



Parkrimp 1
Model 80C-061
Operations and Technical Manual
Bulletin 4480-T20-US



ENGINEERING YOUR SUCCESS.

Safety Notices

- Read the entire Technical Manual prior to mounting and operating this crimper.
- There are Parkrimp training videos available to view online at: <http://solutions.parker.com/hpd-product-videos>.

WARNING – When using this machine, always exercise basic safety precautions, including but not limited to the following:

1. Use this machine only for its intended purpose: to fabricate Parker hose assemblies.
2. Parker Hannifin will not accept responsibility for any incidental, consequential or special damages of any kind or nature whatsoever that result from any subsequent alterations to any Parkrimp machine. Parker Hannifin disclaims any warranties on items altered after leaving the Parker Hannifin facility.
3. This machine must be properly installed and located in accordance with the installation instructions before it is used.

To minimize the possibility of injury:

1. The power unit must be connected to a grounded properly rated, protected and sized power-supply circuit to prevent electrical shock and to avoid electrical overload; Never use an extension cord to connect this machine or any other Parker machine to the electrical outlet.
2. Do not operate over maximum rated working pressure.
3. Check for safe system setups.

Make sure that the valve, connecting hoses, etc. are protected from any external source of damage, such as: excessive heat, flame, moving machine parts, sharp edges, falling objects, corrosive chemicals, etc.

IMPORTANT SAFETY NOTICE

THIS INFORMATION IS INTENDED FOR USE BY INDIVIDUALS POSSESSING ADEQUATE BACKGROUNDS OF ELECTRICAL, ELECTRONIC AND MECHANICAL EXPERIENCE. ANY ATTEMPT TO REPAIR THIS MACHINE MAY RESULT IN PERSONAL INJURY AND PROPERTY DAMAGE.
THE MANUFACTURER OR SELLER CANNOT BE RESPONSIBLE FOR THE INTERPRETATION OF THIS INFORMATION, NOR CAN IT ASSUME ANY LIABILITY IN CONNECTION WITH ITS USE.

DISCONNECT ANY POWER CORD BEFORE SERVICING
IMPORTANT - RECONNECT ALL GROUNDING DEVICES



Parker Safety Guide for Selecting and Using Hose, Tubing, Fittings and Related Accessories

Parker Publication No. 4400-B.1
Revised: August 2007

WARNING: Failure or improper selection or improper use of hose, tubing, fittings, assemblies or related accessories ("Products") can cause death, personal injury and property damage. Possible consequences of failure or improper selection or improper use of these Products include but are not limited to:

- Fittings thrown off at high speed.
- High velocity fluid discharge.
- Explosion or burning of the conveyed fluid.
- Electrocutation from high voltage electric powerlines.
- Contact with suddenly moving or falling objects that are controlled by the conveyed fluid.
- Injections by high-pressure fluid discharge.
- Dangerously whipping Hose.
- Contact with conveyed fluids that may be hot, cold, toxic or otherwise injurious.
- Sparking or explosion caused by static electricity buildup or other sources of electricity.
- Sparking or explosion while spraying paint or flammable liquids.
- Injuries resulting from inhalation, ingestion or exposure to fluids.

Before selecting or using any of these Products, it is important that you read and follow the instructions below. Only Hose from Parker's Stratoflex Products Division is approved for in flight aerospace applications.

Offer of Sale

The items described in this document are hereby offered for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions stated in the "Offer of Sale".



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Help us help you ...

Read this guide carefully.

It is designed to help you operate and maintain your Parkrimp 1. If you don't understand something or need more help, call:

Technical Service Department
Parker Hannifin Corporation
Hose Products Division
Phone: (440) 943-5700
Fax: (440) 943-3129

Write down the Model and Serial Numbers:

80C-

Model Number

Serial Number (Located on the machine Mounting Bracket)

Use these numbers in any correspondence or service calls.

RECEIVING INSTRUCTIONS: UNPACKING – Remove all documents and components from shipping containers.

INSPECTION – Visually inspect all components for shipping damage. If any shipping damage is found, notify the carrier at once. Shipping damage is not covered by the Parker warranty. The carrier is responsible for all repair and replacement costs resulting from such damage.





Figure 1: Parkrimp 1 Crimping Machine

Specifications

- Dimensions:** Length 20"
Width 26"
Height 25"
- Weight:** 275 lbs.
- Rating:** 30 tons cylinder force @ 3,000 psi
- Hydraulic Oil:** ISO Grade 32AW, 1 gallon reservoir capacity.
- Operating Voltage:** Machine is factory wired to operate at 115 Volt, 1 PH, 60 HZ.

See page 6 for additional electrical information.

- 80C-061 includes:**
 - Parkrimp 1 Crimper 80C-181
 - Die ring Silver 80C-R01
 - Die ring Black 80C-R02
 - No Dies - Order Separately

- 80C-181 includes:**
 - Parkrimp 1 Crimper 80C-080
 - 115/230 volt, 1 phase, 60 Hz power unit 80C-115
 - No Dies or Die Rings - Order Separately

Capabilities

For use with 25, 26, 43, 81 and HY fittings.

- 1" 1 and 2 wire hose
- 5/8" 4 spiral hose
- 3/8" Compact Spiral Hose

No Stainless Steel Fittings

Crimp Cycle Time: 15-20 seconds, depending on Pusher position.
(1/2" 43 series straight fittings)

Note: Cycle times vary depending on hose, fitting styles and sizes.

This machine may require the use of the Molykote GN grease for larger hose and fittings. For best performance and longevity of crimper components, use the Molykote GN grease for all crimping:

This machine is designed to make about 200 crimps per day and not designed for production use:

Exceeding the suggested production amounts will significantly reduce the life expectancy of the machine components.

Installation & Operating Instructions

1. Obtain a sturdy, level work surface capable of supporting at least 300 pounds which is 34"-38" high and located in a well-illuminated area. The work surface area must be able to fit the mounting hole pattern shown in Figure 2.
2. Unpack crimper and accessories from shipping container. Verify that you have received the following:

Model Number		Description	Accessory Part Number
80C-061	80C-181		
•	•	Base crimper with 115V power unit	80C-181
•	•	Technical Manual	4480-T20-US
•	•	Grease	842205
•		Silver Die Ring	80C-R01
•		Black Die Ring	80C-R02

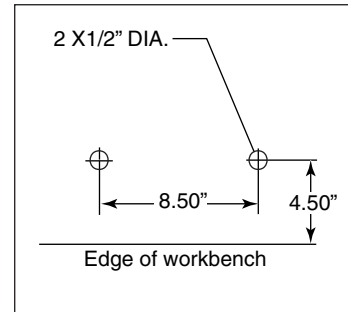


Figure 2: Mounting holes

3. Remove the crimper from the pallet and position onto the work surface so that the base plate overhangs the front of the work surface by six inches.
Caution: Observe normal safety precautions when lifting, lowering, or moving this unit.
4. Secure the unit to the work surface using the mounting hole pattern shown in Figure 2. Two 1/2" holes are provided in the crimper mounting bracket for this purpose.
- 5 **Remove the reservoir breather shipping plug.**
6. **Attach the enclosed breather cap to the reservoir.**
7. The crimper has been filled with oil and cycled. Check the oil level in the reservoir prior to start-up. The oil level should be within 1" of the fill port. Add ISO grade 32 AW Hydraulic oil if filling is required.
8. Plug the machine into a properly rated receptacle (see page 6).

Removal of Air from the Parkrimp 1 Hydraulic Circuit

The hydraulic system, when connected for the first time, will have air in the system. The air must be removed for safety and proper operation. Air can generally be removed from the system by fully advancing and retracting the hydraulic cylinder several times. When the trapped air is removed from the hydraulic circuit, the cylinder will advance and retract smoothly. Sluggish cylinder action is usually the first sign of air in the system.

To Test and Operate the Parkrimp 1 Crimper

1. Toggle the On/Off to the On position, located on the left side of the motor conduit box.
2. Place either the black or silver die ring on the crimper base plate.
Note: It is not necessary to place any dies into the machine for this step.
3. Pull the valve handle toward you to lower the cylinder until the pusher bottoms out against the die ring.
Caution: Keeping the crimper in this bottomed out position for more than a few seconds can damage the power unit.
4. Push the valve handle away from you to raise the cylinder.

Electrical Requirements

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IMPORTANT — RECONNECT ALL GROUNDING DEVICES

The power supply should be brought via separate branch circuit to a single grounded receptacle. The Parkrimp 1 unit has been shipped with a 6 ft. long cord and plug. Figure 3 shows the proper NEMA configuration plug and receptacle approved for use with this machine.

Note: It is against the National Electrical Code to remove the plug from the cord or to install the mating receptacle in a system rated for less than 20 amps.

ANY CHANGES OR ELECTRICAL WORK PERFORMED ON THIS UNIT MUST ONLY BE MADE BY A QUALIFIED ELECTRICIAN.

Model	80C-181
Phase	1 Phase
Voltage	115
Cycle	60 Hz
Full Load Amperes	16 Amps
Circuit Fuse	20 Amps

Wire size for receptacle must conform to the requirements of the National Electrical Code or the prevailing local code. The outlet box should be located within the range of the provided cord. **We strongly recommend against the use of an extension cord.** The installer **must perform a ground continuity check** on the power outlet box to ensure it is properly grounded.

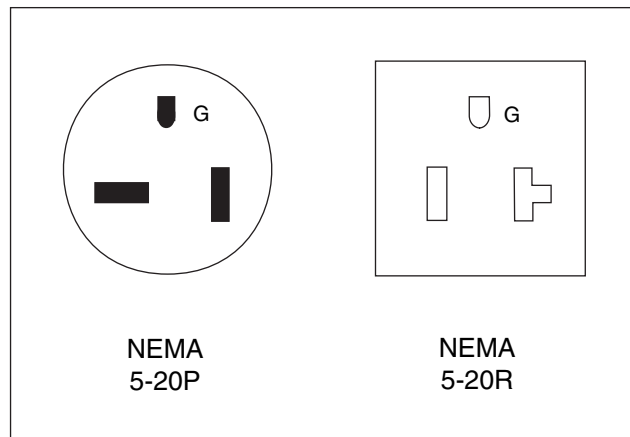


Figure 3: NEMA Configuration of Plug and Receptacle

Alternate Motor Voltages:

	Full Load
	Amperes
Voltage (Standard)	115 16
Voltage (Alternate)	230 8

*Reference motor nameplate for wiring diagrams.

Tools and Dies

The following crimping dies are available for use with the Parkrimp 1 machine:

Fitting Series	-4 RED	-5 PUR	-6 YEL	-8 BLU	-10 ORG	-12 GRN	-16 BLK	-20 WHT
Die Part Number	80C-A04	80C-A05	80C-A06	80C-A08	80C-A10	80C-A12	80C-A16	
43 Series								
Die Part Number			80C-Y06	80C-Y08				
25 Series								
Die Part Number	80C-E04	80C-E05	80C-E06	80C-E08	80C-E10	80C-E12	80C-E16	
26 Series								
Die Part Number						80C-V12	80C-V16	80C-V20
81 Series								
Die Part Number	80C-H585			80C-H735	80C-H860	80C-H1015	80C-H1170	80C-H1365
HY Series 611HT, 801, 836 Hose								

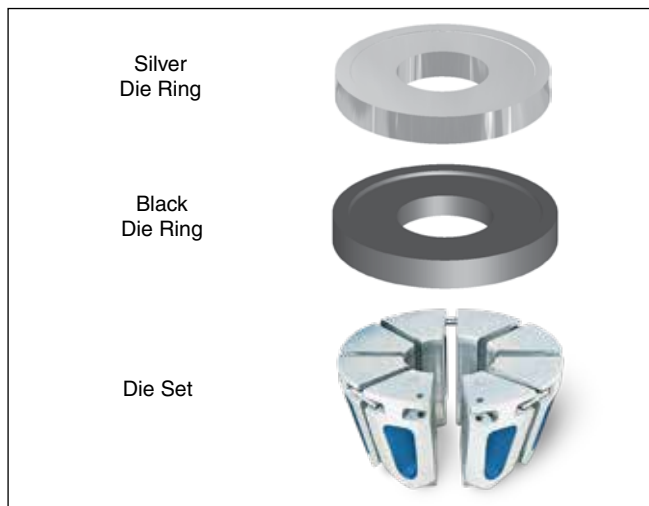


Figure 4: Die Rings and Die Set

The Parkrimp 1 can be used to crimp some Parflex Division products. Please contact Parflex Division for more information.

The 43 Series dies are silver and inserts are color coded by size. Refer to the die selection chart, Parker Catalog 4400 or CrimpSource online, at www.parkerhose.com to determine which die set and die ring to use when crimping a particular fitting, hose size and type.

The following tooling is used for crimping:

80C-R01 Silver Die Ring










To determine when to use, refer to die selection chart in Parker Catalog 4400 or decal on front of crimper.

80C-R02 Black Die Ring

To determine when to use, refer to die selection chart in Parker Catalog 4400 or decal on front of crimper.

See above for die set part numbers.

Tool Selection Chart

		Parker Hannifin Corporation Hose Products Division 30240 Lakeland Blvd. Wickliffe, Ohio 44092		Parkrimp 1 Hose Die Selection Chart								
Fitting Series	HOSE			-4 RED	-5 PUR	-6 YEL	-8 BLU	-10 ORG	-12 GRN	-16 BLK	-20 WHT	Die Ring
43 Series	Die Part Number			80C-A04	80C-A05	80C-A06	80C-A08	80C-A10	80C-A12	80C-A16		
	GLOBALCORE™ 187/187ST/TC (-8 THRU -16) 387/387ST/TC 487/487ST/TC (-4 THRU -12) 787/787ST/TC (-4 & -6) 797/797ST/TC (-4 & -6)			0.645 0.665	0.710 0.730	0.825 0.845	0.945 0.965	1.060 1.080	1.245 1.265	1.590 1.610		
	351ST/TC	422	426	431	436							SILVER
	451ST/TC	471ST/TC	472LT	482ST/TC								
	GLOBALCORE™ 722/722ST/TC (-6 THRU-10 ONLY)			0.685 0.705	0.750 0.770	0.865 0.885	0.985 1.005	1.100 1.120	1.285 1.305	1.630 1.650		
25 Series	Die Part Number					80C-Y06	80C-Y08					
	271					0.680 0.700	0.825 0.845					
26 Series	Die Part Number			80C-E04	80C-E05	80C-E06	80C-E08	80C-E10	80C-E12	80C-E16		
	213	285	293	0.460 0.480	0.520 0.540	0.575 0.595	0.670 0.690	0.805 0.825	0.915 0.935	1.175 1.195		
	201	225	266	0.500	0.560	0.615	0.710	0.845	0.955	1.215		
	206 221FR	226 244	SS25UL	0.520	0.580	0.635	0.730	0.865	0.975	1.235		BLACK
81 Series	Die Part Number								80C-V12	80C-V16	80C-V20	
	811	811HT	881						1.155 1.175	1.450 1.470	1.740 1.760	
HY Series	Die Part Number			80C-H595				80C-H1015	80C-H1170	80C-H1365		
	801	836		0.575 0.595				0.995 1.015	1.140 1.160	1.350 1.370		
	Die Part Number					80C-H735	80C-H860					
	801	836				0.755 0.775	0.890 0.910					
Caution: Read the operations and technical manual before attempting to operate this machine. Do not operate this machine without guard in place. Keep hands clear of moving parts when operating machine.								Note: Do not use this machine to assemble any size stainless steel fittings.				
Information on this decal is subject to change without notice. For the most current crimp specifications, please visit Crimpsource at www.parker.com/crimpsource . New decals can be ordered at Parker website https://parker.cp.imtco.com/Account/Login .								Decal Part Number: 80C-CRIMPDECAL REV. H				

For Reference Only

Notes:

This chart is displayed on the yellow cover of the Parkrimp 1 machine.

The dies listed are interchangeable between all of the Parkrimp machines. The die rings **are not** interchangeable between machines. Use only 80C-R01 and 80C-R02 die rings on the Parkrimp 1 machine.

For a complete selection of hose and fittings, see Parker Catalog 4400.

Caution: To ensure consistent quality, crimp diameters must be checked —

1. After first assembly.
2. At regular intervals during the production, such as first, last and every 50th assembly.

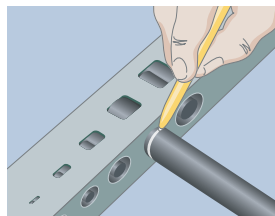
If you find your crimp diameters out of tolerance, inspect each assembly made. **Never allow hose assemblies with an incorrect crimp diameter to be used.** Use the appropriate Parker Machine Trouble Shooting Guide to determine the cause. If you are unable to determine the cause of the problem, call our Hose Products Division Technical Service Department, (440) 943-5700, for assistance.

Additional Hose Die Selection Charts are available upon request from your Parker supplier.

Crimping Instructions

Crimping Instructions for 25, 26, 43, 81 and HY Series fittings.

1 Mark insertion depth and push on fitting



Mark the hose insertion depth and push hose into fitting until the mark on the hose is even with the end of the shell. Lubricate hose if necessary, however, **DO NOT lubricate if using spiral hose.** See Hose Insertion Depth table below.



Place shell onto end of hose and make sure the end of the shell lines up with the Insertion Depth mark.

Push hose onto the 88 Series fitting until the shell bottoms against the fitting's stop ring or hex. Lubricate hose if necessary.

2 Insert unitized die train



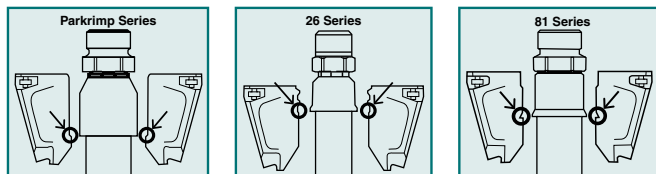
Pull pin at the top of pusher to swing it back. Place unitized die-train into base plate. See decal on crimper for proper die set.

Note: Parkrimp 1 does not have a pin at the top of the pusher.

Important: Lubricate the crimper's die bowl with a MOLY-GRADE lithium grease or Molykote GN assembly paste.

Color-Coded Unitized Die-Train

3 Position the fitting



Position the hose and fitting in dies from below.

Rest bottom of coupling on die step using the PARKALIGN® feature.

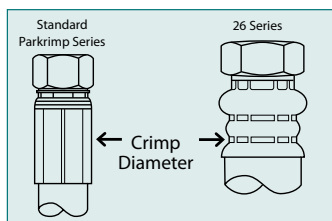
4 Place die ring and crimp



Place correct die ring on top of the dies. See decal on crimper for proper die ring.

Operate pump until the die ring bottoms out. Release pressure within the pump — remove finished assembly.

5 Measure crimp diameter



Measure crimp diameter on the flat surfaces of the crimped shell, referenced in the illustration to the left. Reference decal on crimper for crimp diameters. Never use hose assemblies with incorrect crimp diameters.

Important: Hose assemblies must be inspected for cleanliness and free of all foreign particles.

Note: See Hose Insertion Depth table at the right.

Important: Hose assemblies must be inspected for cleanliness and free of all foreign particles.

Note: Parker Hannifin will not accept responsibility for the operations of, or provide warranty coverage for, a crimper that is operated by a power unit other than equipment supplied by Parker Hannifin for the expressed purpose of operating the designated crimper.

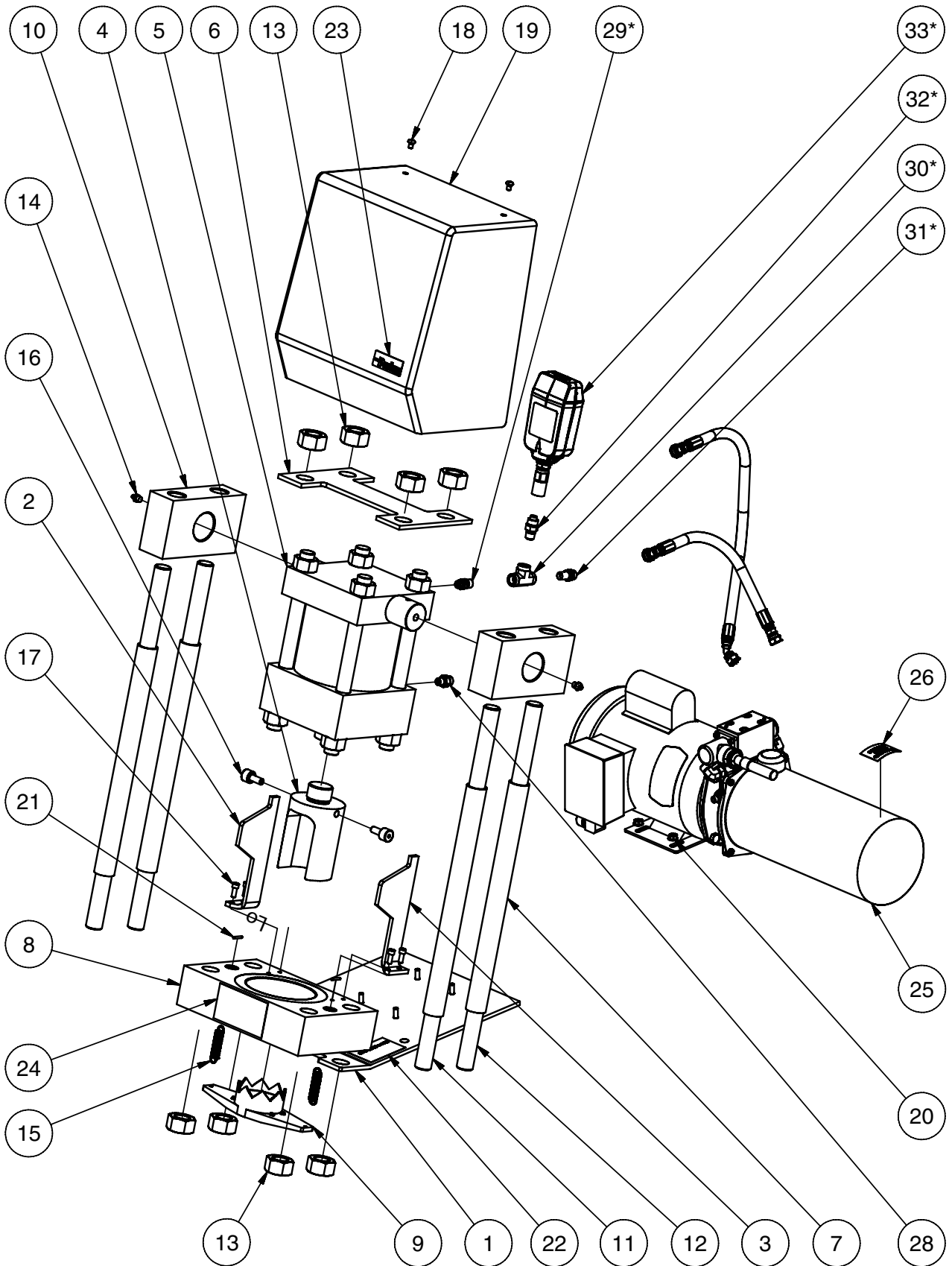
Hose insertion depths

Fitting Size	Fitting Series									
	25		26		43		81		HY	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
-4	—	—	13/16	21	13/16	21	—	—	1-7/16	37
-5	—	—	13/16	21	15/16	24	—	—	—	—
-6	7/8	22	13/16	21	1-1/8	29	—	—	1-1/2	40
-8	7/8	22	13/16	21	1-5/16	33	—	—	1-9/16	40
-10	—	—	7/8	22	1-9/16	40	—	—	1-9/16	40
-12	—	—	7/8	22	1-1/2	38	1-1/8	29	1-5/8	40
-16	—	—	1	25	1-3/4	44	1-1/4	32	1-3/4	43
-20	—	—	—	—	—	—	1-5/16	33	—	—

For specific information on crimping, visit Crimpsource™ online at www.parker.com/crimpsource.

Assembly Detail & Parts List

Crimper



Assembly Detail & Parts List

Crimper

ITEM	QTY.	PART NUMBER	DESCRIPTION
1**	1	792011	MOUNTING BRACKET
2	1	792019	LEFT CAM RAMP
3	1	792020	RIGHT CAM RAMP
4	1	792021	PUSHER
5**	1	792024	CYLINDER
6**	1	792025	CAP PLATE
7**	4	792027	COMPRESSION SLEEVE
8**	1	792029	BASE PLATE
9	1	792030	DIE SEPARATOR
10**	2	792031	TRUNNION CAP
11**	2	792032	FRONT TIE ROD
12**	2	792062	REAR TIE ROD
13**	8	792063	TIE ROD NUT
14	2	1022400000	GREASE FITTING
15	2	792065	EXTENSION SPRING
16	2	792067	CAM FOLLOWER
17	4	792068	1/4-20 X 5/8 S.H.C.S.
18	2	802001	1/4-20 X 3/8 B.H.C.S.
19	1	802002	GUARD
20	4	802015	1/4-20 HEX NUT
21	2	832001	1/8" X 3/4 SPRING PIN
22	1	DEC-SNBR	SERIAL NUMBER DECAL
23	1	881620-B	PARKER LOGO DECAL
24	1	DEC-CAUTION	CRIMP CAUTION DECAL
25	1	80C-115	POWER UNIT
26	1	881620-E	WARNING DECAL
28	1	4 F5OLO-S	TUBE FITTING ADAPTER
29*	1	4-1/4 F5OF-S	TUBE FITTING ADAPTER
30*	1	1/4 MMO-S	TUBE FITTING ADAPTER
31*	1	4-4 FLO-S	TUBE FITTING ADAPTER
32*	2	EMA3/1/4NPT	QCD EMA3 TEST PORT ADAPTER
33*	1	KN-SENSOR-V1A	KRIMPNODE SENSOR

NOTES:

- *Only if applicable (For U.S Machines Only)
- **Items are not sold individually, contact Technical Services.

Replacement Parts

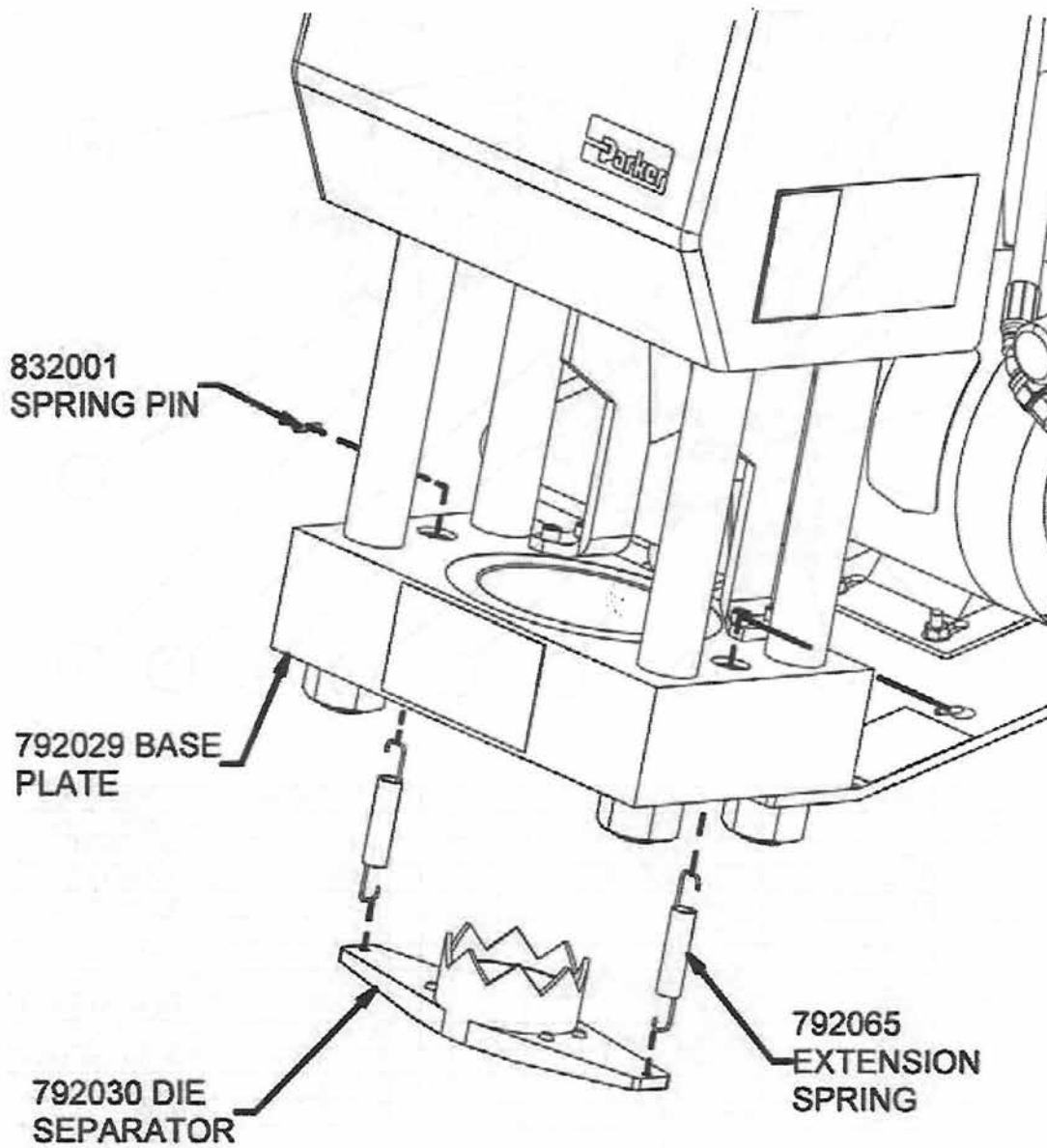
Die Separator Replacement (Part Number 792030)

REMOVAL

1. Remove the two 3/4" x 1/8" spring pins (832001).
2. Remove the die separator (792030) and springs (792065) from the crimper base plate (792029).
3. Remove the springs (792065) from the die separator (792030).

INSTALLATION

To install the new die separator, follow the above steps in reverse.



Replacement Parts

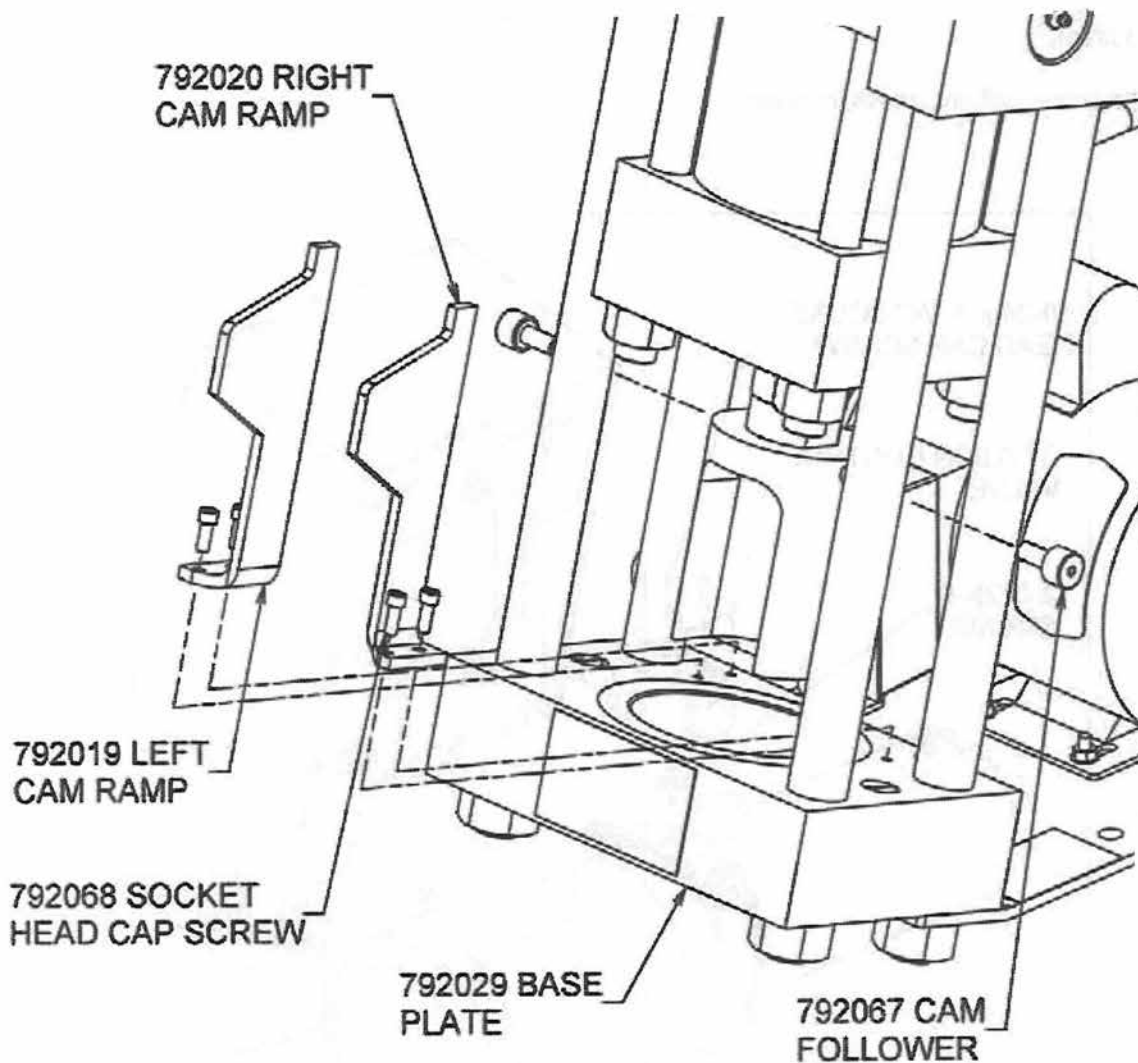
Replacement of Parkrimp 1 Cam Ramps and Cam Followers

REMOVAL

1. Start the power unit and retract the pusher completely up.
2. Unplug the power unit.
3. Remove the four 1/4 - 20 x 5/8" socket head cap screws (792068) holding the cam ramps using a 3/16" allen wrench.
4. Unscrew and remove the cam followers (792067) from the pusher.

INSTALLATION

To reassemble, follow the above steps in reverse.



Replacement Parts**Control Valve Replacement (Part Number DIVL9CN)**

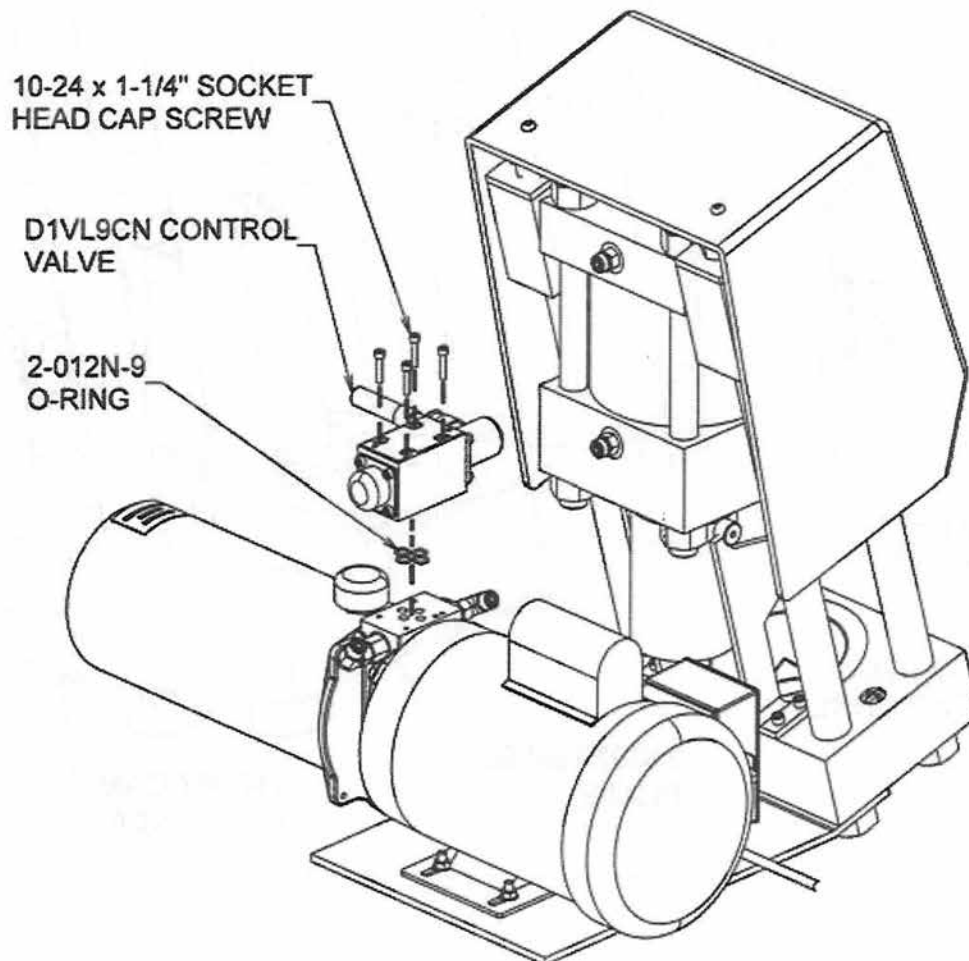
REMOVAL

1. Unplug the power unit
2. Remove the four 10-24 socket head bolts that hold the valve in place.
3. Remove the valve DIVL9CN.

NOTE: This valve is available through Parker Valve Division

INSTALLATION

1. Mount the new valve to the pump assembly. Make sure the four o-rings are in place on the underside of the valve.
2. Insert the four 10-24 socket head bolts into the valve and tighten them to 50-60 lbs. ins. in a diametrically opposed pattern.
3. Run the power unit and check for leaks.



Trouble Shooting Guide

If you have a problem with your Parkrimp 1 machine:

- **First** check that the proper tooling, hose and fitting combinations are being used as identified in the Parker Catalog 4400.
- **Then** check the following recommendations. If after the following suggested remedy, the problem persists, call our Technical Service Department at (440) 943-5700.

Symptoms	Possible Causes	What To Do
Power unit does not operate	Blown fuse(s) Low voltage at motor On-off switch faulty Motor or pump assembly faulty	Replace with time-delay fuse(s) or circuit breaker(s) and check for the cause of the overload. Call a qualified electrician. Disconnect power. Replace off-on switch. Connect Technical Service Department.
Power unit stalls before pusher bottoms out	Low voltage at motor Lack of lubrication between dies and die cavity Wrong fitting, hose or die ring combination	Call a qualified electrician. Lubricate die bowl with bowl with approved MOLY-GRADE grease such as Citgo Lithoplex MP2, Dow Corning Molykote GN Assembly Paste or equivalent. Use correct combination. See Catalog No. 4400.
Motor vibrates or is excessively noisy	High voltage Motor fan loose, damaged, or out of balance	Call a qualified electrician. With power disconnected, remove motor fan guard. Tighten fan screw(s), or repair fan or fan guard by straightening. If problem continues, contact Technical Service Department.
Power unit runs but cylinder does not move up or down when valve handle is actuated.	Low oil supply Valve or pump faulty	Refill oil reservoir with high grade AW32 hydraulic oil. Tank capacity is 1 gallon. Contact Technical Service Department for trouble shooting or analysis.
Pusher does not follow cam ramps.	Machine is not installed properly Cam Ramp(s) bent or damaged. Cam follower(s) bent or damaged.	Work table must be level. Refer to installation instructions on page 5. Front of base plate must overhang the work surface by 6 inches. The front tie rod nuts must not be on the work surface. Repair or place cam ramp(s). Refer to page 14 for replacement. Repair or replace cam follower(s). Refer to page 14 for replacement.

Trouble Shooting Guide

Symptoms	Possible Causes	What To Do
Valve leaks	Valve hold down bolts loose O-rings at valve to subplate worn or damaged.	Tighten hold down bolts to 50-60 inch pounds. Replace O-rings. Valve replacement instructions are found on page 14.
Coupling crimp diameter above or below specification.	Wrong fitting style being used Wrong hose being used. Wrong die ring being used Pusher is not being bottomed out on die ring and base plate (usually inconsistent crimp diameters) Relief valve set too low High or low voltage Worn, damaged or faulty die ring Low on oil Crimp dies or die rings damaged, worn or faulty Die cavity in base plate worn or faulty	Only approved fittings can be used with the Parkrimp 1 machine. For a complete selection and correct combinations of hose and fittings, see Parker Catalog 4400. Use only Parker No-Skive hose. For a complete selection of hose and fittings, see Parker Catalog 4400. See crimper decal or Parker Catalog 4400 for correct die ring. Lubricate die bowl with bowl with approved MOLY-GRADE grease such as Citgo Lithoplex MP2, Dow Corning Molykote GN Assembly Paste or equivalent.. When bottomed, you will hear the relief valve open. You can also check for proper bottoming by placing a piece of paper between die ring and base plate. If properly bottomed, you should not be able to remove paper. Relief valve setting should be 3000 psi. Relief valve can only be set at factory. Call a qualified electrician. Replace die ring. Refill oil reservoir with high grade hydraulic AW32 oil. Tank capacity is 1 gallon. Visually inspect all wear surfaces for raised metal dent or gouges. Replace damaged die sets or die rings. Worn or faulty die sets will crimp above or below specification by the same amount with both the silver and black die rings. Replace worn or faulty die sets. Lubricate the die cavity in base plate frequently to prevent wear. Check crimp diameter of several different sizes of die sets with both the silver and black die rings. If all crimp diameters are out of specification by the same amount, the die cavity in the base plate may be out of specification. Contact Technical Service Department for repair. Lubricate the die cavity in the base plate frequently to prevent wear.

Maintenance

- Frequently inspect all system components (e.g., crimp bowl, dies, die rings, pusher, hoses, electrical cords) for signs of excessive wear, leakage or damage. Replace any worn or damaged component immediately. Any electrical repair or replacement may only be performed by a qualified electrician, adhering to all applicable local and national codes

DO NOT CONTINUE TO USE MACHINE WITH DAMAGED COMPONENTS.

- Check hydraulic fluid level every 40 hours of operation. Oil should be about 1" below fill port with cylinder fully retracted. Add ISO grade 32 AW if necessary by removing the fill port cap. Always be sure the cylinder is fully retracted before adding fluid to the reservoir.
- Completely drain and clean the reservoir, reservoir magnet and pick-up screen every 1000 hours of use or more frequently if machine is used in dirty environments. Refill the reservoir with ISO grade 32 AW.
- Turn the machine off when not in use. Allowing the machine to run continuously when not in use, may cause overheating. If oil temperature rises to 140°F, turn machine off and let cool to 120°F.
- Clean the crimp bowl of old grease on a weekly basis. Re-grease the crimp bowls after the bowl has been cleaned.
- Apply approved MOLY-GRADE lithium grease such as Citgo Lithoplex MP2, Dow Corning Molykote GN Assembly Paste or equivalent to the dies and crimp bowl each time the dies are changed. If dies are not changed through a days operation, grease should be applied twice a day.
- In addition to the above preventative maintenance, it is strongly recommended that the machine crimp head be inspected and serviced every 5-6 years. Contact Parker Hose Products Division Technical Services department for crimper service information.



Parker Safety Guide for Selecting and Using Hose, Tubing, Fittings, Connectors, Conductors, Valves and Related Accessories

Parker Publication No. 4400-B.1

WARNING: Failure or improper selection or improper use of hose, tubing, fittings, assemblies, valves, connectors, conductors or related accessories (“Products”) can cause death, personal injury and property damage. Possible consequences of failure or improper selection or improper use of these Products include but are not limited to:

- Fittings thrown off at high speed.
- High velocity fluid discharge.
- Explosion or burning of the conveyed fluid.
- Electrocutation from high voltage electric powerlines.
- Contact with suddenly moving or falling objects that are controlled by the conveyed fluid.
- Injections by high-pressure fluid discharge.
- Dangerously whipping Hose.
- Tube or pipe burst.
- Weld joint fracture.
- Contact with conveyed fluids that may be hot, cold, toxic or otherwise injurious.
- Sparking or explosion caused by static electricity buildup or other sources of electricity.
- Sparking or explosion while spraying paint or flammable liquids.
- Injuries resulting from inhalation, ingestion or exposure to fluids.

Before selecting or using any of these Products, it is important that you read and follow the instructions below. No product from any division in Parker Fluid Connectors Group is approved for in-flight aerospace applications. For hoses and fittings used in in-flight aerospace applications, please contact Parker Aerospace Group.

1.0 GENERAL INSTRUCTIONS

- 1.1 Scope:** This safety guide provides instructions for selecting and using (including assembling, installing, and maintaining) these Products. For convenience, all rubber and/or thermoplastic products commonly called “hose” or “tubing” are called “Hose” in this safety guide. Metallic tube or pipe are called “tube”. All assemblies made with Hose are called “Hose Assemblies”. All assemblies made with Tube are called “Tube Assemblies”. All products commonly called “fittings”, “couplings” or “adapters” are called “Fittings”. Valves are fluid system components that control the passage of fluid. Related accessories are ancillary devices that enhance or monitor performance including crimping, flaring, flanging, presetting, bending, cutting, deburring, swaging machines, sensors, tags, lockout handles, spring guards and associated tooling. This safety guide is a supplement to and is to be used with the specific Parker publications for the specific Hose, Fittings and Related Accessories that are being considered for use. Parker publications are available at www.parker.com. SAE J1273 (www.sae.org) and ISO 17165-2 (www.ansi.org) also provide recommended practices for hydraulic Hose Assemblies, and should be followed.
- 1.2 Fail-Safe:** Hose, Hose Assemblies, Tube, Tube Assemblies and Fittings can and do fail without warning for many reasons. Design all systems and equipment in a fail-safe mode, so that failure of the Hose, Hose Assembly, Tube, Tube Assembly or Fitting will not endanger persons or property.
- 1.3 Distribution:** Provide a copy of this safety guide to each person responsible for selecting or using Hose, Tube and Fitting products. Do not select or use Parker Hose, Tube or Fittings without thoroughly reading and understanding this safety guide as well as the specific Parker publications for the Products.
- 1.4 User Responsibility:** Due to the wide variety of operating conditions and applications for Hose, Tube and Fittings. Parker does not represent or warrant that any particular Hose, Tube or Fitting is suitable for any specific end use system. This safety guide does not analyze all technical parameters that must be considered in selecting a product. The user, through its own analysis and testing, is solely responsible for:
- Making the final selection of the Products.
 - Assuring that the user’s requirements are met and that the application presents no health or safety hazards.
 - Following the safety guide for Related Accessories and being trained to operate Related Accessories.
 - Providing all appropriate health and safety warnings on the equipment on which the Products are used.
 - Assuring compliance with all applicable government and industry standards.
- 1.5 Additional Questions:** Call the appropriate Parker technical service department if you have any questions or require any additional information. See the Parker publication for the Products being considered or used, or call 1-800-CPARKER, or go to www.parker.com, for telephone numbers of the appropriate technical service department.

2.0 HOSE, TUBE AND FITTINGS SELECTION INSTRUCTIONS

- 2.1 Electrical Conductivity:** Certain applications require that the Hose be nonconductive to prevent electrical current flow. Other applications require the Hose and the Fittings and the Hose/Fitting interface to be sufficiently conductive to drain off static electricity. Extreme care must be exercised when selecting Hose, Tube and Fittings for these or any other applications in which electrical conductivity or nonconductivity is a factor.
- The electrical conductivity or nonconductivity of Hose, Tube and Fittings is dependent upon many factors and may be susceptible to change. These factors include but are not limited to the various materials used to make the Hose and the Fittings, Fitting finish (some Fitting finishes are electrically conductive while others are nonconductive), manufacturing methods (including moisture control), how the Fittings contact the Hose, age and amount of deterioration or damage or other changes, moisture content of the Hose at any particular time, and other factors.
- The following are considerations for electrically nonconductive and conductive Hose. For other applications consult the individual catalog pages and the appropriate industry or regulatory standards for proper selection.
- 2.1.1 Electrically Nonconductive Hose:** Certain applications require that the Hose be nonconductive to prevent electrical current flow or to maintain electrical isolation. For applications that require Hose to be electrically nonconductive, including but not limited to applications near high voltage electric lines, only special nonconductive Hose can be used. The manufacturer of the equipment in which the nonconductive Hose is to be used must be consulted to be certain that the Hose, Tube and Fittings that are selected are proper for the application. Do not use any Parker Hose or Fittings for any such application requiring nonconductive Hose, including but not limited to applications near high voltage electric lines or dense magnetic fields, unless (i) the application is expressly approved in the Parker technical publication for the product, (ii) the Hose is marked “nonconductive”, and (iii) the manufacturer of the equipment on which the Hose is to be used specifically approves the particular Parker Hose, Tube and Fittings for such use.
- 2.1.2 Electrically Conductive Hose:** Parker manufactures special Hose for certain applications that require electrically conductive Hose. Parker manufactures special Hose for conveying paint in airless paint spraying applications. This Hose is labeled “Electrically Conductive Airless Paint Spray Hose” on its lay-line and packaging. This Hose must be properly connected to the appropriate Parker Fittings and properly grounded in order to dissipate dangerous static charge buildup, which occurs in all airless paint spraying applications. Do not use any other Hose for airless paint spraying, even if electrically conductive. Use of any other Hose or failure to properly connect the Hose can cause a fire or an explosion resulting in death, personal injury, and property damage. All hoses that convey fuels must be grounded.
- Parker manufactures a special Hose for certain compressed natural gas (“CNG”) applications where static electricity buildup may occur. Parker CNG Hose assemblies comply with the requirements of ANSI/IAS NGV 4.2; CSA 12.52, “Hoses for Natural Gas Vehicles and Dispensing Systems” (www.ansi.org). This Hose is labeled “Electrically Conductive for CNG Use”

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on its layline and packaging. This Hose must be properly connected to the appropriate Parker Fittings and properly grounded in order to dissipate dangerous static charge buildup, which occurs in, for example, high velocity CNG dispensing or transfer. Do not use any other Hose for CNG applications where static charge buildup may occur, even if electrically conductive. Use of other Hoses in CNG applications or failure to properly connect or ground this Hose can cause a fire or an explosion resulting in death, personal injury, and property damage. Care must also be taken to protect against CNG permeation through the Hose wall. See section 2.6, Permeation, for more information. Parker CNG Hose is intended for dispenser and vehicle use within the specified temperature range. Parker CNG Hose should not be used in confined spaces or unventilated areas or areas exceeding the specified temperature range. Final assemblies must be tested for leaks. CNG Hose Assemblies should be tested on a monthly basis for conductivity per ANSI/IAS NGV 4.2; CSA 12.52.

Parker manufactures special Hose for aerospace in-flight applications. Aerospace in-flight applications employing Hose to transmit fuel, lubricating fluids and hydraulic fluids require a special Hose with a conductive inner tube. This Hose for in-flight applications is available only from Parker's Stratoflex Products Division. Do not use any other Parker Hose for in-flight applications, even if electrically conductive. Use of other Hoses for in-flight applications or failure to properly connect or ground this Hose can cause a fire or an explosion resulting in death, personal injury and property damage. These Hose assemblies for in-flight applications must meet all applicable aerospace industry, aircraft engine and aircraft requirements.

- 2.2 Pressure:** Hose, Tube and Fitting selection must be made so that the published maximum working pressure of the Hose, Tube and Fittings are equal to or greater than the maximum system pressure. The maximum working pressure of a Hose, or Tube Assembly is the lower of the respective published maximum working pressures of the Hose, Tube and the Fittings used. Surge pressures or peak transient pressures in the system must be below the published maximum working pressure for the Hose, Tube and Fitting. Surge pressures and peak pressures can usually only be determined by sensitive electrical instrumentation that measures and indicates pressures at millisecond intervals. Mechanical pressure gauges indicate only average pressures and cannot be used to determine surge pressures or peak transient pressures. Published burst pressure ratings for Hose is for manufacturing test purposes only and is no indication that the Product can be used in applications at the burst pressure or otherwise above the published maximum recommended working pressure.
- 2.3 Suction:** Hoses used for suction applications must be selected to insure that the Hose will withstand the vacuum and pressure of the system. Improperly selected Hose may collapse in suction application.
- 2.4 Temperature:** Be certain that fluid and ambient temperatures, both steady and transient, do not exceed the limitations of the Hose, Tube, Fitting and Seals. Temperatures below and above the recommended limit can degrade Hose, Tube, Fittings and Seals to a point where a failure may occur and release fluid. Tube and Fittings performances are normally degraded at elevated temperature. Material compatibility can also change at temperatures outside of the rated range. Properly insulate and protect the Hose Assembly when routing near hot objects (e.g. manifolds). Do not use any Hose in any application where failure of the Hose could result in the conveyed fluids (or vapors or mist from the conveyed fluids) contacting any open flame, molten metal, or other potential fire ignition source that could cause burning or explosion of the conveyed fluids or vapors.
- 2.5 Fluid Compatibility:** Hose, and Tube Assembly selection must assure compatibility of the Hose tube, cover, reinforcement, Tube, Plating and Seals with the fluid media used. See the fluid compatibility chart in the Parker publication for the product being considered or used. This information is offered only as a guide. Actual service life can only be determined by the end user by testing under all extreme conditions and other analysis.
- Hose, and Tube that is chemically compatible with a particular fluid must be assembled using Fittings and adapters containing likewise compatible seals. Flange or flare processes can change Tube material properties that may not be compatible with certain requirements such as NACE
- 2.6 Permeation:** Permeation (that is, seepage through the Hose or Seal) will occur from inside the Hose or Fitting to outside when Hose or Fitting is used with gases, liquid and gas fuels, and refrigerants (including but not limited to such materials as helium, diesel fuel, gasoline, natural gas, phosphate esters, Skydrol, or LPG). This permeation may result in high concentrations of vapors which are potentially flammable, explosive, or toxic, and in loss of fluid. Dangerous explosions, fires, and other hazards can result when using the wrong Hose for such applications. The system designer must take into account the fact that this permeation

will take place and must not use Hose or Fitting if this permeation could be hazardous. The system designer must take into account all legal, government, insurance, or any other special regulations which govern the use of fuels and refrigerants. Never use a Hose or Fitting even though the fluid compatibility is acceptable without considering the potential hazardous effects that can result from permeation through the Hose or Tube Assembly.

Permeation of moisture from outside the Hose or Fitting to inside the Hose or Fitting will also occur in Hose or Tube assemblies, regardless of internal pressure. If this moisture permeation would have detrimental effects (particularly, but not limited to refrigeration and air conditioning systems), incorporation of sufficient drying capacity in the system or other appropriate system safeguards should be selected and used. The sudden pressure release of highly pressurized gas could also result in Explosive Decompression failure of permeated Seals and Hoses.

- 2.7 Size:** Transmission of power by means of pressurized fluid varies with pressure and rate of flow. The size of the components must be adequate to keep pressure losses to a minimum and avoid damage due to heat generation or excessive fluid velocity.
- 2.8 Routing:** Attention must be given to optimum routing to minimize inherent problems (kinking or flow restriction due to Hose collapse, twisting of the Hose, proximity to hot objects or heat sources). For additional routing recommendations see SAE J1273 and ISO 17165-2. Hose Assemblies have a finite life and should be installed in a manner that allows for ease of inspection and future replacement. Hose because of its relative short life, should not be used in residential and commercial buildings inside of inaccessible walls or floors, unless specifically allowed in the product literature. Always review all product literature for proper installation and routing instructions.
- 2.9 Environment:** Care must be taken to insure that the Hose, Tube and Fittings are either compatible with or protected from the environment (that is, surrounding conditions) to which they are exposed. Environmental conditions including but not limited to ultraviolet radiation, sunlight, heat, ozone, moisture, water, salt water, chemicals and air pollutants can cause degradation and premature failure.
- 2.10 Mechanical Loads:** External forces can significantly reduce Hose, Tube and Fitting life or cause failure. Mechanical loads which must be considered include excessive flexing, twist, kinking, tensile or side loads, bend radius, and vibration. Use of swivel type Fittings or adapters may be required to insure no twist is put into the Hose. Use of proper Hose or Tube clamps may also be required to reduce external mechanical loads. Unusual applications may require special testing prior to Hose selection.
- 2.11 Physical Damage:** Care must be taken to protect Hose from wear, snagging, kinking, bending smaller than minimum bend radius and cutting, any of which can cause premature Hose failure. Any Hose that has been kinked or bent to a radius smaller than the minimum bend radius, and any Hose that has been cut or is cracked or is otherwise damaged should be removed and discarded. Fittings with damages such as scratches on sealing surfaces and deformation should be replaced.
- 2.12 Proper End Fitting:** See instructions 3.2 through 3.5. These recommendations may be substantiated by testing to industry standards such as SAE J517 for hydraulic applications, or MIL-A-5070, AS1339, or AS3517 for Hoses from Parker's Stratoflex Products Division for aerospace applications.
- 2.13 Length:** When determining the proper Hose or Tube length of an assembly, be aware of Hose length change due to pressure, Tube length change due to thermal expansion or contraction, and Hose or Tube and machine tolerances and movement must be considered. When routing short hose assemblies, it is recommended that the minimum free hose length is always used. Consult the hose manufacturer for their minimum free hose length recommendations. Hose assemblies should be installed in such a way that any motion or flexing occurs within the same plane.
- 2.14 Specifications and Standards:** When selecting Hose, Tube and Fittings, government, industry, and Parker specifications and recommendations must be reviewed and followed as applicable.
- 2.15 Hose Cleanliness:** Hose and Tube components may vary in cleanliness levels. Care must be taken to insure that the Hose and Tube Assembly selected has an adequate level of cleanliness for the application.
- 2.16 Fire Resistant Fluids:** Some fire resistant fluids that are to be conveyed by Hose or Tube require use of the same type of Hose or Tube as used with petroleum base fluids. Some such fluids require a special Hose, Tube, Fitting and Seal, while a few fluids will not work with any Hose at all. See instructions 2.5 and 1.5. The wrong Hose, Tube, Fitting or Seal may fail after a very short service. In addition, all liquids but pure water may burn fiercely under certain conditions, and even pure water leakage may be hazardous.

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- 2.17 Radiant Heat:** Hose and Seals can be heated to destruction without contact by such nearby items as hot manifolds or molten metal. The same heat source may then initiate a fire. This can occur despite the presence of cool air around the Hose or Seal. Performance of Tube and Fitting subjected to the heat could be degraded.
- 2.18 Welding or Brazing:** When using a torch or arc welder in close proximity to hydraulic lines, the hydraulic lines should be removed or shielded with appropriate fire resistant materials. Flame or weld spatter could burn through the Hose or Seal and possibly ignite escaping fluid resulting in a catastrophic failure. Heating of plated parts, including Hose Fittings and adapters, above 450°F (232°C) such as during welding, brazing or soldering may emit deadly gases. Any elastomer seal on fittings shall be removed prior to welding or brazing, any metallic surfaces shall be protected after brazing or welding when necessary. Welding and brazing filler material shall be compatible with the Tube and Fitting that are joined.
- 2.19 Atomic Radiation:** Atomic radiation affects all materials used in Hose and Tube assemblies. Since the long-term effects may be unknown, do not expose Hose or Tube assemblies to atomic radiation. Nuclear applications may require special Tube and Fittings.
- 2.20 Aerospace Applications:** The only Hose, Tube and Fittings that may be used for in-flight aerospace applications are those available from Parker's Stratoflex Products Division. Do not use any other Hose or Fittings for in-flight applications. Do not use any Hose or Fittings from Parker's Stratoflex Products Division with any other Hose or Fittings, unless expressly approved in writing by the engineering manager or chief engineer of Stratoflex Products Division and verified by the user's own testing and inspection to aerospace industry standards.
- 2.21 Unlocking Couplings:** Ball locking couplings or other Fittings with quick disconnect ability can unintentionally disconnect if they are dragged over obstructions, or if the sleeve or other disconnect member, is bumped or moved enough to cause disconnect. Threaded Fittings should be considered where there is a potential for accidental uncoupling.
- 3.0 HOSE AND FITTINGS ASSEMBLY AND INSTALLATION INSTRUCTIONS**
- 3.1 Component Inspection:** Prior to assembly, a careful examination of the Hose and Fittings must be performed. All components must be checked for correct style, size, catalog number, and length. The Hose must be examined for cleanliness, obstructions, blisters, cover looseness, kinks, cracks, cuts or any other visible defects. Inspect the Fitting and sealing surfaces for burrs, nicks, corrosion or other imperfections. Do NOT use any component that displays any signs of nonconformance.
- 3.2 Hose and Fitting Assembly:** Do not assemble a Parker Fitting on a Parker Hose that is not specifically listed by Parker for that Fitting, unless authorized in writing by the engineering manager or chief engineer of the appropriate Parker division. Do not assemble a Parker Fitting on another manufacturer's Hose or a Parker Hose on another manufacturer's Fitting unless (i) the engineering manager or chief engineer of the appropriate Parker division approves the Assembly in writing or that combination is expressly approved in the appropriate Parker literature for the specific Parker product, and (ii) the user verifies the Assembly and the application through analysis and testing. For Parker Hose that does not specify a Parker Fitting, the user is solely responsible for the selection of the proper Fitting and Hose Assembly procedures. See instruction 1.4.
- To prevent the possibility of problems such as leakage at the Fitting or system contamination, it is important to completely remove all debris from the cutting operation before installation of the Fittings. The Parker published instructions must be followed for assembling the Fittings on the Hose. These instructions are provided in the Parker Fitting catalog for the specific Parker Fitting being used, or by calling 1-800-CPARKER, or at www.parker.com.
- 3.3 Related Accessories:** Do not crimp or swage any Parker Hose or Fitting with anything but the listed swage or crimp machine and dies in accordance with Parker published instructions. Do not crimp or swage another manufacturer's Fitting with a Parker crimp or swage die unless authorized in writing by the engineering manager or chief engineer of the appropriate Parker division.
- 3.4 Parts:** Do not use any Parker Fitting part (including but not limited to socket, shell, nipple, or insert) except with the correct Parker mating parts, in accordance with Parker published instructions, unless authorized in writing by the engineering manager or chief engineer of the appropriate Parker division.
- 3.5 Field Attachable/Permanent:** Do not reuse any field attachable Hose Fitting that has blown or pulled off a Hose. Do not reuse a Parker permanent Hose Fitting (crimped or swaged) or any part thereof. Complete Hose Assemblies may only be reused after proper inspection under section 4.0. Do not assemble Fittings to any previously used hydraulic Hose that was in service, for use in a fluid power application.
- 3.6 Pre-Installation Inspection:** Prior to installation, a careful examination of the Hose Assembly must be performed. Inspect the Hose Assembly for any damage or defects. DO NOT use any Hose Assembly that displays any signs of nonconformance.
- 3.7 Minimum Bend Radius:** Installation of a Hose at less than the minimum listed bend radius may significantly reduce the Hose life. Particular attention must be given to preclude sharp bending at the Hose to Fitting juncture. Any bending during installation at less than the minimum bend radius must be avoided. If any Hose is kinked during installation, the Hose must be discarded.
- 3.8 Twist Angle and Orientation:** Hose Assembly installation must be such that relative motion of machine components does not produce twisting.
- 3.9 Securement:** In many applications, it may be necessary to restrain, protect, or guide the Hose to protect it from damage by unnecessary flexing, pressure surges, and contact with other mechanical components. Care must be taken to insure such restraints do not introduce additional stress or wear points.
- 3.10 Proper Connection of Ports:** Proper physical installation of the Hose Assembly requires a correctly installed port connection insuring that no twist or torque is transferred to the Hose when the Fittings are being tightened or otherwise during use.
- 3.11 External Damage:** Proper installation is not complete without insuring that tensile loads, side loads, kinking, flattening, potential abrasion, thread damage or damage to sealing surfaces are corrected or eliminated. See instruction 2.10.
- 3.12 System Checkout:** All air entrapment must be eliminated and the system pressurized to the maximum system pressure (at or below the Hose maximum working pressure) and checked for proper function and freedom from leaks. Personnel must stay out of potential hazardous areas while testing and using.
- 3.13 Routing:** The Hose Assembly should be routed in such a manner so if a failure does occur, the escaping media will not cause personal injury or property damage. In addition, if fluid media comes in contact with hot surfaces, open flame or sparks, a fire or explosion may occur. See section 2.4.
- 3.14 Ground Fault Equipment Protection Devices (GFEEDs): WARNING! Fire and Shock Hazard.** To minimize the danger of fire if the heating cable of a Multitube bundle is damaged or improperly installed, use a Ground Fault Equipment Protection Device. Electrical fault currents may be insufficient to trip a conventional circuit breaker.
- For ground fault protection, the IEEE 515:** (www.ansi.org) standard for heating cables recommends the use of GFEEDs with a nominal 30 milliamperere trip level for "piping systems in classified areas, those areas requiring a high degree of maintenance, or which may be exposed to physical abuse or corrosive atmospheres".
- 4.0 TUBE AND FITTINGS ASSEMBLY AND INSTALLATION INSTRUCTIONS**
- 4.1 Component Inspection:** Prior to assembly, a careful examination of the Tube and Fittings must be performed. All components must be checked for correct style, size, material, seal, and length. Inspect the Fitting and sealing surfaces for burrs, nicks, corrosion, missing seal or other imperfections. Do NOT use any component that displays any signs of nonconformance.
- 4.2 Tube and Fitting Assembly:** Do not assemble a Parker Fitting with a Tube that is not specifically listed by Parker for that Fitting, unless authorized in writing by the engineering manager or chief engineer of the appropriate Parker division. The Tube must meet the requirements specified to the Fitting.
- The Parker published instructions must be followed for assembling the Fittings to a Tube. These instructions are provided in the Parker Fitting catalog for the specific Parker Fitting being used, or by calling 1-800-CPARKER, or at www.parker.com.
- 4.3 Related Accessories:** Do not preset or flange Parker Fitting components using another manufacturer's equipment or procedures unless authorized in writing by the engineering manager or chief engineer of the appropriate Parker division. Tube, Fitting component and tooling must be checked for correct style, size and material. Operation and maintenance of Related Accessories must be in accordance with the operation manual for the designated Accessory.
- 4.4 Securement:** In many applications, it may be necessary to restrain, protect, or guide the Tube to protect it from damage by unnecessary flexing, pressure surges, vibration, and contact with other mechanical components. Care must be taken to insure such restraints do not introduce additional stress or wear points.

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- 4.5 **Proper Connection of Ports:** Proper physical installation of the Tube Assembly requires a correctly installed port connection insuring that no torque is transferred to the Tube when the Fittings are being tightened or otherwise during use.
- 4.6 **External Damage:** Proper installation is not complete without insuring that tensile loads, side loads, flattening, potential abrasion, thread damage or damage to sealing surfaces are corrected or eliminated. See instruction 2.10.
- 4.7 **System Checkout:** All air entrapment must be eliminated and the system pressurized to the maximum system pressure (at or below the Tube Assembly maximum working pressure) and checked for proper function and freedom from leaks. Personnel must stay out of potential hazardous areas while testing and using.
- 4.8 **Routing:** The Tube Assembly should be routed in such a manner so if a failure does occur, the escaping media will not cause personal injury or property damage. In addition, if fluid media comes in contact with hot surfaces, open flame or sparks, a fire or explosion may occur. See section 2.4.
- 5.0 **HOSE AND FITTING MAINTENANCE AND REPLACEMENT INSTRUCTIONS**
- 5.1 Even with proper selection and installation, Hose life may be significantly reduced without a continuing maintenance program. The severity of the application, risk potential from a possible Hose failure, and experience with any Hose failures in the application or in similar applications should determine the frequency of the inspection and the replacement for the Products so that Products are replaced before any failure occurs. Certain products require maintenance and inspection per industry requirements. Failure to adhere to these requirements may lead to premature failure. A maintenance program must be established and followed by the user and, at minimum, must include instructions 5.2 through 5.7
- 5.2 **Visual Inspection Hose/Fitting:** Any of the following conditions require immediate shut down and replacement of the Hose Assembly:
 - Fitting slippage on Hose;
 - Damaged, cracked, cut or abraded cover (any reinforcement exposed);
 - Hard, stiff, heat cracked, or charred Hose;
 - Cracked, damaged, or badly corroded Fittings;
 - Leaks at Fitting or in Hose;
 - Kinked, crushed, flattened or twisted Hose; and
 - Blistered, soft, degraded, or loose cover.
- 5.3 **Visual Inspection All Other:** The following items must be tightened, repaired, corrected or replaced as required:
 - Leaking port conditions;
 - Excess dirt buildup/
 - Worn clamps, guards or shields; and
 - System fluid level, fluid type, and any air entrapment.
- 5.4 **Functional Test:** Operate the system at maximum operating pressure and check for possible malfunctions and leaks. Personnel must avoid potential hazardous areas while testing and using the system. See section 2.2.
- 5.5 **Replacement Intervals:** Hose assemblies and elastomeric seals used on Hose Fittings and adapters will eventually age, harden, wear and deteriorate under thermal cycling and compression set. Hose Assemblies and elastomeric seals should be inspected and replaced at specific replacement intervals, based on previous service life, government or industry recommendations, or when failures could result in unacceptable downtime, damage, or injury risk. See section 1.2. Hose and Fittings may be subjected to internal mechanical and/or chemical wear from the conveying fluid and may fail without warning. The user must determine the product life under such circumstances by testing. Also see section 2.5.
- 5.6 **Hose Inspection and Failure:** Hydraulic power is accomplished by utilizing high pressure fluids to transfer energy and do work. Hoses, Fittings and Hose Assemblies all contribute to this by transmitting fluids at high pressures. Fluids under pressure can be dangerous and potentially lethal and, therefore, extreme caution must be exercised when working with fluids under pressure and handling the Hoses transporting the fluids. From time to time, Hose

Assemblies will fail if they are not replaced at proper time intervals. Usually these failures are the result of some form of misapplication, abuse, wear or failure to perform proper maintenance. When Hoses fail, generally the high pressure fluids inside escape in a stream which may or may not be visible to the user. Under no circumstances should the user attempt to locate the leak by "feeling" with their hands or any other part of their body. High pressure fluids can and will penetrate the skin and cause severe tissue damage and possibly loss of limb. Even seemingly minor hydraulic fluid injection injuries must be treated immediately by a physician with knowledge of the tissue damaging properties of hydraulic fluid.

If a Hose failure occurs, immediately shut down the equipment and leave the area until pressure has been completely released from the Hose Assembly. Simply shutting down the hydraulic pump may or may not eliminate the pressure in the Hose Assembly. Many times check valves, etc., are employed in a system and can cause pressure to remain in a Hose Assembly even when pumps or equipment are not operating. Tiny holes in the Hose, commonly known as pinholes, can eject small, dangerously powerful but hard to see streams of hydraulic fluid. It may take several minutes or even hours for the pressure to be relieved so that the Hose Assembly may be examined safely.

Once the pressure has been reduced to zero, the Hose Assembly may be taken off the equipment and examined. It must always be replaced if a failure has occurred. Never attempt to patch or repair a Hose Assembly that has failed. Consult the nearest Parker distributor or the appropriate Parker division for Hose Assembly replacement information.

Never touch or examine a failed Hose Assembly unless it is obvious that the Hose no longer contains fluid under pressure. The high pressure fluid is extremely dangerous and can cause serious and potentially fatal injury.

- 5.7 **Elastomeric seals:** Elastomeric seals will eventually age, harden, wear and deteriorate under thermal cycling and compression set. Elastomeric seals should be inspected and replaced.
- 5.8 **Refrigerant gases:** Special care should be taken when working with refrigeration systems. Sudden escape of refrigerant gases can cause blindness if the escaping gases contact the eye and can cause freezing or other severe injuries if it contacts any other portion of the body.
- 5.9 **Compressed natural gas (CNG):** Parker CNG Hose Assemblies should be tested after installation and before use, and at least on a monthly basis per instructions provided on the Hose Assembly tag. The recommended procedure is to pressurize the Hose and check for leaks and to visually inspect the Hose for damage and to perform an electrical resistance test.
 - Caution:** Matches, candles, open flame or other sources of ignition shall not be used for Hose inspection. Leak check solutions should be rinsed off after use.
- 6.0 **HOSE STORAGE**
- 6.1 **Age Control:** Hose and Hose Assemblies must be stored in a manner that facilitates age control and first-in and first-out usage based on manufacturing date of the Hose and Hose Assemblies. Unless otherwise specified by the manufacturer or defined by local laws and regulations:
 - 6.1.1 The shelf life of rubber hose in bulk form or hose made from two or more materials is 28 quarters (7 years) from the date of manufacture, with an extension of 12 quarters (3 years), if stored in accordance with ISO 2230;
 - 6.1.2 The shelf life of thermoplastic and polytetrafluoroethylene hose is considered to be unlimited;
 - 6.1.3 Hose assemblies that pass visual inspection and proof test shall not be stored for longer than 2 years.
 - 6.1.4 **Storage:** Stored Hose and Hose Assemblies must not be subjected to damage that could reduce their expected service life and must be placed in a cool, dark and dry area with the ends capped. Stored Hose and Hose Assemblies must not be exposed to temperature extremes, ozone, oils, corrosive liquids or fumes, solvents, high humidity, rodents, insects, ultraviolet light, electromagnetic fields or radioactive materials.

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Offer of Sale

Offer of Sale

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- Goods: means any tangible part, system or component to be supplied by the Seller.
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21. **Entire Agreement.** These Terms, along with the terms set forth in the main body of any Quote, forms the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of sale. In the event of a conflict between any term set forth in the main body of a

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22. **Compliance with Laws.** Buyer agrees to comply with all applicable laws, regulations, and industry and professional standards, including those of the United States of America, and the country or countries in which Buyer may operate, including without limitation the U.S. Foreign Corrupt Practices Act ("FCPA"), the U.S. Anti-Kickback Act ("Anti-Kickback Act"), U.S. and E.U. export control and sanctions laws ("Export Laws"), the U.S. Food Drug and Cosmetic Act ("FDCA"), and the rules and regulations promulgated by the U.S. Food and Drug Administration ("FDA"), each as currently amended. Buyer agrees to indemnify, defend, and hold harmless Seller from the consequences of any violation of such laws, regulations and standards by Buyer, its employees or agents. Buyer acknowledges that it is familiar with all applicable provisions of the FCPA, the Anti-Kickback Act, Export Laws, the FDCA and the FDA and certifies that Buyer will adhere to the requirements thereof and not take any action that would make Seller violate such requirements. Buyer represents and agrees that Buyer will not make any payment or give anything of value, directly or indirectly, to any governmental official, foreign political party or official thereof, candidate for foreign political office, or commercial entity or person, for any improper purpose, including the purpose of influencing such person to purchase Products or otherwise benefit the business of Seller. Buyer further represents and agrees that it will not receive, use, service, transfer or ship any Product from Seller in a manner or for a purpose that violates Export Laws or would cause Seller to be in violation of Export Laws.

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