

# FD14 Series Oil Drain Coupling

FLOCS application

Danfoss' FD14 Drain Coupling is designed to serve as a drain port for use with Danfoss' FLOCS (Fast Lube Oil Change System) as well as providing a purging port for use during pre-fill operations. The FD14 provides a leak free push to connect operation for improving speed and efficiency for oil evacuation systems.



## Product Features

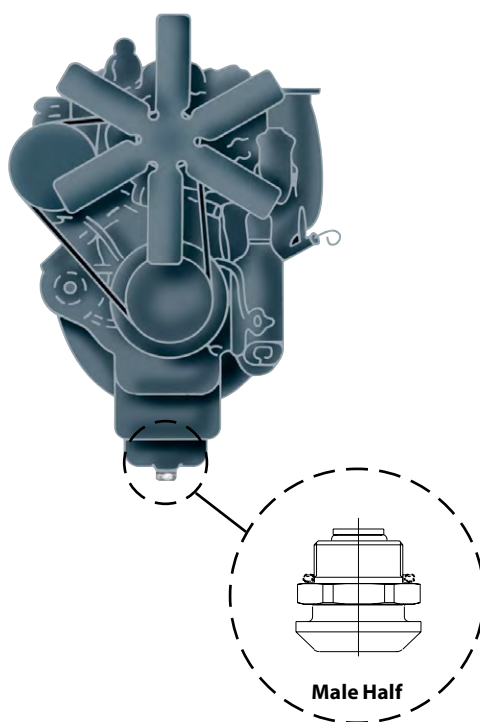
- Low-Profile design with multiple sealing mechanisms
- Push-To-Connect socket/female half for easy one-hand operation
- Broad range of standard thread styles for plug/male half
- Utilizes a Copper-Crush gasket to seat against the port face
- Standard plug/male half seal material: FKM
- Standard socket/female half seal material: Buna-N
- Standard body material: High resistance carbon steel with zinc trivalent plating with zinc die-cast valve

## Physical Characteristics

Body Size (in)	Max. Operating Pressure		Min. Burst Pressure Connected		Vacuum Connected Only	Rated Flow	
	(bar)	(psi)	(bar)	(psi)	(in./Hg)	(lpm)	(gpm)
3/8	3.5	50	7.0	200	28	12	3

## Applications & Markets

- Automated oil evacuation systems
- Gravity drain oil evacuation systems



# FD14 Series Oil Drain Coupling

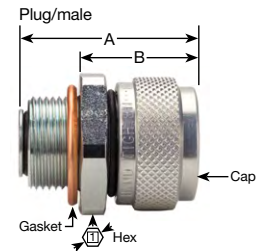


Figure 1

## Dimensions (English Thread)

Body Size	Thread Size	Fig.	Dimensions				Hex ①		Min. Assy. Torque		Part Number Assembly (includes Gasket & Cap)	Gasket (Copper-Crush)	Cap (Brass)
			A	B									
P			mm	(in)	mm	(in)	mm	(in)	N-m	(lbs-ft)			
3/8	1 1/16-12 UN-2A	1	39.1	(1.54)	24.4	(.96)	38.1	(1 1/2)	41-81	(30-60)*	FD14-4002-20-06	FD14-1206-08	FD14-1210-06
3/8	1 1/4-18 UNEF-2A	1	39.1	(1.54)	24.4	(.96)	38.1	(1 1/2)	41-81	(30-60)*	FD14-4002-05-06	FD14-1206-11	FD14-1210-06
3/8	1 1/8-12 UNF-2A	1	39.1	(1.54)	24.4	(.96)	38.1	(1 1/2)	41-81	(30-60)*	FD14-4002-14-06	FD14-1206-09	FD14-1210-06
3/8	1/2-14 DRYSEAL NPTF	1	40.6	(1.60)	24.4	(.96)	27.0	(1 1/16)	-	-	FD14-4002-27-06*	None Needed	FD14-1210-06
3/8	1/2-14 UNS-2A	1	38.6	(1.52)	24.4	(.96)	27.0	(1 1/16)	27-33	(20-24)*	FD14-4002-22-06*	FD14-1206-01	FD14-1210-06
3/8	1/2-20 UNF-2A	1	38.6	(1.52)	24.4	(.96)	27.0	(1 1/16)	27-33	(20-24)*	FD14-4002-01-06*	FD14-1206-01	FD14-1210-06
3/8	1-18 UNS-2A	1	39.1	(1.54)	24.4	(.96)	31.8	(1 1/4)	41-81	(30-60)*	FD14-4002-06-06	FD14-1206-07	FD14-1210-06
3/8	3/4-14 DRYSEAL NPTF	1	43.8	(1.72)	24.4	(.96)	31.8	(1 1/4)	-	-	FD14-4002-26-06	None Needed	FD14-1210-06
3/8	3/4-16 UNF-2A	1	39.1	(1.54)	24.4	(.96)	31.8	(1 1/4)	41-68	(30-50)*	FD14-4002-09-06	FD14-1206-04	FD14-1210-06
3/8	5/8-18 UNF-2A	1	38.6	(1.52)	24.4	(.96)	27.0	(1 1/16)	27-54	(20-40)*	FD14-4002-08-06*	FD14-1206-03	FD14-1210-06
3/8	7/8-14 UNF-2A	1	39.1	(1.54)	24.4	(.96)	31.8	(1 1/4)	41-81	(30-60)*	FD14-4002-10-06	FD14-1206-06	FD14-1210-06
3/8	7/8-18 UNS-2A	1	39.1	(1.54)	24.4	(.96)	31.8	(1 1/4)	41-81	(30-60)*	FD14-4002-07-06	FD14-1206-06	FD14-1210-06
3/8	9/16-18 UNF-2A	1	38.6	(1.52)	24.4	(.96)	27.0	(1 1/16)	27-54	(20-40)*	FD14-4002-12-06*	FD14-1206-02	FD14-1210-06

\*⚠CAUTION: Failure to meet minimum assembly torque could result in fluid leakage.

## Dimensions (English Thread)

Body Size	Thread Size	Fig.	Dimensions				Hex ①		Min. Assy. Torque		Part Number Assembly (includes Gasket & Cap)	Gasket (Copper-Crush)	Cap (Brass)
			A	B									
P			mm	(in)	mm	(in)	mm	(in)	N-m	(lbs-ft)			
3/8	M12 X 1.5 6g	1	38.6	(1.52)	24.4	(.96)	27.0	(1 1/16)	27-33	(20-24)*	FD14-4002-23-06*	FD14-1206-01	FD14-1210-06
3/8	M12 X 1.75 6g	1	38.6	(1.52)	24.4	(.96)	27.0	(1 1/16)	27-33	(20-24)*	FD14-4002-25-06*	FD14-1206-01	FD14-1210-06
3/8	M14 X 1.25 6g	1	38.6	(1.52)	24.4	(.96)	27.0	(1 1/16)	27-33	(20-24)*	FD14-4002-03-06*	FD14-1206-02	FD14-1210-06
3/8	M14 X 1.5 6g	1	38.6	(1.52)	24.4	(.96)	27.0	(1 1/16)	27-33	(20-24)*	FD14-4002-24-06*	FD14-1206-02	FD14-1210-06
3/8	M18 X 1.5 6g	1	38.6	(1.52)	24.4	(.96)	31.8	(1 1/4)	27-33	(20-24)*	FD14-4002-02-06*	FD14-1206-04	FD14-1210-06
3/8	M20 X 1.5 6g	1	39.1	(1.54)	24.4	(.96)	31.8	(1 1/4)	41-81	(30-60)*	FD14-4002-16-06	FD14-1206-05	FD14-1210-06
3/8	M22 X 1.5 6g	1	39.1	(1.54)	24.4	(.96)	31.8	(1 1/4)	41-81	(30-60)*	FD14-4002-18-06	FD14-1206-06	FD14-1210-06
3/8	M24 X 1.5 6g	1	39.1	(1.54)	24.4	(.96)	31.8	(1 1/4)	41-81	(30-60)*	FD14-4002-19-06	FD14-1206-07	FD14-1210-06
3/8	M24 X 2 6g	1	39.1	(1.54)	24.4	(.96)	31.8	(1 1/4)	41-81	(30-60)*	FD14-4002-11-06	FD14-1206-07	FD14-1210-06
3/8	M25 X 1.5 6g	1	39.1	(1.54)	24.4	(.96)	31.8	(1 1/4)	41-81	(30-60)*	FD14-4002-17-06	FD14-1206-07	FD14-1210-06
3/8	M27 X 2 6g	1	36.3	(1.43)	24.4	(.96)	38.1	(1 1/2)	41-81	(30-60)*	FD14-4002-29-06	FD14-1206-06	FD14-1210-06
3/8	M30 X 1.5 6g	1	39.1	(1.54)	24.4	(.96)	38.1	(1 1/2)	41-81	(30-60)*	FD14-4002-21-06	FD14-1206-10	FD14-1210-06

\*⚠CAUTION: Failure to meet minimum assembly torque could result in fluid leakage.

## Dimensions (Socket/Female Half NPTF, Valved)

Body Size	Thread Size	Fig.	Dimensions				Hex ①		Part Number Assembly
			A	B					
P			mm	(in)	mm	(in)	mm	(in)	
3/8	3/4-14 Dryseal NPTF	2	46.5	(1.83)	45.7	(1.80)	33.0	(1 5/16)	FD14-1001-12-06

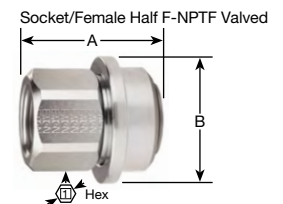


Figure 2

## Dimensions (Socket/Female Half Assembly, Non-Valved)

Body Size	Hose Size	Fig.	Dimensions				Part Number Assembly
			A	B			
P			mm	(in)	mm	(in)	
3/8	5/8"SOCKETLESS™	3	59.4	(2.34)	38.1	(1.50)	FD14-4003-10-06

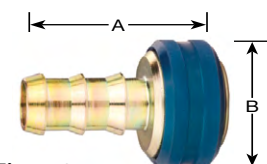


Figure 3

# FD14 Series Oil Drain Coupling

## Dimensions (Cap Molded Rubber)

Body Size	Fig.	Dimensions A		Dimensions B		Part Number Cap (Buna-N)
		mm	(in)	mm	(in)	
3/8	4	13.2	(.519)	35.6	(1.40)	FD14-1204-06

## Dimensions (Cap)

Body Size	Fig.	Dimensions A		Dimensions B		Part Number Cap (Buna-N)
		mm	(in)	mm	(in)	
3/8	5	18.4	(.726)	31.8	(1.25)	FD14-1210-06

## Swivel Joint

Body Size	Fig.	Thread Size	Cap	Part Number (Buna-N)
3/8	6	3/4-14	Dryseal NPTF	FD14-1004-12-12

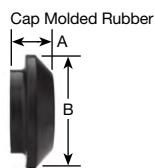


Figure 4

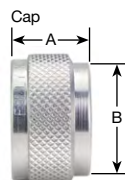


Figure 5

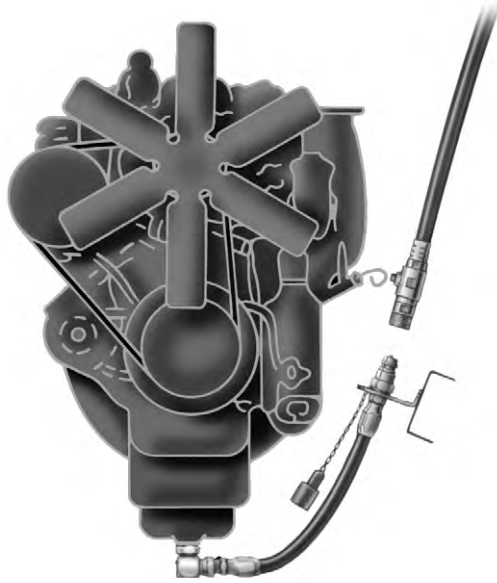


Figure 6

# Access Methods

## Remote Access

The FLOCS Remote Access Conversion Kit replaces the old drain plug with a 90 degree pan adapter, hose assembly and quick-disconnect coupling.



### Installation:

1. Remove old drain plug.
2. Replace with the proper size FF1187 pan adapter.
3. Install mounting bracket (and optional 90° adapter).
4. Attach hose assembly to FF1187 pan adapter and mounting bracket.
5. Attach coupling and dust cap.

Your installation is now complete.

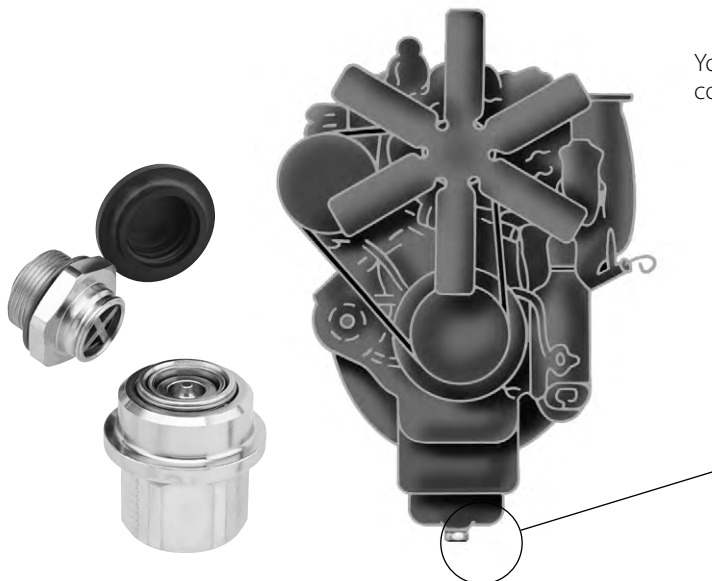
### Evacuation:

When it is time to change the oil:

1. Remove the dust cap.
2. Connect the evacuation hose to the quick-disconnect coupling.
3. Activate the pump, and the used oil is quickly evacuated to storage tanks.
4. Disconnect the evacuation hose and replace the dust cap.

## Direct Access

The FLOCS Direct Access Conversion Kit uses the Danfoss-developed FD14 Drain Coupling as an alternative to the standard remote hose kit. This coupling design permits easy, one-hand connection and disconnection of the evacuation unit's hose.



### Installation:

1. Remove old drain plug.
2. Replace with the proper size FD14 Drain Coupling.
3. Install protective cap.

Your installation is now complete.

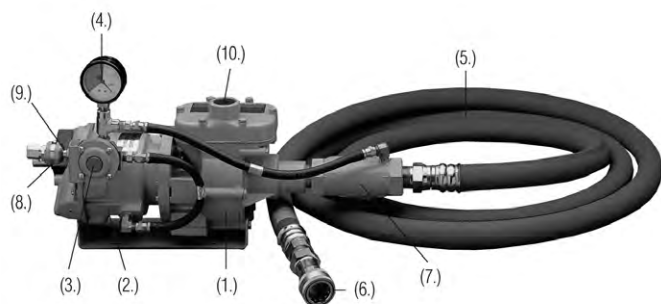
### Evacuation:

When it is time to change the oil:

1. Remove the protective cap.
2. Connect the evacuation hose to the FD14 Drain Coupling.
3. Activate the pump, and the used oil is quickly evacuated to storage tanks.
4. Disconnect the evacuation hose and replace the protective cap.

# Evacuation Systems

## FLOCS 30A Air-powered Unit



- |  |                             |
|--|-----------------------------|
| 1. Piston pump                           | 6. Coupling half**          |
| 2. 5 cfm air-operated motor (80-150 psi) | 7. Suction strainer         |
| 3. Override button                       | 8. 1/4" air-supply coupling |
| 4. Cycle gauge                           | 9. 1/4" air-supply nipple   |
| 5. 15' of 1" I.D. suction hose*          | 10. 1" NPT discharge port   |

## (Part No. FF9330A-01) Remote Access (Part No. FF9330A-19) Direct Access

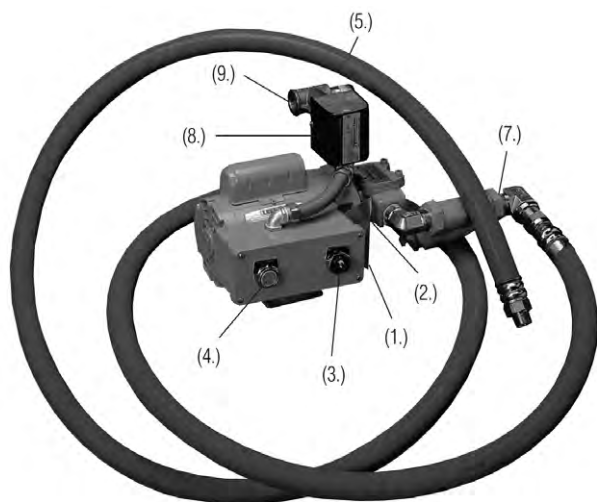
The FLOCS 30A Oil-evacuation Unit is a versatile, air-powered unit designed to be used where an air-power source is available, and electrical units may present a fire hazard. The unit can be adapted for use either on a lube truck or in a maintenance bay.

A FLOCS 30A unit can be used with equal effectiveness on vehicles with small oil-pan capacities (taxicabs, delivery trucks, school buses, etc.), medium capacities (highway equipment, tree-harvesting equipment, etc.) or large capacities (mining or construction equipment, etc.). Speed, ease of operation and versatility make the FLOCS 30A the best rapid oil-evacuation unit for many applications.

\* FLOCS 30A Oil-evacuation Unit with 25' hose assembly is ordered by part number FF9330A-100 (Remote Access), FF9330A-20 (Direct Access).

\*\* Differs with access method.

## FLOCS 15 Electric-powered Unit



- |  |  |
|--|--|
| 1. 3/4" hp electric motor, 115V AC, 20 amp | 6. Coupling half**                                     |
| 2. Gear pump                               | 7. Suction strainer                                    |
| 3. Cycle-run starter button                | 8. 115V AC flow-control switch                         |
| 4. Cycle-run signal light                  | 9. Backflow check valve with a 3/4" NPT discharge port |
| 5. 15' of 1" I.D. suction hose*            |  |

## (Part NO. FF9315-01) Remote Access (Part No. FF9315-28) Direct Access

The FLOCS 15 Oil-evacuation Unit is electric powered and is designed for use in fleet maintenance service bays. Used in conjunction with overhead oil-dispensing reels, the FLOCS 15 speeds oil changes in large fleets. In some multilane maintenance shops, the FLOCS 15 concept has been used to implement a "fast-lane" operation, with one lane set aside for high-frequency, routine maintenance functions, leaving the other lanes free for more complex and time-consuming operations.

The FLOCS 15 is compatible with existing oil service equipment and can be installed quickly, without interrupting normal maintenance operations. It discharges old oil into existing storage tanks and shuts off automatically when the old oil has been evacuated. A signal light goes off when the evacuation is complete.

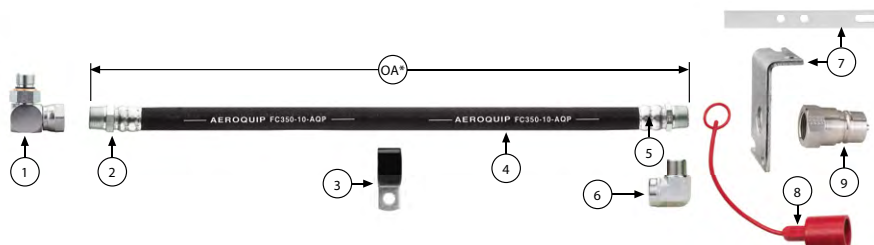
\* FLOCS 15 Oil-evacuation Unit with 30' hose assembly is ordered by part number FF9516-01 (Remote Access), FF9516-02 (Direct Access).

\*\* Differs with access method.

# Remote Access (Aeroquip) Conversion Kits

## Standard Vehicles

All kits are designed to accommodate manual drain when necessary.



These components are common to each kit regardless of the part number.

Item #	Part #	Description
Item # 2	4412-8-10S	Hose Fitting (Reusable)
Item # 2	FJ3152-0810S	Hose Fitting (Crimp)
Item # 3	900729-6	Hose Clamp
Item # 4	FC350-10	Hose
Item # 5	4412-12-10S	Hose Fitting
Item # 5	FJ3152-1210S	Crimp
Item # 6	2089-12-12S	Connection At Mounting Flange
Item # 7	FF9363-01S	Bracket
Item # 8	5657-12	Dust Cap
Item # 9	5602-12-12S	Coupling Half

Kit Numbers are selected by matching the drain port thread size with the oil pan adapter of the same thread.

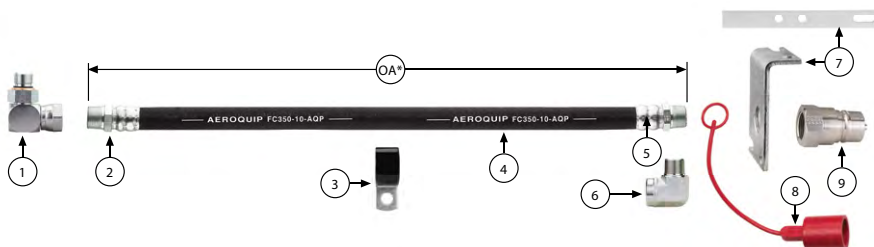
Thread Size	#1 Oil Pan Adapter & Gasket	Hardware Kit (Includes Items 1, 3, 6, 7, 8, & 9)	Assembled Kit* (Includes Items 1 through 9)
1/2 - 20	FF1187-0801S	FF428	FF400-OA
m 18 x 1.5	FF1187-0802S	FF429	FF401-OA
m 14 x 1.25	FF1187-0803S	FF430	FF402-OA
m 10 x 1	FF1187-0804S	FF431	FF403-OA
1 1/4 - 18	FF1187-0805S	FF432	FF404-OA
1 - 18	FF1187-0806S	FF433	FF405-OA
7/8 - 18	FF1187-0807S	FF434	FF406-OA
5/8 - 18	FF1187-0808S	FF435	FF407-OA
3/4 - 16	FF1187-0809S	FF436	FF408-OA
7/8 - 14	FF1187-08010S	FF437	FF409-OA
9/16 - 18UNF - 2A	FF1187-08012S	FF11042	FF11041-OA
1 1/8 - 12UNF - 2A	FF1187-08014S	FF11301	FF10452-OA
1 1/8 - 12UNF - 2A	**FF1187-08015S	FF11303	FF11302-OA
m 20 x 1.5	FF1187-0816S	FF11499	FF11498-OA
m 25 x 1.5	FF1187-0817S	FF11826	FF11825-OA
3/8 - 18 NPT (Pipe)	2047-8-6S	FF439	FF411-OA
1/2 - 14 NPT (Pipe)	2047-8-8S	FF440	FF412-OA
3/4 - 14 NPT (Pipe)	2047-8-12S	FF441	FF413-OA

\* OA indicates overall length of hose assembly in inches. (Available to Aeroquip only.)

\*\* Long Drop Version for oil pans covered by sound attenuation shields.

## Large-capacity Vehicle Kit

All kits are designed to accommodate manual drain when necessary.



These components are common to each kit regardless of the part number.

Item #	Part #	Description
Item # 2	4412-8-12S FJ3152-0812S	(Reusable) (Crimp)
Item # 3	900729-8	Hose Clamp
Item # 4	FC350-10	Hose
Item # 5	4412-12-12S	Hose Fitting
Item # 5	FJ3152-1212S	(Crimp)
Item # 6	2089-12-12S	Connection At Mounting Flange
Item # 7	FF9363-01S/ FF9270-01S	Bracket
Item # 8	5657-12	Dust Cap
Item # 9	5602-12-12S	Coupling Half

Kit Part Numbers are selected by choosing the appropriate drain port thread size.

Items Thread Size	#1 Oil Pan Adapter & Gasket	#2 Hose Fitting	Hardware Kit (Includes Items 1, 3, 6, 7, 8, & 9)	Assembled Kit* (Includes Items 1 through 9)
3/4 - 14 NPT (Pipe)	2047-8-12S	4412-8-12S	FF943	FF293-OA
3/8 - 18 NPT (Pipe)	2047-8-6S	44112-8-12S	FF945	FF322-OA
7/8 - 18	FF1187-0807S	4412-8-12S	FF944	FF317-OA
7/8 - 14	FF1187-0810S	4412-8-12S	FF946	FF380-OA
1 - 18	FF1187-0806S	4412-8-12S	FF947	FF395-OA
1 - 11 1/2 NPT (Pipe)	2024-16-12S	4411-8-12S	FF948	FF833-OA
1/2 - 14 NPT (Pipe)	2024-8-12S	4411-8-12S	FF949	FF834-OA

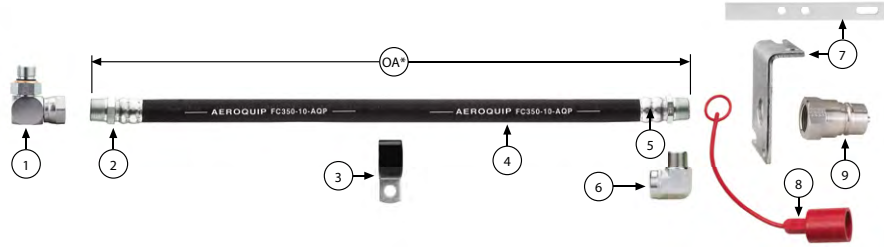
\* OA indicates overall length of hose assembly in inches. (Available to Aeroquip only.)



# Remote Access (Weatherhead) Conversion Kits

## Standard Vehicles

All kits are designed to accommodate manual drain when necessary.



These components are common to each kit regardless of the part number.

Item #	Part #	Description
Item # 2	0A10E-108	Hose Fitting
Item # 3	900729-6	Hose Clamp
Item # 4	H56910	Hose
Item # 5	069	Hose Fitting Adapter for 90
Item # 6	2089-12-12S	Connection At Mounting Flange
Item # 7	FF9363-01S	Bracket
Item # 8	5657-12	Dust Cap
Item # 9	5602-12-12S	Coupling Half

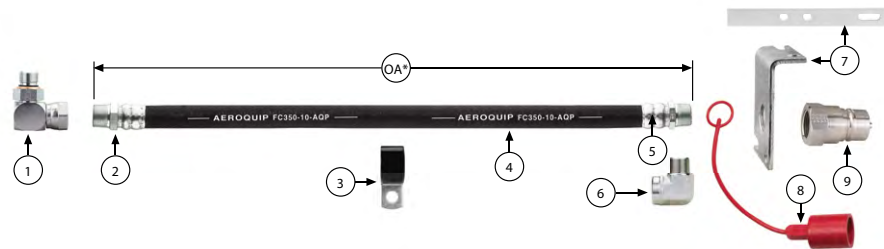
Kit Numbers are selected by matching the drain port thread size with the oil pan adapter of the same thread.

Thread Size	#1 Oil Pan Adapter & Gasket	Hardware Kit (Includes Items 1, 3, 6, 7, 8, & 9)
1/2 - 20	FF1187-0801S	FF428
m 18 x 1.5	FF1187-0802S	FF429
m 14 x 1.25	FF1187-0803S	FF430
m 10 x 1	FF1187-0804S	FF431
1 1/4 - 18	FF1187-0805S	FF432
1 - 18	FF1187-0806S	FF433
7/8 - 18	FF1187-0807S	FF434
5/8 - 18	FF1187-0808S	FF435
3/4 - 16	FF1187-0809S	FF436
7/8 - 14	FF1187-0810S	FF437
9/16 - 18UNF - 2A	FF1187-08012S	FF11042
1 1/8 - 12UNF - 2A	FF1187-08014S	FF11301
1 1/8 - 12UNF - 2A	**FF1187-08015S	FF11303
m 20 x 1.5	FF1187-0816S	FF11499
m 25 x 1.5	FF1187-0817S	FF11826
3/8 - 18 NPT (Pipe)	2047-8-6S	FF439
1/2 - 14 NPT (Pipe)	2047-8-8S	FF440
3/4 - 14 NPT (Pipe)	2047-8-12S	FF441

\*\* Long Drop Version for oil pans covered by sound attenuation shields.

## Large-capacity Vehicle Kit

All kits are designed to accommodate manual drain when necessary.



These components are common to each kit regardless of the part number.

Item #	Part #	Description
Item # 2	069	Hose Clamp
Item # 3	900729-8	Hose
Item # 4	H56912	Hose
Item # 5	069	Hose Fitting
Item # 6	2089-12-12S	Connection At Mounting Flange
Item # 7	FF9363-01S/ FF9270-01S	Bracket
Item # 8	5657-12	Dust Cap
Item # 9	5602-12-12S	Coupling Half

Kit Part Numbers are selected by choosing the appropriate drain port thread size.

Thread Size	#1 Oil Pan Adapter & Gasket	Hardware Kits (Includes Items 1, 3, 6, 7, 8, & 9)
3/4 - 14 NPT (Pipe)	2047-8-12S	FF943
3/8 - 18 NPT (Pipe)	2047-8-6S	FF945
7/8 - 18	FF1187-0807S	FF944
7/8 - 14	FF1187-0810S	FF946
1 - 18	FF1187-0806S	FF947
1 - 11 1/2 NPT (Pipe)	2047-8-16S	FF948
1/2 - 14 NPT (Pipe)	2047-8-8S	FF949

# Oil Thief System



### Providing easy access to oil samples for spectro-graphic analysis.

With the spectrographic analysis of engine oil being increasingly required, the problem of obtaining oil samples quickly, economically and efficiently has demanded more attention.

With the push of a button, an oil sample can be taken during the evacuation cycle of any FLOCS unit and collected in a standard sampling bottle for analysis. It takes less than 15 seconds to collect an oil sample with the Oil Thief.

Because oil-analysis facilities provide differing oil sample bottles, the FLOCS Oil Thief is available with a sample bottle port thread to match your needs. (Refer to the sample bottle thread sizes and corresponding Oil Thief part numbers listed in this chart.)

### Physical Characteristics:

Buna-N Seals for -40 to +225 Degrees Fahrenheit Service. Vacuum Capable to 28" Hg.

In a typical FLOCS system, a Male NPTF-to-Male NPTF adapter (2083-12-12s) is used on one end of the Oil Thief to connect to the female quick-disconnect coupling.

### Operating Instructions:

The Oil Thief is compatible with any FLOCS evacuation unit. Simply install an Oil Thief between the evacuation hose line and the coupling half; then attach a sample bottle. Wait a few seconds after starting the evacuation cycle (to flush away any oil from the last evacuation); then depress the sample collection button for approximately ten seconds. Release the button and remove the sample bottle. Clean the Oil Thief sample bottle port, attach another bottle and you are ready for the next sample.

**Note:** When not in use, the Oil Thief should have a spare sample bottle attached to maintain valve cleanliness.

### Features:

- Push-button operation
- Light weight
- Repairable seals
- Accepts a wide variety of sample bottle threads

### Benefits:

- No-mess oil sample
- Economical – one Oil Thief per maintenance bay evacuation pump
- Allows oil sampling while oil is still hot, without employee hazard

Oil Thief Part Number	Sample Bottle Thread Size (In Inches)
FF9300-75-0001	1.480-6 (or 38mm)
FF9300-75-0002	2.070-6
FF9300-75-0003*	1.580-6
FF9300-75-0004*	1.750-6 (or 45mm)

\*Available by special order.



# Remote Access Conversion Kit Installation

## 1. Selecting the Conversion Kit

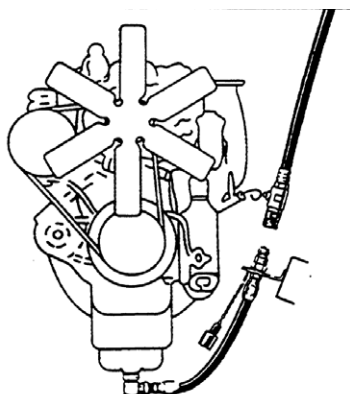
Remove the oil pan drain plug and drain engine oil. Measure the thread on the pan plug with a thread gauge. The thread size will determine the specific conversion kit to be used. Kits are available in two styles: 1) assembly kits (contain mounting hardware and hose assembly), and 2) oil pan drain fitting and coupling with mounting bracket (installer must finish hose assembly). Hose length in inches ("L") is added to the basic part number when ordering assembled kits.

## 2. Installation

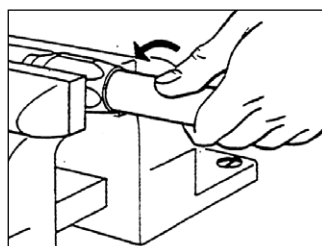
Determine the length of hose required for your vehicle. If the hose length is not known, mount the quick disconnect coupling and bracket and route the hose from the coupling bracket to the oil pan drain. Refer to step 5 for proper routing, mark and cut the hose to length. Following step 3 install the hose fittings to complete the hose assembly. Install the oil pan drain fitting (per step 6) and the hose assembly.

Pan Plug Thread Size	Assembled Kit No.	Hardware Kit No.
1/2-20	F400-L	FF428
18 x 1.5 mm	FF401-L	FF429
14 x 1.25 mm	FF402-L	FF430
10 x 1 mm	FF403-L	FF431
1 1/4-18	FF404-L	FF432
1-18	FF405-L	FF433
7/8 - 18	FF406-L	FF434
24 x 2 mm	FF410-L	FF438
9/16 - 18	FF952-L	FF453
3/8 - 18 NPT (Pipe)	FF411-L	FF439
1/2 - 14 NPT (Pipe)	FF412-L	FF440
3/4 - 14 NPT (Pipe)	FF413-L	FF441

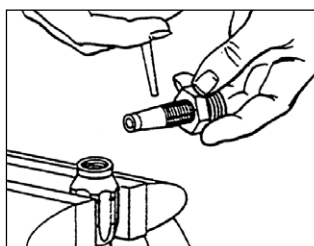
## 3. Assembling the Hose Line



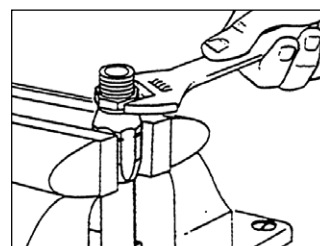
**A.** Put the socket in vise and screw hose into socket counterclockwise until it bottoms. Back off 1/4 turn.



**B.** Oil nipple threads and inside of hose liberally. Use heavy lube oil.



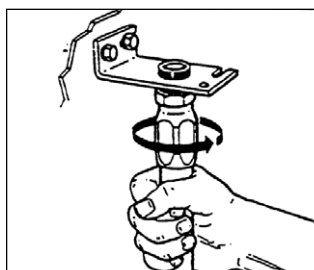
**C.** Screw nipple clockwise into socket and hose. Keep hose from turning while assembling nipple. Leave 1/32" to 1/16" clearance between nipple hex and socket.



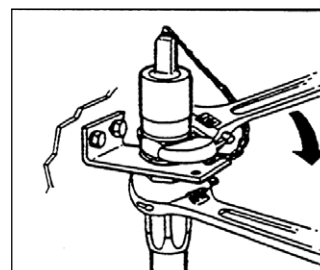
## 4. Mounting the Coupling

**Note:** The coupling bracket should be mounted so that the coupling valve is located above the oil level in the crank case. Make sure that the coupling is mounted firmly and located so that it will not be damaged during normal operation of the vehicle.

**A.** Attach mounting bracket to desired location on vehicle, preferably near the dipstick. Screw assembled fitting into bracket until enough thread is exposed on opposite side to assemble and tighten the quick disconnect coupling.

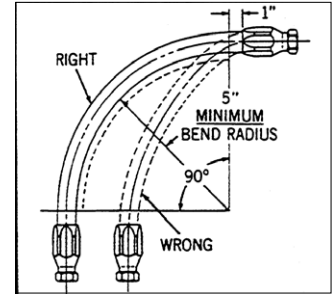
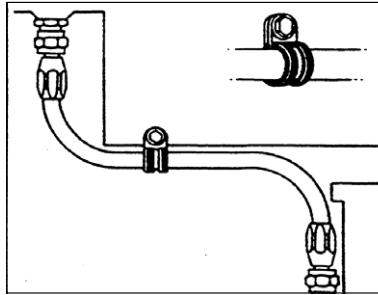
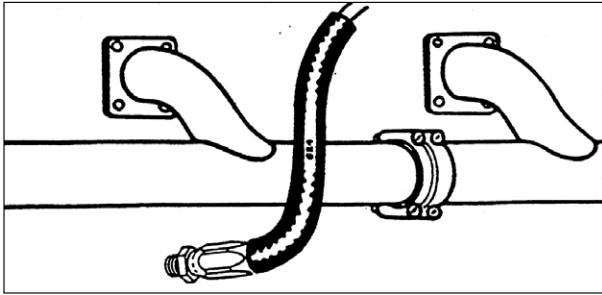


**B.** Assemble dust cap and coupling to mounted hose fitting. Use pipe thread sealant. Check for any leakage after kit is installed.



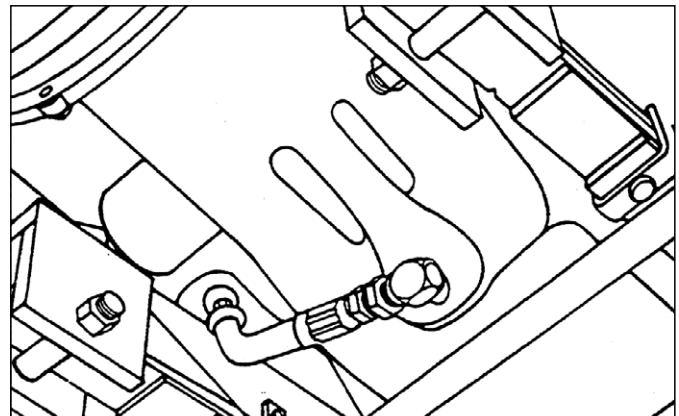
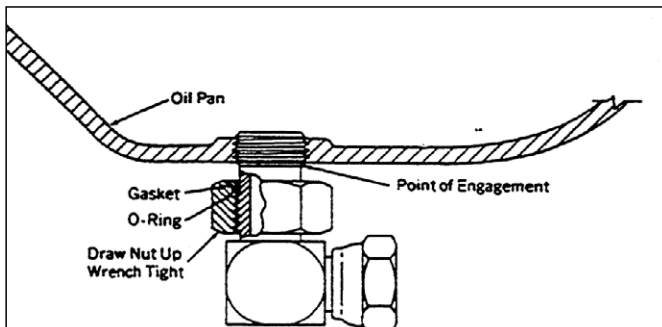
**5. Routing the Hose**

- A.** Avoid heat. If the hose must be routed past the manifold or exhaust pipe, use Firesleeve for heat protection.
- B.** Avoid sharp or abrasive edges. Use Danfoss protective coil/sleeve if hose might be cut or chafed or use support clamp provided to avoid abrasion.
- C.** Avoid kinking. Tight bends may kink hose. Observe bend radius limitations.



**6. Installing the Oil Pan Drain Fitting**

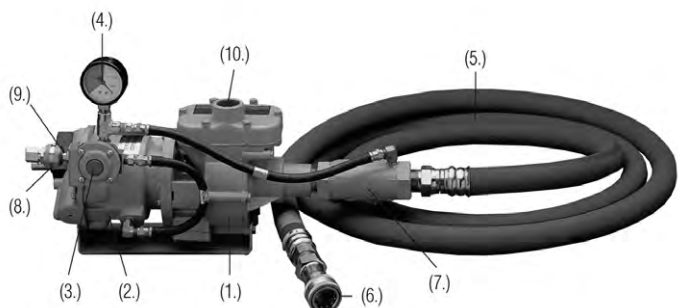
- Lubricate the O-ring seal on the Oil Pan Drain Fitting. Screw the fitting into the oil pan until the last thread on the upper set of threads is engaged.
- Position the elbow and tighten the jam nut (two wrenches needed). Screw the hose fitting into the elbow and tighten all connections.
- Oil may be manually drained by disconnecting the hose fitting from the oil pan adapter.



# Air Units

## Operation and Service Info

### FLOCS 30A Air-powered Unit



- |  |                             |
|--|-----------------------------|
| 1. Piston pump                           | 6. Coupling half**          |
| 2. 5 cfm air-operated motor (80-150 psi) | 7. Suction strainer         |
| 3. Override button                       | 8. 1/4" air-supply coupling |
| 4. Cycle gauge                           | 9. 1/4" air-supply nipple   |
| 5. 15' of 1" I.D. suction hose*          | 10. 1" NPT discharge port   |

### Specifications

- Maximum discharge pressure: 1/5 of the input air pressure (power source).
- Recommended operating temperature of fluid: +60°F. to 180°F.
- Strainer screen size: size 35 mesh.
- Flow rate: see flow chart.
- Pump power source: 80 to 150 psi air at 5 CFM minimum.
- Fluid handling compatibility: all petroleum base fluids below 6000 SSU
- Minimum discharge line: size 1" I.D. (-16).
- Mounting requirements:

see Fig. 3, page 3.

- 15' of 1" I.D. suction line standard.
- 5601-12-12 female coupling.

### Installation Instructions

Mount the unit for easy accessibility to the vehicles to be serviced. It may be mounted in either a horizontal or vertical position. A mounting bracket is provided for rigid mounting of the pump (reference Figure 3 for detail dimensions). The pump motor operates on 80-150 psi air at 5 CFM minimum. The unit is to be mounted so that the cycle gauge is in full view of the operator and the override button and strainer cleanout are readily accessible.

1. Connect the used oil discharge line to the 1" pipe port at the top of the unit. The discharge line must be no higher than 10 feet above FLOCS unit. It is important to keep the discharge line large to maintain maximum efficiency.

Use a 1" I.D. pipe for lines 15' to 30' long and a 1 1/4" I.D. pipe for lines 30' to 100' long. Make sure the discharge line does not develop more head pressure than 1/5 of the air pressure source. (Example: air power source of 150 psi, discharge head pressure of 30 psi maximum.)

2. Connect the air supply line into the 1/4" NPTF port of the quick disconnect coupling supplied with the unit. The air supply line should be equipped with an air line water filter to prevent water from contaminating the pump control and/or causing freezing-up. A lubricator is also recommended for the air supply line (use non-detergent oil in the lubricator).

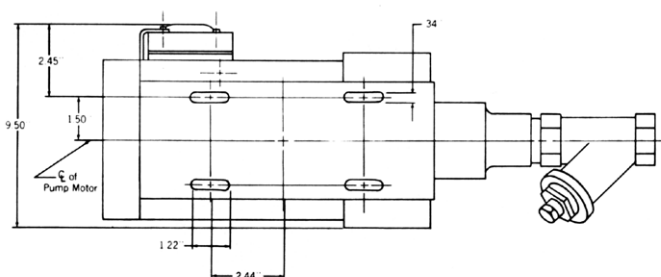


Figure 3

3. Install the 15' evacuation line by screwing the swivel hose fitting into the female thread on the strainer. Use pipe dope to insure a proper seal. Do not over tighten.

**Note:** The unit should not be mounted in a position requiring more than 10 feet of evacuation lift.

### Operation

The FLOCS 30A unit is a simple self-controlled automatic oil evacuator. Once it has been started it will operate until all the oil has been evacuated from the oil pan. The unit will stop automatically when air enters the suction hose.

This unit is controlled by a normally closed, air supply shut-off valve, which requires the pump vacuum to hold it open. At the end of the evacuation cycle air in the suction line destroys the vacuum causing the control valve to shut off the air pressure supply and stop the pump. The unit also incorporates a strainer to prevent large particles from damaging the pump.

### To operate:

1. Attach the FLOCS 30A unit quick disconnect coupling to the mating conversion kit coupling half on the equipment.
2. Press the red override button to start the unit; hold for approximately 5 seconds. Cycle gauge will indicate run condition.
3. The unit will shut off automatically when all oil is evacuated. The cycle gauge will indicate when the unit is off. Disconnect the evacuation line.