Issued: August 08, 2012
Reply to: Dan Worcester
Southwest Research Institute
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San Antonio, TX 78238
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These are the unapproved minutes of the 07.31.2012 Sequence VI Task Force meeting.

The meeting was called to order at 10:00 AM Central Daylight Time by Chair Dave Glaenzer.

Agenda

The Agenda is the included as Attachment 1.

1.0 Roll Call

The Attendance list Attachment 2.

2.0. Approval of minutes

2.1. Approval of the minutes of the 06.19.2012 Conference Call.
Jason Bowden, Charlie Leverett second.
The minutes were approved without changes.

3.0. Action Item Review

3.1. TMC to conduct engine coolant flow calibration round robin with meter supplied by Afton.
Altman/Grundza
The procedure is included as Attachment 3.
Charlie Leverett has agreed to write a procedure for the VIE test.
Rich has supplied the following data:

5 0f 6 labs have reported results on the flow comparison exercise and I have tabulated them below:

Lab	Lab Reading	Meter Reading	Delta
A	80	79.87	0.13
B	83.5	80	3.5
C	79.04	79.59	-0.55*
D	80.2	81	-0.8
G	81	79.615	1.385

* Average of 15 readings

3.2. ExxonMobil to generate list of ECM data that would be desirable to monitor and record.
Mosher report
This item is still open.

3.3. Standardization of piping on suction side of engine driven oil pump.

Glaenzer Motion

The goal is #12 lines for the suction side of the engine to replace either #8 or #10 currently in the procedure.

This would allow the engine oil pressure relief valve to control oil pressure.

Note: the original motion in the email included the short body Burkert which is not currently available. That item was removed.

Dave Glaenzer, Bruce Matthews second.

Supporting information is in Attachments 4, 5, and 6.

Motion:

Recommend to Sequence VI Surveillance Panel that FCV-150C is to be Burkert Type 2000 with 13 mm orifice and 50 mm actuator. Additionally, flexible hoses to and from FCV-150C are to be size #12 and the internal diameter of any fitting on the suction side of the engine driven oil pump shall be equal to or greater than 0.50 inches. Hose lines to and from FIL-2 are to be size #10. Yes: 7 No: 1

4.0 Old Business

4.1. None.

5.0 New Business

5.1. Removal of Section 6.6.5.3(5) wording

"Use only one type of Burkert piston and solenoid valve on a test stand."

It was recommended to make the change for the VID and VIE.

5.2 2012 engine hours adjustment.

There was a request to include the raw engine hours for the 2012 engines.

This will be confirmed that it is in the current report package.

5.3 The 2012 engine is now available for purchase from OHT.

6.0 Next Meeting

The next call will be at the call of the Chair.

7.0 Meeting Adjourned

The meeting adjourned at 10:41 AM Central Daylight Time.

Sequence VI Test Quality TF Teleconference

July 31, 2012

11:00 EDT

Call-in Number: 866-817-9787

Participant Passcode: 2158089

Non-Toll Free: 203-320-3489

Agenda

1) Attendance

2) Approval of minutes

2.1) Approve the minutes from June 19, 2012

3) Action Item Review from 03/27, 04/26, 05/22 & 06/19

3.1. TMC to conduct engine coolant flow calibration round robin with meter supplied by Afton. Altman/Grundza Underway

3.2. ExxonMobil to generate list of ECM data that would be desirable to monitor and record. Mosher report

3.3. Standardization of piping on suction side of engine driven oil pump. Glaenzer Motion

4) New or Additional Areas of Concern

4.1. Removal of Section 6.6.5.3(5) wording

4.2 New Items?

5) Next Meeting

Teleconference on XX/XX/2012

6) Meeting Adjourned

ASTM SEQUENCE VI TEST QUALITY TASK FORCE TELECONFERENCE JULY 31, 2012

Name	Address	Phone/Fax/Email	Attendance
Jason Bowden Voting Member	OH Technologies, Inc. P.O. Box 5039 Mentor, OH 44061-5039	Phone: 440-354-7007 Fax: 440-354-7080 jhbowden@ohtech.com Rollcall Vote	X y
Timothy Caudill Voting Member	Ashland, Inc. 21st and Front Streets Ashland, KY 41101	Phone: 606-329-5708 Fax: 606-329-3009 Tlcaudill@ashland.com	
David Glaenzer Voting Member	Afton Research Center 500 Spring Street Richmond, VA 23218	Phone: 804-788-5214 Fax: 804-788-6358 Dave.Glaenzer@aftonchemical.com	X
Rich Grundza Voting Member	ASTM TMC 6555 Penn Ave. Pittsburgh, PA 15206-4489	Phone: 412-365-1034 Fax: 412-365-1047 reg@astmtmc.cmu.edu	X Y
Charlie Leverett Voting Member	Intertek Automotive Research 5404 Bandera Road San Antonio, TX 78238	Phone: 210-647-9422 Fax: 210-523-4607 charlie.leverett@intertek.com	X Y
Jim Linden Voting Member	Toyota	lindenjim@hotmail.com	X Y
Bruce Matthews Voting Member	GM Powertrain Engine Oil Group Mail Code: 483-730-472 823 Joslyn Rd	Pontiac, MI 48340 Phone: 248-830-9197 bruce.matthews@gm.com	X Y
Timothy Miranda Voting Member	BP Castrol Lubricants USA 1500 Valley Road Wayne, NJ 07470	Phone: 973-305-3334 Timothy.Miranda@bp.com	
Nathaniel Moles Voting Member	Lubrizol 29400 Lakeland Blvd. Wickliffe, OH 44092	Phone: (440) 347-4472 Nathaniel.Moles@Lubrizol.com	X Y
Mark Mosher Voting Member	ExxonMobil 600 Billingsport Road Paulsboro, NJ 08066	Phone: 856-224-2132 Fax: 856-224-3628 mark_r_mosher@exxonmobil.com	X Y
Andy Ritchie Voting Member	Infineum 1900 East Linden Ave. Linden, NJ 07036-0735	Phone: 908-474-2097 Fax: 908-474-3637 Andrew.Ritchie@infineum.com	

ASTM SEQUENCE VI

Name	Address	Phone/Fax/Email	Attendance
Ron Romano Voting Member	Ford Motor Company 21500 Oakwood Blvd POEE Bldg Rm DR 167 MD 44 Dearborn, MI 48121-2053	Phone: 313-845-4068 rromano@ford.com	
Mark Sutherland Voting Member	Chevron Oronite Company LLC 4502 Centerview Ste. 210 San Antonio, TX 78228	Phone: 210.731.5605 Fax: 210.731.5621 msut@chevrontexaco.com	
Haiying Tang Voting Member	Chrysler	HT146@Chrysler.com Tel: 248-512-0593	
Dan Worcester Voting Member	Southwest Research Institute (SwRI) 6220 Culebra Road San Antonio, TX 78228	Phone: 210.522.2405 dan.worcester@swri.org	X N

Guests

Ed Altman	ed.altman@aftonchemical.com	Afton	✓
Bob Campbell	Bob.Campbell@aftonchemical.com	Afton	✓
Todd Dvorak	todd.dvorak@aftonchemical.com	Afton	✓
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Jim Carter	jecarter@jhaltermann.com	Haltermann	
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Jerry Brys	Jerome.brys@lubrizol.com	Lubrizol	✓
Jeff Kettman	Jeff.kettman@gm.com	GM	

ASTM SEQUENCE VI

Name	Address	Phone/Fax/Email	Attendance
Don Smolenski	donald.j.smolenski@gm.com	GM	
Robert Stockwell	Robert.Stockwell@GM.com Phone: 210.563.0785	GM	✓
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Scott Stap	Scott.stap@tgdirect.com	TG Direct	
Dwight Bowden	dhbowden@ohtech.com	OHT	
Matt Bowden	mjbowden@ohtech.com	OHT	✓
Clayton Knight	cknight@tei-net.com	TEI	
Jeff Clark	jac@astmtmc.cmu.edu	TMC	
Guy Stubbs	Guy.Stubbs@swri.org	SwRI	
William Buscher	wbuscher@swri.edu	SwRI	

Sequence VI Test Quality Task Force Coolant Flow Measurement

To measure engine coolant flow.

1. Remove flow meter from packaging and secure on level surface.
2. Install flow meter in line with engine coolant circulation system.
3. Charge system with 100% Dexcool®.
4. Circulate coolant for time sufficient to remove entrapped air.
5. Adjust coolant flow control valve (FCV-103) or VFD circulating pump to read approximately 80 L/m coolant flow on stand data acquisition system.
6. Record flow observed on stand data acquisition system and flow observed on flow meter.
7. Send data to Richard Grundza at ASTM-Test Monitoring Center.
8. Drain coolant. Secure flow meter in packaging and send to next laboratory.

bürkert
Fluid Control Systems

2/2-Way Piston-Operated Valve For All Neutal Media and Steam

Type 251

Specifications

Orifice Diameter (IN)	Cv-Rating Water (GPM)	Cv-Rating Air (SCFM)	Port Connecton (NPT)	Pressure Range (PSI)[1] Steam Tmax 356°F	Pressure Range (PSI)[1] Other Media Tmax 248°F	Weight (LBS) with Actuator No.[2] 1,4	2,5,8	3,6,9
1/2	5.2	170	1/2	0-140	0-230	2.4	- -	2.9
3/4	13	420	3/4	0-140	0-230	4.2	- -	4.6
1	21	680	1	0-140	0-230	4.9	- -	5.3
1-1/4	35	1100	1-1/4	0-140	0-230	6.8	11.0	7.3
1-1/2*	47	1500	1-1/2	0-140	0-230	7.7	12.0	8.2
2*	70	2300	2	0-140	0-230	9.7	14.0	10.1

* Not available in stainless steel.
1) Also suitable for vacuum down to 38 TORR. Maximum pressures are dependent on pilot pressure used. Consult graphs on page 2.
2) Use Actuators 1, 2 or 3 for compressible fluids. When controlling incompressible fluids where "water hammer" is a problem, use Actuators 4, 5 or 6. (See table on next page for maximum allowable pressures.)

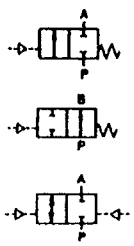
Valve Operations

VALVE OPERATION A
2/2-way valve, in rest position closed by spring energy

VALVE OPERATION B
2/2-way valve, in rest position opened by spring energy

VALVE OPERATION I
2/2-way valve with double-acting actuator

Symbols



Technical Data (Valve)

Installation: Any position.

Material: Body of bronze or stainless steel. Spindle sealed with spring-loaded stacks of Teflon and Viton chevron-shaped packing rings. Other wetted parts of stainless steel (type AISI 420 in bronze body valve and type AISI 316 in stainless steel body valve).

Max. Ambient Temp: 158°F or 122°F with plastic actuator (No. 1 or 4) or with direct mounted pilot valve.

Viscosity: 6.5×10^{-3} Ft^2/Sec

Seal Material	Code	Fluids Handled (Example)	Temperature Range
PTFE (Standard version)	E	Water, steam, alcohols, oils, fuels, hydraulic fluids, organic solvents. With stainless steel body: salt solutions, food stuffs, soda solutions, ammonia, ammonia salt.	+32°F to +356°F
NBR	B	Neutral media such as compressed air natural gas, water, hydraulic oil, river and sea water.	+32°F to +194°F

Technical Data (Actuator)

Actuator Code Matrix				
Springs	Actuator Diameter/Material 2.68" Plastic	4.17" Aluminum	2.68" Aluminum	Comments
Standard	1	2	3	Normal flow conditions – Flow to Close
Reinforced	4	5	6	Reverse-flow to eliminate "water hammer"
None	- -	8	9	"Pressurize to open or close" conditions

Refer to "Selecting an Actuator" on page 3

Control Media: Actuator 1 or 4, compressed air. All others use neutral gases and liquids such as air, water and mineral-based oils. Max temp: 158°F, Max pressure: 140 PSI

Pilot Valves
Actuators 1 through 6 may be piloted by any 3/2 way valve which will handle the control fluid at the necessary pressure (See "Selecting an Actuator"). Since the maximum control pressure is 140 PSI, some commonly used 3/2 way valves are listed below. Refer to the appropriate data sheet for additional information.

Remote Pilot
311-C-5/64-F-BR-1/8-120/60-08-U-H-000 Normally Closed
311-D-5/64-F-BR-1/8-120/60-08-U-H-000 Normally Open
330-C-1/8-F-BR-1/4-120/60-08-U-H-000 Normally Closed
330-D-1/8-F-BR-1/4-120/60-08-U-H-000 Normally Open

Direct Mounted Pilot*
312-C-5/64-F-BR-MAN-120/60-08-U-H-000 Normally Closed
312-D-5/64-F-BR-MAN-120/60-08-U-H-000 Normally Open
331-C-1/8-F-BR-MAN-120/60-08-U-H-000 Normally Closed
331-D-1/8-F-BR-MAN-120/60-08-U-H-000 Normally Open

*Use banjo coupler P/N A-0684-1150-006-00 with type 312 pilot
Use banjo coupler P/N A-0684-1150-005-00 with type 331 pilot

NOTE: Pilot air must be connected to the lower port on the actuator for Valve Operation A.
Pilot air for Valve Operation B must be connected to the top port on the actuator.

Actuators 8 and 9 have no return spring and must be piloted by either two 3/2 way valves or one 4/2 way valve, some of which are listed below.

Remote Pilot
411-G-1/4-B-PL-1/4-120/60-08-U-H-000
420-G-1/8-B-PL-1/8-120/60-08-U-H-000

We reserve the right to make technical changes without notice.

Example for ordering

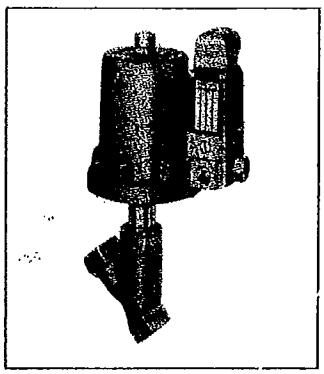
The necessary details for correct ordering are formulated as shown in the example below.

859 - optical indicator
456 - 317 + 859

Example: 251 - A - 3/4 - E - BZ - 3/4 - 4 - 0 - 000

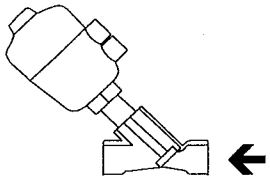
- Valve Type
- Valve Operation
- Orifice Size
- Seal Material
- Body Material
- Pipe Size
- Actuator Number
- Agency Approval
- Optional Features

TOOL KIT
1100341R



Type 251

Technical data Type 2000 threaded port, flow direction below seat (for gases and liquid)



Flow direction below seat

$C_V = 1.166 * K_V$

Orifice [mm]	Actuator size [mm]	Kv value water (m^3/h)	Min. pilot pressure CFA [bar]	Max. operating pressure up to ±180° CFA [bar]	CFB [bar]	Weight [kg]
13	40	3.7	4.0	15	16	0.8
	50	4.2	3.9	16	16	0.8
20	40	7.0	4.0	6.5	16	0.9
	50	8.5	3.9	11	16	1.0
	63	9.0	4.5	16	–	1.4
25	50	10	–	–	16	1.2
	63	18	4.5	11	16	1.8
	80	18	5.0	16	16	2.2
32	63	25	4.5	6	16	2.2
	80	27	5.0	14	16	3.1
40	63	35	–	–	16	2.7
	80	38	5.0	10	16	3.5
	100	40	4.4	12.5	–	7.6
	125	40	3.2	16	–	9.0
50	63	49	–	–	13	4.0
	80	52	–	–	15	4.8
	100	55	4.4	7.2	–	7.0
	125	55	3.2	10	–	9.4
65	80	77	–	–	15	6.4
	125	90	3.2	5.2	–	11.0

Kv value water [m^3/h]: Measured at +20 °C, 1 bar pressure at valve inlet and free outlet
Pressure values [bar]: Measured as overpressure to the atmospheric pressure

Pilot pressure diagram with control function B and flow direction below seat

Diagram 1

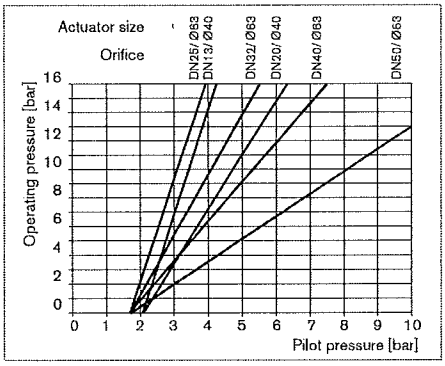
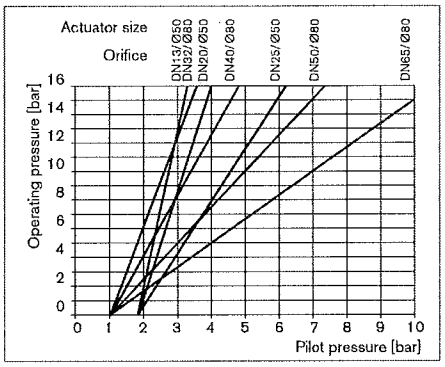


Diagram 2



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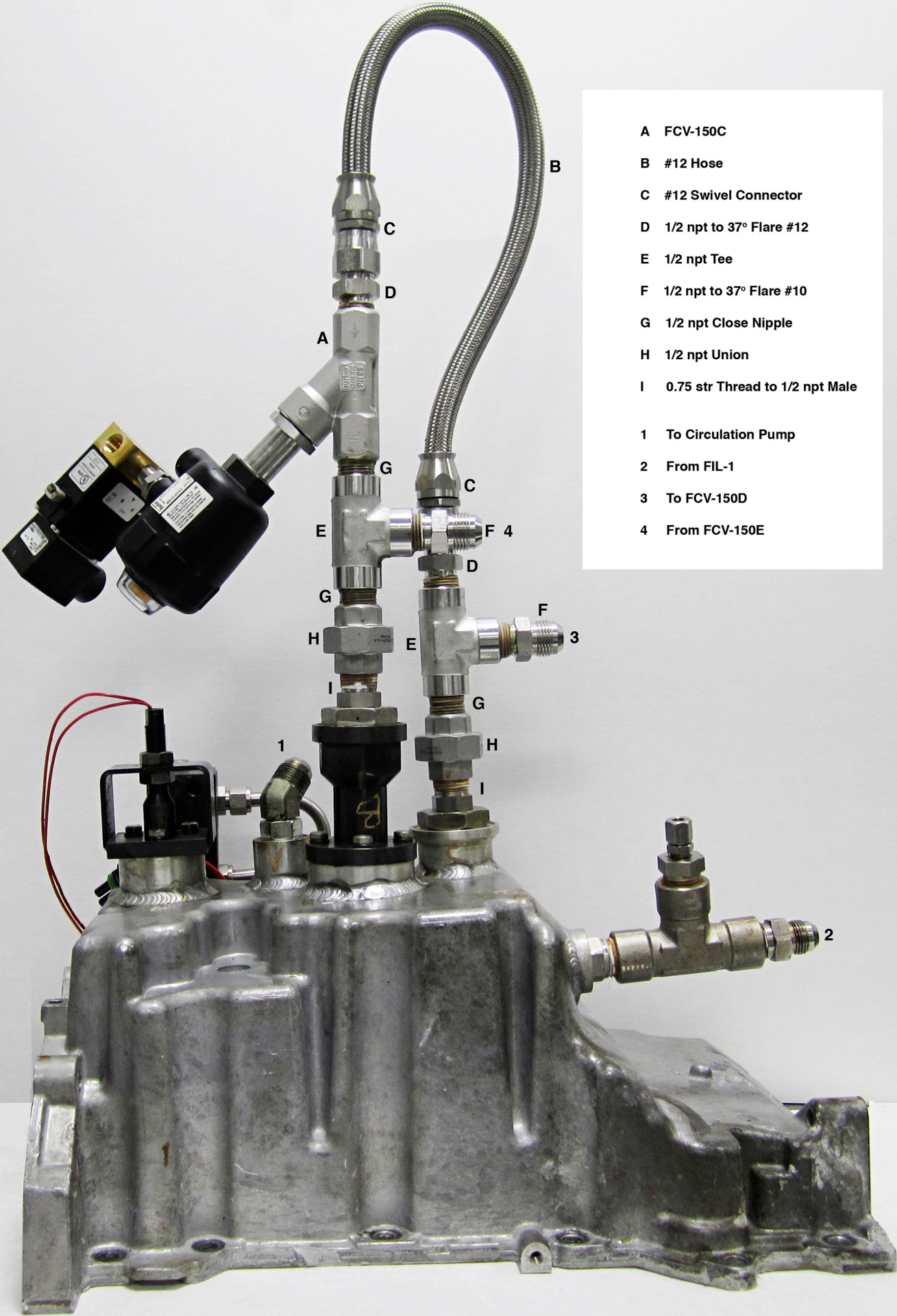
A FCV-150C
B #12 Hose
C #12 Swivel Connector
D 1/2 npt to 37° Flare #12
E 1/2 npt Tee
F 1/2 npt to 37° Flare #10
G 1/2 npt Close Nipple
H 1/2 npt Union
I 0.75 str Thread to 1/2 npt Male
1 To Circulation Pump
2 From FIL-1
3 To FCV-150D
4 From FCV-150E
A
B
C
D
E
F
G
H
I
1
2
3
4