

ENGINEERING
TOMORROW



Operator's Manual

Aeroquip® by Danfoss FT1370 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 Danfoss.

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

Danfoss 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.

Safety Instructions

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 FT1370 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 Danfoss 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.

NOTE

Your new crimper has been calibrated and filled with hydraulic oil in the factory. Do not remove any plugs or caps until necessary. Excess air in the hydraulic system may cause erratic cylinder movement during retract. Refer to the Setup and Assembly section for instructions on removing air from the hydraulic system.



Specifications

- Crimper Dimensions:** 13"W x 14"D x 24"H
- Weight:** 85 lbs.
- Pump Requirements:**
- Reservoir Capacity:** 40 cubic inches or more (656 cc)
 - Pressure Rating:** 10,000psi (690 bar)

- Hose Production Capacity:** (varies with available tooling)
- 04 through -20 Global TTC Fittings
 - 04 through -16 Global TTC12 Fittings
 - FC372 / FC373 with FC5810 Swage Fittings. Sizes -02, -03, -04, -06, and -08.

- Will not crimp:**
- Flat single skive fittings
 - Flat field crimp fittings
 - Barrel field crimp fittings
 - Internal skive fittings
 - Hoses that require a positive stop, including the following Danfoss hoses: 2807, 2808, FC186, FC465, FC469, FC505

Accessories

Die Cage Conversion Kit

For conversion of any FT1330 die cage for use with the Aeroquip ProCrimp 1370 crimp machine.
Contains components necessary to convert one die cage.

Part Number.....FT1380-2-3

MatchMate Plus Fitting Locators

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

Part Number.....FT1330-XL

Die Cages

FT1380-275-M070	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

1. Remove the pipe plug from the top cylinder port and install the 2089-06-06S 90° adapter. Orient the adapter so that it points to the rear of the crimp machine, away from the operator.
2. Install the FC616-06 hose assembly to the cylinder adapter.
3. Install half of the FD35 quick-disconnect coupling to the end of the FC616-06 hose assembly.
4. If using your own pump, make sure it has the requirements listed in the Specifications section on the previous page.
5. Place the pump on the work surface to the right of the crimper. Install the 2083-6-6S adapter and the other half of the FD35 quick-disconnect coupling to the pump pressure port.
6. Connect the FD35 coupling to complete the hydraulic circuit.
7. Important: Remove excess air from the hydraulic system. This can be accomplished by placing the pump at a higher level than the cylinder and cycling the machine approximately five times. If possible, tilt the crimp machine so the cylinder port is at the "high point" of the machine.
8. Secure the machine frame to a stable work surface using lag screws or other suitable fasteners.

Operating Instructions

Loading / Unloading Die Cages and Shims

Select the proper crimp cage and shim for the style and size of desired hose (refer to JA906 Die Cage / Shim Selection Table). To load the cage, retract the crimp machine cylinder by releasing the hydraulic pressure from the power source. The die cage may be inserted or removed from this position. The shim can also be inserted and removed from this position. To load the shim, place the shim between the pusher and cylinder and rest it (the shim) on one of the tie bars.

Crimp Diameter Control

The crimp diameter of a hose fitting is dependent on the combination of die cage and shim selected. Refer to JA906 for proper die cage and shim selection.

The cylinder of the machine will fully extend for each crimp. Assuming the same die cage is used, a smaller shim produces a larger crimp diameter and a larger shim produces a smaller crimp diameter. Shim sizes have been pre-determined for hoses listed in JA906. The dash size of a shim reflects the thickness (inches) of the shim and is not related to the desired crimp diameter.

Note: Do not adjust the location of the cylinder on the FT1370. This will alter the calibration of the machine. Your new crimper has been calibrated at the factory to produce correct crimp diameters when combined with the proper dies and shims.

Operating Instructions

Refer to the **PowerSource Crimp Spec Tool** at danfoss.com/crimp for the proper hose/fitting combinations, crimp diameters, crimp ovality and crimp length. Use the **JA906 - Die Cage / Shim Selection Table** (included with machine) for proper die cage and shim selection.

Crimping Procedures

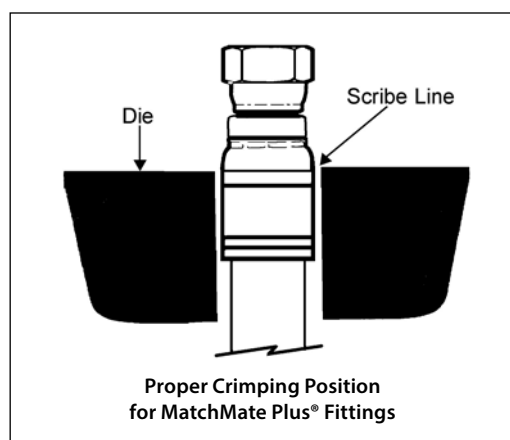


Figure A

WARNING:

Maintain clear distance from all moving parts.

1. Select and load the proper die cage. Be sure to lubricate the dies with high efficiency PTFE grease (Danfoss part number T-400-G)
2. Select the proper shim and install it on top of the pusher. Pivot the shim so it rests along the tie bar.
3. Position fitting within the crimp cage and begin the crimp cycle by activating the hydraulic power source (i.e. hand pump, air/hydraulic foot pedal, etc.).
4. The cylinder will extend and force the dies into the crimp ring. When the dies make contact with the fitting, be certain the alignment corresponds to the figure in the current Danfoss Crimp Specifications bulletin (A MatchMate Plus fitting is shown in Figure A).
5. **Completion of crimp cycle.** When the fitting is fully crimped, the cylinder will stop. This can be verified by the location of the shim on the tie bar. If the shim has passed completely into the black portion of the tie bar (the top of the shim will be in-line with the bottom of the red decal), the crimp is complete. If shim is still in the red portion of the tie bar, the cylinder has not fully extended and the crimp is incomplete.
6. Release the hydraulic pressure on the power source to retract the cylinder.
7. Verify the correct crimp diameter.

Maintenance Intervals

Die Cage Lubrication

Every 30 crimps	Relube sliding surfaces of dies
Every 250 crimps	Remove old grease and relube
Every 1000 crimps	Die cage maintenance

Crimp Ring Maintenance

Every 250 crimps	Remove old grease and relube
Every 1,000 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 unit. Add pump manufacturer's hydraulic oil as needed.
NOTE: Completely retract the cylinder when checking the oil level.

Die Cage Maintenance Procedures

1. Lubricate the die cage. For maximum service, FT1370 die cages require lubrication at 30-crimp intervals with high efficiency PTFE grease (Danfoss part number T-400-G). FF91455 is an 16-ounce container that will provide sufficient lubricant for about 10,000 crimps.

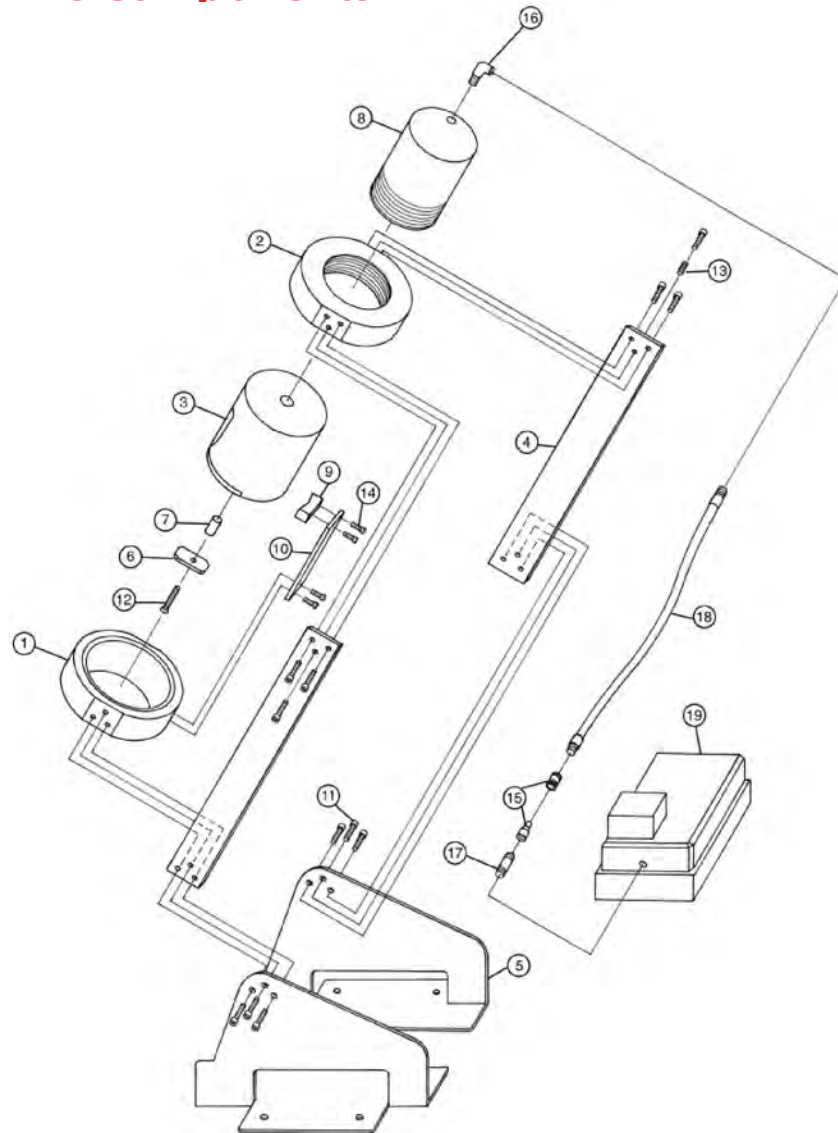
Periodically remove PTFE grease residue that has built-up on the sides of the dies and the crimp ring during the crimping process. PTFE grease residue becomes contaminated with metal and plating chips and airborne contaminants, which can cause pre-mature wear of the dies and crimp ring. It should carefully be removed without mixing it with newly applied PTFE grease.

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 PTFE grease 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.

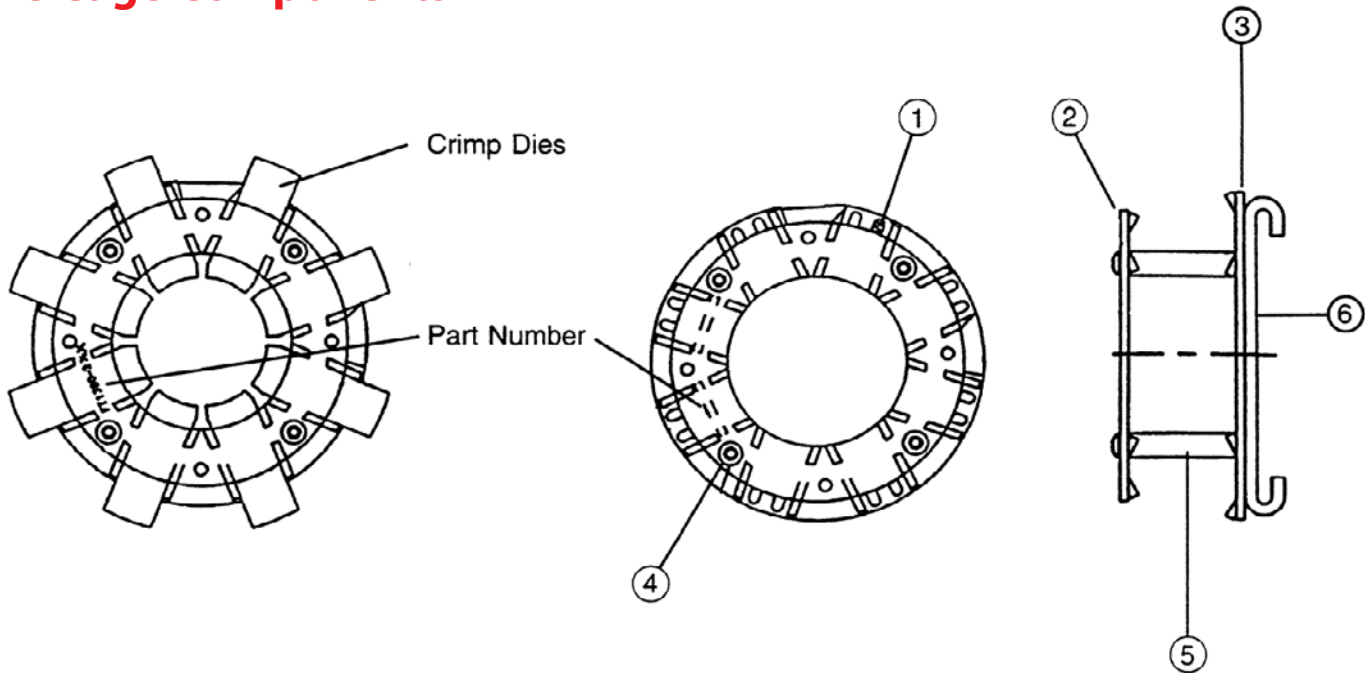
Crimp Machine Components



Item	Qty	Part Number	Description
1	1	FT1370-3-1	Crimp Ring
2	1	FT1370-3-2	Top Plate
3	1	FT1370-3-3	Pusher
4	2	FT1370-3-4	Tie Bar
5	1	FT1370-3-5	Frame
6	1	FT1370-3-6	Pusher Guide Plate
7	1	FT1370-3-7	Pusher Guide
8	1	FT1370-3-8	Cylinder
9	1	FT1370-3-9	Pusher Support
10	1	FT1370-3-10	Pusher Support Bracket
11	12	FT1370-3-11	1/2-13 x 1.25 Lg SHCS
12	1	FT1370-3-12	3/8-16 x 2.25 Lg FHCS
13	1	FT1370-3-13	1/2-13 x .50 Lg. Brass Tip SHSS
14	4	FT1370-3-14	1/4-20 x .50 Lg. SHCS
15	1	FD35-1000-06-06	FD35 Coupling

Item	Qty	Part Number	Description
16	1	2089-06-06S	Elbow Adapter
17	1	2083-6-6S	Adapter
18	1	FK3812GGG0720	Hose Assembly
19	1	FT1380P-2-2	Hand Pump
	1	FT1310-2-6	Air/Oil Pump
	1	FT1310-2-9	12 Volt DC Pump
	1	FT1310-2-7	115 Volt AC Pump
			(not included with FT1370-1-1)
	1	FT1370-3-15	Serialized Decal (not shown)
	2	FT1370-3-16	Tie Bar Decal-JA903 (not shown)
	1	FT1330-3-64	Attention Decal (not shown)
	1	JA902	1370 Decal (not shown)
	1	T-400-G	PTFE grease

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	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. (FT-1380-2-9A) requires 8 springs.

Shim Sets

FT1370-5-1	GH194 with TTC Fittings (-4 through -20)
FT1370-5-2	GH195 with TTC Fittings (-4 through -20)
FT1370-5-3	GH663/FC211/FRH1AT/FC613 with TTC Fittings (-4 through -20)
FT1370-5-4	GH781/FC579/FC735 with TTC Fittings (-4 through -20)
FT1370-5-5	GH793/FC212/FRH2AT with TTC Fittings (-4 through -20)
FT1370-5-6	GH493/FC136/FC736 with TTC12 Fittings (-6 through -16)
FT1370-5-7	FC372/FC373 with FC5810 Swage Fittings (-2, -3, -4, -6 and -8)

FT1370 Die Cage / Shim Selection for MatchMate Plus Hoses

FT1370 Die Cage / Shim Selection for MatchMate Plus Hoses

GH663	Die Cage	Shim
-4	-M150	-402
-6	-M180	-260
-8	-M240	-441
-10	-M240	-176
-12	-M320	-471
-16	-M370	-142
-20	-M420	-095

GH793	Die Cage	Shim
-4	-M150	-260
-6	-M210	-427
-8	-M240	-323
-10	-M280	-378
-12	-M320	-402
-16	-M370	-048
-20	-M465	-176

GH194	Die Cage	Shim
-4	-M150	-402
-6	-M180	-308
-8	-M240	-441
-10	-M240	-176
-12	-M320	-471
-16	-M370	-142
-20	-M420	-122

GH781	Die Cage	Shim
-4	-M150	-288
-6	-M210	-461
-8	-M240	-351
-10	-M280	-415
-12	-M320	-488
-16	-M370	-202
-20	-M465	-308

GH493	Die Cage	Shim
-6	-M210	-270
-8	-M280	-461
-10	-M280	-202
-12	-M320	-215
-16	-M420	-298
-16	-M370	-048

GH195	Die Cage	Shim
-4	-M150	-288
-6	-M210	-427
-8	-M240	-323
-10	-M280	-378
-12	-M320	-402
-16	-M370	-028
-20	-M465	-073

About Danfoss Power Solutions FC

Danfoss hoses, fittings, and tooling provide the ultimate fluid conveyance solutions for a variety of equipment and applications around the world. We proudly engineer to support a sustainable future for tomorrow.

To learn more please visit: <http://www.danfoss.com/en/about-danfoss/our-businesses/power-solutions>

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