.12" Eff. Stroke		39.12" Eff. Stroke		51.12" Eff. Stroke		63.12" Eff. Stroke	
2.5	14.74" Eff. Stroke		26.74" Eff. Stroke		38.74" Eff. Stroke		50.74" Eff. Stroke		62.74" Eff. Stroke	
2.5	14.87" Eff. Stroke		26.87" Eff. Stroke		38.87" Eff. Stroke		50.87" Eff. Stroke		62.87" Eff. Stroke	
2.5	15.12" Eff. Stroke		27.12" Eff. Stroke		39.12" Eff. Stroke		51.12" Eff. Stroke		63.12" Eff. Stroke	
2.5	14.74" Eff. Stroke		26.74" Eff. Stroke		38.74" Eff. Stroke		50.74" Eff. Stroke		62.74" Eff. Stroke	
2.5	14.87" Eff. Stroke		26.87" Eff. Stroke		38.87" Eff. Stroke		50.87" Eff. Stroke		62.87" Eff. Stroke	
2.5	15.12" Eff. Stroke		27.12" Eff. Stroke		39.12" Eff. Stroke		51.12" Eff. Stroke		63.12" Eff. Stroke	
2.5	14.74" Eff. Stroke		26.74" Eff. Stroke		38.74" Eff. Stroke		50.74" Eff. Stroke		62.74" Eff. Stroke	
2.5	14.87" Eff. Stroke		26.87" Eff. Stroke		38.87" Eff. Stroke		50.87" Eff. Stroke		62.87" Eff. Stroke	
2.5	15.12" Eff. Stroke		27.12" Eff. Stroke		39.12" Eff. Stroke		51.12" Eff. Stroke		63.12" Eff. Stroke	
2.5	14.74" Eff. Stroke		26.74" Eff. Stroke		38.74" Eff. Stroke		50.74" Eff. Stroke		62.74" Eff. Stroke	
2.5	14.87" Eff. Stroke		26.87" Eff. Stroke		38.87" Eff. Stroke		50.87" Eff. Stroke		62.87" Eff. Stroke	
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
3	14.87" Eff. Stroke		26.87" Eff. Stroke		38.87" Eff. Stroke		50.87" Eff. Stroke		62.87" Eff. Stroke	
3	14.37" Eff. Stroke		26.37" Eff. Stroke		38.37" Eff. Stroke		50.37" Eff. Stroke		62.37" Eff. Stroke	
3	14.37" Eff. Stroke		26.37" Eff. Stroke		38.37" Eff. Stroke		50.37" Eff. Stroke		62.37" Eff. Stroke	

CHROME RODS

* Stroke length is dependent upon selection of piston and head type. See following pages for more details.

EFFECTIVE STROKE CALCULATION



MACHINED CHROME RODS

Selection Chart for Pistons, Heads and Seal Kits to Accommodate Machine Chrome Rod

Rod Dia	Thread		Stub Dia	Stub OAL	Thread Lgth	Nut Part #	List \$	Nut Lgth					
1.5	3/4"-16 UNF		0.75	2.88	2.255	CM-LN45075	18.03	0.88					
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
2.5	CM-P110239	51.92	IT Piston	1.25	0.62	CM-SK-P110239	14.47	CM-H107463	87.25	IT Head	2.38	CM-SK-H107463	20.10
2.5	CM-P110239	51.92	IT Piston	1.25	0.62	CM-SK-P110239	14.47	CM-H70158	106.20	TH Head	2.38	CM-SK-H70158	14.77
2.5	CM-P110239	51.92	IT Piston	1.25	0.62	CM-SK-P110239	14.47	CM-H70163	123.62	TK Head	2.25	CM-SK-H70163	14.77
2.5	CM-P110596	55.93	ITW Piston	1.88	0.00	CM-SK-P110596	3.52	CM-H107463	87.25	IT Head	2.38	CM-SK-H107463	20.10
2.5	CM-P110596	55.93	ITW Piston	1.88	0.00	CM-SK-P110596	3.52	CM-H70158	106.20	TH Head	2.38	CM-SK-H70158	14.77
2.5	CM-P110596	55.93	ITW Piston	1.88	0.00	CM-SK-P110596	3.52	CM-H70163	123.62	TK Head	2.25	CM-SK-H70163	14.77
2.5	CM-P70017	76.36	TH Piston	1.50	0.38	CM-SK-P70017	16.14	CM-H107463	87.25	IT Head	2.38	CM-SK-H107463	20.10
2.5	CM-P70017	76.36	TH Piston	1.50	0.38	CM-SK-P70017	16.14	CM-H70158	106.20	TH Head	2.38	CM-SK-H70158	14.77
2.5	CM-P70017	76.36	TH Piston	1.50	0.38	CM-SK-P70017	16.14	CM-H70163	123.62	TK Head	2.25	CM-SK-H70163	14.77
2.5	CM-P70065	54.75	TM Piston	1.00	0.88	CM-SK-P70065	14.47	CM-H107463	87.25	IT Head	2.38	CM-SK-H107463	20.10
2.5	CM-P70065	54.75	TM Piston	1.00	0.88	CM-SK-P70065	14.47	CM-H70158	106.20	TH Head	2.38	CM-SK-H70158	14.77
2.5	CM-P70065	54.75	TM Piston	1.00	0.88	CM-SK-P70065	14.47	CM-H70163	123.62	TK Head	2.25	CM-SK-H70163	14.77
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
3	CM-P70841	56.38	TM Piston	1.00	1.12	CM-SK-P70841	14.47	CM-H107131	91.76	IT Head	2.25	CM-SK-H107131	14.53
3	CM-P70841	56.38	TM Piston	1.00	1.12	CM-SK-P70841	14.47	CM-H70011	117.95	TH Head	2.75	CM-SK-H70011	14.77
3	CM-P70841	56.38	TM Piston	1.00	1.12	CM-SK-P70841	14.47	CM-H70130	119.61	TK Head	2.75	CM-SK-H70130	14.77

Rod Dia	Thread		Stub Dia	Stub OAL	Thread Lgth	Nut Part #	List \$	Nut Lgth					
1.5	1"-14 UNS		1.00	3.185	2.69	CM-LN45100	12.41	1.06					
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
3	CM-P110121	61.35	ITW Piston	2.00	0.00	CM-SK-P110121	20.85	CM-H107131	91.76	IT Head	2.25	CM-SK-H107131	14.53
3	CM-P110121	61.35	ITW Piston	2.00	0.00	CM-SK-P110121	20.85	CM-H70011	117.95	TH Head	2.75	CM-SK-H70011	14.77
3	CM-P110121	61.35	ITW Piston	2.00	0.00	CM-SK-P110121	20.85	CM-H70130	119.61	TK Head	2.75	CM-SK-H70130	14.77
3	CM-P70006	78.61	TH Piston	1.75	0.25	CM-SK-P70006	20.26	CM-H107131	91.76	IT Head	2.25	CM-SK-H107131	14.53
3	CM-P70006	78.61	TH Piston	1.75	0.25	CM-SK-P70006	20.26	CM-H70011	117.95	TH Head	2.75	CM-SK-H70011	14.77
3	CM-P70006	78.61	TH Piston	1.75	0.25	CM-SK-P70006	20.26	CM-H70130	119.61	TK Head	2.75	CM-SK-H70130	14.77
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
3.25	CM-P110608	74.28	IT Piston	1.25	0.75	CM-SK-P110608	14.47	CM-H107591	103.46	IT Head	2.25	CM-SK-H107591	18.72

For additional dimensional information on pistons and heads see pages 30 - 36.

* Customer must modify per-machined stub length on some piston styles.



MACHINED CHROME RODS

Quick Reference Chart for Effective Stroke of Machined Chrome Rods

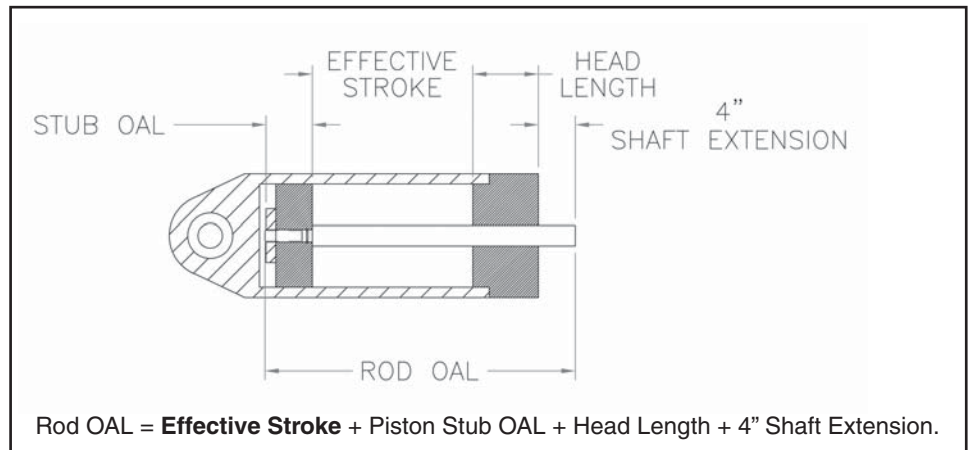
Rod Dia	Part # 12" Stroke	List \$	Part # 24" Stroke	List \$	Part # 36" Stroke	List \$	Part # 48" Stroke	List \$	Part # 60" Stroke	List \$
1.5	CR1001-1.50X24-0.75	107.69	CR1001-1.50X36-0.75	157.64	CR1001-1.50X48-0.75	209.11	CR1001-1.50X60-0.75	259.11	CR1001-1.50X72-0.75	309.24
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
2.5	14.74" Eff. Stroke		26.74" Eff. Stroke		38.74" Eff. Stroke		50.74" Eff. Stroke		62.74" Eff. Stroke	
2.5	14.74" Eff. Stroke		26.74" Eff. Stroke		38.74" Eff. Stroke		50.74" Eff. Stroke		62.74" Eff. Stroke	
2.5	14.87" Eff. Stroke		26.87" Eff. Stroke		38.87" Eff. Stroke		50.87" Eff. Stroke		62.87" Eff. Stroke	
2.5	14.74" Eff. Stroke		26.74" Eff. Stroke		38.74" Eff. Stroke		50.74" Eff. Stroke		62.74" Eff. Stroke	
2.5	14.74" Eff. Stroke		26.74" Eff. Stroke		38.74" Eff. Stroke		50.74" Eff. Stroke		62.74" Eff. Stroke	
2.5	14.87" Eff. Stroke		26.87" Eff. Stroke		38.87" Eff. Stroke		50.87" Eff. Stroke		62.87" Eff. Stroke	
2.5	14.74" Eff. Stroke		26.74" Eff. Stroke		38.74" Eff. Stroke		50.74" Eff. Stroke		62.74" Eff. Stroke	
2.5	14.74" Eff. Stroke		26.74" Eff. Stroke		38.74" Eff. Stroke		50.74" Eff. Stroke		62.74" Eff. Stroke	
2.5	14.87" Eff. Stroke		26.87" Eff. Stroke		38.87" Eff. Stroke		50.87" Eff. Stroke		62.87" Eff. Stroke	
2.5	14.74" Eff. Stroke		26.74" Eff. Stroke		38.74" Eff. Stroke		50.74" Eff. Stroke		62.74" Eff. Stroke	
2.5	14.74" Eff. Stroke		26.74" Eff. Stroke		38.74" Eff. Stroke		50.74" Eff. Stroke		62.74" Eff. Stroke	
2.5	14.87" Eff. Stroke		26.87" Eff. Stroke		38.87" Eff. Stroke		50.87" Eff. Stroke		62.87" Eff. Stroke	
2.5	14.74" Eff. Stroke		26.74" Eff. Stroke		38.74" Eff. Stroke		50.74" Eff. Stroke		62.74" Eff. Stroke	
2.5	14.74" Eff. Stroke		26.74" Eff. Stroke		38.74" Eff. Stroke		50.74" Eff. Stroke		62.74" Eff. Stroke	
2.5	14.87" Eff. Stroke		26.87" Eff. Stroke		38.87" Eff. Stroke		50.87" Eff. Stroke		62.87" Eff. Stroke	
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
3	14.87" Eff. Stroke		26.87" Eff. Stroke		38.87" Eff. Stroke		50.87" Eff. Stroke		62.87" Eff. Stroke	
3	14.37" Eff. Stroke		26.37" Eff. Stroke		38.37" Eff. Stroke		50.37" Eff. Stroke		62.37" Eff. Stroke	
3	14.37" Eff. Stroke		26.37" Eff. Stroke		38.37" Eff. Stroke		50.37" Eff. Stroke		62.37" Eff. Stroke	

CHROME RODS

Rod Dia	Part # 12" Stroke	List \$	Part # 24" Stroke	List \$	Part # 36" Stroke	List \$	Part # 48" Stroke	List \$	Part # 60" Stroke	List \$
1.5	CR1001-1.50X24-1.00	107.69	CR1001-1.50X36-1.00	157.64	CR1001-1.50X48-1.00	209.11	CR1001-1.50X60-1.00	259.11	CR1001-1.50X72-1.00	309.24
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
3	14.57" Eff. Stroke		26.57" Eff. Stroke		38.57" Eff. Stroke		50.57" Eff. Stroke		62.57" Eff. Stroke	
3	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
3	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
3	14.57" Eff. Stroke		26.57" Eff. Stroke		38.57" Eff. Stroke		50.57" Eff. Stroke		62.57" Eff. Stroke	
3	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
3	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
3.25	14.57" Eff. Stroke		26.57" Eff. Stroke		38.57" Eff. Stroke		50.57" Eff. Stroke		62.57" Eff. Stroke	

* Stroke length is dependent upon selection of piston and head type. See following pages for more details.

EFFECTIVE STROKE CALCULATION





Available
April
2010

MACHINED CHROME RODS

Selection Chart for Pistons, Heads and Seal Kits to Accommodate Machine Chrome Rod

Rod Dia	Thread		Stub Dia	Stub OAL	Thread Lgth	Nut Part #	List \$	Nut Lgth					
1.5	1"-14 UNS		1.00	3.185	2.69	CM-LN45100	12.41	1.06					
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
3.5	CM-P110241	76.03	IT Piston	1.25	0.75	CM-SK-P110241	14.47	CM-H107198	111.42	IT Head	2.25	CM-SK-H107198	15.46
3.5	CM-P110241	76.03	IT Piston	1.25	0.75	CM-SK-P110241	14.47	CM-H70013	126.97	TH Head	2.75	CM-SK-H70013	14.77
3.5	CM-P110241	76.03	IT Piston	1.25	0.75	CM-SK-P110241	14.47	CM-H70089	162.89	TK Head	2.75	CM-SK-H70089	14.77
3.5	CM-P70872	62.75	TM Piston	1.00	1.38	CM-SK-P70872	14.47	CM-H107198	111.42	IT Head	2.25	CM-SK-H107198	15.46
3.5	CM-P70872	62.75	TM Piston	1.00	1.38	CM-SK-P70872	14.47	CM-H70013	126.97	TH Head	2.75	CM-SK-H70013	14.77
3.5	CM-P70872	62.75	TM Piston	1.00	1.38	CM-SK-P70872	14.47	CM-H70089	162.89	TK Head	2.75	CM-SK-H70089	14.77
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
4	CM-P110242	78.83	IT Piston	1.25	0.75	CM-SK-P110242	14.47	CM-H107130	114.71	IT Head	2.25	CM-SK-H107130	16.14
4	CM-P110242	78.83	IT Piston	1.25	0.75	CM-SK-P110242	14.47	CM-H70014	186.83	TH Head	2.75	CM-SK-H70014	16.46
4	CM-P110242	78.83	IT Piston	1.25	0.75	CM-SK-P110242	14.47	CM-H70115	182.71	TK Head	2.75	CM-SK-H70115	16.46
4	CM-P70067	76.22	TM Piston	1.00	1.00	CM-SK-P70067	14.47	CM-H107130	114.71	IT Head	2.25	CM-SK-H107130	16.14
4	CM-P70067	76.22	TM Piston	1.00	1.00	CM-SK-P70067	14.47	CM-H70014	186.83	TH Head	2.75	CM-SK-H70014	16.46
4	CM-P70067	76.22	TM Piston	1.00	1.00	CM-SK-P70067	14.47	CM-H70115	182.71	TK Head	2.75	CM-SK-H70115	16.46

Rod Dia	Thread		Stub Dia	Stub OAL	Thread Lgth	Nut Part #	List \$	Nut Lgth					
1.75	1"-14 UNS		1.00	3.185	2.69	CM-LN45100	12.41	1.06					
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
3	CM-P110121	61.35	ITW Piston	2.00	0.00	CM-SK-P110121	20.85	CM-H107189	93.39	IT Head	2.25	CM-SK-H107189	15.46
3	CM-P110121	61.35	ITW Piston	2.00	0.00	CM-SK-P110121	20.85	CM-H107729	102.09	ITW Head	2.62	CM-SK-H107729	25.85
3	CM-P110121	61.35	ITW Piston	2.00	0.00	CM-SK-P110121	20.85	CM-H70560	149.23	TK Head	2.75	CM-SK-H70560	15.49
3	CM-P110121	61.35	ITW Piston	2.00	0.00	CM-SK-P110121	20.85	CM-H70814	117.95	TH Head	2.75	CM-SK-H70814	15.49
3	CM-P70006	78.61	TH Piston	1.75	0.25	CM-SK-P70006	20.26	CM-H107189	93.39	IT Head	2.25	CM-SK-H107189	15.46
3	CM-P70006	78.61	TH Piston	1.75	0.25	CM-SK-P70006	20.26	CM-H107729	102.09	ITW Head	2.62	CM-SK-H107729	25.85
3	CM-P70006	78.61	TH Piston	1.75	0.25	CM-SK-P70006	20.26	CM-H70560	149.23	TK Head	2.75	CM-SK-H70560	15.49
3	CM-P70006	78.61	TH Piston	1.75	0.25	CM-SK-P70006	20.26	CM-H70814	117.95	TH Head	2.75	CM-SK-H70814	15.49
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
3.25	CM-P110608	74.28	IT Piston	1.25	0.75	CM-SK-P110608	14.47	CM-H107592	109.92	IT Head	2.25	CM-SK-H107592	19.66
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
3.5	CM-P110241	76.03	IT Piston	1.25	0.75	CM-SK-P110241	14.47	CM-H107108	112.79	IT Head	2.25	CM-SK-H107108	16.40
3.5	CM-P110241	76.03	IT Piston	1.25	0.75	CM-SK-P110241	14.47	CM-H107791	118.30	ITW Head	2.62	CM-SK-H107791	26.03
3.5	CM-P110241	76.03	IT Piston	1.25	0.75	CM-SK-P110241	14.47	CM-H70504	128.02	TH Head	2.75	CM-SK-H70504	15.35
3.5	CM-P110241	76.03	IT Piston	1.25	0.75	CM-SK-P110241	14.47	CM-H70862	167.79	TK Head	2.75	CM-SK-H70862	14.77
3.5	CM-P70872	62.75	TM Piston	1.00	1.38	CM-SK-P70872	14.47	CM-H107108	112.79	IT Head	2.25	CM-SK-H107108	16.40
3.5	CM-P70872	62.75	TM Piston	1.00	1.38	CM-SK-P70872	14.47	CM-H107791	118.30	ITW Head	2.62	CM-SK-H107791	26.03
3.5	CM-P70872	62.75	TM Piston	1.00	1.38	CM-SK-P70872	14.47	CM-H70504	128.02	TH Head	2.75	CM-SK-H70504	15.35
3.5	CM-P70872	62.75	TM Piston	1.00	1.38	CM-SK-P70872	14.47	CM-H70862	167.79	TK Head	2.75	CM-SK-H70862	14.77

For additional dimensional information on pistons and heads see pages 30 - 36.

* Customer must modify per-machined stub length on some piston styles.

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MACHINED CHROME RODS

Quick Reference Chart for Effective Stroke of Machined Chrome Rods

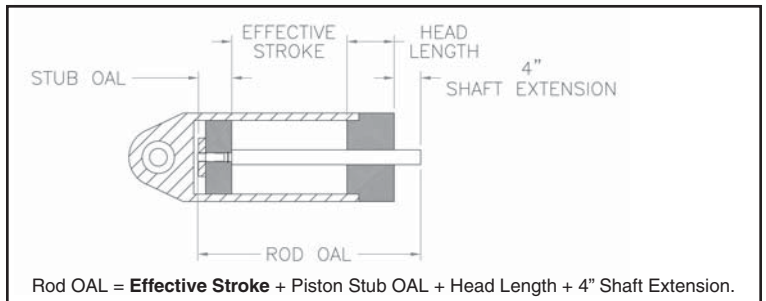
Rod Dia	Part # 12" Stroke	List \$	Part # 24" Stroke	List \$	Part # 36" Stroke	List \$	Part # 48" Stroke	List \$	Part # 60" Stroke	List \$
1.5	CR1001-1.50X24-1.00	107.69	CR1001-1.50X36-1.00	157.64	CR1001-1.50X48-1.00	209.11	CR1001-1.50X60-1.00	259.11	CR1001-1.50X72-1.00	309.24
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
3.5	14.57" Eff. Stroke		26.57" Eff. Stroke		38.57" Eff. Stroke		50.57" Eff. Stroke		62.57" Eff. Stroke	
3.5	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
3.5	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
3.5	14.57" Eff. Stroke		26.57" Eff. Stroke		38.57" Eff. Stroke		50.57" Eff. Stroke		62.57" Eff. Stroke	
3.5	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
3.5	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
4	14.57" Eff. Stroke		26.57" Eff. Stroke		38.57" Eff. Stroke		50.57" Eff. Stroke		62.57" Eff. Stroke	
4	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
4	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
4	14.57" Eff. Stroke		26.57" Eff. Stroke		38.57" Eff. Stroke		50.57" Eff. Stroke		62.57" Eff. Stroke	
4	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
4	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	

Rod Dia	Part # 12" Stroke	List \$	Part # 24" Stroke	List \$	Part # 36" Stroke	List \$	Part # 48" Stroke	List \$	Part # 60" Stroke	List \$
1.75	CR1001-1.75X24-1.00	142.76	CR1001-1.75X36-1.00	209.33	CR1001-1.75X48-1.00	277.24	CR1001-1.75X60-1.00	342.31	CR1001-1.75X72-1.00	408.80
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
3	14.57" Eff. Stroke		26.57" Eff. Stroke		38.57" Eff. Stroke		50.57" Eff. Stroke		62.57" Eff. Stroke	
3	14.20" Eff. Stroke		26.20" Eff. Stroke		38.20" Eff. Stroke		50.20" Eff. Stroke		62.20" Eff. Stroke	
3	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
3	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
3	14.57" Eff. Stroke		26.57" Eff. Stroke		38.57" Eff. Stroke		50.57" Eff. Stroke		62.57" Eff. Stroke	
3	14.20" Eff. Stroke		26.20" Eff. Stroke		38.20" Eff. Stroke		50.20" Eff. Stroke		62.20" Eff. Stroke	
3	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
3	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
3.25	14.57" Eff. Stroke		26.57" Eff. Stroke		38.57" Eff. Stroke		50.57" Eff. Stroke		62.57" Eff. Stroke	
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
3.5	14.57" Eff. Stroke		26.57" Eff. Stroke		38.57" Eff. Stroke		50.57" Eff. Stroke		62.57" Eff. Stroke	
3.5	14.20" Eff. Stroke		26.20" Eff. Stroke		38.20" Eff. Stroke		50.20" Eff. Stroke		62.20" Eff. Stroke	
3.5	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
3.5	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
3.5	14.57" Eff. Stroke		26.57" Eff. Stroke		38.57" Eff. Stroke		50.57" Eff. Stroke		62.57" Eff. Stroke	
3.5	14.20" Eff. Stroke		26.20" Eff. Stroke		38.20" Eff. Stroke		50.20" Eff. Stroke		62.20" Eff. Stroke	
3.5	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
3.5	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	

CHROME RODS

* Stroke length is dependent upon selection of piston and head type. See following pages for more details.

EFFECTIVE STROKE CALCULATION



MACHINED CHROME RODS

Selection Chart for Pistons, Heads and Seal Kits to Accommodate Machine Chrome Rod

Rod Dia	Thread		Stub Dia	Stub OAL	Thread Lgth	Nut Part #	List \$	Nut Lgth					
1.75	1"-14 UNS		1.00	3.185	2.69	CM-LN45100	12.41	1.06					
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
4	CM-P110242	78.83	IT Piston	1.25	0.75	CM-SK-P110242	14.47	CM-H107124	115.34	IT Head	2.25	CM-SK-H107124	17.20
4	CM-P110242	78.83	IT Piston	1.25	0.75	CM-SK-P110242	14.47	CM-H70488	134.86	TH Head	2.75	CM-SK-H70488	17.42
4	CM-P110242	78.83	IT Piston	1.25	0.75	CM-SK-P110242	14.47	CM-H70576	173.57	TK Head	2.75	CM-SK-H70576	17.42
4	CM-P70067	76.22	TM Piston	1.00	1.00	CM-SK-P70067	14.47	CM-H107124	115.34	IT Head	2.25	CM-SK-H107124	17.20
4	CM-P70067	76.22	TM Piston	1.00	1.00	CM-SK-P70067	14.47	CM-H70488	134.86	TH Head	2.75	CM-SK-H70488	17.42
4	CM-P70067	76.22	TM Piston	1.00	1.00	CM-SK-P70067	14.47	CM-H70576	173.57	TK Head	2.75	CM-SK-H70576	17.42

Rod Dia	Thread		Stub Dia	Stub OAL	Thread Lgth	Nut Part #	List \$	Nut Lgth					
2	1"-14 UNS		1.00	3.185	2.69	CM-LN45100	12.41	1.06					
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
3	CM-P110121	61.35	ITW Piston	2.00	0.00	CM-SK-P110121	20.85	CM-H107359	95.05	IT Head	2.50	CM-SK-H107359	15.88
3	CM-P110121	61.35	ITW Piston	2.00	0.00	CM-SK-P110121	20.85	CM-H107548	111.16	ITW Head	2.62	CM-SK-H107548	29.35
3	CM-P110121	61.35	ITW Piston	2.00	0.00	CM-SK-P110121	20.85	CM-H70012	119.61	TH Head	2.75	CM-SK-H70012	17.30
3	CM-P110121	61.35	ITW Piston	2.00	0.00	CM-SK-P110121	20.85	CM-H70165	147.48	TK Head	2.75	CM-SK-H70165	17.30
3	CM-P70006	78.61	TH Piston	1.75	0.25	CM-SK-P70006	20.26	CM-H107359	95.05	IT Head	2.50	CM-SK-H107359	15.88
3	CM-P70006	78.61	TH Piston	1.75	0.25	CM-SK-P70006	20.26	CM-H107548	111.16	ITW Head	2.62	CM-SK-H107548	29.35
3	CM-P70006	78.61	TH Piston	1.75	0.25	CM-SK-P70006	20.26	CM-H70012	119.61	TH Head	2.75	CM-SK-H70012	17.30
3	CM-P70006	78.61	TH Piston	1.75	0.25	CM-SK-P70006	20.26	CM-H70165	147.48	TK Head	2.75	CM-SK-H70165	17.30
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
3.5	CM-P110241	76.03	IT Piston	1.25	0.75	CM-SK-P110241	14.47	CM-H107112	107.54	IT Head	2.25	CM-SK-H107112	18.18
3.5	CM-P110241	76.03	IT Piston	1.25	0.75	CM-SK-P110241	14.47	CM-H107549	112.38	ITW Head	2.62	CM-SK-H107549	30.31
3.5	CM-P110241	76.03	IT Piston	1.25	0.75	CM-SK-P110241	14.47	CM-H70030	127.35	TH Head	2.75	CM-SK-H70030	17.20
3.5	CM-P110241	76.03	IT Piston	1.25	0.75	CM-SK-P110241	14.47	CM-H70167	162.89	TK Head	2.75	CM-SK-H70167	17.20
3.5	CM-P70872	62.75	TM Piston	1.00	1.38	CM-SK-P70872	14.47	CM-H107112	107.54	IT Head	2.25	CM-SK-H107112	18.18
3.5	CM-P70872	62.75	TM Piston	1.00	1.38	CM-SK-P70872	14.47	CM-H107549	112.38	ITW Head	2.62	CM-SK-H107549	30.31
3.5	CM-P70872	62.75	TM Piston	1.00	1.38	CM-SK-P70872	14.47	CM-H70030	127.35	TH Head	2.75	CM-SK-H70030	17.20
3.5	CM-P70872	62.75	TM Piston	1.00	1.38	CM-SK-P70872	14.47	CM-H70167	162.89	TK Head	2.75	CM-SK-H70167	17.20
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
4	CM-P110242	78.83	IT Piston	1.25	0.75	CM-SK-P110242	14.47	CM-H107311	115.56	IT Head	2.25	CM-SK-H107311	18.86
4	CM-P110242	78.83	IT Piston	1.25	0.75	CM-SK-P110242	14.47	CM-H107550	129.87	ITW Head	3.25	CM-SK-H107550	33.50
4	CM-P110242	78.83	IT Piston	1.25	0.75	CM-SK-P110242	14.47	CM-H70015	135.34	TH Head	2.75	CM-SK-H70015	19.24
4	CM-P110242	78.83	IT Piston	1.25	0.75	CM-SK-P110242	14.47	CM-H70116	182.71	TK Head	2.75	CM-SK-H70116	19.24
4	CM-P70067	76.22	TM Piston	1.00	1.00	CM-SK-P70067	14.47	CM-H107311	115.56	IT Head	2.25	CM-SK-H107311	18.86
4	CM-P70067	76.22	TM Piston	1.00	1.00	CM-SK-P70067	14.47	CM-H107550	129.87	ITW Head	3.25	CM-SK-H107550	33.50
4	CM-P70067	76.22	TM Piston	1.00	1.00	CM-SK-P70067	14.47	CM-H70015	135.34	TH Head	2.75	CM-SK-H70015	19.24
4	CM-P70067	76.22	TM Piston	1.00	1.00	CM-SK-P70067	14.47	CM-H70116	182.71	TK Head	2.75	CM-SK-H70116	19.24

For additional dimensional information on pistons and heads see pages 30 - 36.

* Customer must modify per-machined stub length on some piston styles.



MACHINED CHROME RODS

Quick Reference Chart for Effective Stroke of Machined Chrome Rods

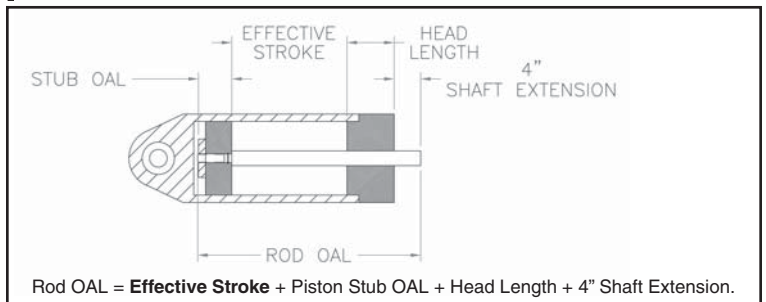
Rod Dia	Part # 12" Stroke	List \$	Part # 24" Stroke	List \$	Part # 36" Stroke	List \$	Part # 48" Stroke	List \$	Part # 60" Stroke	List \$
1.75	CR1001-1.75X24-1.00	142.76	CR1001-1.75X36-1.00	209.33	CR1001-1.75X48-1.00	277.24	CR1001-1.75X60-1.00	342.31	CR1001-1.75X72-1.00	408.80
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
4	14.57" Eff. Stroke		26.57" Eff. Stroke		38.57" Eff. Stroke		50.57" Eff. Stroke		62.57" Eff. Stroke	
4	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
4	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
4	14.57" Eff. Stroke		26.57" Eff. Stroke		38.57" Eff. Stroke		50.57" Eff. Stroke		62.57" Eff. Stroke	
4	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
4	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	

Rod Dia	Part # 12" Stroke	List \$	Part # 24" Stroke	List \$	Part # 36" Stroke	List \$	Part # 48" Stroke	List \$	Part # 60" Stroke	List \$
2	CR1001-2.00X24-1.00	147.69	CR1001-2.00X36-1.00	218.04	CR1001-2.00X48-1.00	287.16	CR1001-2.00X60-1.00	357.51	CR1001-2.00X72-1.00	426.67
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
3	14.32" Eff. Stroke		26.32" Eff. Stroke		38.32" Eff. Stroke		50.32" Eff. Stroke		62.32" Eff. Stroke	
3	14.20" Eff. Stroke		26.20" Eff. Stroke		38.20" Eff. Stroke		50.20" Eff. Stroke		62.20" Eff. Stroke	
3	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
3	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
3	14.32" Eff. Stroke		26.32" Eff. Stroke		38.32" Eff. Stroke		50.32" Eff. Stroke		62.32" Eff. Stroke	
3	14.20" Eff. Stroke		26.20" Eff. Stroke		38.20" Eff. Stroke		50.20" Eff. Stroke		62.20" Eff. Stroke	
3	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
3	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
3.5	14.57" Eff. Stroke		26.57" Eff. Stroke		38.57" Eff. Stroke		50.57" Eff. Stroke		62.57" Eff. Stroke	
3.5	14.20" Eff. Stroke		26.20" Eff. Stroke		38.20" Eff. Stroke		50.20" Eff. Stroke		62.20" Eff. Stroke	
3.5	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
3.5	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
3.5	14.57" Eff. Stroke		26.57" Eff. Stroke		38.57" Eff. Stroke		50.57" Eff. Stroke		62.57" Eff. Stroke	
3.5	14.20" Eff. Stroke		26.20" Eff. Stroke		38.20" Eff. Stroke		50.20" Eff. Stroke		62.20" Eff. Stroke	
3.5	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
3.5	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
4	14.57" Eff. Stroke		26.57" Eff. Stroke		38.57" Eff. Stroke		50.57" Eff. Stroke		62.57" Eff. Stroke	
4	13.57" Eff. Stroke		25.57" Eff. Stroke		37.57" Eff. Stroke		49.57" Eff. Stroke		61.57" Eff. Stroke	
4	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
4	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
4	14.57" Eff. Stroke		26.57" Eff. Stroke		38.57" Eff. Stroke		50.57" Eff. Stroke		62.57" Eff. Stroke	
4	13.57" Eff. Stroke		25.57" Eff. Stroke		37.57" Eff. Stroke		49.57" Eff. Stroke		61.57" Eff. Stroke	
4	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	
4	14.07" Eff. Stroke		26.07" Eff. Stroke		38.07" Eff. Stroke		50.07" Eff. Stroke		62.07" Eff. Stroke	

CHROME RODS

* Stroke length is dependent upon selection of piston and head type. See following pages for more details.

EFFECTIVE STROKE CALCULATION



MACHINED CHROME RODS

Selection Chart for Pistons, Heads and Seal Kits to Accommodate Machine Chrome Rod

Rod Dia	Thread		Stub Dia	Stub OAL	Thread Lgth	Nut Part #	List \$	Nut Lgth					
2	1-1/4"-12 UNF		1.25	3.63	2.255	CM-LN45126	21.47	1.38					
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
4	CM-P70010	95.75	TH Piston	1.75	0.38	CM-SK-P70010	27.47	CM-H107311	115.56	IT Head	2.25	CM-SK-H107311	18.86
4	CM-P70010	95.75	TH Piston	1.75	0.38	CM-SK-P70010	27.47	CM-H107550	129.87	ITW Head	3.25	CM-SK-H107550	33.50
4	CM-P70010	95.75	TH Piston	1.75	0.38	CM-SK-P70010	27.47	CM-H70015	135.34	TH Head	2.75	CM-SK-H70015	19.24
4	CM-P70010	95.75	TH Piston	1.75	0.38	CM-SK-P70010	27.47	CM-H70116	182.71	TK Head	2.75	CM-SK-H70116	19.24
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
4.5	CM-P110537	73.68	ITW Piston	2.00	0.00	CM-SK-P110537	36.31	CM-H107200	139.51	IT Head	2.25	CM-SK-H107200	20.21
4.5	CM-P110537	73.68	ITW Piston	2.00	0.00	CM-SK-P110537	36.31	CM-H107716	203.09	ITW Head	3.25	CM-SK-H107716	42.22
4.5	CM-P110537	73.68	ITW Piston	2.00	0.00	CM-SK-P110537	36.31	CM-H70276	158.15	TH Head	2.75	CM-SK-H70276	20.61
4.5	CM-P110537	73.68	ITW Piston	2.00	0.00	CM-SK-P110537	36.31	CM-H70367	210.93	TK Head	2.75	CM-SK-H70367	20.61
4.5	CM-P70275	104.57	TH Piston	1.75	0.38	CM-SK-P70275	30.18	CM-H107200	139.51	IT Head	2.25	CM-SK-H107200	20.21
4.5	CM-P70275	104.57	TH Piston	1.75	0.38	CM-SK-P70275	30.18	CM-H107716	203.09	ITW Head	3.25	CM-SK-H107716	42.22
4.5	CM-P70275	104.57	TH Piston	1.75	0.38	CM-SK-P70275	30.18	CM-H70276	158.15	TH Head	2.75	CM-SK-H70276	20.61
4.5	CM-P70275	104.57	TH Piston	1.75	0.38	CM-SK-P70275	30.18	CM-H70367	210.93	TK Head	2.75	CM-SK-H70367	20.61
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
5	CM-P110248	85.30	ITW Piston	2.00	0.00	CM-SK-P110248	29.19	CM-H107212	139.32	IT Head	2.25	CM-SK-H107212	20.54
5	CM-P110248	85.30	ITW Piston	2.00	0.00	CM-SK-P110248	29.19	CM-H107679	183.66	ITW Head	3.00	CM-SK-H107679	22.85
5	CM-P110248	85.30	ITW Piston	2.00	0.00	CM-SK-P110248	29.19	CM-H70037	181.40	TH Head	3.00	CM-SK-H70037	21.80
5	CM-P110248	85.30	ITW Piston	2.00	0.00	CM-SK-P110248	29.19	CM-H70114	246.70	TK Head	3.00	CM-SK-H70114	21.80
5	CM-P70018	140.69	TH Piston	2.00	0.00	CM-SK-P70018	51.79	CM-H107212	139.32	IT Head	2.25	CM-SK-H107212	20.54
5	CM-P70018	140.69	TH Piston	2.00	0.00	CM-SK-P70018	51.79	CM-H107679	183.66	ITW Head	3.00	CM-SK-H107679	22.85
5	CM-P70018	140.69	TH Piston	2.00	0.00	CM-SK-P70018	51.79	CM-H70037	181.40	TH Head	3.00	CM-SK-H70037	21.80
5	CM-P70018	140.69	TH Piston	2.00	0.00	CM-SK-P70018	51.79	CM-H70114	246.70	TK Head	3.00	CM-SK-H70114	21.80
5	CM-P70090	120.34	TM Piston	1.50	0.62	CM-SK-P70090	14.47	CM-H107212	139.32	IT Head	2.25	CM-SK-H107212	20.54
5	CM-P70090	120.34	TM Piston	1.50	0.62	CM-SK-P70090	14.47	CM-H107679	183.66	ITW Head	3.00	CM-SK-H107679	22.85
5	CM-P70090	120.34	TM Piston	1.50	0.62	CM-SK-P70090	14.47	CM-H70037	181.40	TH Head	3.00	CM-SK-H70037	21.80
5	CM-P70090	120.34	TM Piston	1.50	0.62	CM-SK-P70090	14.47	CM-H70114	246.70	TK Head	3.00	CM-SK-H70114	21.80
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
5.5	CM-P110511	121.48	ITW Piston	2.120	0.00	CM-SK-P110511	34.17	CM-H70153	275.52	TH Head	3.00	CM-SK-H70153	22.33
5.5	CM-P110511	121.48	ITW Piston	2.120	0.00	CM-SK-P110511	34.17	CM-H70389	274.18	TK Head	3.00	CM-SK-H70389	22.33
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
6	CM-P110249	129.48	ITW Piston	2.120	0.00	CM-SK-P110249	41.76	CM-H107345	149.49	IT Head	2.50	CM-SK-H107345	21.65
6	CM-P110249	129.48	ITW Piston	2.120	0.00	CM-SK-P110249	41.76	CM-H70041	271.99	TH Head	3.00	CM-SK-H70041	23.33
6	CM-P110249	129.48	ITW Piston	2.120	0.00	CM-SK-P110249	41.76	CM-H70112	305.76	TK Head	3.00	CM-SK-H70112	23.33

For additional dimensional information on pistons and heads see pages 30 - 36.

* Customer must modify per-machined stub length on some piston styles.



MACHINED CHROME RODS

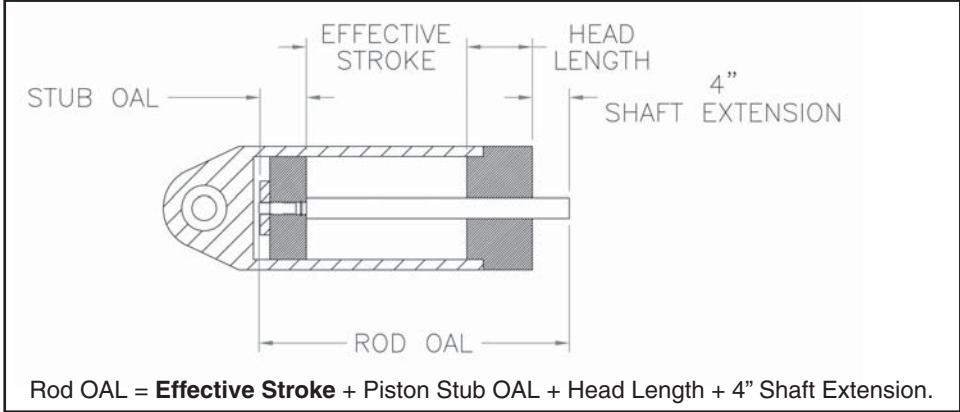
Quick Reference Chart for Effective Stroke of Machined Chrome Rods

Rod Dia	Part # 12" Stroke	List \$	Part # 24" Stroke	List \$	Part # 36" Stroke	List \$	Part # 48" Stroke	List \$	Part # 60" Stroke	List \$
2	CR1001-2.00X24-1.25	147.69	CR1001-2.00X36-1.25	218.04	CR1001-2.00X48-1.25	287.16	CR1001-2.00X60-1.25	357.51	CR1001-2.00X72-1.25	426.67
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
4	14.12" Eff. Stroke		26.12" Eff. Stroke		38.12" Eff. Stroke		50.12" Eff. Stroke		62.12" Eff. Stroke	
4	13.12" Eff. Stroke		25.12" Eff. Stroke		37.12" Eff. Stroke		49.12" Eff. Stroke		61.12" Eff. Stroke	
4	13.62" Eff. Stroke		25.62" Eff. Stroke		37.62" Eff. Stroke		49.62" Eff. Stroke		61.62" Eff. Stroke	
4	13.62" Eff. Stroke		25.62" Eff. Stroke		37.62" Eff. Stroke		49.62" Eff. Stroke		61.62" Eff. Stroke	
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
4.5	14.12" Eff. Stroke		26.12" Eff. Stroke		38.12" Eff. Stroke		50.12" Eff. Stroke		62.12" Eff. Stroke	
4.5	13.12" Eff. Stroke		25.12" Eff. Stroke		37.12" Eff. Stroke		49.12" Eff. Stroke		61.12" Eff. Stroke	
4.5	13.62" Eff. Stroke		25.62" Eff. Stroke		37.62" Eff. Stroke		49.62" Eff. Stroke		61.62" Eff. Stroke	
4.5	13.62" Eff. Stroke		25.62" Eff. Stroke		37.62" Eff. Stroke		49.62" Eff. Stroke		61.62" Eff. Stroke	
4.5	14.12" Eff. Stroke		26.12" Eff. Stroke		38.12" Eff. Stroke		50.12" Eff. Stroke		62.12" Eff. Stroke	
4.5	13.12" Eff. Stroke		25.12" Eff. Stroke		37.12" Eff. Stroke		49.12" Eff. Stroke		61.12" Eff. Stroke	
4.5	13.62" Eff. Stroke		25.62" Eff. Stroke		37.62" Eff. Stroke		49.62" Eff. Stroke		61.62" Eff. Stroke	
4.5	13.62" Eff. Stroke		25.62" Eff. Stroke		37.62" Eff. Stroke		49.62" Eff. Stroke		61.62" Eff. Stroke	
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
5	14.12" Eff. Stroke		26.12" Eff. Stroke		38.12" Eff. Stroke		50.12" Eff. Stroke		62.12" Eff. Stroke	
5	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
5	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
5	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
5	14.12" Eff. Stroke		26.12" Eff. Stroke		38.12" Eff. Stroke		50.12" Eff. Stroke		62.12" Eff. Stroke	
5	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
5	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
5	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
5	14.12" Eff. Stroke		26.12" Eff. Stroke		38.12" Eff. Stroke		50.12" Eff. Stroke		62.12" Eff. Stroke	
5	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
5	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
5	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
5.5	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
5.5	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
Bore Dia	12" Nominal Stroke		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
6	13.87" Eff. Stroke		25.87" Eff. Stroke		37.87" Eff. Stroke		49.87" Eff. Stroke		61.87" Eff. Stroke	
6	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
6	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	

CHROME RODS

* Stroke length is dependent upon selection of piston and head type. See following pages for more details.

EFFECTIVE STROKE CALCULATION



MACHINED CHROME RODS

Selection Chart for Pistons, Heads and Seal Kits to Accommodate Machine Chrome Rod

Rod Dia	Thread		Stub Dia	Stub OAL	Thread Lgth	Nut Part #	List \$	Nut Lgth					
2.5	1-1/4"-12 UNF		1.25	3.630	2.255	CM-LN45126	21.47	1.38					
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
4	CM-P70010	95.75	TH Piston	1.750	0.38	CM-SK-P70010	27.47	CM-H107386	116.01	IT Head	2.50	CM-SK-H107386	22.24
4	CM-P70010	95.75	TH Piston	1.750	0.38	CM-SK-P70010	27.47	CM-H107551	146.30	ITW Head	3.25	CM-SK-H107551	38.74
4	CM-P70010	95.75	TH Piston	1.750	0.38	CM-SK-P70010	27.47	CM-H70032	134.77	TH Head	2.75	CM-SK-H70032	22.67
4	CM-P70010	95.75	TH Piston	1.750	0.38	CM-SK-P70010	27.47	CM-H70168	182.71	TK Head	2.75	CM-SK-H70168	22.67
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
4.5	CM-P110537	73.68	ITW Piston	2.000	0.00	CM-SK-P110537	36.31	CM-H107552	176.62	ITW Head	3.25	CM-SK-H107552	34.85
4.5	CM-P110537	73.68	ITW Piston	2.000	0.00	CM-SK-P110537	36.31	CM-H70310	158.88	TH Head	2.75	CM-SK-H70310	24.04
4.5	CM-P110537	73.68	ITW Piston	2.000	0.00	CM-SK-P110537	36.31	CM-H70378	194.33	TK Head	2.75	CM-SK-H70378	24.04
4.5	CM-P70275	104.57	TH Piston	1.750	0.38	CM-SK-P70275	30.18	CM-H107552	176.62	ITW Head	3.25	CM-SK-H107552	34.85
4.5	CM-P70275	104.57	TH Piston	1.750	0.38	CM-SK-P70275	30.18	CM-H70310	158.88	TH Head	2.75	CM-SK-H70310	24.04
4.5	CM-P70275	104.57	TH Piston	1.750	0.38	CM-SK-P70275	30.18	CM-H70378	194.33	TK Head	2.75	CM-SK-H70378	24.04
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
5	CM-P110248	85.30	ITW Piston	2.000	0.00	CM-SK-P110248	29.19	CM-H107204	139.87	IT Head	2.50	CM-SK-H107204	23.91
5	CM-P110248	85.30	ITW Piston	2.000	0.00	CM-SK-P110248	29.19	CM-H107554	182.04	ITW Head	3.62	CM-SK-H107554	45.70
5	CM-P110248	85.30	ITW Piston	2.000	0.00	CM-SK-P110248	29.19	CM-H70038	181.72	TH Head	3.00	CM-SK-H70038	25.23
5	CM-P110248	85.30	ITW Piston	2.000	0.00	CM-SK-P110248	29.19	CM-H70113	246.70	TK Head	3.00	CM-SK-H70113	25.23
5	CM-P70018	140.69	TH Piston	2.000	0.00	CM-SK-P70018	51.79	CM-H107204	139.87	IT Head	2.50	CM-SK-H107204	23.91
5	CM-P70018	140.69	TH Piston	2.000	0.00	CM-SK-P70018	51.79	CM-H107554	182.04	ITW Head	3.62	CM-SK-H107554	45.70
5	CM-P70018	140.69	TH Piston	2.000	0.00	CM-SK-P70018	51.79	CM-H70038	181.72	TH Head	3.00	CM-SK-H70038	25.23
5	CM-P70018	140.69	TH Piston	2.000	0.00	CM-SK-P70018	51.79	CM-H70113	246.70	TK Head	3.00	CM-SK-H70113	25.23
5	CM-P70090	120.34	TM Piston	1.500	0.62	CM-SK-P70090	14.47	CM-H107204	139.87	IT Head	2.50	CM-SK-H107204	23.91
5	CM-P70090	120.34	TM Piston	1.500	0.62	CM-SK-P70090	14.47	CM-H107554	182.04	ITW Head	3.62	CM-SK-H107554	45.70
5	CM-P70090	120.34	TM Piston	1.500	0.62	CM-SK-P70090	14.47	CM-H70038	181.72	TH Head	3.00	CM-SK-H70038	25.23
5	CM-P70090	120.34	TM Piston	1.500	0.62	CM-SK-P70090	14.47	CM-H70113	246.70	TK Head	3.00	CM-SK-H70113	25.23
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
5.5	CM-P110511	121.48	ITW Piston	2.120	0.00	CM-SK-P110511	34.17	CM-H107611	208.41	ITW Head	3.62	CM-SK-H107611	47.24
5.5	CM-P110511	121.48	ITW Piston	2.120	0.00	CM-SK-P110511	34.17	CM-H70142	276.83	TH Head	3.00	CM-SK-H70142	25.76
5.5	CM-P110511	121.48	ITW Piston	2.120	0.00	CM-SK-P110511	34.17	CM-H70390	274.18	TK Head	3.00	CM-SK-H70390	25.76
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$
6	CM-P110249	129.48	ITW Piston	2.120	0.00	CM-SK-P110249	41.76	CM-H107206	176.94	IT Head	2.50	CM-SK-H107206	25.00
6	CM-P110249	129.48	ITW Piston	2.120	0.00	CM-SK-P110249	41.76	CM-H107556	232.90	ITW Head	3.62	CM-SK-H107556	46.83
6	CM-P110249	129.48	ITW Piston	2.120	0.00	CM-SK-P110249	41.76	CM-H70042	259.02	TH Head	3.00	CM-SK-H70042	26.76
6	CM-P110249	129.48	ITW Piston	2.120	0.00	CM-SK-P110249	41.76	CM-H70111	305.76	TK Head	3.00	CM-SK-H70111	26.76

CHROME RODS

For additional dimensional information on pistons and heads see pages 30 - 36.

* Customer must modify per-machined stub length on some piston styles.

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MACHINED CHROME RODS

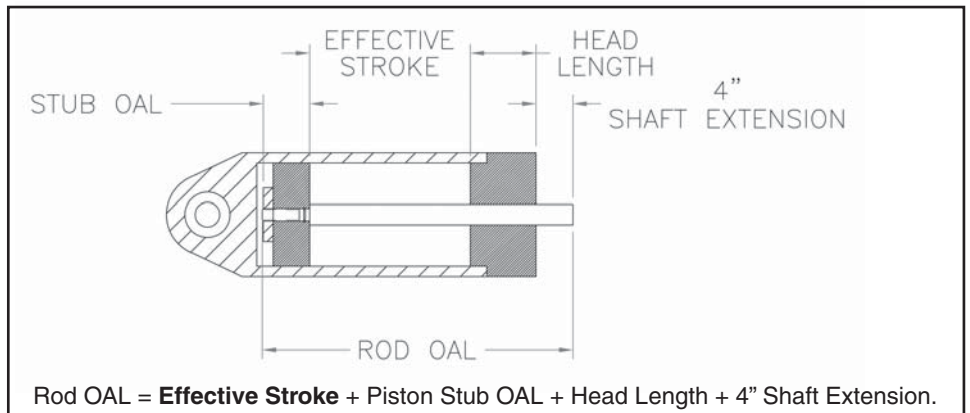
Quick Reference Chart for Effective Stroke of Machined Chrome Rods

Rod Dia	Part # 12" Stroke	List \$	Part # 24" Stroke	List \$	Part # 36" Stroke	List \$	Part # 48" Stroke	List \$	Part # 60" Stroke	List \$
2.5	CR1001-2.50X24-1.25	209.20	CR1001-2.50X36-1.25	308.80	CR1001-2.50X48-1.25	408.36	CR1001-2.50X60-1.25	507.82	CR1001-2.50X72-1.25	606.27
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
4	13.87" Eff. Stroke		25.87" Eff. Stroke		37.87" Eff. Stroke		49.87" Eff. Stroke		61.87" Eff. Stroke	
4	13.12" Eff. Stroke		25.12" Eff. Stroke		37.12" Eff. Stroke		49.12" Eff. Stroke		61.12" Eff. Stroke	
4	13.62" Eff. Stroke		25.62" Eff. Stroke		37.62" Eff. Stroke		49.62" Eff. Stroke		61.62" Eff. Stroke	
4	13.62" Eff. Stroke		25.62" Eff. Stroke		37.62" Eff. Stroke		49.62" Eff. Stroke		61.62" Eff. Stroke	
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
4.5	13.12" Eff. Stroke		25.12" Eff. Stroke		37.12" Eff. Stroke		49.12" Eff. Stroke		61.12" Eff. Stroke	
4.5	13.62" Eff. Stroke		25.62" Eff. Stroke		37.62" Eff. Stroke		49.62" Eff. Stroke		61.62" Eff. Stroke	
4.5	13.62" Eff. Stroke		25.62" Eff. Stroke		37.62" Eff. Stroke		49.62" Eff. Stroke		61.62" Eff. Stroke	
4.5	13.12" Eff. Stroke		25.12" Eff. Stroke		37.12" Eff. Stroke		49.12" Eff. Stroke		61.12" Eff. Stroke	
4.5	13.62" Eff. Stroke		25.62" Eff. Stroke		37.62" Eff. Stroke		49.62" Eff. Stroke		61.62" Eff. Stroke	
4.5	13.62" Eff. Stroke		25.62" Eff. Stroke		37.62" Eff. Stroke		49.62" Eff. Stroke		61.62" Eff. Stroke	
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
5	13.87" Eff. Stroke		25.87" Eff. Stroke		37.87" Eff. Stroke		49.87" Eff. Stroke		61.87" Eff. Stroke	
5	12.75" Eff. Stroke		24.75" Eff. Stroke		36.75" Eff. Stroke		48.75" Eff. Stroke		60.75" Eff. Stroke	
5	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
5	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
5	13.87" Eff. Stroke		25.87" Eff. Stroke		37.87" Eff. Stroke		49.87" Eff. Stroke		61.87" Eff. Stroke	
5	12.75" Eff. Stroke		24.75" Eff. Stroke		36.75" Eff. Stroke		48.75" Eff. Stroke		60.75" Eff. Stroke	
5	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
5	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
5	13.87" Eff. Stroke		25.87" Eff. Stroke		37.87" Eff. Stroke		49.87" Eff. Stroke		61.87" Eff. Stroke	
5	12.75" Eff. Stroke		24.75" Eff. Stroke		36.75" Eff. Stroke		48.75" Eff. Stroke		60.75" Eff. Stroke	
5	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
5	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
5.5	12.75" Eff. Stroke		24.75" Eff. Stroke		36.75" Eff. Stroke		48.75" Eff. Stroke		60.75" Eff. Stroke	
5.5	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
5.5	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
6	13.87" Eff. Stroke		25.87" Eff. Stroke		37.87" Eff. Stroke		49.87" Eff. Stroke		61.87" Eff. Stroke	
6	12.75" Eff. Stroke		24.75" Eff. Stroke		36.75" Eff. Stroke		48.75" Eff. Stroke		60.75" Eff. Stroke	
6	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
6	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	

CHROME RODS

* Stroke length is dependent upon selection of piston and head type. See following pages for more details.

EFFECTIVE STROKE CALCULATION



MACHINED CHROME RODS

Selection Chart for Pistons, Heads and Seal Kits to Accommodate Machine Chrome Rod

Rod Dia	Thread		Stub Dia	Stub OAL	Thread Lgth	Nut Part #	List \$	Nut Lgth						
3	1-1/4"-12 UNF		1.25	3.63	2.255	CM-LN45126	21.47	1.38						
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$	
4	CM-P70010	95.75	TH Piston	1.75	0.38	CM-SK-P70010	27.47	CM-H107525	110.91	IT Head	2.50	CM-SK-H107525	21.69	
4	CM-P70010	95.75	TH Piston	1.75	0.38	CM-SK-P70010	27.47	CM-H107640	155.67	ITW Head	3.62	CM-SK-H107640	54.62	
4	CM-P70010	95.75	TH Piston	1.75	0.38	CM-SK-P70010	27.47	CM-H70033	140.18	TH Head	2.75	CM-SK-H70033	25.44	
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$	
4.5	CM-P110537	73.68	ITW Piston	2.00	0.00	CM-SK-P110537	36.31	CM-H107553	160.35	ITW Head	3.25	CM-SK-H107553	42.70	
4.5	CM-P110537	73.68	ITW Piston	2.00	0.00	CM-SK-P110537	36.31	CM-H70377	172.68	TH Head	2.75	CM-SK-H70377	26.81	
4.5	CM-P110537	73.68	ITW Piston	2.00	0.00	CM-SK-P110537	36.31	CM-H70379	210.93	TK Head	2.75	CM-SK-H70379	26.81	
4.5	CM-P70275	104.57	TH Piston	1.75	0.38	CM-SK-P70275	30.18	CM-H107553	160.35	ITW Head	3.25	CM-SK-H107553	42.70	
4.5	CM-P70275	104.57	TH Piston	1.75	0.38	CM-SK-P70275	30.18	CM-H70377	172.68	TH Head	2.75	CM-SK-H70377	26.81	
4.5	CM-P70275	104.57	TH Piston	1.75	0.38	CM-SK-P70275	30.18	CM-H70379	210.93	TK Head	2.75	CM-SK-H70379	26.81	
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$	
5	CM-P110248	85.30	ITW Piston	2.00	0.00	CM-SK-P110248	29.19	CM-H107205	147.98	IT Head	2.50	CM-SK-H107205	26.63	
5	CM-P110248	85.30	ITW Piston	2.00	0.00	CM-SK-P110248	29.19	CM-H107555	193.35	ITW Head	3.62	CM-SK-H107555	64.78	
5	CM-P110248	85.30	ITW Piston	2.00	0.00	CM-SK-P110248	29.19	CM-H70039	182.20	TH Head	3.00	CM-SK-H70039	28.00	
5	CM-P110248	85.30	ITW Piston	2.00	0.00	CM-SK-P110248	29.19	CM-H70107	231.92	TK Head	3.00	CM-SK-H70107	28.00	
5	CM-P70018	140.69	TH Piston	2.00	0.00	CM-SK-P70018	51.79	CM-H107205	147.98	IT Head	2.50	CM-SK-H107205	26.63	
5	CM-P70018	140.69	TH Piston	2.00	0.00	CM-SK-P70018	51.79	CM-H107555	193.35	ITW Head	3.62	CM-SK-H107555	64.78	
5	CM-P70018	140.69	TH Piston	2.00	0.00	CM-SK-P70018	51.79	CM-H70039	182.20	TH Head	3.00	CM-SK-H70039	28.00	
5	CM-P70018	140.69	TH Piston	2.00	0.00	CM-SK-P70018	51.79	CM-H70107	231.92	TK Head	3.00	CM-SK-H70107	28.00	
5	CM-P70090	120.34	TM Piston	1.50	0.62	CM-SK-P70090	14.47	CM-H107205	147.98	IT Head	2.50	CM-SK-H107205	26.63	
5	CM-P70090	120.34	TM Piston	1.50	0.62	CM-SK-P70090	14.47	CM-H107555	193.35	ITW Head	3.62	CM-SK-H107555	64.78	
5	CM-P70090	120.34	TM Piston	1.50	0.62	CM-SK-P70090	14.47	CM-H70039	182.20	TH Head	3.00	CM-SK-H70039	28.00	
5	CM-P70090	120.34	TM Piston	1.50	0.62	CM-SK-P70090	14.47	CM-H70107	231.92	TK Head	3.00	CM-SK-H70107	28.00	
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$	
5.5	CM-P110511	121.48	ITW Piston	2.12	0.00	CM-SK-P110511	34.17	CM-H107612	202.93	ITW Head	3.62	CM-SK-H107612	66.32	
5.5	CM-P110511	121.48	ITW Piston	2.12	0.00	CM-SK-P110511	34.17	CM-H70143	277.31	TH Head	3.00	CM-SK-H70143	28.54	
5.5	CM-P110511	121.48	ITW Piston	2.12	0.00	CM-SK-P110511	34.17	CM-H70391	237.68	TK Head	3.00	CM-SK-H70391	28.54	
Bore Dia	Piston Part #	List \$	Piston Style	Piston Lgth	Stub Cut*	Piston Seal Kit	List \$	Head Part#	List \$	Head Style	Head Lgth	Seal Kit	List \$	
6	CM-P110249	129.48	ITW Piston	2.12	0.00	CM-SK-P110249	41.76	CM-H107207	207.62	IT Head	2.50	CM-SK-H107207	27.72	
6	CM-P110249	129.48	ITW Piston	2.12	0.00	CM-SK-P110249	41.76	CM-H107557	233.35	ITW Head	3.62	CM-SK-H107557	65.90	
6	CM-P110249	129.48	ITW Piston	2.12	0.00	CM-SK-P110249	41.76	CM-H70043	272.79	TH Head	3.00	CM-SK-H70043	29.54	
6	CM-P110249	129.48	ITW Piston	2.12	0.00	CM-SK-P110249	41.76	CM-H70108	281.95	TK Head	3.00	CM-SK-H70108	29.54	

CHROME RODS

For additional dimensional information on pistons and heads see pages 30 - 36.

* Customer must modify per-machined stub length on some piston styles.

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MACHINED CHROME RODS

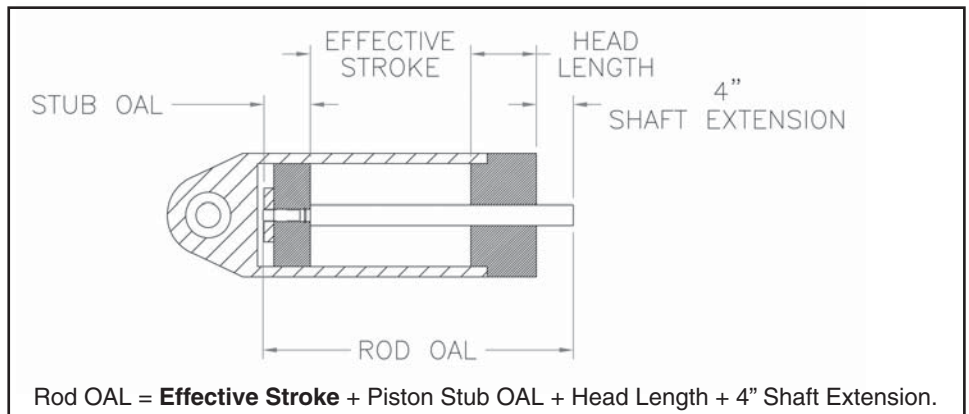
Quick Reference Chart for Effective Stroke of Machined Chrome Rods

Rod Dia	Part # 12" Stroke	List \$	Part # 24" Stroke	List \$	Part # 36" Stroke	List \$	Part # 48" Stroke	List \$	Part # 60" Stroke	List \$
3	CR1001-3.00X24-1.25	283.87	CR1001-3.00X36-1.25	419.29	CR1001-3.00X48-1.25	554.71	CR1001-3.00X60-1.25	690.13	CR1001-3.00X72-1.25	825.51
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
4	13.87" Eff. Stroke		25.87" Eff. Stroke		37.87" Eff. Stroke		49.87" Eff. Stroke		61.87" Eff. Stroke	
4	12.75" Eff. Stroke		24.75" Eff. Stroke		36.75" Eff. Stroke		48.75" Eff. Stroke		60.75" Eff. Stroke	
4	13.62" Eff. Stroke		25.62" Eff. Stroke		37.62" Eff. Stroke		49.62" Eff. Stroke		61.62" Eff. Stroke	
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
4.5	13.12" Eff. Stroke		25.12" Eff. Stroke		37.12" Eff. Stroke		49.12" Eff. Stroke		61.12" Eff. Stroke	
4.5	13.62" Eff. Stroke		25.62" Eff. Stroke		37.62" Eff. Stroke		49.62" Eff. Stroke		61.62" Eff. Stroke	
4.5	13.62" Eff. Stroke		25.62" Eff. Stroke		37.62" Eff. Stroke		49.62" Eff. Stroke		61.62" Eff. Stroke	
4.5	13.12" Eff. Stroke		25.12" Eff. Stroke		37.12" Eff. Stroke		49.12" Eff. Stroke		61.12" Eff. Stroke	
4.5	13.62" Eff. Stroke		25.62" Eff. Stroke		37.62" Eff. Stroke		49.62" Eff. Stroke		61.62" Eff. Stroke	
4.5	13.62" Eff. Stroke		25.62" Eff. Stroke		37.62" Eff. Stroke		49.62" Eff. Stroke		61.62" Eff. Stroke	
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
5	13.87" Eff. Stroke		25.87" Eff. Stroke		37.87" Eff. Stroke		49.87" Eff. Stroke		61.87" Eff. Stroke	
5	12.75" Eff. Stroke		24.75" Eff. Stroke		36.75" Eff. Stroke		48.75" Eff. Stroke		60.75" Eff. Stroke	
5	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
5	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
5	13.87" Eff. Stroke		25.87" Eff. Stroke		37.87" Eff. Stroke		49.87" Eff. Stroke		61.87" Eff. Stroke	
5	12.75" Eff. Stroke		24.75" Eff. Stroke		36.75" Eff. Stroke		48.75" Eff. Stroke		60.75" Eff. Stroke	
5	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
5	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
5	13.87" Eff. Stroke		25.87" Eff. Stroke		37.87" Eff. Stroke		49.87" Eff. Stroke		61.87" Eff. Stroke	
5	12.75" Eff. Stroke		24.75" Eff. Stroke		36.75" Eff. Stroke		48.75" Eff. Stroke		60.75" Eff. Stroke	
5	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
5	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
5.5	12.75" Eff. Stroke		24.75" Eff. Stroke		36.75" Eff. Stroke		48.75" Eff. Stroke		60.75" Eff. Stroke	
5.5	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
5.5	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
Bore Dia	12" Nominal Stroke (24" OAL)		24" Nominal Stroke (36" OAL)		36" Nominal Stroke (48" OAL)		48" Nominal Stroke (60" OAL)		60" Nominal Stroke (72" OAL)	
6	13.87" Eff. Stroke		25.87" Eff. Stroke		37.87" Eff. Stroke		49.87" Eff. Stroke		61.87" Eff. Stroke	
6	12.75" Eff. Stroke		24.75" Eff. Stroke		36.75" Eff. Stroke		48.75" Eff. Stroke		60.75" Eff. Stroke	
6	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	
6	13.37" Eff. Stroke		25.37" Eff. Stroke		37.37" Eff. Stroke		49.37" Eff. Stroke		61.37" Eff. Stroke	

CHROME RODS

* Stroke length is dependent upon selection of piston and head type. See following pages for more details.

EFFECTIVE STROKE CALCULATION





NOTES

NOTES

Kits & Tools

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O-RING KITS

O-RING KIT

Part Number: 568 Kit-A
List Price: \$ 31.97

PART NUMBER	QTY	PART NUMBER	QTY
006-012	20	210-222	10
110-116	13	325-327	7

This kit contains a total of 382 O-Rings in 30 different sizes, providing an extremely low cost per size value.



O-RING METRIC KIT

Part Number: Metric O Kit-J-A
List Price: \$ 47.90

I.D X C.S. (mm)	QTY	I.D X C.S. (mm)	QTY
3 X 2.0	16	20 X 3.0	12
4 X 2.0	16	22 X 3.0	12
5 X 2.0	16	24 X 3.0	12
6 X 2.0	16	25 X 3.0	12
7 X 2.0	16	27 X 3.0	12
8 X 2.0	16	28 X 3.0	12
10 X 2.0	16	30 X 3.0	12
10 X 2.5	16	32 X 3.0	12
11 X 2.5	13	33 X 3.0	12
12 X 2.5	13	35 X 3.0	12
14 X 2.5	13	36 X 3.0	12
16 X 2.5	13	38 X 3.0	12
17 X 2.5	13	38 X 4.0	9
19 X 2.5	13	41 X 4.0	9
19 X 3.0	12	44 X 4.0	9

The Metric O Kit-J-A contains a total of 389 O-Rings in 30 different sizes, another extremely low cost per size value.



ASSORTMENT KITS AND TOOLS

O-RING KITS

U.S. INDUSTRIAL O-RING KIT

Part Number: 568 Kit
List Price: \$ 39.52

PART NUMBER	QTY	PART NUMBER	QTY
005-011	25	111-116	10
012	15	117-121	7
013-018	10	210-211	10
110	15	212-219	7

This kit contains a total of 436 70 Durometer O-Rings in 36 different sizes, providing an extremely low cost per size value.



QUAD WAREHOUSE KIT

Part Number: Quad-Ring WH Kit
List Price: \$ 512.32

PART NUMBER	QTY	PART NUMBER	QTY
QR-4004-012	10	QR-4125-135	3
QR-4013-030	5	QR-4136-154	2
QR-4031-038	3	QR-4204-216	5
QR-4039-048	2	QR-4217-229	3
QR-4108-116	10	QR-4230-338	2
QR-4117-124	5		

Similar to the O-Ring Warehouse kit, the Quad Seal Warehouse kit contains a total of 583 four-lobed seals in 145 different sizes. This kit is ideal for the small distributor who wishes to have a comprehensive on-hand inventory of Quad seals for counter sales.



ASSORTMENT KITS AND TOOLS

O-RING KITS

O-RING WAREHOUSE KIT

Part Number: 568 WH Kit
List Price: \$ 391.95

PART NUMBER	QTY	PART NUMBER	QTY
001-016	20	217-229	5
017-024	10	230-232	3
025-031	7	233-237	2
032-043	5	325-328	5
044-046	2	329-330	4
110-116	15	331-338	2
117-124	10	901-914	5
125-142	5	916, 918	5
143-146	3	920, 924	5
147-151	2	928, 932	5
210-216	10		

Our O-ring Warehouse kit is ideally suited for the repair shop that needs a large on-hand selection of O-rings to insure quick repair of all machine types. 1,110 O-Rings in 150 different sizes are included in this kit. Each size is individually packaged in heavy duty ziploc bags to protect against environmental exposure and contamination. All packages are then stored in a sturdy styrene cabinet with pull-out drawers for easy access to parts. Included card shows size, dimensions, and drawer location for each ring.



90 DUROMETER O-RING WAREHOUSE KIT

Part Number: 568 WH Kit-90D
List Price: \$ 370.66

PART NUMBER	QTY	PART NUMBER	QTY
001-016-90D	20	217-229-90D	5
017-024-90D	10	230-232-90D	3
025-031-90D	7	233-237-90D	2
032-043-90D	5	325-328-90D	5
044-046-90D	2	329-330-90D	4
110-116-90D	15	331-338-90D	2
117-124-90D	10	901-914-90D	5
125-142-90D	5	916, 918-90D	5
143-146-90D	3	920, 924-90D	5
147-151-90D	2	928, 932-90D	5
210-216-90D	10		

Our 90 Durometer O-ring Warehouse kit is ideally suited for the repair shop that needs a large on-hand selection of O-Rings to insure quick repair of all machine types. 1,110 O-Rings in 150 different sizes are included in this kit.



O-RING KITS

90 DUROMETER O-RING KIT

Part Number: 568 90D Kit
List Price: \$ 56.28

PART NUMBER	QTY	PART NUMBER	QTY
005-011-90D	25	111-116-90D	10
012-90D	15	117-121-90D	7
013-018-90D	10	210-211-90D	10
110-90D	15	212-219-90D	7

This kit contains a total of 436 90 Durometer O-Rings in 36 different sizes, providing an extremely low cost per size value.



SAE 900 O-RING BOSS KIT

Part Number: 900 Boss Kit
List Price: \$ 25.91

PART NUMBER	QTY	SAE PORT SIZE	PART NUMBER	QTY	SAE PORT SIZE
568-904	35	-4	568-910	20	-10
568-905	30	-5	568-911	15	-11
568-906	30	-6	568-912	15	-12
568-907	20	-7	568-913	15	-13
568-908	20	-8	568-914	15	-14
568-909	20	-9	568-916	15	-16

This 250 piece assortment contains the most popular size 90 Durometer Boss O-rings in 12 different fitting sizes, individually separated, which will supply your shop, service truck, or parts counter with the sizes you need!



FLUOROCARBON O-RING KIT

Part Number: 568 FC Kit
List Price: \$ 236.79

PART NUMBER	QTY	PART NUMBER	QTY
005-011V	25	111-116V	10
012V	15	117-121V	7
013-018V	10	210-211V	10
110V	15	212-219V	7

This kit contains a total of 436 75 Durometer Fluorocarbon O-Rings in 36 different sizes, providing an extremely low cost per size value.



ASSORTMENT KITS AND TOOLS

O-RING KITS

MAX O-RING KIT

Part Number:
MAX 1381 Kit

List Price: \$ 336.46

Part Number:
MAX 1381 Kit-90D

List Price: \$ 369.12

These sturdy kits, packaged in a heavy duty box, contain 1415 O-Rings in the most popular sizes. Every service truck should have one of these. Five internal boxes contain 1/16" C/S, 3/32" C/S, 1/8" C/S, Boss, and Flange fitting o-rings. Contents and quantities are listed below.

Flange Seals

FLANGE NUMBER	QTY	FLANGE NUMBER	QTY
8	10	20	5
12	10	24	5
16	10	32	5

Boss O-Rings

BOSS NUMBER	QTY	BOSS NUMBER	QTY
903	15	907	25
904	25	910	25
906	15	912	15
908	25	916	10

1/16" C/S O-Rings

O-RING NUMBER	QTY	O-RING NUMBER	QTY
006 - 118	25	028	15
019 - 021	20	029	10
022 - 026	15	030	10



3/32" C/S O-Rings

O-RING NUMBER	QTY	O-RING NUMBER	QTY
109 - 118	25	129	10
119 - 120	20	131	10
121 - 127	15	133	10
128	10	135	5

1/8" C/S O-Rings

O-RING NUMBER	QTY	O-RING NUMBER	QTY
210 - 214	20	228	10
215 - 222	15	232	10
223 - 224	10	236	10
226	10		

O-RING KITS

SAE 900 O-RING BOSS FLUOROCARBON KIT

Part Number: 900 Boss FC
List Price: \$ 166.50

PART NUMBER	QTY	SAE PORT SIZE	PART NUMBER	QTY	SAE PORT SIZE
568-904V	35	-4	568-910V	20	-10
568-905V	30	-5	568-911V	15	-11
568-906V	30	-6	568-912V	15	-12
568-907V	20	-7	568-913V	15	-13
568-908V	20	-8	568-914V	15	-14
568-909V	20	-9	568-916V	15	-16



This 250 piece assortment contains the most popular size 90 Durometer FKM Boss O-rings in 12 different fitting sizes, individually separated, which will supply your shop, service truck, or parts counter with the sizes you need!

PTFE O-RING KIT

Part Number: 568 PTFE Kit
List Price: \$ 491.54

This kit contains a total of 325 PTFE O-Rings (55 - 58 Shore D) in 36 different sizes. PTFE O-Rings can withstand temperatures up to 500° F and are impervious to a wide range of chemicals.

PART NUMBER	QTY
005-012T	15
013-018T	10
110-116T	10
117-121T	5
210-219T	5



QUAD RING KIT

Part Number: Quad-Ring Kit
List Price: \$ 93.25

PART NUMBER	QTY	PART NUMBER	QTY
4005-4012	10	4110-4116	6
4013-4016	6	4117-4121	4
4017-4018	5	4210-4219	5

This kit contains a total of 226 Quad rings in 36 different sizes, providing an extremely low cost per size value.



ASSORTMENT KITS AND TOOLS

O-RING KITS

O-RING FACE KIT

Part Number: 568 Face Kit
List Price: \$ 21.91

PART NUMBER	QTY	PART NUMBER	QTY
011-90D	25	018-90D	20
012-90D	25	021-90D	15
014-90D	25	025-90D	10
016-90D	25	029-90D	10

This kit contains a total of 155 90 Durometer O-Rings in 8 different sizes, providing an extremely low cost per size value.

O-RING FLANGE KIT

Part Number: 568 Flange Kit
List Price: \$ 25.98

PART NUMBER	QTY	PART NUMBER	QTY
210-90D	10	225-90D	10
214-90D	10	228-90D	10
219-90D	10	232-90D	10
222-90D	10		

This kit contains a total of 70, 90 Durometer O-Rings, in 7 different sizes, providing an extremely low cost per size value.

ASSORTMENT KITS AND TOOLS



SPLIT FLANGE SEAL KIT

Part Number: SFS Kit
List Price: \$ 94.71

PART NUMBER	QTY	PART NUMBER	QTY
SFS-8	5	SFS-24	5
SFS-12	5	SFS-32	5
SFS-16	5	SFS-40	5
SFS-20	5		

This kit contains 35 Split Flange Seals in 7 popular sizes.

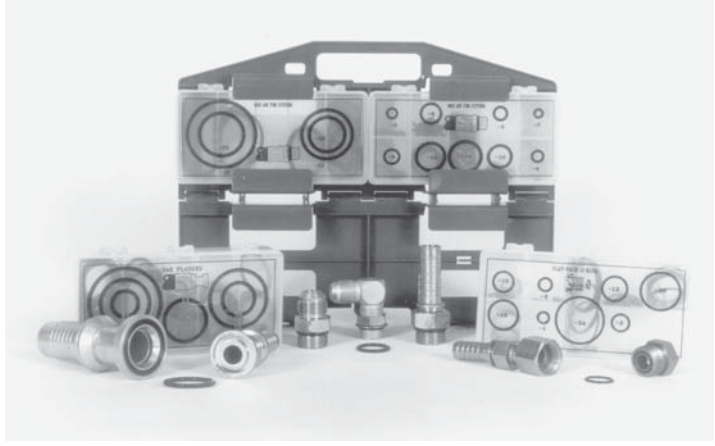


O-RING KITS

HOSE END & ADAPTER KIT

Part Number: O-R Fitting Kit
List Price: \$ 93.25

This handy kit contains 27 sizes and 216 pieces of 90A Durometer O-rings for boss, split flange, and flat face hose end fittings and adapters. Each box has a graphic label identifying the type of application and dash number for the seal. A chart on the back of the box lists popular OEM part number matches for each O-ring. Due to popular demand, these kits are now available individually.



SAE FLANGE SEALS

Part Number: SAE Flange Seals
List Price: \$ 23.31

BOX PART NUMBER	PART NUMBER	QTY
-8	568-210-90D	8
-12	568-214-90D	8
-16	568-219-90D	8
-20	568-222-90D	8
-24	568-225-90D	8
-32	568-228-90D	8

FLAT FACE SEALS

Part Number: Flat Face O-Rings
List Price: \$ 23.31

BOX PART NUMBER	PART NUMBER	QTY
-4	568-011-90D	8
-6	568-012-90D	8
-8	568-014-90D	8
-10	568-016-90D	8
-12	568-018-90D	8
-16	568-021-90D	8
-20	568-025-90D	8
-24	568-029-90D	8

BOSS & TUBE SEALS

Part Number: Boss & Tube Fittings-1
List Price: \$ 23.31
Part Number: Boss & Tube Fittings-2
List Price: \$ 23.31

BOX PART NUMBER	PART NUMBER	QTY	KIT NUMBER
-2	568-902	8	FITTINGS-1
-3	568-903	8	FITTINGS-1
-4	568-904	8	FITTINGS-1
-5	568-905	8	FITTINGS-1
-6	568-906	8	FITTINGS-1
-8	568-908	8	FITTINGS-1
-10	568-910	8	FITTINGS-1

BOX PART NUMBER	PART NUMBER	QTY	KIT NUMBER
-12	568-912	8	FITTINGS-1
-14	568-914	8	FITTINGS-1
-16	568-916	8	FITTINGS-2
-20	568-920	8	FITTINGS-2
-24	568-924	8	FITTINGS-2
-32	568-932	8	FITTINGS-2

ASSORTMENT KITS AND TOOLS

O-RING KITS

COMMON JAPANESE SIZE O-RINGS IN 70 DUROMETER

Part Number: Metric O Kit-J
List Price: \$ 60.22



This 380 piece kit contains the most popular Japanese Industrial metric O-ring sizes.

I.D.	C.S	QTY	I.D.	C.S	QTY
2.8	1.9	25	20.8	2.4	8
3.8	1.9	20	21.8	2.4	8
4.8	1.9	20	24.4	3.1	6
5.8	1.9	20	29.4	3.1	7
6.8	1.9	15	21.7	3.5	5
7.8	1.9	15	22.1	3.5	5
8.8	1.9	15	23.7	3.5	7
9.8	1.9	15	24.7	3.5	7
9.8	2.4	15	25.2	3.5	7
10.8	2.4	15	25.7	3.5	7
11.0	2.4	15	27.7	3.5	7
11.8	2.4	12	28.7	3.5	6
12.8	2.4	12	29.2	3.5	6
13.8	2.4	12	29.7	3.5	6
14.8	2.4	12	30.7	3.5	6
15.8	2.4	12	31.2	3.5	6
17.8	2.4	8	14.5	4.0	4
19.8	2.4	8	23.5	4.0	6

ASSORTMENT KITS AND TOOLS

COMMON JAPANESE SIZE O-RINGS IN 90 DUROMETER

Part Number: Metric O Kit-J-90D
List Price: \$ 114.74



This 380 piece kit contains the most popular Japanese Industrial metric O-ring sizes in 90 durometer NBR.

I.D.	C.S	QTY	I.D.	C.S	QTY
2.8	1.9	25	20.8	2.4	8
3.8	1.9	20	21.8	2.4	8
4.8	1.9	20	24.4	3.1	6
5.8	1.9	20	29.4	3.1	7
6.8	1.9	15	21.7	3.5	5
7.8	1.9	15	22.1	3.5	5
8.8	1.9	15	23.7	3.5	7
9.8	1.9	15	24.7	3.5	7
9.8	2.4	15	25.2	3.5	7
10.8	2.4	15	25.7	3.5	7
11.0	2.4	15	27.7	3.5	7
11.8	2.4	12	28.7	3.5	6
12.8	2.4	12	29.2	3.5	6
13.8	2.4	12	29.7	3.5	6
14.8	2.4	12	30.7	3.5	6
15.8	2.4	12	31.2	3.5	6
17.8	2.4	8	14.5	4.0	4
19.8	2.4	8	23.5	4.0	6

O-RING KITS

COMMON EUROPEAN SIZE O-RINGS IN 70 DUROMETER

Part Number: Metric O Kit-E

List Price: \$ 47.35



This 500 piece kit contains the most popular European metric O-ring sizes.

I.D.	C.S.	QTY	I.D.	C.S.	QTY
5.0	1.5	20	19.0	2.0	10
13.0	1.5	15	20.0	2.0	10
16.0	1.5	10	4.3	2.4	15
2.2	1.6	20	5.3	2.4	15
3.1	1.6	20	5.6	2.4	15
4.1	1.6	20	7.6	2.4	15
7.1	1.6	20	8.3	2.4	15
9.1	1.6	15	8.6	2.4	15
10.1	1.6	15	10.0	2.5	10
13.1	1.6	15	13.0	2.5	10
4.0	2.0	20	14.0	2.5	10
6.0	2.0	20	15.0	2.5	10
8.0	2.0	15	17.0	2.5	10
9.0	2.0	15	18.0	2.5	10
10.0	2.0	15	19.0	2.5	10
12.0	2.0	15	9.0	3.0	10
14.0	2.0	10	10.0	3.0	10
16.0	2.0	10	11.0	3.0	10

COMMON EUROPEAN SIZE O-RINGS IN 90 DUROMETER

Part Number: Metric O Kit-E-90D

List Price: \$ 116.45



This 500 piece kit contains the most popular European metric O-ring sizes.

I.D.	C.S.	QTY	I.D.	C.S.	QTY
5.0	1.5	20	19.0	2.0	10
13.0	1.5	15	20.0	2.0	10
16.0	1.5	10	4.3	2.4	15
2.2	1.6	20	5.3	2.4	15
3.1	1.6	20	5.6	2.4	15
4.1	1.6	20	7.6	2.4	15
7.1	1.6	20	8.3	2.4	15
9.1	1.6	15	8.6	2.4	15
10.1	1.6	15	10.0	2.5	10
13.1	1.6	15	13.0	2.5	10
4.0	2.0	20	14.0	2.5	10
6.0	2.0	20	15.0	2.5	10
8.0	2.0	15	17.0	2.5	10
9.0	2.0	15	18.0	2.5	10
10.0	2.0	15	19.0	2.5	10
12.0	2.0	15	9.0	3.0	10
14.0	2.0	10	10.0	3.0	10
16.0	2.0	10	11.0	3.0	10

ASSORTMENT KITS AND TOOLS

O-RING SPLICE KITS

O-RING SPLICE KIT INCH SIZES

Part Number: 568 Splice Kit
List Price: \$ 52.88

Kit Contains:

1. Stock of 70 Durometer Buna O-ring Cord
2. Razor Blade
3. Splicing tool
4. Tube of Adhesive

Replacement Parts

Parts:	List Price
#568 Splice Tool	\$9.65 ea
#568 Adhesive	\$6.51 ea
70 Duro. Cord	

O-RING SPLICE KIT INCH & METRIC SIZES

Part Number: Met/Inch Splice Kit
List Price: \$ 76.75

This kit can produce O-Rings of any standard inch size cross-section plus a wide variety of metric sizes. Each kit contains quick drying adhesive, cutting and splicing jig, razor blade and 14 lengths of 70 Durometer Buna-N cord stock as follows:

Inch cross-sections: (inch)
1/16" (.070), 3/32" (.103), 1/8" (.139),
3/16" (.210), 1/4" (.275)
Metric cross-sections: (mm)
1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 5.0, 5.7, 8.4



These kits can produce O-Rings of any circumference. The 568 kit contains the most popular inch cross sectional sized O-ring cord. The Metric and Inch Kit has both standard inch size cross sectional cord plus a wide variety of metric sized cord. Both kits contain quick drying adhesive, a cutting and splicing jig, a razor blade and 70 Durometer Buna-N cord.

FLUOROCARBON O-RING SPLICE KIT INCH SIZES

Part Number: 568 FC Splice Kit
List Price: \$ 245.97

Kit Contains:

1. Stock of 75 Durometer Fluorocarbon Cord
2. Razor Blade
3. Splicing tool
4. Tube of Adhesive

Replacement Parts

Parts:	List Price
#568 Splice Tool	\$9.65 ea
#568 Adhesive	6.51 ea
75 Duro. Fluorocarbon Cord	



BACK-UP RING KITS

574 BACK-UP RING KIT

Part Number: 574 Kit
List Price: \$ 74.00

PART NUMBER	QTY	PART NUMBER	QTY
574-005	10	574-114	10
574-006	10	574-115	10
574-007	10	574-116	10
574-008	10	574-117	5
574-009	10	574-118	5
574-010	10	574-119	5
574-011	10	574-120	5
574-012	10	574-121	5
574-013	10	574-210	7
574-014	10	574-211	7
574-015	10	574-212	7
574-016	10	574-213	7
574-017	10	574-214	5
574-018	10	574-215	5
574-110	10	574-216	5
574-111	10	574-217	5
574-112	10	574-218	5
574-113	10	574-219	5

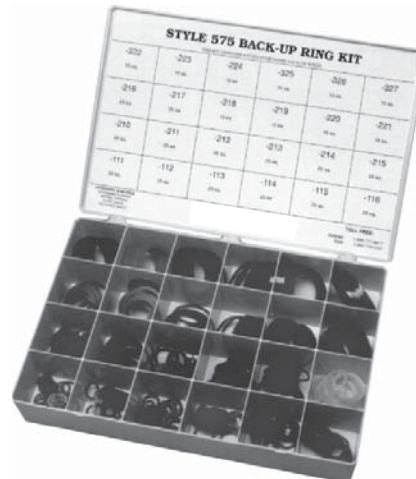


This 293 piece kit contains 36 of the most popular size "Parback®" Style Dished Cross Section back-up rings. Molded of 90A Durometer Buna-N Rubber, they stretch for installation and return quickly to their original size. SIZES CORRESPOND TO O-RING NUMBERS. Your shop and service truck should not be without this handy kit.

575 BACK-UP RING KIT

Part Number: 575 Kit
List Price: \$ 160.92

PART NUMBER	QTY	PART NUMBER	QTY
575-111	25	575-216	25
575-112	25	575-217	15
575-113	25	575-218	15
575-114	25	575-219	15
575-115	25	575-220	15
575-116	25	575-221	15
575-210	25	575-222	15
575-211	25	575-223	15
575-212	25	575-224	15
575-213	25	575-325	10
575-214	25	575-326	10
575-215	25	575-327	10



This 475 piece kit contains 24 of the most popular size urethane back-up rings. This assortment is essential for parts counters, shop use, and service trucks.

ASSORTMENT KITS AND TOOLS

BACK-UP RING KITS

PTFE BACK-UP RING KIT

Part Number: 575 PTFE Kit S
List Price: \$ 168.72

PART NUMBER	QTY	PART NUMBER	QTY
575-005ST	15	575-114ST	10
575-006ST	15	575-115ST	10
575-007ST	15	575-116ST	10
575-008ST	15	575-117ST	5
575-009ST	15	575-118ST	5
575-010ST	15	575-119ST	5
575-011ST	15	575-120ST	5
575-012ST	15	575-121ST	5
575-013ST	10	575-210ST	5
575-014ST	10	575-211ST	5
575-015ST	10	575-212ST	5
575-016ST	10	575-213ST	5
575-017ST	10	575-214ST	5
575-018ST	10	575-215ST	5
575-110ST	10	575-216ST	5
575-111ST	10	575-217ST	5
575-112ST	10	575-218ST	5
575-113ST	10	575-219ST	5



This 325 piece kit contains 36 of the most popular size PTFE Back-up Rings. These rings are compatible with all hydraulic fluids, since they are virtually chemically inert, and can be used in applications involving elevated operating temperatures. These rings are scarf cut to facilitate installation.

STYLE 870 KIT

Part Number: 870 TRI-Kit
List Price: \$ 212.79

Hercules Sealing Products 870 Tri-Kit is packaged in three sturdy cases that contain 180 U-Cups. The U-Cups conform to AN-6226 size standards in 36 popular sizes ranging from 1/8" to 1-1/8" inside diameter. All of the seals are molded from 70A Durometer Buna-N rubber.



ASSORTMENT KITS AND TOOLS

RETAINER RING KITS

Each kit has an assortment of retainer rings (Tru-arc, Eaton, or spiral wound style) packed in a reusable plastic box. All rings are made in the USA from carbon spring steel.

Each kit contains: 18 sizes - 9 internal, 9 external • 216 rings per box • 12 rings per size

TRU-ARC

Part Number: 300-310 Kit
List Price: \$ 124.97

PART NUMBER	QTY.	PART NUMBER	QTY.
300-050	12	310-050	12
300-062	12	310-062	12
300-075	12	310-075	12
300-087	12	310-087	12
300-100	12	310-100	12
300-112	12	310-112	12
300-125	12	310-125	12
300-137	12	310-137	12
300-150	12	310-150	12



SPIRAL WOUND

Part Number: SRR Kit
List Price: \$ 227.22

PART NUMBER	QTY.	PART NUMBER	QTY.
WHM-050	12	WSM-050	12
WHM-062	12	WSM-062	12
WHM-075	12	WSM-075	12
WHM-087	12	WSM-087	12
WHM-100	12	WSM-100	12
WHM-112	12	WSM-112	12
WHM-125	12	WSM-125	12
WHM-137	12	WSM-137	12
WHM-150	12	WSM-150	12



EATON

Part Number: ERR Kit
List Price: \$ 290.28

PART NUMBER	QTY.	PART NUMBER	QTY.
NAN-050	12	XAN-050	12
NAN-062	12	XAN-062	12
NAN-075	12	XAN-075	12
NAN-087	12	XAN-087	12
NAN-100	12	XAN-100	12
NAN-112	12	XAN-112	12
NAN-125	12	XAN-125	12
NAN-137	12	XAN-137	12
NAN-150	12	XAN-150	12



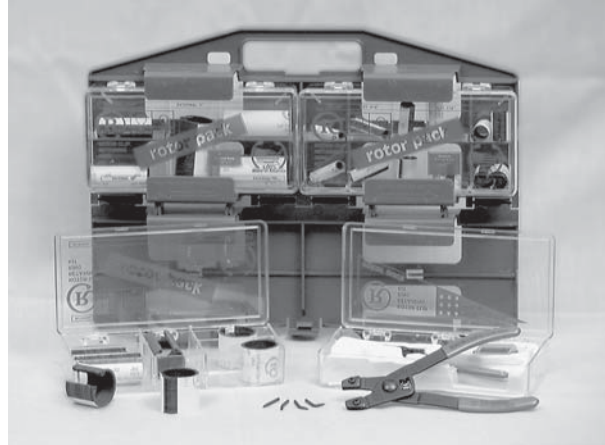
ASSORTMENT KITS AND TOOLS

RETAINER RING KITS

ROTOR PACK KIT

Part Number: RPK 4 Kit
List Price: \$ 259.78

Packaged in four plastic cases with a handy carrying case, our rotor pack kit contains approximately 50 each of 20 common internal/external retaining ring sizes. The internal rings fit housings or bores from 3/8" internal diameter to 1-1/8". External rings accommodate shaft sizes from 1/4" internal diameter to 1-1/8". Two retainer ring installation pliers are also included.



ASSORTMENT KITS AND TOOLS

EXTERNAL RETAINER RINGS

Part Number: 310 Kit
List Price: \$ 73.97

PART NUMBER	SHAFT SIZE	QTY.	PART NUMBER	SHAFT SIZE	QTY.
310-100	1.000	5	310-200	2.000	5
310-125	1.250	5	310-225	2.250	5
310-137	1.375	5	310-250	2.500	5
310-150	1.500	5	310-275	2.750	3
310-175	1.750	5	310-300	3.000	3

These assortments contain the most popular size retainer rings, boxed in a handy storage and display case, which will supply your shop, service truck, or parts counter with the sizes you need!



INTERNAL RETAINER RINGS

Part Number: 300 Kit
List Price: \$ 139.86

PART NUMBER	BORE SIZE	QTY.	PART NUMBER	BORE SIZE	QTY.
300-075	0.750	10	300-200	2.000	10
300-087	0.875	10	300-225	2.250	5
300-100	1.000	10	300-250	2.500	5
300-112	1.125	10	300-275	2.750	5
300-125	1.250	10	300-300	3.000	5
300-137	1.375	10	300-350	3.500	5
300-150	1.500	10	300-400	4.000	5
300-162	1.625	10	300-450	4.500	2
300-175	1.750	10	300-500	5.000	2



ASSORTMENT KITS

CAP PLUG KIT

Part Number: Cap Plug Kit
List Price: \$ 173.16



Our new and improved cap plug kit contains 22% more cap plugs in an environmentally friendly corrugated box. Separated areas hold 625 cap plugs in 24 of the most popular sizes.

Cap Plug Number	QTY	Cap Plug Number	QTY	Cap Plug Number	QTY
CAP-2-X	50	CAP-PD-100	25	CAP-G-22	20
CAP-4	50	CAP-PD-120	25	CAP-G-25	20
CAP-6-X	50	CAP-PD-140	20	CAP-G-27	20
CAP-9	50	CAP-PD-160	20	CAP-P-28	25
CAP-12-X	25	CAP-G-2	20	CAP-P-38	25
CAP-14	20	CAP-G-8	20	CAP-P-48	25
CAP-PD-60	25	CAP-G-14	20	CAP-P-68-H	25
CAP-PD-80	25	CAP-G-18	20	CAP-P-88-H	20

CAT® SILICONE O-RING KIT

Part Number: CTC-4C8253
List Price: \$ 363.12

This handy kit, in an unbreakable box, contains 149 silicone o-rings in the 32 most popular sizes used on Caterpillar® equipment.



CAT® O-RING KIT

This handy kit, in an unbreakable box, contains the 9 most popular sized D-Rings used on Caterpillar® equipment.

Part Number: CTC-4C4784
List Price: \$ 134.81



CAT® NITRILE O-RING KIT

This handy kit, in an unbreakable box, contains 570 nitrile o-rings in the 32 most popular sizes used on Caterpillar® equipment.

Part Number: CTC-4C4782
List Price: \$ 227.77



ASSORTMENT KITS AND TOOLS

NOTE: Caterpillar® part numbers are used as a reference only. We do not imply that these parts are original equipment parts.

ASSORTMENT KITS

THE ULTIMATE NITRILE O-RING ASSORTMENT

Part Number: 568 KIT-ULTIMATE

List Price: \$ 3,458.02



Includes: 12 drawers and 3 slide racks, plus base. Total weight 232 lbs.

214 Items, 1324 Pieces.

Sizes Include:

-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -012, -013, -014, -015, -016, -017, -018, -019, -020, -021, -022, -023, -024, -025, -026, -027, -028, -029, -030, -031, -032, -033, -034, -035, -036, -037, -038, -039, -040, -041, -042, -043, -044, -045, -046, -047, -048, -049, -050

-106, -107, -108, -109, -110, -111, -112, -113, -114, -115, -116, -117, -118, -119, -120, -121, -122, -123, -124, -125, -126, -127, -128, -129, -130, -131, -132, -133, -134, -135, -136, -137, -138, -139, -140, -141, -142, -143, -144, -145, -146, -147, -148, -149, -150, -151, -152, -153, -154, -155, -156, -157, -158, -159, -160, -161, -162, -163

-204, -205, -206, -207, -208, -209, -210, -211, -212, -213, -214, -215, -216, -217, -218, -219, -220, -221, -222, -223, -224, -225, -226, -227, -228, -229, -230, -231, -232, -233, -234, -235, -236, -237, -238, -239, -240, -241, -242, -243, -244, -245, -246, -247, -248, -249, -250, -251, -252, -253, -254, -255, -256, -257, -258, -259, -260, -261, -262

-314, -315, -316, -317, -318, -319, -320, -321, -322, -323, -324, -325, -326, -327, -328, -329, -330, -331, -332, -333, -334, -335, -336, -337, -338, -339, -340, -341, -342, -343, -344, -345, -346, -347, -348, -349, -350, -351, -352, -353, -354, -355

-425, -426, -427, -428, -429

3 racks - each one is: 20" wide x 15-3/4" deep x 15" high
1 base - 20-3/8" wide x 16" deep x 15-1/8" high
Approximately 61" from top to bottom

ASSORTMENT KITS

THE ULTIMATE FLUOROCARBON O-RING ASSORTMENT

Part Number: 568 FC KIT-ULTIMATE

List Price: \$ 7,440.55



Includes: 12 drawers and 3 slide racks, plus base. Total weight 232 lbs.

214 Items, 1324 Pieces.

Sizes Include:

-001, -002, -003, -004, -005, -006, -007, -008, -009,
-010, -012, -013, -014, -015, -016, -017, -018, -019,
-020, -021, -022, -023, -024, -025, -026, -027, -028,
-029, -030, -031, -032, -033, -034, -035, -036, -037,
-038, -039, -040, -041, -042, -043, -044, -045, -046,
-047, -048, -049, -050

-106, -107, -108, -109, -110, -111, -112, -113, -114,
-115, -116, -117, -118, -119, -120, -121, -122, -123,
-124, -125, -126, -127, -128, -129, -130, -131, -132,
-133, -134, -135, -136, -137, -138, -139, -140, -141,
-142, -143, -144, -145, -146, -147, -148, -149, -150,
-151, -152, -153, -154, -155, -156, -157, -158, -159,
-160, -161, -162, -163

-204, -205, -206, -207, -208, -209, -210, -211, -212,
-213, -214, -215, -216, -217, -218, -219, -220, -221,
-222, -223, -224, -225, -226, -227, -228, -229, -230,
-231, -232, -233, -234, -235, -236, -237, -238, -239,
-240, -241, -242, -243, -244, -245, -246, -247, -248,
-249, -250, -251, -252, -253, -254, -255, -256, -257,
-258, -259, -260, -261, -262

-314, -315, -316, -317, -318, -319, -320, -321, -322,
-323, -324, -325, -326, -327, -328, -329, -330, -331,
-332, -333, -334, -335, -336, -337, -338, -339, -340,
-341, -342, -343, -344, -345, -346, -347, -348, -349,
-350, -351, -352, -353, -354, -355

-425, -426, -427, -428, -429

3 racks - each one is: 20" wide x 15-3/4" deep x 15" high

1 base - 20-3/8" wide x 16" deep x 15-1/8" high
Approximately 61" from top to bottom

ASSORTMENT KITS

COTTER PIN KIT

Part Number: Cotter Pin Kit
List Price: \$ 33.30



	1/16" X 1" 150 pcs.	3/32" X 1" 150 pcs.
	1/8" X 1 1/4" 75 pcs.	3/32" X 1 1/2" 100 pcs.
	1/8" X 2" 50 pcs.	5/32" X 2 1/2" 30 pcs.
555 Pieces		

WOODRUFF KEY KIT

Part Number: Woodruff Keys Kit
List Price: \$ 74.29



	1/8" X 1/2" No. 3 16 pcs.	1/8" X 5/8" No. 5 15 pcs.
	3/32" X 5/8" No. 6 15 pcs.	3/16" X 3/4" No. 9 10 pcs.
	1/4" X 7/8" No. A 5 pcs.	1/4" X 1" No. 15 4 pcs.
	65 Pieces	

GREASE FITTING KIT

Part Number: Grease Fitting Kit
List Price: \$ 64.99



	1/8" NPT Straight 6 pcs.	1/4" - 28 Straight 6 pcs.
	3/16" Drive Straight 4 pcs.	1/8" NPT 45 1/8" NPT 90 3 pcs. ea.
	1/4" - 28 45 1/4" - 28 90 3 pc. ea.	5/16" Drive Straight 4 pcs.
32 Pieces		

SET SCREW KIT

Part Number: SSK-INCH
List Price: \$ 55.50



Use these set screws in confined areas, where there is no room for a protruding head. Nine coarse sizes, three fine sizes.

Hex wrench shown not included. Coarse sizes: 1/8"-40 x 3/16", 5/32"-32 x 3/16", 3/16"-24 x 1/4", 1/4"-20 x 1/4", 1/4"-20 x 3/8", 5/16"-18 x 3/8", 5/16"-18 x 1/2", 3/8"-16 x 3/8", and 3/8"-16 x 1/2". Fine sizes: 1/4"-28 x 1/4", 5/16"-24 x 3/8", 3/8"-24 x 3/8"

ASSORTMENT KITS AND TOOLS

INSTALLATION TOOLS

ROD U-SEAL INSTALLATION TOOLS

List Price: \$ 65.27

Part Number	Seal ID Range
IT 100	3/4" to 1-1/4"
IT 150	1-3/8" to 1-7/8"
IT 200	2" to 3"
IT 100-NN	3/4" to 1-1/4"
IT 150-NN	1-3/8" to 1-7/8"
IT 200-NN	2" to 3"

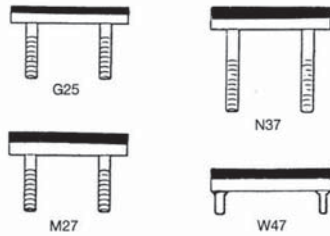
These tools aid U-seal installation, eliminating the risk of damaging the seal lip.



REMANUFACTURING TOOLS

HONE STONE SETS

Stone sets for 2.5" to 21" diameter, portable tools (two stones and two guides per set). For Industrial applications. From fast stock removal in deburred, bored, ground, or reamed holes to fine finishing in previously honed holes, these hone stone sets are in stock and ready for next day delivery.



Stone Number	Diameter
G25	2.500 - 2.700
M27	2.700 - 4.250
N37	3.700 - 5.500
W47	4.125 - 21.000

PART NUMBER	BORE SIZE	MATERIAL	GRIT SIZE	HARDNESS	LUBRICANT	NET PRICE
H-G25-J87	2.500 - 2.700	Silicon Carbide	400	Hard	N/A	\$ 19.40
H-G25-R25X	2.500 - 2.700	Red Aluminum Oxide	80	Medium	Sulfur Impregnated	19.40
H-M27-R25X	2.700 - 4.250	Red Aluminum Oxide	80	Medium	Sulfur Impregnated	19.74
H-N37-A43	3.700 - 5.500	Aluminum Oxide	150	Soft	N/A	20.30
H-N37-A45	3.700 - 5.500	Aluminum Oxide	150	Medium	N/A	20.30
H-N37-A63	3.700 - 5.500	Aluminum Oxide	280	Soft	N/A	20.30
H-N37-J85	3.700 - 5.500	Silicon Carbide	400	Medium	N/A	20.30
H-N37-J87	3.700 - 5.500	Silicon Carbide	400	Hard	N/A	20.30
H-N37-R25X	3.700 - 5.500	Red Aluminum Oxide	80	Medium	Sulfur Impregnated	20.30
H-W47-A43	4.125 - 21.000	Aluminum Oxide	150	Soft	N/A	22.30
H-W47-A45	4.125 - 21.000	Aluminum Oxide	150	Medium	N/A	22.30
H-W47-J65	4.125 - 21.000	Silicon Carbide	280	Medium	N/A	22.30
H-W47-J85	4.125 - 21.000	Silicon Carbide	400	Medium	N/A	22.30
H-W47-J87	4.125 - 21.000	Silicon Carbide	400	Hard	N/A	22.30
H-W47-R25X	4.125 - 21.000	Red Aluminum Oxide	80	Medium	Sulfur Impregnated	22.30

HONING OIL - 5 GALLON PAIL

Part Number: H-TA-230-5
Net Price: \$ 99.50



Honing oil is specially compounded for ferrous and non ferrous honing to:

- Dissipate heat from the workpiece
- Lubricate tool contact surfaces (guides)
- Flush bore free of honing swarf
- And maintain clean, free cutting abrasive conditions

Recommended for continuous honing of most materials, including: steel, cast iron, carbide, aluminum, bronze and ceramics. Use with any make honing equipment or tooling.

ASSORTMENT KITS AND TOOLS

REMANUFACTURING TOOLS

PORTABLE HONES

Part Number: H-AN-815
Net Price: \$ 595.00



Additional sizes and accessories shown below.

Illustration shows standard AN-815 Portable Hone assembled with single length master holder set and stone set. Requires 16 mm (5/8") chuck capacity for 63.5-127 mm (2.5"-5") diameter. Requires 19mm (3/4") chuck capacity for 127-381 mm (5"-15") diameter. Requires 25.4 mm (1") chuck capacity for larger than 381 mm (15") diameter.

Weight 2.3 kg (5 lbs).

FOR A COMPLETE PORTABLE HONE ORDER A + B + C + D + E				A - BASIC HONE		B - MASTER HOLDER SETS				C - STONE SUPPORT		D - STONE SET	E - SHAFT EXTENSION
Diameter Range				Part Number	Net Price	Single Length		Double Length		Part Number	Net Price		
General Purpose Stone Sets		Guideless and Keyway Stone Sets				Part Number	Net Price	Part Number	Net Price			Part Number	Net Price
mm	Inches	mm	Inches										
64-140	2.5-5.5	64-142	2.5-5.6	H-AN-815	\$ 595.00	None	-	None	-	None	-	See Table on page 98 for portable hone stone sets	For holes longer than 508 mm (20") see table below for Shaft Extensions.
104-160	4.1-6.3	114-165	4.5-6.5	H-AN-815	595.00	H-AN-345	\$ 105.00	None	-	None	-		
119-178	4.7-7.0	130-183	5.1-7.2	H-AN-815	595.00	H-AN-355	107.00	H-AN-855	\$ 150.00	None	-		
152-229	6.0-9.0	163-234	6.4-9.2	H-AN-815	595.00	H-AN-365	109.00	H-AN-865	157.00	H-AN-260	\$ 64.00		
206-305	8.1-12.0	213-310**	8.4-12.2**	H-AN-815	595.00	H-AN-375	111.00	H-AN-875	158.00	H-AN-280	81.50		
279-381	11.0-15.0	284-386**	11.2-15.2**	H-AN-815	595.00	H-AN-385	115.00	H-AN-885	163.00	H-AN-290	96.75		
356-457	14.0-18.0	363-465**	14.3-18.3**	H-AN-815*	595.00	H-AN-395	118.00	H-AN-895	164.00	H-AN-340	114.00		
432-533	17.0-21.0	437-538**	17.2-21.2**	H-AN-815*	595.00	H-AN-415	124.00	H-AN-915	168.00	H-AN-450	134.00		

* For light work only in this diameter range.
 ** Do not use WW (Guideless) Stone Sets in this range due to lack of stability.

Length		Drive Shanks		Shaft Extensions		Master Holder Sets	
mm	Inches	Part Number	Net Price	Part Number	Net Price	Master Holder Sets, listed in the table above, are used with Type W47,WW51 and WY51 Stone Sets. Double Length Master Holders require two stone sets—use when it is necessary to bridge interruptions in the bore. Each Master Holder Set consists of two holders for stones and two holders for guides. Stone Supports are required to give rigidity to the hone assembly when honing bores larger than 178 mm (7") diameter.	
76	3	H-AN-608A	\$ 23.00	None	-		
152	6	H-AN-618A***	32.80	H-AN-840	\$ 35.70		
305	12	None	-	H-AN-841***	46.00		
610	24	None	-	H-AN-842	160.00		
1220	48	None	-	H-AN-844	193.00		

*** Supplied with hone.

ASSORTMENT KITS AND TOOLS

TESTING TOOLS

FasTest® WEH 17 SERIES



Your Ergonomic Solution to Eliminate Wrenches and Bottle-Necks

FasTest® WEH 17 connectors provide leak tight connections for filling, charging, evacuation and pressure testing. The WEH 17 automatically seals when pressurized. Available in lever or pneumatically activated versions to grip and seal to female threads. Test pressures to 3500 psi.

How to Operate

To Connect: Collapse split collets in accordance with the operating method you have selected. Insert collets into female thread of the component to be tested. Expand collet to grip and seal. Activate test media through connector side port.

To Disconnect: Deactivate test pressure. Collapse split collets in accordance with the operating method you have selected. Remove connector from test piece.
Caution: WEH Series 17 connectors are not internally valved. Disconnecting while pressurized will cause leakage of test media.

Technical Data

Seals: Nitrile
Materials: Stainless steel
Temperature: -40° to +250°F
Pressure Ranges: 0 to 5000 psi. (static)
Pneumatic Operation: Requires a minimum air supply of 75 psi.
Rated Pressure: Based on test results using threaded ports manufactured to the referenced specifications and steel material. Other materials or deviations from those specifications may reduce the safe working pressure and should be verified by test. For dynamic pressure cycles or heavy side-load applications please see **FasMate®** Series.

NPTF Pipe Thread



PART NUMBER	CONNECTS TO FEMALE THREAD	RATED PRESSURE	NET PRICE
HH17H-40204041-1BB1	1/4" NPTF	5000	\$ 629.26
HH17H-40206061-1BB1*	3/8" NPTF	5000	641.11
HH17H-40208081-1BB1	1/2" NPTF	5000	678.83
HH17H-40212121-1BB1	3/4" NPTF	3500	968.67

MAIN SEAL SET 5/PKG	NET PRICE
S17-041B	\$ 14.15
S17-061B	14.15
S17-081B	18.65
S17-121B	18.65

SAE O-Ring



PART NUMBER	CONNECTS TO FEMALE THREAD	RATED PRESSURE	NET PRICE
HH17H-044021-1BB1	-4 (7/16-20)	5000	\$ 629.26
HH17H-064041-1BB1	-6 (9/16-18)	5000	629.26
HH17H-084061-1BB1*	-8 (3/4-16)	5000	641.11
HH17H-104081-1BB1	-10 (7/8-14)	5000	678.83
HH17H-124121-1BB1	-12 (1 1/16-12)	3500	968.67

MAIN SEAL SET 5/PKG	NET PRICE
S17-042B	\$ 14.15
S17-062B	14.15
S17-082B	18.65
S17-102B	18.65
S17-122B	18.65

* In-stock. Additional sizes available for order.

TESTING TOOLS

TwistMate® MIT SERIES

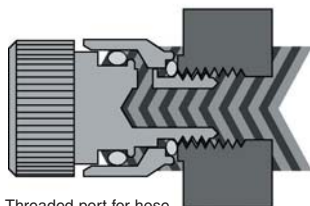


No Wrenches Needed • Hand Tighten Your Port Adapters • Shortens Testing Time

Twistmate® MIT mechanical internal thread connectors and plugs provide fast leak tight threaded connections for testing, filling, flushing, plugging, calibrating or venting applications. The patented pressure assisted sealing eliminates wrench tightening and thread sealants for safe secure connections up to 10,000 psi. With sizes up to 4" NPTF, and high flow design, the MIT is ideal for large unit run testing. Fast and reliable sealing reduces test time and production losses from scrap, rework and re-testing. Full-flow design for shortest filling and test times.

Spin Twistmate® finger-tight onto thread until face seal contacts test piece. They seal automatically when the system is pressurized. Air, gas or hydraulic pressure in the system provides a sealing force that presses the urethane main seal against the face of the threads. This automatic internal piston action maintains the seal with minimum pressure.

Piston Action



Threaded port for hose quick disconnect.

Operation

- Step 1. Spin **Twistmate®** into the threaded port until the seal makes contact.
- Step 2. Introduce the media and pressure. The external sleeve automatically moves toward the test port enhancing the seal squeeze. Vacuum applications will require finger-tightening.

Technical Data

Seals: Urethane and Nitrile
 Materials: Steel with QPQ or Stainless Steel
 Temperature: -40° to +200°F
 Pressure: Vacuum to 10,000 psi
 Rated Pressure: Based on test results using threaded ports manufactured to the referenced specifications and steel material. Other materials or deviations from those specifications may reduce the safe working pressure and should be verified by test.

NPTF Pipe Thread



PART NUMBER	CONNECTS TO FEMALE THREAD	RATED PRESSURE	CONNECTOR TYPE	NET PRICE	MAIN SEAL SET 5/PKG	NET PRICE
HHMIT-022021	1/8" NPTF	5000	SWIVEL	\$ 62.10	S1109-U70	\$ 14.55
HHMIT-042041	1/4" NPTF	5000	SWIVEL	63.60	S1111-U70	15.65
HHMIT-062061	3/8" NPTF	5000	SWIVEL	72.45	S1113-U70	16.80
HHMIT-082081	1/2" NPTF	5000	SWIVEL	78.60	S1209-U70	18.00
HHMIT-122121X	3/4" NPTF	5000	CONNECTOR	110.25	S1213-U70	19.35
HHMIT-162161X	1" NPTF	5000	CONNECTOR	123.05	S1216-U70	20.80
HHMIT-202201X	1-1/2" NPTF	5000	CONNECTOR	169.10	S1222-U70	21.55
HHMIT-242241X	2" NPTF	5000	CONNECTOR	411.95	S1327-U70	51.90

SAE O-Ring



PART NUMBER	CONNECTS TO FEMALE THREAD	RATED PRESSURE	CONNECTOR TYPE	NET PRICE	MAIN SEAL SET 5/PKG	NET PRICE
HHMIT-044021X	-04 (7/16-20)	5000	CONNECTOR	\$ 57.80	S1109-U70	\$ 14.55
HHMIT-064041X	-06 (9/16-18)	5000	CONNECTOR	66.35	S1111-U70	15.65
HHMIT-084081X	-08 (3/4-16)	4000	CONNECTOR	80.25	S1209-U70	18.00
HHMIT-104081X	-10 (7/8-14)	4000	CONNECTOR	80.25	S1209-U70	18.00
HHMIT-124121X	-12 (1 1/16-12)	4000	CONNECTOR	165.85	S1213-U70	19.35
HHMIT-164161X	-16 (1 5/16-12)	4000	CONNECTOR	185.15	S1217-U70	20.80
HHMIT-204201X	-20 (1 5/8-12)	4000	CONNECTOR	253.60	S1222-U70	21.55

REMOVAL TOOLS

We have the packing removal tools to fit your needs.
Try out these high quality tools in your shop.

Proper tools make the job of servicing cylinders easier and faster and reduce the possibility of damaging the finely machined surfaces. The handy tools listed on this page aid in the repair of telescopic cylinders and make it easier to do a quality job.

O-RING PICK SET 1

Part Number: O-Ring Pick
List Price: \$ 15.64

These Bronze O-ring Picks, w/ black vinyl case, aid in the installation and extraction of O-rings.



O-RING PICK SET 2

Part Number: ORP-B
List Price: \$ 30.61
Part Number: ORP-SS
List Price: \$ 30.61

Available in brass (ORP-B) or stainless steel (ORP-SS), these tools have been specifically engineered to enhance o-ring removal and replacement. Coated handles increase the tools performance in less than perfect environments.



O-RING PICK SET 3

Part Number: O Pick Set
List Price: \$ 64.48

Packaged in a clear vinyl pouch, kit contains a knurled handle and four screw-in picks with different hook configurations. Set includes straight tip, o-ring 90° tip, hook tip, and angle tip.



O-RING PICK SET 4

Part Number: Maxi Pick Set
List Price: \$ 215.86

Packaged in a plastic pouch, these highly visible picks feature screwdriver-type colored handles. Set includes awl, hook tip, 45° bent tip tool, and 90° bent tip tool.



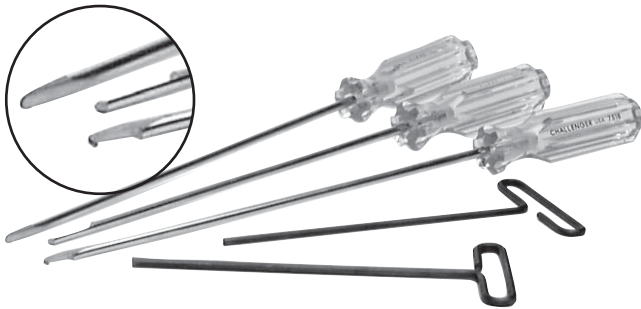
REMOVAL TOOLS

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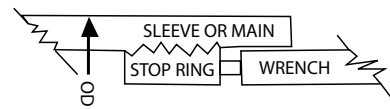
5 PIECE TOOL KIT SET

Part Number: CH-TK-1
List Price: \$ 218.82



STOP RING WRENCH

Part Number	Sleeve or Main O.D.	Pins	List Price
CM-376-6067-047	3 3/4"	5 Pins	\$ 531.64
CM-376-6067-048	4 3/4"	5 Pins	603.21
CM-376-6067-049	5 3/4"	7 Pins	649.35
CM-376-6067-050	6 3/4"	7 Pins	713.82
CM-376-6067-051	7 7/8"	7 Pins	753.64
CM-376-6067-052	9 3/8"	8 Pins	866.34
CM-376-6067-053	11 1/8"	8 Pins	1,141.73



ASSORTMENT KITS AND TOOLS

FLEXIBLE PACKING HOOKS

Part Number	Packing Space	Length	List Price
FPH-187	3/16"-up	6-1/2"	\$ 34.54
FPH-312R	5/16"-up	7-1/2"	29.83
FPH-437R	7/16"-up	10-1/2"	38.23
FPH-500R	1/2"-up	14-1/2"	46.24

With a tempered tool steel corkscrew tip and a woven strand steel flexible shaft, this tool makes hard to reach packing easy to pull out. Works best by using two hooks at diametrically opposed points (180°).



CHEVRON ASSEMBLY TOOL

Part Number: CM-376-9067-001
List Price: \$ 183.43



REMOVAL TOOLS

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REPLACEABLE WOODSCREW TIPS

Part Number	Packing Space	List Price
FPH-RTW312	5/16"-up	\$ 16.98
FPH-RTW437	7/16"-up	21.87



REPLACEABLE CORKSCREW TIPS

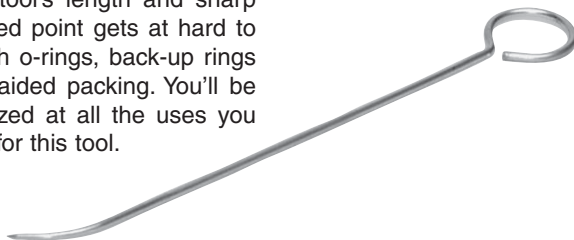
Part Number	Packing Space	List Price
FPH-RTC312	5/16"-up	\$ 13.23
FPH-RTC437	7/16"-up	16.02
FPH-RTC500	1/2"-up	21.47



SOLID SHAFT PICKS

Part Number	Packing Space	Length	List Price
SSP-125		9-1/2"	\$ 19.60
SSP-312	5/16"-up	10"	38.92

Formed from hardened steel, this tool's length and sharp angled point gets at hard to reach o-rings, back-up rings & braided packing. You'll be amazed at all the uses you find for this tool.



REMOVAL TOOLS

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Try out these high quality tools in your shop.**

Proper tools make the job of servicing cylinders easier and faster and reduce the possibility of damaging the finely machined surfaces. The handy tools listed on this page aid in the repair of telescopic cylinders and make it easier to do a quality job.

11 PIECE PACKING TOOL KIT

17 PIECE PACKING TOOL KIT

Part Number: Pack Tool Set-11
List Price: \$ 258.47

Part Number: Pack Tool Set-17
List Price: \$ 444.10

PART NUMBER	QTY	PART NUMBER	QTY
FPH-312R	2	FPH-RTC312	1
FPH-437R	2	FPH-RTC437	1
SSP-125	1	WRENCH	1
SSP-187	1	BOX	1
SSP-312	1		

PART NUMBER	QTY	PART NUMBER	QTY
FPH-312R	2	FPH-RTC437	1
FPH-437R	2	FPH-RTC500	1
FPH-500R	2	FPH-RTW312	1
SSP-125	1	FPH-RTW437	1
SSP-187	1	FPH-RTW500	1
SSP-312	1	WRENCH	1
FPH-RTC312	1	BOX	1



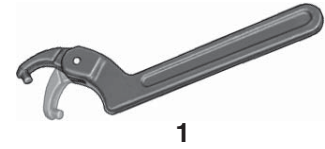
ASSORTMENT KITS AND TOOLS

DISMANTLING TOOLS

SPANNER WRENCHES

(1) ADJUSTABLE HEAD — PIN STYLE

PART NUMBER	PART OD RANGE		PIN DIA.	PIN LGTH.	LIST PRICE
SPAP-2.00X0.13	3/4" to 2"	(19mm to 50mm)	1/8"	1/8"	\$ 85.47
SPAP-2.00X0.19	3/4" to 2"	(19mm to 50mm)	3/16"	5/32"	98.16
SPAP-3.00X0.19	1-1/4" to 3"	(32mm to 76mm)	3/16"	3/16"	98.11
SPAP-3.00X0.25	1-1/4" to 3"	(32mm to 76mm)	1/4"	7/32"	99.33
SPAP-4.75X0.25	2" to 4-3/4"	(51mm to 120mm)	1/4"	1/4"	134.51
SPAP-6.25X0.38	4-1/2" to 6-1/4"	(115mm to 159mm)	3/8"	1/4"	144.08



1

(2) ADJUSTABLE HEAD — HOOK STYLE

PART NUMBER	PART OD RANGE		HOOK WD.	HOOK DP.	LIST PRICE
SPAH-2.00	3/4" to 2"	(19mm to 50mm)	11/32"	1/8"	\$ 80.22
SPAH-3.00	1-1/4" to 3"	(32mm to 76mm)	13/32"	5/32"	90.68
SPAH-4.75	2" to 4-3/4"	(51mm to 120mm)	15/32"	3/16"	125.68
SPAH-6.25	4-1/2" to 6-1/4"	(115mm to 159mm)	15/32"	1/4"	134.32
SPAH-8.75	6-1/8" to 8-3/4"	(155mm to 222mm)	15/32"	5/16"	163.84



2

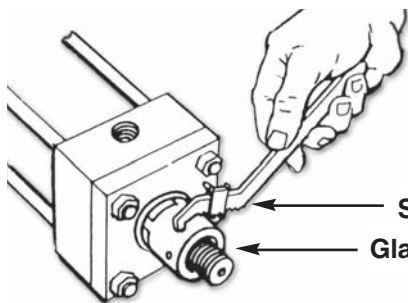
(3) ADJUSTABLE FACE — PIN STYLE

PART NUMBER	DIA. RANGE (CENTER TO CENTER)		PIN DIA.	PIN LGTH.	LIST PRICE
SPAPF-2.00X0.19	5/8" to 2"	(16mm to 50mm)	3/16"	1/8"	\$ 78.50
SPAPF-3.00X0.25	5/8" to 3"	(16mm to 76mm)	1/4"	3/16"	112.20
SPAPF-4.00X0.31	5/8" to 4"	(16mm to 101mm)	5/16"	1/4"	146.73



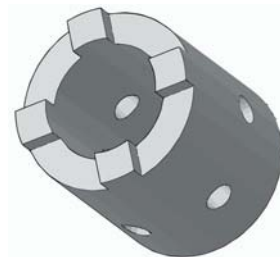
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PARKER GLAND WRENCHES



Spanner Wrench (Sold Separately Above)

Gland Wrench



Rod Dia.	Kit #	ID X OD X HT	List Price	Spanner (Sold Separately Above)
1/2", 5/8", 12mm & 14mm	PKH-069590	11/16" X 1-1/8" X 1-3/8"	\$ 88.80	SPAP-2.00X0.19
18mm	PKH-084765	13/16" X 1-1/4" X 1-7/16"	82.37	SPAP-2.00X0.19 or SPAP-3.00X0.19
1" & 22mm	PKH-069591	1-1/16" X 1-5/8" X 1-1/2"	90.29	SPAP-2.00X0.19 or SPAP-3.00X0.19
28mm	PKH-084766	1-1/4" X 1-11/16" X 9/16"	95.20	SPAP-2.00X0.19 or SPAP-3.00X0.19
1-3/8" & 36mm	PKH-069592	1-7/16" X 1-7/8" X 1-5/8"	93.25	SPAP-2.00X0.19 or SPAP-3.00X0.19
1-3/4" & 45mm	PKH-069593	1-13/16" X 2-1/4" X 1-5/8"	94.71	SPAP-3.00X0.25 or SPAP-4.75X0.25
2"	PKH-069594	2-1/16" X 2-1/2" X 2"	106.56	SPAP-3.00X0.25 or SPAP-4.75X0.25
2-1/2" & 56mm	PKH-069595	2-9/16" X 3" X 2-1/8"	102.11	SPAP-3.00X0.25 or SPAP-4.75X0.25
70mm	PKH-069596	2-15/16" X 3-1/2" X 2-3/8"	124.41	SPAP-4.75X0.25

MEASURING TOOLS

HIGH QUALITY DIGITAL CALIPER

Part Number	List Price
HH-Caliper-6-FR	\$ 102.25

This high quality instrument measures to 6" (150 mm). A push of a button changes from inches, mm, and fractions. Functions also include: On/Off function, zero key, data input capabilities, test for low voltage, and "Auto Off" function when unit sits dormant for more than 4 minutes.



DIGITAL CALIPERS

Part Number	List Price
HH-Caliper-6	\$ 92.50
HH-Caliper-6-P	92.50
HH-Caliper-12	199.81
HH-Caliper-12-P	199.81

Quality calipers able to measure up to 150mm or 6". A push of a button changes from inches to metric. A clear LCD display shows a reading with a resolution of 0.0005" (0.01mm) that is accurate to ±0.001" (±0.03mm). These calipers come in a sturdy, padded plastic case with instructions and a spare battery.



P = No Hercules logo.

O-RING MEASURING CONE

Part Number:	O-Ring Cone-Inch
List Price:	\$ 173.16

Handy cone provides o-ring dash numbers instantly. Measures 184 of the most widely used sizes in 5 standard widths, 1/4" ID to 5-5/8" ID. Made of high density polyurethane, the cone stands 17-1/2" high.



MEASURING TOOLS

PI TAPES

Part Number	Size	List Price
PI-212	2" - 12"	\$ 299.37

This handy tool allows for quick, accurate measuring of the outside diameters (OD) of vee packing, large U-Seals, Piston Rings, and metal parts such as cylinder stages, rams and rods. This tape comes with certificate of calibration. Accurate to .001".



O-RING GAUGE

Part Number:	OR-GAUGE
List Price:	\$ 53.20

Slide gauge for measuring standard cross-section o-rings with an inside diameter up to 13".



POWER PUNCH MAXI SET

Part Number:	Maxi Punch Set
List Price:	\$ 740.12

PART NUMBER	PUNCH RANGE
Punch Set	1/4, 5/16, 3/8, 7/16, 1/2, 16,5/8, 1/16, 3/4, 3/16, 7/8, 5/16, 1

This extremely high quality punch set includes 13 punches, power punch, centering pin, punch pad and carrying case. Durable cutting heads cut washers and bolt holes effortlessly.



O-RING SIZE CHART

Part Number:	O-Ring Size Chart
List Price:	\$ 2.83

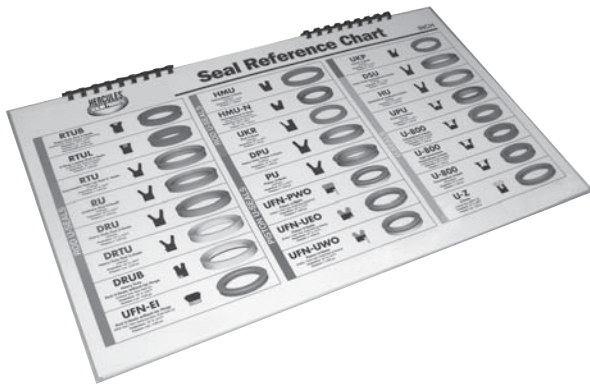
This handy chart gives complete dimensions for both static and reciprocating o-ring gland design. Dimensions shown are universal for o-rings, quad rings, square o-rings, split flange seals, and t-seals for both rod and piston seals.

MEASURING TOOLS

SEAL REFERENCE CHART

Part Number: Seal Reference Chart
List Price: \$ 36.39

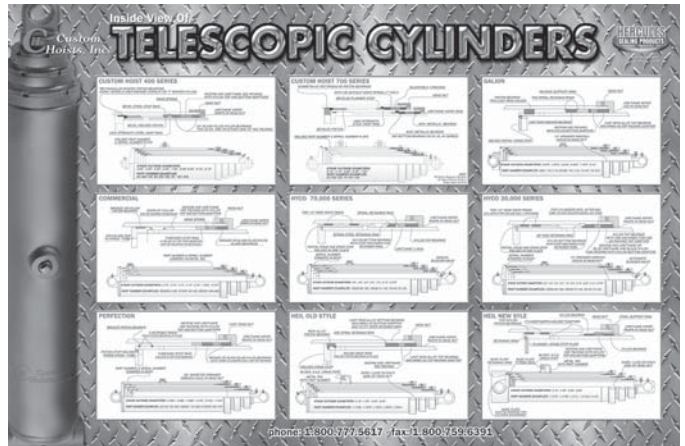
The seal identification chart will assist you when visually identifying seals at the sales counter or back in the shop. Many seal profile pictures with detailed descriptions and technical data are listed on the multi-color laminated flip-chart.



TELESCOPIC CYLINDER POSTER

Part Number: Tele-Cyl Chart
List Price: \$ 3.07

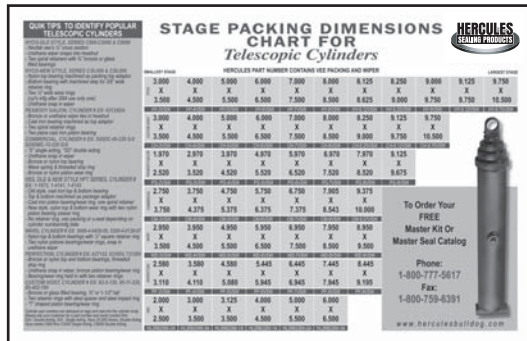
This colorful poster is an invaluable tool for determining seal placement within the most popular telescopic cylinders.



STAGE PACKING CHART

Part Number: Stage-Packing Chart
List Price: \$ 3.07

Your guide for quickly identifying popular telescopic cylinder dimensions. Series include Hyco, Peabody Galion, Commercial, Heil, Ward, Perfection and Custom Hoist.



O-RING CHART

Part Number: O-Ring Chart
List Price: \$ 41.39
Part Number: O-Ring Chart NN
List Price: \$ 41.39

Durable, Accurate, and Fast, these charts allow for easy Standard O-ring size identification. No shop should be without one!

NN = Without Hercules® logo.



ASSORTMENT KITS AND TOOLS

LEAK DETECTION

LEAK DETECTION KIT

Part Number: LDU-OPK-341

Net Price: \$ 355.00

HOW IT WORKS

A small amount of liquid fluorescent dye is added to a circulating fluid system that is being inspected for leaks. The system is then run for a short time to allow the dye to mix and circulate with the host fluid. The dye/fluid mixture escapes with the host fluid wherever there is a leak and glows a bright yellow/green when inspected with a high-intensity ultraviolet or UV/black light lamp. This method is extremely effective in locating even the smallest, most elusive leaks, as well as multiple leaks.



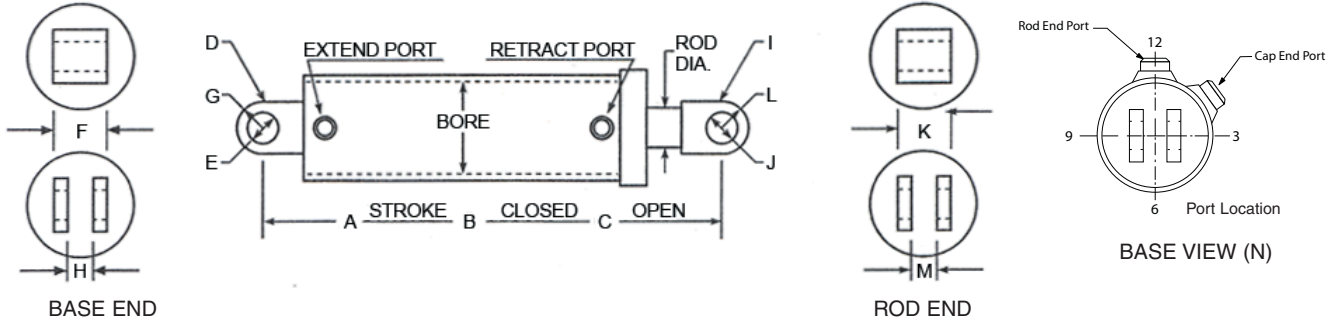
INDIVIDUAL LEAK DETECTION PRODUCTS

Part Number	Description	Net Price
LDU-CR-800	CLEANER, 8 OZ SPRAY	\$ 11.00
LDU-MD-500	DETECTOR, ULTRASONIC, W/O EMITTER	573.00
LDU-OIL-GLO-44-G	DYE, ALL-IN-ONE, 1 GALLON	703.00
LDU-OIL-GLO-44-P	DYE, ALL-IN-ONE, 16 OZ	100.00
LDU-OPX-3000	LAMP, LED, 115V CHARGER	175.00
LDU-UVS-40	SPECTACLES, UV ENHANCING	18.00

Technical Information

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HERCULES CUSTOM CYLINDER APPLICATION DATA FORM



Cylinder application _____

Single - or Double-acting _____ System operating pressure Normal _____ Max. _____

Bore _____ Is there a relief valve in system _____ Setting _____

Rod diameter _____ System flow in G.P.M Min. _____ Max. _____

Head & gland design _____ System operating temp. Normal _____ Max. _____

Piston design _____ Fluid type _____

Mounting conditions ___Vert.___Horz.___Incline angle Load holding requirements _____

Any side or eccentric loading possible _____ Environmental condition _____

Average cycles per week _____ Cylinder max force during: Push___ Pull___Both _____

A : Total stroke _____ I : Rod mount type or code _____

B : Closed length _____ J : Rod pin diameter _____

C : Open length _____ K : Rod mount width _____

D : Base mount type or code _____ L : Rod mount radius _____

E : Base pin diameter _____ M : Rod clevis gap (if applicable) _____

F : Base mount width _____ N : Base End Port Location _____

G : Base mount radius _____ Rod End Port Location _____

H : Base Clevis Gap (if applicable) _____

Special mounting (if applicable) _____

Extend port size and type _____ Extend port location _____

Retract port size and type _____ Retract port location _____

Special features or comments _____
(This includes break-a-way force, shock loads, etc.)

Requested by: Company Name _____ Quantity / Shipment _____

Address _____ Annual Usage _____

City _____ State _____ Zip _____

Phone _____ Fax _____

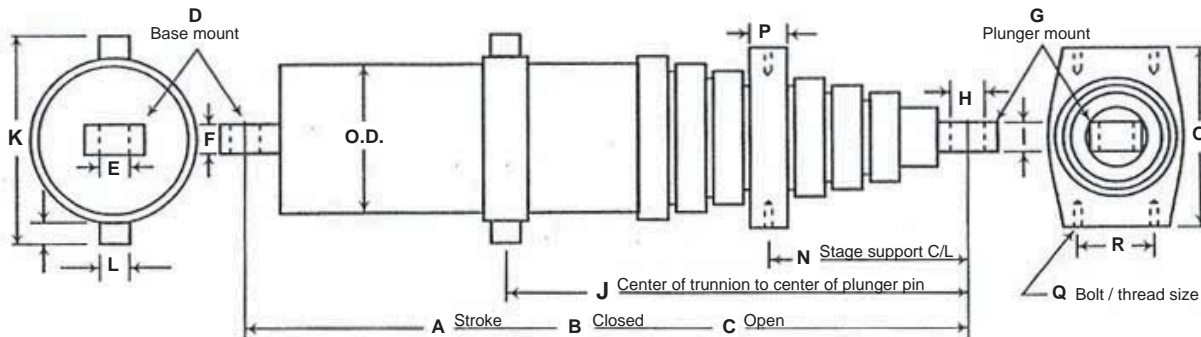
Contact _____

Phone (800) 777-5617 Fax (800) 759-6391



Hercules Sealing Products
1016 N. Belcher Rd
Clearwater, FL 33765

TELESCOPIC CYLINDER APPLICATION DATA FORM



Cylinder application _____

Single - or Double-acting _____ System operating pressure Normal _____ Max. _____

O.D. of body _____ Is there a relief valve in system _____ Setting _____

O.D. largest moving stage _____ System flow in G.P.M. Min. _____ Max. _____

Number of moving stages _____ System operating temp. Normal _____ Max. _____

Chrome or non-chrome stages _____ Fluid type _____

Mounting conditions ___Vert. ___Horz. ___Incline angle Load holding requirements _____

Any side or eccentric loading possible _____ Environmental condition _____

A : Total stroke _____ J : Plunger pin to trunnion C/L (if applicable) _____

B : Closed length _____ K : Trunnion overall width _____

C : Open length _____ L : Trunnion lug diameters _____

D : Base mount type or code _____ M : Trunnion lug lengths _____

E : Base pin diameter _____ N : Plunger pin to stage support (if applicable) _____

F : Base mount width _____ O : Stage support width _____

G : Plunger mount type or code _____ P : Stage support thickness _____

H : Plunger pin diameter _____ Q : Stage support bolt & thread size _____

I : Plunger mount width _____ R : Stage support bolt locations & C/L's _____

Special mounting (if applicable) _____

Extend port size and type _____ Extend port location _____

Retract port size and type _____ Retract port location _____

Special features or comments _____

Requested by: Firm _____ Current Quan. _____

Address _____ Future Quan. _____

City _____ State _____ Zip _____

Phone _____ Fax _____

Contact _____

Phone (800) 777-5617 Fax (800) 759-6391



Hercules Sealing Products
1016 N. Belcher Rd
Clearwater, FL 33765



CYLINDER PUSH AND PULL FORCES

Square Head "High Pressure" Cylinders

Working Pressure of Hydraulic Fluid P.S.I.

BORE	AREA	ROD	SIZE	50	100	250	500	1000	1500	2000	3000	5000
1-1/2	PUSH	—		88	177	443	885	1,770	2,655	3,540	5,310	8,850
	PULL	STD	5/8	73	146	365	730	1,460	2,190	2,920	4,380	7,300
	PULL	2:1	1	49	98	245	490	980	1,470	1,960	2,940	4,900
2	PUSH	—		157	314	785	1,570	3,140	4,710	6,280	9,420	15,700
	PULL	STD	1	118	236	590	1,180	2,360	3,540	4,720	7,080	11,800
	PULL	2:1	1-3/8	83	166	415	830	1,660	2,490	3,320	4,980	8,300
2-1/2	PUSH	—		246	491	1,228	2,455	4,910	7,265	9,820	14,730	24,550
	PULL	STD	1	206	412	1,030	2,060	4,120	6,180	8,240	12,360	20,600
	PULL	2:1	1-3/4	125	250	625	1,250	2,500	3,750	5,000	7,500	12,500
3-1/2	PUSH	—		415	830	2,075	4,150	8,300	12,450	16,600	24,900	41,500
	PULL	STD	1-3/8	341	681	1,703	3,405	6,810	10,215	13,620	20,430	34,050
	PULL	2:1	2	258	515	1,288	2,575	5,150	7,725	10,300	15,450	25,750
4	PUSH	—		628	1,257	3,143	6,285	12,570	18,855	25,140	37,710	62,850
	PULL	STD	1-3/4	508	1,016	2,540	5,080	10,160	15,240	20,320	30,480	50,800
	PULL	2:1	2-1/2	383	766	1,916	3,830	7,660	11,490	15,320	22,980	38,300
5	PUSH	—		982	1,964	4,910	9,820	19,640	29,460	39,280	58,920	98,200
	PULL	STD	2	825	1,649	4,123	8,245	16,490	24,735	32,980	49,470	82,450
	PULL	2:1	3-1/2	500	1,001	2,503	5,005	10,010	15,015	20,020	30,030	50,050
6	PUSH	—		1,413	2,827	7,068	14,135	28,270	42,405	56,540	84,810	141,350
	PULL	STD	2-1/2	1,168	2,336	5,840	11,680	23,360	35,040	46,720	70,080	116,800
	PULL	2:1	4	786	1,571	3,928	7,855	15,710	23,565	31,420	47,130	78,550
7	PUSH	—		1,924	3,849	9,623	19,245	38,490	57,735	76,980	115,470	192,450
	PULL	STD	3	1,571	3,142	7,855	15,710	31,420	47,130	62,840	94,260	157,100
	PULL	2:1	5	942	1,885	4,713	9,425	18,850	28,275	37,700	56,550	94,250
8	PUSH	—		2,514	5,027	12,568	25,135	50,270	75,405	100,540	150,810	251,350
	PULL	STD	3-1/2	2,032	4,064	10,160	20,320	40,640	60,960	81,280	121,920	203,200
	PULL	2:1	5-1/2	1,326	2,651	6,628	13,255	26,510	39,765	53,020	79,530	132,550
10	PUSH	—		3,927	7,854	19,635	39,270	78,540	117,810	157,080	235,620	392,700
	PULL	STD	4-1/2	3,132	6,264	15,660	31,320	62,640	93,960	125,280	187,920	313,200
	PULL	2:1	7	2,003	4,006	10,015	20,030	40,060	60,090	80,120	120,180	200,300

This table is a ready reference of forces available from either end from various cylinder and rod sizes at a range of pressures. For pressures intermediate between those shown, add force values from two or more pressures whose sum equals the given operating pressure.

HYDRAULIC CYLINDER SPEEDS

Inches / Minute

PISTON DIAMETER	ROD DIAMETER	FLOW - GPM										
		1	2	3	5	10	12	15	20	25	50	75
1	—	298	596	894	1490							
	1/2	392	784	1176	1960							
1-1/2	—	130	260	392	654	1308						
	5/8	158	316	476	792	1584						
	1	235	470	706	1176	2352						
2	—	73	146	221	368	736	883	1120				
	3/4	85	170	257	428	956	1025	1283				
	1	97	184	294	490	980	1175	1465				
	1-3/8	139	278	418	697	1394	1673	2090				
2-1/2	—	47	94	141	235	470	565	675	940	1175		
	1	56	112	168	280	560	672	840	1120	1400		
	1-3/8	67	134	203	339	678	813	1015	1355	1695		
	1-3/4	92	184	277	463	926	1110	1385	1850	2310		
3	—	32	64	98	163	326	392	490	653	817		
	1	36	72	110	184	368	440	551	735	920		
	1-1/2	43	86	131	218	436	523	655	872	1090		
	2	58	116	176	294	588	705	882	1175	1470		
3-1/2	—	24	48	72	120	240	288	360	480	600	1200	
	1-1/4	27	54	82	137	274	330	411	548	685	1370	
	1-3/4	32	64	96	160	320	384	480	640	800	1600	
	2	35	70	107	178	356	428	534	712	890	1780	
4	—	18	36	55	92	184	220	276	368	460	920	
	1-1/4	20	40	61	102	204	244	306	408	510	1020	
	1-3/4	22	44	68	113	226	273	339	452	565	1130	
	2	24	48	73	122	244	294	366	488	610	1220	
	2-1/2	30	60	90	150	300	362	450	600	750	1500	
5	—	12	24	35	58	116	141	174	232	290	580	870
	1-1/2	13	26	39	64	128	155	193	258	320	640	960
	2	14	28	42	70	140	168	210	280	350	700	1050
	2-1/2	16	32	47	78	156	188	235	315	390	780	1170
	3	18	36	55	92	184	220	275	365	460	920	1380
	3-1/2	22	44	66	111	222	266	333	444	555	1110	1665
6	—	8	16	24	41	82	98	123	162	202	404	606
	1-3/4	9	18	27	45	90	107	135	180	225	450	675
	2-1/2	10	20	30	50	100	118	150	200	250	500	750
	3	11	22	33	54	108	130	165	206	270	540	810
	3-1/2	12	24	37	62	124	148	185	245	310	620	930
8	—	4	8	14	23	46	55	69	92	115	230	345
	3-1/2	5-1/2	11	17	28	56	68	85	115	140	280	420
	4	6	12	18	30	60	73	90	122	150	300	450
	5	7-1/2	15	22	38	76	90	114	150	185	375	555
	5-1/2	8-1/2	17	26	43	86	104	129	172	215	430	645
10	—	3	6	9	15	30	35	44	60	73	146	220
	4-1/2	3-1/2	7	11	18	36	44	55	75	92	184	275
	5	4	8	12	20	40	47	60	80	100	200	300
	5-1/2	4-1/2	9	13	21	42	50	63	84	105	210	315
	7	5-1/2	11	17	29	58	69	87	115	145	290	435

TECHNICAL INFORMATION

This chart is based on the formula $V = \frac{231 \times \text{GPM}}{\text{EFF. CYL. AREA (Sq. Inches)}}$

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ELECTRIC MOTOR HORSEPOWER

Required to Drive a Hydraulic Pump

GPM	PUMP PRESSURE PSI										
	100	200	250	300	400	500	750	1000	1250	1500	2000
1/2	.04	.07	.09	.10	.14	.17	.26	.34	.43	.52	.69
1	.07	.14	.17	.21	.28	.34	.52	.69	.86	1.03	1.37
1 1/2	.10	.21	.26	.31	.41	.52	.77	1.03	1.29	1.54	2.06
2	.14	.28	.34	.41	.55	.69	1.03	1.37	1.72	2.06	2.75
2 1/2	.17	.34	.43	.52	.69	.86	1.29	1.72	2.15	2.58	3.43
3	.21	.41	.52	.62	.83	1.03	1.54	2.06	2.57	3.09	4.12
3 1/2	.24	.48	.60	.72	.96	1.20	1.80	2.40	3.00	3.60	4.81
4	.28	.55	.69	.82	1.10	1.37	2.06	2.75	3.43	4.12	5.49
5	.34	.69	.86	1.03	1.32	1.72	2.57	3.43	4.29	5.15	6.86
6	.41	.82	1.03	1.24	1.65	2.06	3.09	4.12	5.15	6.18	8.24
7	.48	.96	1.20	1.44	1.92	2.40	3.60	4.81	6.01	7.21	9.61
8	.55	1.10	1.37	1.65	2.20	2.75	4.12	5.49	6.86	8.24	11.0
9	.62	1.24	1.55	1.85	2.47	3.09	4.63	6.18	7.72	9.27	12.4
10	.69	1.37	1.62	2.06	2.75	3.43	5.15	6.86	8.58	10.3	13.8
11	.76	1.51	1.89	2.27	3.02	3.78	5.66	7.55	9.44	11.3	15.1
12	.83	1.65	2.06	2.47	3.30	4.12	6.18	8.24	10.3	12.4	16.5
13	.89	1.79	2.23	2.68	3.57	4.46	6.69	8.92	11.2	13.4	17.8
14	.96	1.92	2.40	2.88	3.84	4.81	7.21	9.61	12.0	14.4	19.2
15	1.03	2.06	2.57	3.09	4.12	5.15	7.72	10.3	12.9	15.4	20.6
16	1.10	2.20	2.75	3.30	4.39	5.49	8.24	11.0	13.7	16.5	22.0
17	1.17	2.33	2.92	3.50	4.68	5.83	8.75	11.7	14.6	17.5	23.3
18	1.24	2.47	3.09	3.71	4.94	6.18	9.27	12.4	15.4	18.5	24.7
19	1.30	2.61	3.26	3.91	5.22	6.52	9.78	13.0	16.3	19.6	26.1
20	1.37	2.75	3.43	4.12	5.49	6.86	10.3	13.7	17.2	21.6	27.5
25	1.72	3.43	4.29	5.15	6.86	8.58	12.9	17.2	21.5	25.8	34.3
30	2.06	4.12	5.15	6.18	8.24	10.3	15.4	20.6	25.7	30.9	41.2
35	2.40	4.81	6.01	7.21	9.61	12.0	18.0	24.0	30.0	36.0	48.0
40	2.75	5.49	6.86	8.24	11.0	13.7	20.6	27.5	34.3	41.2	54.9
45	3.09	6.18	7.72	9.27	12.4	15.4	23.2	31.0	38.6	46.3	61.8
50	3.43	6.86	8.58	10.3	13.7	17.2	25.7	34.3	42.9	51.5	68.6
55	3.78	7.55	9.44	11.3	15.1	18.9	28.3	37.8	47.2	56.6	75.5
60	4.12	8.24	10.3	12.4	16.5	20.6	30.9	41.2	51.5	61.8	83.4
65	4.46	8.92	11.2	13.4	17.8	22.3	33.5	44.6	55.8	66.9	89.2
70	4.81	9.61	12.0	14.4	19.2	24.0	36.0	48.0	60.1	72.1	96.1
75	5.15	10.3	12.9	15.4	20.6	25.7	38.6	51.4	64.3	77.2	103.0
80	5.49	11.0	13.7	16.5	22.0	27.5	41.2	54.9	68.6	82.4	109.8
90	6.18	12.4	15.4	18.5	24.7	30.9	46.3	61.8	77.2	92.7	123.6
100	6.86	13.7	17.2	20.6	27.5	34.4	51.5	68.6	85.8	103.0	137.3

TECHNICAL INFORMATION

This chart is based on the formula

$$HP = \frac{GPM \times PSI}{1714 \times \text{EFFICIENCY}}$$

For the purposes of this chart, pump efficiency was assumed to be 85%.

As horsepower varies directly with flow or pressure, multiply proportionately to determine values not shown. For instance, at 4000 PSI multiply 2000 PSI values by 2.

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FAX 1-727-797-8849

FLUID POWER FORMULAS

BASIC FORMULAS		
FORMULA FOR:	WORD FORMULA	LETTER FORMULA
FLUID PRESSURE In Pounds/Square Inch	PRESSURE = $\frac{\text{FORCE (pounds)}}{\text{UNIT AREA (Square Inches)}}$	$P = \frac{F}{A}$ or $\text{psi} = \frac{F}{A}$
FLUID FLOW RATE In Gallons/Minute	FLOW RATE = $\frac{\text{VOLUME (Gallons)}}{\text{UNIT TIME (Minutes)}}$	$Q = \frac{V}{T}$
FLUID POWER In Horsepower	HORSEPOWER = $\frac{\text{PRESSURE (PSI)} \times \text{FLOW (GPM)}}{1714}$	$HP = \frac{PQ}{1714}$
FLUID FORMULAS		
VELOCITY THROUGH PIPING In Feet/Second Velocity	VELOCITY = $\frac{.3208 \times \text{FLOW RATE THROUGH I.D. (GPM)}}{\text{INTERNAL AREA (Square Inches)}}$	$V = \frac{.3208Q}{A}$
COMPRESSIBILITY OF OIL In Additional Required Oil To Reach Pressure	ADDITIONAL VOLUME = $\frac{\text{PRESSURE (PSI)} \times \text{VOLUME OF OIL UNDER PRESSURE}}{250,000 \text{ (Approx.)}}$	$VA = \frac{PV^*}{250,000}$ <small>* Approximately 1/2% per 1000 psi</small>
COMPRESSIBILITY OF A FLUID	COMPRESSIBILITY = $\frac{1}{\text{BULK MODULUS OF THE FLUID}}$	$C(\beta) = \frac{1}{BM}$
SPECIFIC GRAVITY OF A FLUID	SPECIFIC GRAVITY = $\frac{\text{WEIGHT OF ONE CUBIC FOOT OF FLUID}}{\text{WEIGHT OF ONE CUBIC FOOT OF WATER}}$	$SG = \frac{W}{62.4283}$
VALVE (CV) FLOW FACTOR	VALVE FACTOR (CV) = $\frac{\text{FLOW RATE (GPM)} \times \sqrt{\text{SPECIFIC GRAVITY}}}{\text{PRESSURE DROP (PSI)}}$	$CV = \frac{Q \sqrt{SG}}{\Delta P}$
VISCOSITY IN CENTISTOKES	For Viscosities of 32 to 100 Saybolt Universal Seconds: CENTISTOKES = $.2253 \times \text{SUS} - \frac{194.4}{\text{SUS}}$	$CS = .2253 \text{ SUS} - \frac{194.4}{\text{SUS}}$
VISCOSITY IN CENTISTOKES	For Viscosities of 100 to 240 Saybolt Universal Seconds: CENTISTOKES = $.2193 \times \text{SUS} - \frac{134.6}{\text{SUS}}$	$CS = .2193 \text{ SUS} - \frac{134.6}{\text{SUS}}$
VISCOSITY IN CENTISTOKES	For Viscosities Greater Than 240 Saybolt Universal Seconds: CENTISTOKES = $\frac{\text{SUS}}{4.635}$	$CS = \frac{\text{SUS}}{4.635}$

NOTE: Saybolt Universal Seconds is often abbreviated SSU.

PUMP FORMULAS		
PUMP OUTLET FLOW In Gallons/Minute	FLOW = $\frac{\text{RPM} \times \text{PUMP DISPLACEMENT (Cu. In./Rev.)}}{231}$	$Q = \frac{nd}{231}$
PUMP INPUT POWER In Horsepower Required	HORSEPOWER INPUT = $\frac{\text{FLOW RATE OUTPUT (GPM)} \times \text{PRESSURE (psi)}}{1714 \times \text{EFFICIENCY (Overall)}}$	$HP_{IN} = \frac{QP}{1714 \text{ Eff}}$ or $\frac{\text{GPM} \times \text{psi}}{1714 \text{ Eff}}$
PUMP EFFICIENCY Overall in Percent	OVERALL EFFICIENCY = $\frac{\text{OUTPUT HORSEPOWER}}{\text{INPUT HORSEPOWER}} \times 100$	$f_{OV} = \frac{HP_{OUT}}{HP_{IN}} \times 100$
	OVERALL EFFICIENCY = $\text{VOLUMETRIC Eff.} \times \text{MECHANICAL Eff.}$	$f_{OV} = \text{Eff}_{VOL.} \times \text{Eff}_{MECH.}$
PUMP EFFICIENCY Overall in Percent	VOLUMETRIC EFFICIENCY = $\frac{\text{ACTUAL FLOW RATE OUTPUT (GPM)}}{\text{THEORETICAL FLOW RATE OUTPUT (GPM)}} \times 100$	$f_{VOL} = \frac{Q_{ACT.}}{Q_{THEO.}} \times 100$
PUMP EFFICIENCY Mechanical in Percent	MECHANICAL EFFICIENCY = $\frac{\text{THEORETICAL TORQUE TO DRIVE}}{\text{ACTUAL TORQUE TO DRIVE}} \times 100$	$\text{Eff}_{MEC} = \frac{T_{THEO.}}{T_{ACT.}} \times 100$
PUMP LIFE B ₁₀ BEARING LIFE	B ₁₀ HOURS OF BEARING LIFE = $\text{RATED LIFE HOURS} \times \frac{\text{RATED SPEED (RPM)}}{\text{NEW SPEED (RPM)}} \times \left(\frac{\text{RATED PRESSURE (PSI)}}{\text{NEW PRESSURE (PSI)}} \right)^3$	$B_{10} = \text{RATED HRS.} \times \frac{\text{RPM}_R}{\text{RPM}_N} \times \left(\frac{\text{PR}}{\text{PN}} \right)^3$

TECHNICAL INFORMATION



FLUID POWER FORMULAS

ACTUATOR FORMULAS

FORMULA FOR:	WORD FORMULA	LETTER FORMULA
CYLINDER AREA In Square Inches	AREA = $\pi \times \text{RADIUS}^2$ (Inches)	A = πr^2
	= $\frac{\pi \times \text{DIAMETER}^2}{4}$ (Inches)	A = $\frac{\pi D^2}{4}$ or A = $.785D^2$
CYLINDER FORCE In Pounds, Push or Pull	FORCE = PRESSURE (psi) X NET AREA (Square Inches)	F = psi X A or F = PA
CYLINDER VELOCITY or SPEED In Feet/Second	VELOCITY = $\frac{231 \times \text{FLOW RATE (GPM)}}{12 \times 60 \times \text{NET AREA (Square Inches)}}$	F = $\frac{231Q}{720A}$ or V = $\frac{.3208Q}{A}$
CYLINDER VOLUME CAPACITY In Gallons of Fluid	VELOCITY = $\frac{\pi \times \text{RADIUS}^2 \text{ (Inches)} \times \text{STROKE (Inches)}}{231}$	V = $\frac{\pi r^2 l}{231}$
	= $\frac{\text{NET AREA (Square Inches)} \times \text{STROKE (Inches)}}{231}$	V = $\frac{A l}{231}$ l = Length of Stroke
CYLINDER FLOW RATE In Gallons Per Minute	FLOW RATE = $\frac{12 \times 60 \times \text{VELOCITY (Feet/Sec.)} \times \text{NET AREA (Sq. Inches)}}{231}$	Q = $\frac{720vA}{231}$ or Q = 3.117vA
FLUID MOTOR TORQUE In Inch Pounds	TORQUE = $\frac{\text{PRESSURE (psi)} \times \text{F.M. DISPLACEMENT (Cu. In./Rev.)}}{2\pi}$	T = $\frac{\text{psi } d}{2\pi}$ or T = $\frac{Pd}{2\pi}$
	= $\frac{\text{HORSEPOWER} \times 63025}{\text{RPM}}$	T = $\frac{63025 \text{ HP}}{n}$
	= $\frac{\text{FLOW RATE (GPM)} \times \text{PRESSURE (psi)} \times 36.77}{\text{RPM}}$	T = $\frac{36.77QP}{n}$ or T = $\frac{36.77Q\text{psi}}{n}$
FLUID MOTOR TORQUE/100 psi In Inch Pounds	TORQUE/100 psi = $\frac{\text{F.M. DISPLACEMENT (Cu. Inches/Revolution)}}{.0628}$	T _{100psi} = $\frac{d}{.0628}$
FLUID MOTOR SPEED In Revolutions/Minute	SPEED = $\frac{231 \times \text{FLOW RATE (GPM)}}{\text{F.M. DISPLACEMENT (Cu. Inches/Revolution)}}$	n = $\frac{231Q}{d}$
FLUID MOTOR POWER In Horsepower Output	HORSEPOWER = $\frac{\text{TORQUE OUTPUT (Inch Pounds)} \times \text{RPM}}{63025}$	HP = $\frac{Tn}{63025}$
THERMAL FORMULAS Δ		
RESERVOIR COOLING CAPACITY Based on Adequate Air Circulation	HEAT (BTU/HR) = 2 X TEMPERATURE DIFFERENCE BETWEEN RESERVOIR WALLS AND AIR (°F) X AREA OF RESERVOIR (Sq. Ft.)	BTU/HR = 2.0 X T X A Δ
HEAT IN HYDRAULIC OIL (approx.) Due to System Inefficiency (SG=.89-.92)	HEAT (BTU/HR) = FLOW RATE (GPM) X 210 X TEMPERATURE DIFFERENCE (°F)	BTU/HR = Q X 210 X T Δ
HEAT IN FRESH WATER (approx.)	HEAT (BTU/HR) = FLOW RATE (GPM) X 500 X TEMPERATURE DIFFERENCE (°F)	BTU/HR = Q X 500 X T
NOTE: One British Thermal Unit (BTU) is the amount of heat required to raise the temperature of one pound of water one degree. One Horsepower = 2545 BTU/HR.		

VOLUME & CAPACITY EQUIVALENTS

	Cubic Inches	Cubic Feet	Cubic Yards	Liters	U.S. Gallons	Imperial Gallons	Water at Max. Density 39.2°F 4°C	
							Pounds of Water	Kilograms of Water
Cu Inches	1	.0005787	.00002143	.016384	.004329	.0036065	.0361275	.0163872
Cu Feet	1728	1	.037037	28.317	7.48052	6.23210	62.4283	28.3170
Cu Yards	46,656	27	1	764.56	201.974	168.266	1685.56	764.559
Liters	61.0234	.0353145	.001308	1	.264170	.220083	2.20462	1
U.S. Gallons	231	.133681	.004951	3.78543	1	.833111	8.34545	3.78543
Imp. Gallons	277.274	.160459	.0059429	4.54374	1.20032	1	10.0172	4.54373
Lbs Water	27.6798	.0160184	.0005929	.453592	.119825	.0998281	1	.453593

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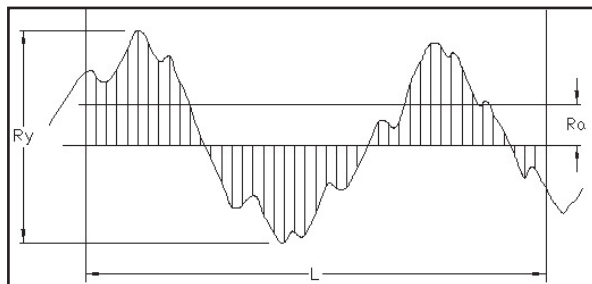
TECH TIP - SURFACE FINISH

The surface finish has a critical influence on excellent sealing performance, low friction and long seal life. A finish that is either too rough or very smooth will cause a negative result. The surface microstructures allow pockets of fluid in very small volumes to pass under the seal with each cycle. This lubricating fluid lowers friction and extends seal life. Seal interface lubrication is reduced with a very fine surface finish and the seal will suffer increased friction and wear. In the case of rod sealing, a rougher finish may result in leakage if the fluid passes under the seal, is removed from the rod and not returned back into the cylinder. The wear rate is a major factor in the life of a dynamic application, and depends on the quality of the rod and the cylinder bore surface finish.

DEFINITIONS

The most frequently specified parameters in the fluid power industry are Ra, Ry, Rt, Rz, Rq, and Rsk which are defined in ISO 4287 and ISO 4288.

Ra is defined as the arithmetical mean deviation of the assessed profile. The inch equivalent parameter is CLA (centre line average). A surface finish of 0.4 µm Ra is equivalent to 16 µin CLA. The “checkmark” symbol used on drawings to specify a surface texture control requirement is an Ra specification.



Ry (also Rmax) is the maximum roughness height in one cutoff length (L) of the profile.

Rt is the maximum roughness height in five cutoff lengths of the roughness profile.

Rz is the average of the five greatest peak-to-valley separations crossing the mean line in a single cutoff length.

Rq is the root mean square deviation of the assessed profile. The equivalent term in inches is RMS (Root Mean Square). The Rq (RMS) of a surface is approximately 10% greater than the Ra (CLA) value.

Rsk is the assessed profile skewness or the measure of symmetry about the mean. A negative Rsk indicates greater valleys than peaks and imparts a better seal mating surface.

RECOMMENDATIONS

A single parameter rating is not sufficient in assessing the surface irregularities. Several parameters should be specified to accurately evaluate the surface depth, shape and orientation and their affect on sealing performance, friction and wear.

Reciprocating Cylinder Rod
Hydraulic and Low Pressure Pneumatic

Ra = 4 to 12 µin [0.1 to 0.3 µm]
Rz ≤ 50 µin [1.3 µm]
Rsk = -1.0 to -4.0

Reciprocating Cylinder Bore and Slow Rotary Rod
Hydraulic and Low Pressure Pneumatic

Ra = 4 to 20 µin [0.1 to 0.5 µm]
Rz ≤ 80 µin [2.0 µm]
Rsk = -1.0 to -4.0

SURFACE FINISHING

The surface roughness is dependent on the machining process employed. Scores, scratches, voids, concentric or linear machining marks are not permitted. Common production methods result in a metal surface finish of between 1 µin to 140 µin [0.02 µm to 3.5 µm] Ra roughness as shown in the table below.

PROCESS ROUGHNESS Ra (µin [µm])

Turning	40 - 140 [1.0 - 3.5]
Boring	24 - 95 [0.6 - 2.4]
Broaching	16 - 63 [0.4 - 1.6]
Precision Rolling	8 - 48 [0.2 - 1.2]
Grinding	8 - 40 [0.2 - 1.0]
Smooth	3 - 12 [0.08 - 0.3]
Super Fine	0.5 - 3 [0.012 - 0.08]
Polished	0.5 - 3 [0.012 - 0.08]

FRONT MOUNT DUMP BODY

Stroke & Lifting Calculations Mounting

NOTE: This guide is for use to determine approximate stroke and lifting requirements for a front mount dump body. Final dimensions should be determined by an engineering drawing.

Formula for Calculating Initial Required Cylinder Force to Lift a Load

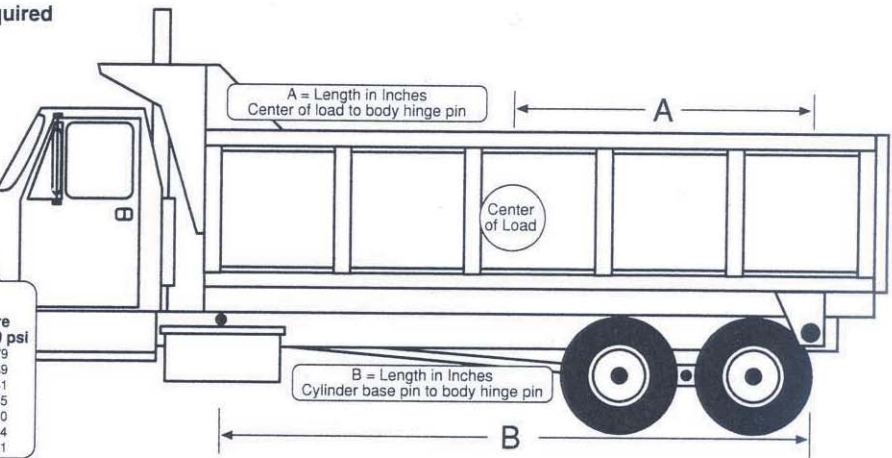
$$\frac{\text{Load (lbs)} \times \text{"A"}}{\text{"B"}} = \text{Initial required cylinder force}$$

Example

$$\frac{50,000\# \times 85"}{166"} = 25,603\# \text{ of force to start the lift}$$

Note: For a good design, initial pressure should not exceed 800 psi at start of lift

Telescopic Lifting Capabilities				
Stage O.D. in inches	800 psi	System operating pressure 1000 psi	1500 psi	2000 psi
2.75"	4752	5940	8909	11879
3.75"	8836	11045	16567	22089
4.75"	14176	17721	26581	35441
5.75"	20774	25967	38951	51935
6.75"	28628	35785	53677	71570
7.90"	39213	49017	73525	98034
9.37"	55165	68958	103434	137911



Formula for Calculating the Required Cylinder Stroke for a Dump Angle

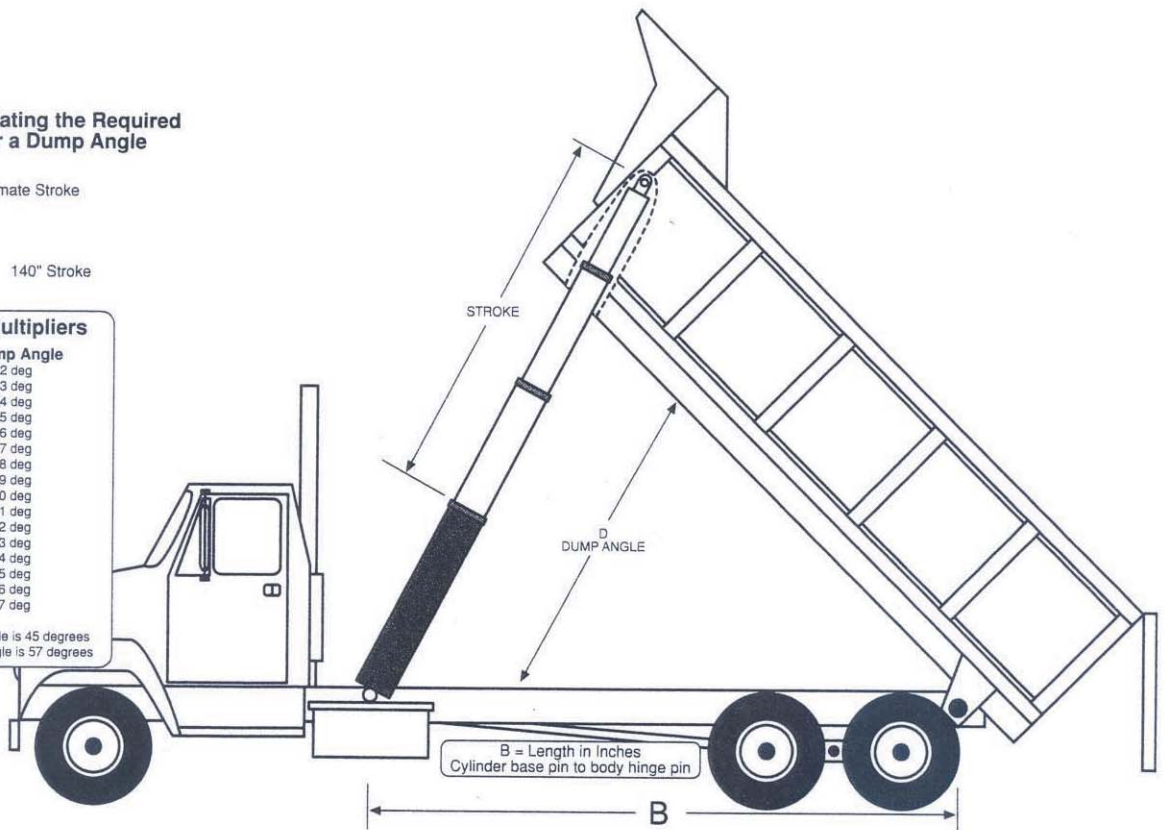
$$\text{"B"} \times \text{"D"} = \text{Approximate Stroke}$$

Example

$$166" (\text{B}) \times .845 (\text{D}) = 140" \text{ Stroke}$$

Dump Angle Multipliers	
"D" = Dump Angle	
.715	42 deg
.733	43 deg
.750	44 deg
.765	45 deg
.780	46 deg
.797	47 deg
.813	48 deg
.830	49 deg
.845	50 deg
.861	51 deg
.877	52 deg
.892	53 deg
.903	54 deg
.923	55 deg
.939	56 deg
.954	57 deg

Normal minimum dump angle is 45 degrees
Normal maximum dump angle is 57 degrees



TECHNICAL INFORMATION



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