



Energy products

Maintenance Manual

3-Inch Pressure Control Valve

F376 Series

Meggitt Control Systems

Our product competencies & services:
Aerospace valves | Thermal management solutions | Environmental control systems | Electro-mechanical products
Ground fuelling products | Energy products | Aftermarket services

MEGGITT
smart engineering for
extreme environments

Energy products

Meggitt Fuelling Products Maintenance Manual 3-Inch Pressure Control Valve – F376 Series

LIST OF EFFECTIVE PAGES

On a revised page, the portion of text or illustrations affected by the change is indicated by a vertical line in the outer margin of the page. When a revision is issued, the entire document is reissued with the current revision number and date shown on all pages. For major revisions, the basic number is incremented. For minor revisions, the number following the decimal is incremented. Dates of issue for original and subsequent revisions are as follows:

Original 1.0 02/01/2008

The total number of pages in this technical document is 11 consisting of the following:

Title, 2 – 11

TABLE OF CONTENTS

SUBJECT	PAGE
Introduction	3
Description and Operation	3
Fault Isolation	6
Adjustments and Bleeding	7
Illustrated Parts List	9

Meggitt Control Systems

Our product competencies & services:
Aerospace valves | Thermal management solutions | Environmental control systems | Electro-mechanical products
Ground fuelling products | Energy products | Aftermarket services

MEGGITT
smart engineering for
extreme environments

Energy products

Meggitt Fuelling Products Maintenance Manual 3-Inch Pressure Control Valve – F376 Series

INTRODUCTION

1. General

This manual provides component maintenance shop instructions for the 3-Inch Pressure Control Valve.

2. Revision Service

This manual will be revised as necessary to show the current information.

3. Weights and Measurements

Weights and measurements in this manual are expressed in both English (U.S. customary) and Metric (SI) units.

DESCRIPTION AND OPERATION

1. Description

The 3-Inch Pressure Control Valve (valve) provides three operating modes for the control of fluid flow in a pressure control system.

2. Operation

A. Pressure Control – In this mode the valve operates on the basis of a fuel or air reference pressure. An air pressure source or a regulated fuel pressure source must be provided to effect control. This reference pressure is normally somewhat higher than the desired control pressure. The difference between the reference and control pressures is termed "bias".

Meggitt Control Systems

Our product competencies & services:
Aerospace valves | Thermal management solutions | Environmental control systems | Electro-mechanical products
Ground fuelling products | Energy products | Aftermarket services

MEGGITT
smart engineering for
extreme environments

Energy products

Meggitt Fuelling Products Maintenance Manual 3-Inch Pressure Control Valve – F376 Series

B. Deadman Control – In deadman mode, the release of the reference pressure to the servo causes the valve to automatically close.

C. Aircraft Valve Response – In this mode, a downstream pressure increase caused by closure of the aircraft valve causes the F376 to close, thus preventing excessive surge build-up. This feature is available on all except the F376J variation.

D. Principles of Operation – Refer to Figure 1.

3. Leading Particulars (Refer to Table 1)

Table 1. Leading Particulars	
Service Automotive and Aviation Fuels	
Mainstream Pressure Inlet Pressure up to 200 psi	
Outlet Pressure controllable from 15 to 75 psi	
Bias Pressure 25 psi (except Mod A, which is 16 psi)	
Pressure Drop 4.0 psi at 400 gpm	
Operating Times	
Opening adjustable from 10 to 50 seconds;	
Closing	Closes when reference pressure is released (deadman) in 0.3 second minimum or when aircraft valve closes (surge control) in 0.75 seconds from start of aircraft valve closure
Closing Time (Mod J)	The surge control is ineffective and the closing time is adjustable from 1.0 to 15 seconds; initially set to 2.5 seconds

Meggitt Control Systems

Our product competencies & services:
Aerospace valves | Thermal management solutions | Environmental control systems | Electro-mechanical products
Ground fuelling products | Energy products | Aftermarket services

MEGGITT
smart engineering for
extreme environments

Energy products

Meggitt Fuelling Products Maintenance Manual 3-Inch Pressure Control Valve – F376 Series

4. Model Variations

The basic 3-inch Pressure Control Valve has an aluminum alloy body, flange and piston. It operates on an air pressure set 25 psi bias. Each variation (modification) is identified by a Mod letter, or combination of letters. Refer to Table 2 for the available valve variations. Refer to the **ILLUSTRATED PARTS LIST** section for additional details.

Table 2. Model Variations	
MOD LETTERS	DESCRIPTION
(Basic)	3-inch, 150 pound ASA flanges, air set, 25 psi bias, aluminum body (supersedes F344A)
A	Changes pressure bias to 16 psi
B	Changes body to ductile iron
C	Changes inlet fitting to Victaulic (for Mods A, D, E and J only)
D	Changes outlet fitting to Victaulic (for Mods A, C, E and J only)
E	Modified for use with F540-1 flow control (for Mods A, B, C, D and J only) (F540-1 not included)
J	Adds closing time adjustment (for Mods A, B, C, D and E only)
W	Changes servo to F1510 barrier servo

FAULT ISOLATION

1. General

Refer to Table 3 for fault isolation information. Locate suspected faulty component and take appropriate remedial action.

Energy products

Meggitt Fuelling Products Maintenance Manual 3-Inch Pressure Control Valve – F376 Series

Table 3. Fault Isolation

FAULT	POSSIBLE CAUSE	CORRECTIVE ACTION
Valve will not open	Check air pressure supply to servo	Check reference air supply.
	Opening time adjustment screw too far in	Back the screw out 1/8 to 1/4-turn and recheck operation.
	Servo valve sticking	Actuate the deadman control several times and recheck operation.
	Bias pressure adjustment screw too far in	Back the screw out 1-turn and recheck operation.
Valve operation is unstable	Air trapped in fuel sense line	Completely bleed trapped air from the servo valve and the fuel sense line (refer to ADJUSTMENTS AND BLEEDING).
	Opening time is too fast	Adjust the opening time screw all the way in and then back it out 1/8-turn. If necessary, adjust the screw 1/8-turn further out, and repeat until operation stabilizes.
	Servo valve or main piston sticking	Actuate the deadman control several times and recheck operation.
	Reference pressure is too high	Adjust the bias pressure (refer to ADJUSTMENTS AND BLEEDING).
	Sense line restricted	Make sure that the sense line is 3/8-inch inside diameter.
	Sense line (hose) too soft	Make sure that the hose is sufficiently strong to prevent expansion and contraction.
Valve will not fully close	Servo valve or main piston sticking	Actuate the deadman control several times and recheck operation.
	Closing time adjustment screw too far in	Back the screw out 1/8 to 1/4-turn and recheck operation.

Meggitt Control Systems

Our product competencies & services:
Aerospace valves | Thermal management solutions | Environmental control systems | Electro-mechanical products
Ground fuelling products | Energy products | Aftermarket services

MEGGITT
smart engineering for
extreme environments

Energy products

Meggitt Fuelling Products Maintenance Manual 3-Inch Pressure Control Valve – F376 Series

ADJUSTMENTS AND BLEEDING

1. Setup

- A. Apply air reference (or regulated fuel reference) pressure to the AIR port. For all variations but the "A" modification, the reference pressure should be 25 psi higher than the desired control pressure. On the "A" modification, reference pressure should be 16 psi higher than the desired control pressure.
- B. Refer to Figure 2 for the adjustment screw locations.

2. Bleeding

- A. Two screws are provided on the servo assembly for line bleeding purposes.
- B. The screw nearest the outlet is used for bleeding air from the fuel lines. Loosen the screw approximately two turns, until the leakage shows no evidence of air. Then, tighten the screw.
- C. The screw nearest the valve inlet is used for bleeding fluid from the air lines. Loosen the screw approximately two turns, until the leakage shows no evidence of fuel. Then, tighten the screw.

3. Opening Time

- A. The valve is factory set for an opening time of 22 to 32 seconds, with a 90 psi inlet pressure. To adjust set this setting, remove the screw and washer located on the side of the servo assembly opposite the AIR and FUEL ports, nearest to the mating surfaces of the servo assembly and main valve body.

NOTE: There will be minor leakage when the screw is removed.

- B. Using a hex key, adjust the opening time as required. (Turning the adjustment screw clockwise increases the opening time. Turning the adjustment screw counterclockwise increases the opening time.) Turn the screw approximately 1/16-turn each time and recheck the operation. After the final adjustment, replace screw and washer.



Energy products

Meggitt Fuelling Products Maintenance Manual 3-Inch Pressure Control Valve – F376 Series

4. Bias Pressure Adjustment

Apply air pressure and inlet pressure and establish a flow rate. Remove the screw and washer from the servo assembly end cap, nearest the valve outlet. Using a hex key, adjust the bias pressure as required. (Turning the adjustment screw clockwise increases the bias pressure. Lowers the control pressure if the reference air pressure is constant. After the final adjustment, replace screw and washer.

ILLUSTRATED PARTS LIST

1. General

This section lists, describes, and illustrates all detail parts required for maintenance support of the 3-Inch Pressure Control Valve.

2. Scope of Information

A. The parts list is arranged in the general order of disassembly. The listing is indented to show the relationship between each part and its next higher assembly. Item numbers used in the parts list are keyed to the corresponding numbers of the accompanying illustration.

B. MODIFICATION CODE

The modification code (see Table 1) indicates the parts usage with respect to the end item. When the MODIFICATION CODE column is blank, the part usage is applicable to all versions unless otherwise specified in the DESCRIPTION column.

C. Abbreviations

ASSY	Assembly.
FIG.	Figure.
IPL	Illustrated Parts List.
MOD	Modification.

Energy products

Meggitt Fuelling Products Maintenance Manual 3-Inch Pressure Control Valve – F376 Series

FIG. ITEM	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	MOD	UNITS
			CODES	PER ASSY
	F376	VALVE, 3-INCH PRESSURE CONTROL		REF
1	–	· BODY AND PISTON ASSEMBLY Flanged (See manual M302 for details)		1
2	4631050C	· SERVO ASSEMBLY, 25 psi bias (See manual 4631050 for details)		1
	4631050AC	· SERVO ASSEMBLY, 16 psi bias (See manual 4631050 for details)	A	1
	4631050D	· SERVO ASSEMBLY, 25 psi bias, for use with F540-1 flow control (See manual 4631050 for details)	E	1
	4631050ACD	· SERVO ASSEMBLY, 16 psi bias, for use with F540-1 flow control (See manual 4631050 for details)	E	1
3	4631050CP	· SERVO ASSEMBLY, 25 psi bias and adjustable closing time) (See manual 4631050 for details)	J	1
	4631050ACP	· SERVO ASSEMBLY, 16 psi bias and adjustable closing time) (See manual 4631050 for details)	AJ	1
4	2763462-101	· PLATE, IDENTIFICATION		1
5	CMS16996-12	· SCREW, MACHINE		4
6	CMS35338-43	· WASHER, LOCK		4

PARTS KITS AVAILABLE

KIT PART NUMBER	DESCRIPTION	ITEMS IN KIT
KITF386-1	Seal Kit for Body and Piston Assembly	Refer to Manual M302 for details
2KITF4631050-101	With Air Servo	Refer to Manual 4631050 for details

Meggitt Control Systems

Our product competencies & services:
Aerospace valves | Thermal management solutions | Environmental control systems | Electro-mechanical products
Ground fuelling products | Energy products | Aftermarket services

MEGGITT
smart engineering for
extreme environments