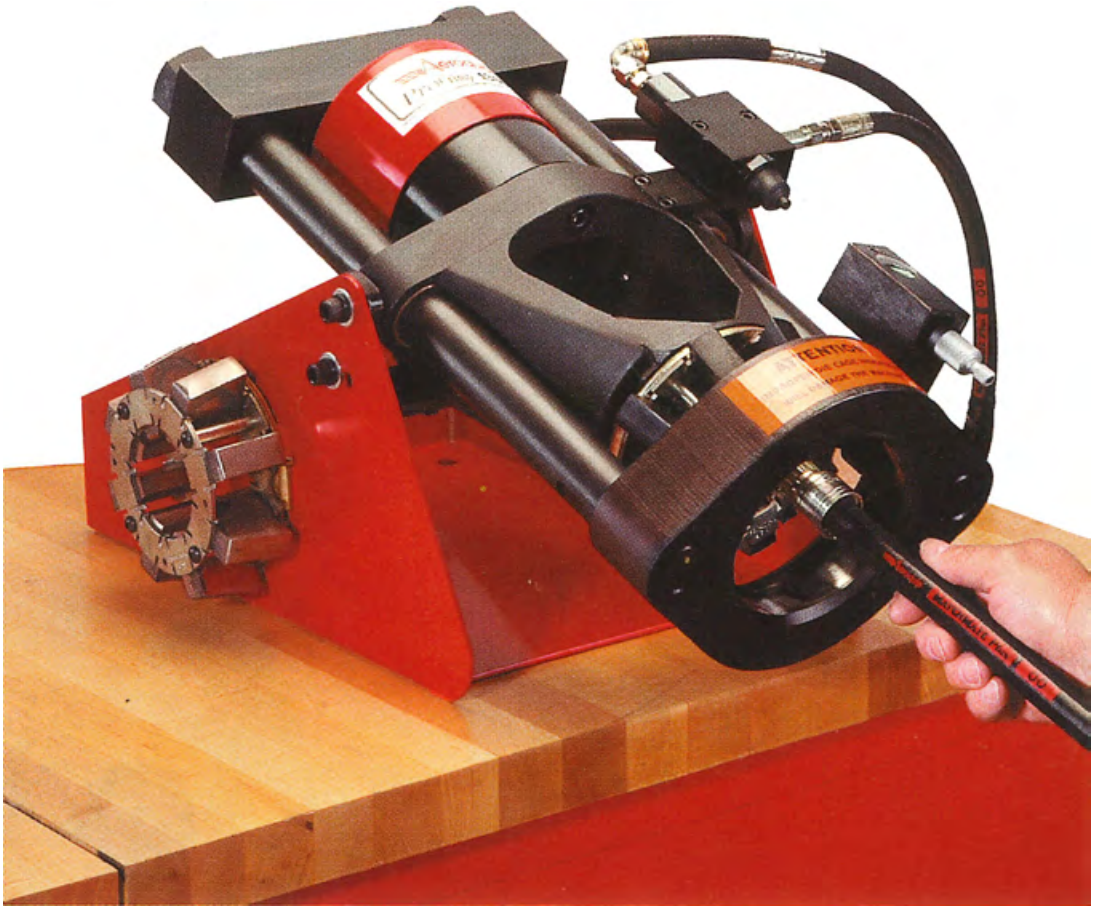
ENGINEERING
TOMORROW

Operator's Manual

Aeroquip® by Danfoss Procrimp FT1380P
Crimp Machine



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Safety instructions

⚠ WARNING

Failure to follow Aeroquip process and product instructions and limitations could lead to premature hose assembly failures, resulting in property damage, serious injury or death.

Aeroquip fitting tolerances are engineered to match Aeroquip hose tolerances. The use of Aeroquip fittings on hose supplied by other manufacturers and/or the use of Aeroquip hose with fittings supplied by other manufacturers, may result in the production of unreliable and unsafe hose assemblies and is neither recommended nor authorized by Aeroquip.

Read and understand the operator's manual before attempting to operate any equipment.

Aeroquip hereby disclaims any obligation or liability (including incidental and consequential damages) arising from breach of contract, warranty, or tort (under negligence or strict liability theories) should Aeroquip hose, fittings or assembly equipment be used with the hose, fittings or assembly equipment supplied by another manufacturer, or in the event that product instructions for each specified hose assembly are not followed.

1. PREVENT UNAUTHORIZED OPERATION. Do not permit anyone to operate this equipment unless they have read and thoroughly understand this manual.
2. WEAR SAFETY GLASSES.
3. AVOID PINCH POINTS. Do not rest your hand on the crimp ring. Keep your hands clear of all moving parts. Do not allow anyone, other than the operator, close to the equipment while it is in operation.
4. MAINTAIN DIES WITH CARE. Dies used in the FT1380 crimp machine are hardened steel, offering the best combination of strength and wear resistance for long life. Hardened dies are generally brittle and care should be taken to avoid any sharp impact. Never strike a die with a hardened instrument.
5. USE ONLY SPECIFIED AEROQUIP PRODUCTS. Make hose assemblies using only Aeroquip hose and fittings specified for this assembly equipment.
6. VERIFY CORRECT CRIMP DIAMETERS. Check and verify correct crimp diameters of all fittings after crimping. Do not put any hose assemblies into service if the crimp diameters do not meet Aeroquip crimp specifications.
7. Make sure all dies are completely in place and the cage is positioned properly on the pressure plate.
8. DO NOT OVER PRESSURIZE. Do not exceed the 10,000 psi hydraulic pressure supplied to the machine. This setting is preset at the factory and should not require adjustment.

NOTE: All components used to connect the pump and crimp cylinder must meet the criteria set forth in the Material Handling Institute Specification #IJ100 for hydraulic jacking applications.

9. DIE CHANGE. Do not insert/remove dies while the power is on.
10. SECURE THE EQUIPMENT TO A STABLE WORK SURFACE. Prior to operation, secure the crimp machine to a stable work surface to prevent the equipment from tipping.
11. UNPLUG THE POWER SUPPLY WHEN NOT IN USE.
12. KEEP WORK AREA CLEAN. Cluttered areas and benches invite accidents.

Specifications

Crimper Dimensions:	17"W x 23.5" D x 13" H
Weight:	130 lb.

Pump Requirements:

Reservoir Capacity:	50 cubic inches or more (820 cc)
Pressure Rating:	10,000 psi (690 bar)
Return port for bypass oil from crimper valve:	200 psi (14 bar)

Hose Production Capacity:

- All Aeroquip MatchMate Plus braided and spiral hose through -20 size
- Flat field crimp through -16
- Barrel field crimp through -20
- Flat single skive 1 & 2-wire braid crimp thru -20
- Flat single skive 4-wire spiral crimp thru -16

Will not crimp:

- Internal skive fittings
- Hose that requires a positive stop, including the following Aeroquip hoses: 2807, 2808, FC186, FC465, FC469 and FC505

Accessories

Die Holder Kit

A plate and mounting hardware that can hold two cages. This kit attaches to the back of the Aeroquip Pro-Crimp 1380P crimp machine.

Part Number **FT1380P-2-4**

Die Cage Conversion Kit

For conversion of any FT1330 die cage for use with the Aeroquip ProCrimp 1380P crimp machine. Contains components necessary to convert one die cage.

Part Number **FT1380-2-3**

MatchMate Plus Fitting Locators

For easy positioning of Match Mate fittings into FT1380 "M" series die cages.

Part Number **FT1330-XL**

Die Cages

FT1380-275-MO7O	**FT1380-200-M180**	**FT1380-200-M320**
FT1380-275-M090	**FT1380-200-M210**	**FT1380-275-M370**
FT1380-275-M120	**FT1380-200-M240**	**FT1380-275-M420**
FT1380-200-M150	**FT1380-200-M280**	**FT1380-275-M465**

Setup and Assembly Instructions

FT1380P-1-2 **Air/Oil Pump Kit**

1. Secure the crimper base to a stable workbench using four 1/2 inch lag screws or other suitable fasteners.
2. Install the die cage hanger bracket on the back of the crimper base. (optional)
3. Place the pump on the bench to the right of the crimper and remove the plugs from the pressure port and the return port.
4. Install the 2021-6-4S adapter into the pressure port in front and the 2021-6-6S adapter into the return port on top.
5. Remove the SAE 37° plug from the free end of the GH793-4 hose.
6. Attach the GH793-4 hose to the 2021-6-4S adapter in the pump pressure port.
7. Install one end of the 2556-6 return hose onto the 2021-6-6S adapter in the pump return port.
8. Remove the SAE 37° cap on the 2021-4-6S adapter on top of the valve.
9. Install the free end of the 2556-6 return hose to the 2021-4-6S adapter on top of the valve.
10. Connect compressed air hose to the air inlet port (fittings are not provided for this).
11. Place the pump on the floor to the right of the crimper. If the hoses try to coil or kink, slightly loosen the upper ends of the hoses, untwist them and retighten.

FT1380P-1-1 **Hand Pump Kit & FT1380P-1-4 12Volt DC Kit**

1. Secure the crimper base to a stable workbench using four 1/2 inch lag screws or other suitable fasteners.
2. Install the die cage hanger bracket on the back of the crimper base. (optional)
3. Place the pump on the bench to the right of the crimper and remove the plugs from the pressure port and the return port.
4. Install the 2021-6-4S adapter into the pressure port in front and the 2021-6-6S adapter into the return port in front.
5. Remove the SAE 37° plug from the free end of the GH793-4 hose.
6. Attach the GH793-4 hose to the 2021-6-4S adapter in the pump pressure port.
7. Install the straight fitting of the 2556-6 return hose onto the 2021-6-6S adapter in the pump return port.
8. Remove the SAE 37° cap on the 2021-4-6S adapter on top of the valve.
9. Install the 90° fitting of the 2556-6 return hose to the 2021-4-6S adapter on top of the valve. If the hoses try to coil or kink, slightly loosen the upper ends of the hoses, untwist them and retighten.

FT1380P-1-3 **Kit {No Pump)**

1. Secure the crimper base to a stable workbench using four 1/2 inch lag screws or other suitable fasteners.
2. Install the die cage hanger bracket on the back of the crimper base. (optional)
3. Make sure that your pump has the requirements listed in Specifications section.
4. Place the pump on the bench to the right of the crimper and install a -4 SAE 37°adapter in the pressure port.
5. Install a -6 SAE 37° adapter in the return port.
6. Attach the GH793-4 hose to the -4 SAE 37° adapter in the pump pressure port.
7. Remove the SAE 37° cap on the 2021-4-6S adapter on top of the valve.
8. Install a -6 return hose to pump return port and valve top port. This hose must be capable of containing 200 psi.

Operating Instructions

Loading and Unloading Die Cages

Select proper crimp cage for style and size of desired hose. Refer to Danfoss PowerSource Crimp Spec Tool at danfoss.com/crimp for complete and detailed crimp specification information for each hose and fitting style. To load the die cage, extend the crimp ring to its fullest length by releasing the hydraulic pressure from the power source (Figure 1). The die cage may be inserted or removed in this position.

Figure 1

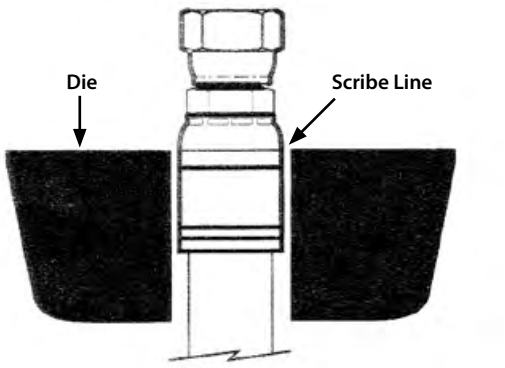
Establishing Crimp Setting

The three-digit micrometer display setting determines the crimp diameter for each combination of hose, fitting and crimp cage. The three-digit value is not the desired crimp diameter, but rather a setting. Refer to the table listed in the back of this manual for target settings for popular MatchMate Plus hoses. These target settings are provided to aid in establishing actual settings.

The ratio of micrometer display change to crimp diameter change is approximately 2 to 1. For example, if a fitting is crimped at a micrometer display setting of 438, and the crimp diameter is .025 too large, the micrometer should be increased by 050 (2 x .025) to 488 in order to produce the correct crimp diameter.

Crimping Procedures

⚠ **WARNING:** Maintain clear distance from all moving parts.



Proper Crimping Position for MatchMatte Plus Fittings

Figure 2

Refer to the current Aeroquip Crimp Secifications bulletin for complete and detailed crimp specification information for each hose and fitting style.

1. Select and load the proper die cage according to the current Aeroquip Crimp Specification bulletin.
2. Adjust the micrometer display to the proper setting (see Example). Target settings for popular MatchMate Plus hoses are listed in the back of this manual.
3. Position the fitting within the crimp cage according to the corresponding figure in the current Aeroquip Crimp Specifications bulletin (A MatchMate Plus fitting is shown in Figure 2).
4. To crimp fitting, activate hydraulic power source (i.e. hand-pump, air/hydraulic foot pedal, etc.). The crimp ring will rise until the fitting is fully crimped.

NOTE: The use of a 10,000 psi hydraulic power source is required to operate the FT1380P crimp machine. If lower rated power units are used, improper crimping may result.

5. When the fitting is fully crimped, the crimp ring will stop moving, indicating the crimp operation is complete. Internally, a hydraulic valve shifts to divert the fluid back to the reservoir. Further pumping will not result in additional crimp stroke.
6. Release the hydraulic pressure on the power source to retract crimp cage.
7. Verify correct crimp diameter.

Example:
Adjust the micrometer setting to ".300" and start the crimping process. If the dies crimp the fitting, measure the crimp diameter and INCREASE the setting by twice the amount that you wish to decrease the crimp diameter. If the dies do not touch the fitting, increase the micrometer setting by .115 to ".415" and try to crimp the fitting again. If that is still not enough, continue to increase the micrometer setting by .115 increments until the dies make contact with the fitting. Then, measure the crimp diameter and INCREASE the setting by twice the amount that you wish to decrease the crimp diameter.
If the micrometer setting of ".415", using GH793-8 hose with 1A (TTC) fittings produces a crimp diameter of 1.124 inches, subtract the crimp specification (0.990 inches) from the diameter you measured. (1.124 - 0.990 = .134). Then add ".268" (.134 x 2 = .268) to the micrometer setting (.415 + .286 = .683) and change the setting to ".683". If the crimp diameter is still too large, repeat this process.

Calibration

⚠ **WARNING:** Maintain clear distance from all moving parts.

The calibration procedure below will calibrate the Aeroquip ProCrimp FT1380P crimp machine to the original factory setting. New machines are calibrated at the factory and will be ready to use out of the crate. This procedure should be followed if the crimp machine has been disassembled or has had components replaced. The procedure requires the use of an FT1380-200-M240 die cage and a 1SB8 socket (or 1A (TTC) -8 fitting).

1. Loosen the clamp on the micrometer bracket assembly and position the end of the bracket 0.250 inches from the top of the crimp ring. Tighten the clamp to hold the micrometer bracket assembly in place.
2. Verify that the micrometer is positioned securely inside the bracket assembly. This can be done by adjusting the cap screw on top of the bracket assembly. (NOTE: DO NOT overtighten to assure free movement of the micrometer head.)
3. Insert an FT1380-200-M240 die cage.
4. Adjust the micrometer setting to 0.760.
5. Center a 1SB8 socket or 1A (TTC) -8 fitting (without a hose) in the die cage, holding the socket in place with a pencil or other suitable tool. Actuate the pump until the crimp ring stops advancing, indicating a complete cycle. Relieve the pressure on the pump, and the crimp ring will retract.

NOTE: When using an air/oil pump, fully actuate the switch during the crimp cycle. Actuating the switch part way will cause a variation in crimp diameter.

6. Using a set of calipers, measure the crimp diameter. The preferred method is to use the average of the four pairs of indentations.
7. The correct crimp diameter is 1.000±0.003 inches. If the measured crimp diameter does not meet this specification, refer to Table A for the new distance to set the micrometer bracket assembly from the top of the crimp ring (Bracket to Ring Gap) and repeat steps 1, 5 and 6.

NOTE: If your Crimp Diameter falls between the numbers shown in Table A, simply determine or interpolate the Bracket to Ring Gap, since the relationship between the numbers is linear.

Table A

Crimp Diameter	Bracket to Ring Gap
1.050	.005
1.040	.029
1.030	.053
1.020	.077
1.010	.101
1.000	.125
0.990	.149
0.980	.173
0.970	.197
0.960	.221
0.950	.245

Maintenance Intervals

Die Cage Lubrication

Every 50 crimps	Relube sliding surfaces of dies
Every 500 crimps	Remove old grease and relube
Every 1000 crimps	Die cage maintenance

Crimp Ring Maintenance

Every 500 crimps	Remove old grease and relube
Every 2000 crimps	Remove old grease, inspect for wear or damage and relube if okay

Use High Efficiency PTFE Grease (Danfoss part number T-400-G)

Maintenance Procedures

Machine Maintenance Procedures

1. Sliding surfaces must be kept free of dirt and other abrasive materials
2. All exposed black metal surfaces should be coated occasionally with a light film of oil to prevent corrosion.
3. Periodically check the oil level in the fluid reservoir of the hydraulic power unit. Maintain the oil level of according to the indicator on top of the reservoir. Add pump manufacturer's hydraulic oil as needed.

NOTE: Completely retract the crimp ring when checking the oil level.

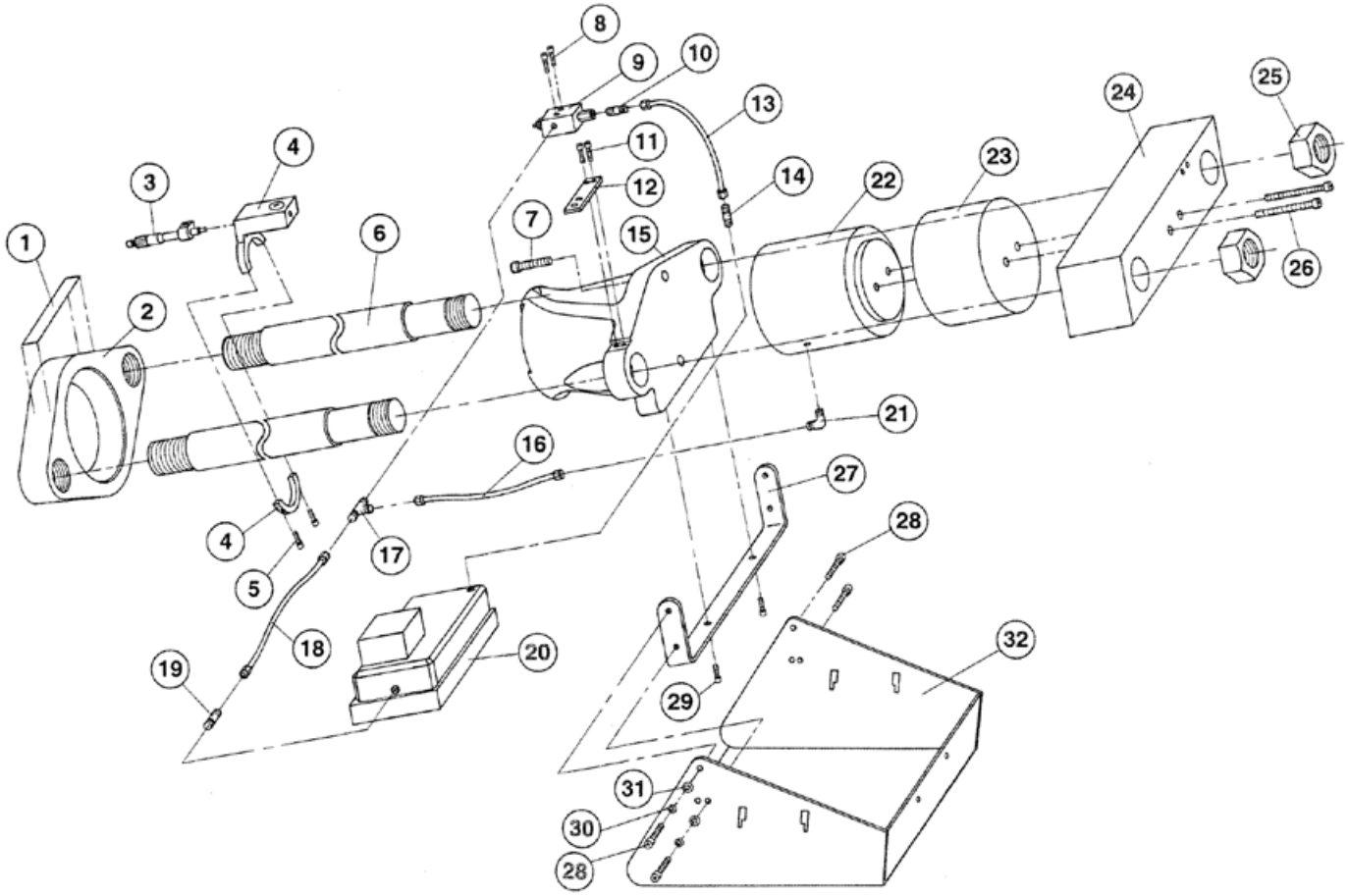
Die Cage Maintenance Procedures

1. Lubricate the die cage. For maximum service, FT1380 die cages require lubrication at 50-crimp intervals with High Efficiency PTFE Grease (Danfoss part number T-400-G) (FF91455 is sufficient lubricant for about 10,000 crimps)
   Periodically remove High Efficiency PTFE Grease (Danfoss part number T-400-G) residue that has built-up on the sides of the dies and the crimp ring during the crimping process. High Efficiency PTFE Grease (Danfoss part number T-400-G) residue becomes contaminated with metal and plating chips and airborne contaminants, which can cause pre mature wear of the dies and crimp ring. It should carefully be removed without mixing it with newly applied High Efficiency PTFE Grease (Danfoss part number T-400-G).

2. Die Cage maintenance should be performed at 1000-crimp intervals or every six months, which ever occurs first. Die cages should be clean of grease and debris and inspected for worn or damaged components.
   - **a.** The sliding surface of the dies should appear smooth with no apparent galling. Galled dies must be replaced. Individual dies in a cage can be replaced without replacing all eight dies.
   - **b.** Replace springs that show any sign of damage or collapse (are shorter than other springs).
   - **c** The spring plate should appear smooth with no apparent galling. Galled spring plates must be replaced.
   - **d.** Inspect remaining components and replace those that are badly worn.

Reassemble components and liberally apply High Efficiency PTFE Grease (Danfoss part number T-400-G) to the die surface which slides along the spring plate. Torque the die cage bolts to 50 in. -lbs.
Ensure that all dies slide in and out freely.

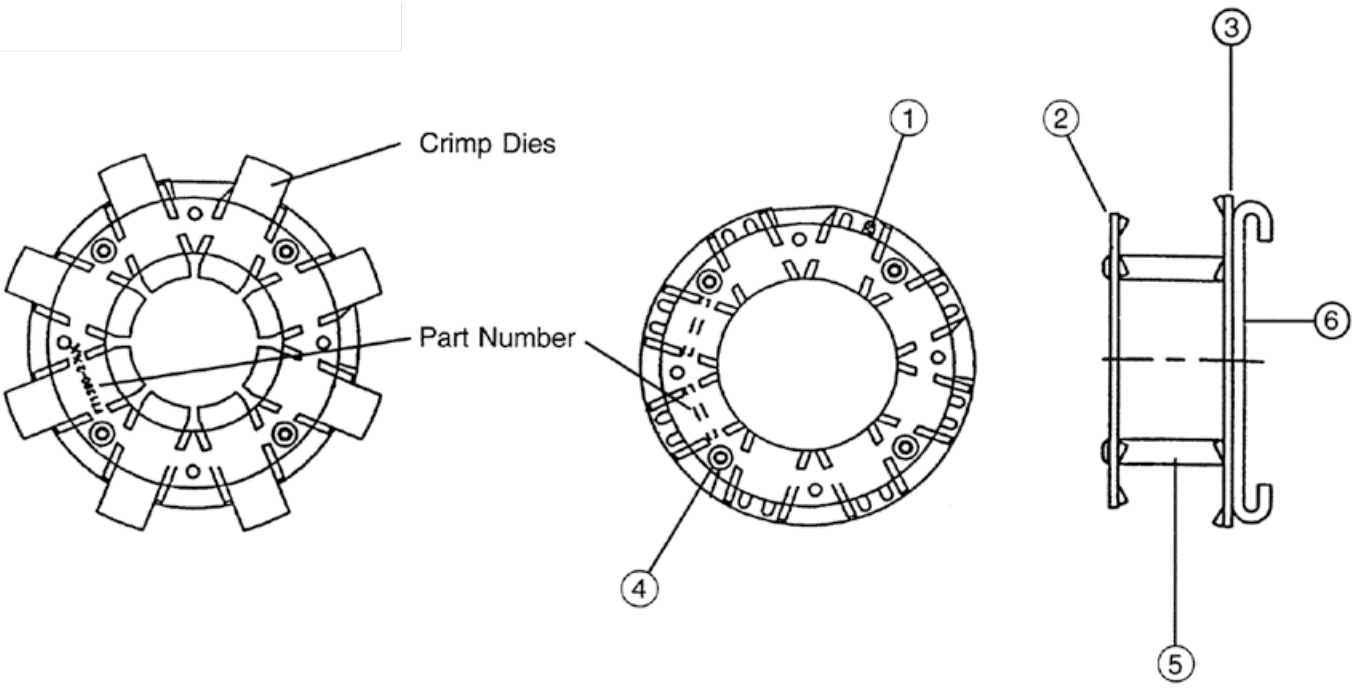
Crimp Machine Components



Item	Part Number	Description	Qty
1	FT1289-3-60	CAUTION Decal	1
2	FT1380-3-13	Crimp Ring	1
3	FT1307-3-49	Micrometer Head	1
4	FT1380P-3-1	Bracket Assembly, Micrometer	1
5	FT1380P-3-1	1/4-28 X 0.75 SHCS	2
6	FT1380-3-14	Tie Rod	2
7	22003-6-24S	3/8-16 X 1.50 SHCS	2
8	222003-4-24S	1 /4-20 X 1.50 SHCS	2
9	FT1380P-3-2	Valve Assembly	1
10	2021-4-6S	Adapter	1
11	222003-4-8S	1/4-20 X 0.50 SHCS	2
12	FT1380P-3-4	Bracket, Valve	1
13	FL570GGG0790000	Hose Assembly (not included with FT1380P-1-3 Kit)	1
14	2021-6-6S	Adapter (not included with FT1380P-1-3 Kit)	1
15	FT1380P-3-12	Pressure Plata	1
16	1C0190BEEE0160A	Hose Assemblv	1

Item	Part Number	Description	Qty
17	2028-4-4S	Adapter	
18	1C01908EEE0620A	Hose Assembly	1
19	2021-6-4S	Adapter (not included with FT1380P-1-3 Kit)	1
20	FT1380P-2-2	Hand Pump	1
	FT1310-2-6	Air I Oil Pump	1
	FT1310-2-9	12 Volt DC Pump (not included with FT1380P-1-3)	1
21	2024-4-6S	90 Adapter	1
22	FT1380-3-2	Cylinder	1
23	FT1380P-3-6	Cylinder Guard	1
24	FT1380-3-15	Too Block	1
25	FT1380-3-21	Nut	2
26	FT1380-3-22	1/4-20 X 2.50 SHCS	2
27	FT1380P-3-3	Mounting Bracket	1
28	22003-6-12S	3/8-16 X 0.75 SHCS	4
29	FT1380-3-25	1/2-13 X 1.00 SHCS	2
30	210104-2-6S	3/8" Lock Washer	4
31	FF9230-0501S	5/16" Flat Washer	4
32	FT1380P-3-5	Frame	1

Die Cage Components



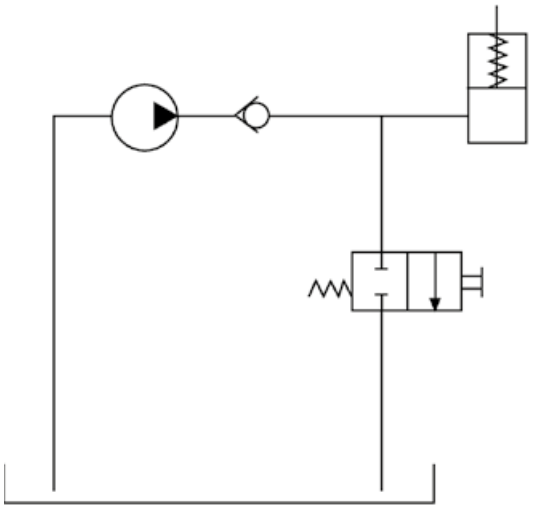
Detail Number	FT1380-2-9 Bill of Material	FT1380-2-9A Bill of Material	Description	Qty Req'd
1	FT1330-2-9-21	FT1330-2-9-2	Die Spring	8 or 16*
2	FT1380-2-9-3	FT1380-2-9-2	Front Plate	1
3	FT1330-2-9-13	FT1330-2-9-3	Spring Plate	1
4	FT1330-2-9-55	FT1330-2-9-5	Button Head Cap Screw	4
5	FT1330-2-9-66	FT1330-2-6-6	Spacers	4
6	FT1380-2-9-1	FT1380-2-9-1	Back Plate	1

*The FT1380-200-NO. (FT1380-2-9) requires 16 springs and the FT1380-201-NO. (FT1380-2-9A) requires 8 springs.

Hydraulic Schematic

Sequence

1. Pump on - Cylinder advances.
2. Valve energized - Cylinder holds position.
3. Pump and Valve de-energized -Cylinder retracts.



FT1380P Target Settings For Match Mate Plus Hoses

FT1380P Target Settings For MatchMate Plus Hoses

GH663	Die Cage	Target Setting
-4	-M150	0.834
-6	-M180	0.751
-8	-M240	0.912
-12	-M320	0.949
-16	-M370	0.620

GH793	Die Cage	Target Setting
-4	-M150	0.703
-6	-M210	0.884
-8	-M240	0.792
-10	-M280	0.850
-12	-M320	0.880
-16	-M370	0.521
-20	-M465	0.647

GH194	Die Cage	Target Setting
-4	-M150	0.836
-6	-M180	0.772
-8	-M240	0.907
-10	-M240	0.652
-12	-M320	0.935
-16	-M370	0.608
-20	-M420	0.585

GH781	Die Cage	Target Setting
-4	-M150	0.735
-6	-M210	0.930
-8	-M240	0.827
-10	-M280	0.887
-12	-M320	0.960
-16	-M370	0.675
-20	-M465	0.781

GH493	Die Cage	Target Setting
-6	-M210	0.749
-8	-M280	0.933
-10	-M280	0.691
-12	-M320	0.714
-16	-M370	0.323
-20	-M465	0.440

GH195	Die Cage	Target Setting
-4	-M150	0.732
-6	-M210	0.882
-8	-M240	0.790
-10	-M280	0.845
-12	-M320	0.877
-16	-M370	0.493
-20	-M465	0.544

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