

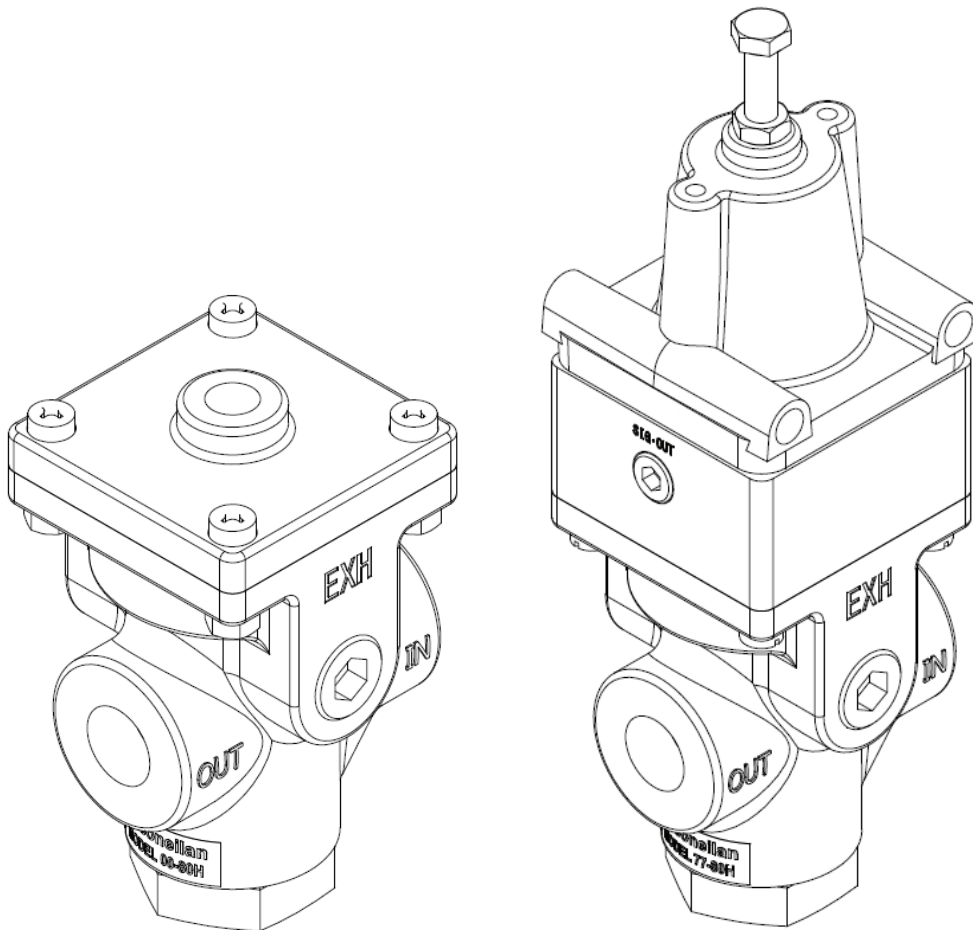
Masoneilan

a Baker Hughes business

77-80H/00-80H Series

Air Valve

Instruction Manual (Rev. A)



DISCLAIMER

THESE INSTRUCTIONS PROVIDE THE CUSTOMER/OPERATOR WITH IMPORTANT PROJECT-SPECIFIC REFERENCE INFORMATION IN ADDITION TO THE CUSTOMER/OPERATOR’S NORMAL OPERATION AND MAINTENANCE PROCEDURES. SINCE OPERATION AND MAINTENANCE PHILOSOPHIES VARY, BAKER HUGHES COMPANY (AND ITS SUBSIDIARIES AND AFFILIATES) DOES NOT ATTEMPT TO DICTATE SPECIFIC PROCEDURES, BUT TO PROVIDE BASIC LIMITATIONS AND REQUIREMENTS CREATED BY THE TYPE OF EQUIPMENT PROVIDED.

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Safety Information

Important –
Please read before installation

These instructions contain **DANGER**, **WARNING**, and **CAUTION** labels, where necessary, to alert you to safety related or other important information. Read the instructions carefully **before** installing and maintaining your control valve.

DANGER and **WARNING** hazards are related to personal injury. **CAUTION** hazards involve equipment or property damage. **Operation of damaged equipment can, under certain operational conditions, result in degraded process system performance that can lead to injury or death. Total compliance with all DANGER, WARNING, and CAUTION notices is required for safe operation.**



This is the safety alert symbol. It alerts you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.



Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, could result in serious injury.



Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.



When used without the safety alert symbol, indicates a potentially hazardous situation which, if not avoided, could result in property damage.

Note: Indicates important facts and conditions.

About this Manual

- The information in this manual is subject to change without prior notice.
- The information contained in this manual, in whole or part, shall not be transcribed or copied without Baker Hughes’s written permission.
- Please report any errors or questions about the information in this manual to your local supplier.
- These instructions are written specifically for the 77-80H/00-80H, and do not apply for other valves outside of this product line.
- These instructions apply to 77-80H/00-80H operated with our Valve Control System (including the fluid level gauge). In the case of using the equipment for other systems, the designers of the systems or those who decide on the specifications of the systems should judge the adaptability of the equipment.

Warranty

Items sold by Baker Hughes are warranted to be free from defects in materials and workmanship for a period of one year from the date of shipment provided said items are used according to Baker Hughes recommended usages. Baker Hughes reserves the right to discontinue manufacture of any product or change product materials, design or specifications without notice.

Note: Prior to installation
The valve must be installed, put into service and maintained by qualified and competent professionals who have undergone suitable training. All surrounding pipelines must be thoroughly flushed to ensure all entrained debris has been removed from the system. Under certain operating conditions, the use of damaged equipment could cause a degradation of the performance of the system which may lead to personal injury or death. Changes to specifications, structure, and components used may not lead to the revision of this manual unless such changes affect the function and performance of the product.

■ Storage

⚠ CAUTION

- **Store the equipment in places protected from rainwater.**
- **Store the equipment in places with minimal vibration and impact.**
- **Keep the equipment in places at normal temperature and humidity** (i.e., approximately 23°C and 65%).
- **Protect the connection port with an appropriate component**, such as a cap, to prevent the intrusion of foreign substances after using the equipment.

■ Installation

⚠ CAUTION

- **Do not remove the cap attached to the connection port until just before installation:**
a foreign body may enter, which may result in malfunction.
- **Install the air instrumentation components so that the air will flow in the direction indicated on the equipment**, otherwise, it may cause malfunction of the valve.

■ Air Source

⚠ CAUTION

- **Use clear air.**
Do not use compressed air that contains chemicals, synthetic oil based on organic solvents, or corrosive gas, or otherwise an equipment breakdown or operational failure may result.
- **Use an air drier or after cooler for air that contains a large quantity of drainage.**
Otherwise, the malfunctioning of devices driven by compressed air may result.

■ Air Piping

⚠ CAUTION

- **When you install piping, purge sufficiently inside the piping to remove any chip and/or foreign body.**
- **For air piping, use a pipe with a sufficient diameter to operate the valve.**
- **Apply Loctite 577 or equivalent to the air piping joint, except 1 to 1.5 threads at the joint end. When you use a sealing tape, do not apply it to the 0.5 to 1 threads at the joint end.**
Otherwise, a small piece of the tape may clog inside, which may cause malfunction of the valve.

■ Maintenance

⚠ WARNING

- **Isolate the valve from the control system.**
- **Make sure that the valve, controller, or any other equipment will not operate suddenly.**
- **Gradually extract the pressure of air in all the operating lines and disconnect the operating lines only after the air is entirely extracted.**
- **An unexpected operation may result in personnel being injured or killed.**

⚠ CAUTION

- **For replacement, use the original Masoneilan parts.**
Otherwise, malfunction and/or fluid leakage may result.

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1. Outline

The 77-80H, an air valve that consists of a combination of pilot valve and three-way valve, is a high-capacity “set pressure control” type three-way valve.

Besides this, there is the 00-80H, the so-called three-way valve - the 77-80H from which the pilot valve is removed.

In case a plurality of 77-80H valves are needed, use one 77-80H valve and 00-80H valves for the rest and connect the outlet pressure of the 77-80H’s pilot valve to “SIG” of each 00-80H valve. By so doing, not only piping is simplified but also change-over can be made simultaneously.

2. Specification

Item		Standard	Option
Max Operating Pressure	Body	880 kPa	-
	Signal	1030 kPa	-
Set Pressure Range		100 – 700 kPa	-
Hysteresis		<= 34 kPa	-
Cv Value	IN → OUT	4.56	-
	OUT → EXH.	4.25	-
Connection	IN, OUT, EXH. Ports	Rc1/2	½ NPT
	SIGNAL Port	Rc1/4	¼ NPT
Operating Temperature Range		-30 to +70-	-18 to +100°C (High Temp) -49 to +80°C (Low Temp)
Housing Material		Aluminum Alloy	-

3. Installation

Prior to installing, clean all lines thoroughly to remove all dirt, scale or other foreign matter.

Install the air valve as near the actuator as possible, holding the number of connections to a minimum, so that the air flows in the direction indicated by the marks, "IN" and "OUT" on the underside of valve body. There are two "EXH" ports. Use the necessary one and pipe plug the other. When the valve is to be used as a lock-up valve, the both ports must be pipe plugged.

The signal pressure piping should be made by connecting the supply pressure directly to "SIG. IN" so that when the air pressure drops below the set pressure or disappears the air valve operates to close "IN" and connect "OUT" and "EXH".



Do not use for air pressures exceeding 880 kPa.

Be careful not to take the signal pressure from near the “IN” side of body because due to the large capacity of the air valve this gives rise to a change in signal air pressure, thereby causing hunting.

4. Adjustment

The air valve is normally factory set and does not require adjustment.
If it becomes necessary to adjust set pressure:

- A) Turn adjusting screw (19) to relieve range spring (23) of air valve from compression.
- B) Connect air supply to “IN” of body to check for closing and opening of body, then connect pressure gauge and pressure regulator to the signal pressure connection “SIG IN”.
- C) Turn on air supply pressure and adjust the pressure regulator to set the pressure at a desired value, observing the air supply pressure to “SIG IN” on the pressure gauge. Then turn the adjusting screw clockwise until there is no air leak from “OUT” of body. At this point, the air valve has its “IN” closed and “OUT” and “EXH” communicated.
- D) Finally, tighten adjusting screw locknut (20) and connect the air valve outlet and “OUT” to the actuator and the signal pressure line to the supply pressure.

5. Maintenance

If the air valve does not operate properly, inspect it as follows.

- A) Shut off the supply pressure
- B) Return the adjusting screw to its former position and loosen the spring.

Disassembling Procedure

Remove four screws (25) and remove O-Ring (15), housing S/A, range spring (23), spring button (17) and spring case (18) from body (1).

For housing (2), diaphragm S/A (16) and pilot valve (6) can be removed by loosening nut (21) and pilot retainer (7) respectively.

To disassemble body S/A, first remove bottom cap (26), take out spring (9), remove nut (24) on the underside of plug S/A and pull out spring washer (22), insert retainer (5) and rubber insert (8).

After that, push up the bottom or plug (3) to remove piston (4) and rubber insert (8) together with plug.

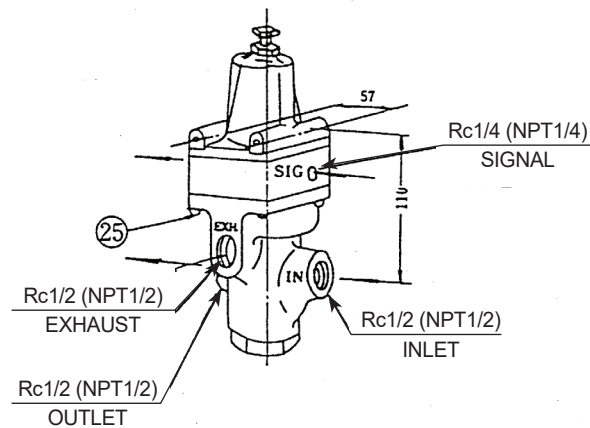
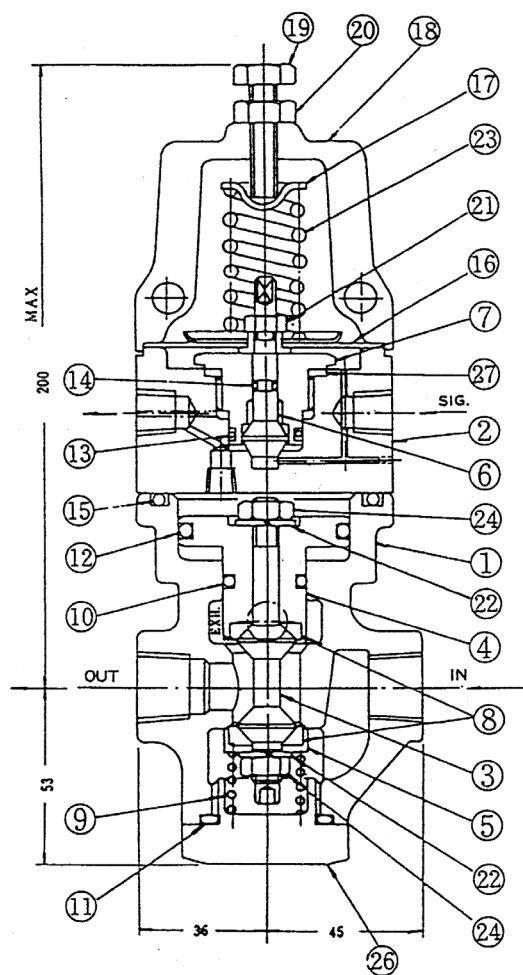
Inspection should be made in the following way:

First examine diaphragm (16) for rupture and damaged edge. Inspect the seat of pilot valve (6) for dust and damage. Also inspect O-rings (13) and (14). Replace all of these parts by new ones if necessary. For the valve body, inspect O-rings (10), (11), (12) and (15) and rubber insert (8). Replace them with new ones if necessary.

Check the valve seat for dust and clean it.

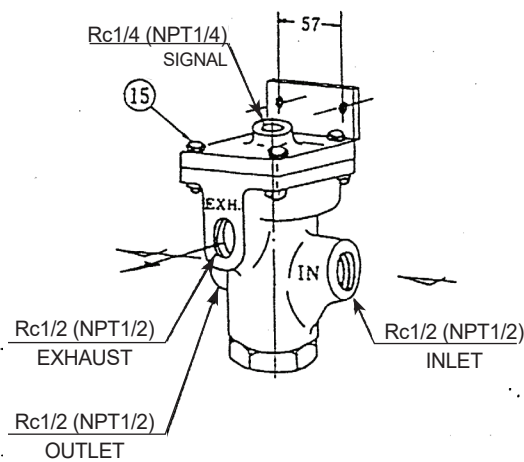
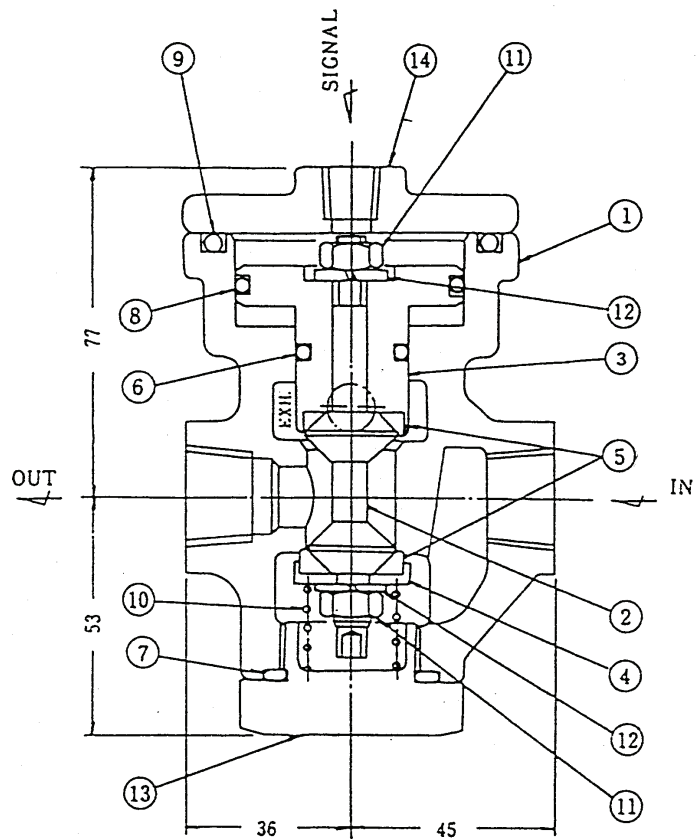
6. Reassembly

Reverse the disassembly procedure. Before setting to reassembly, apply silicon grease to O-rings. Do not fail to use a new shim (27).



INLET PRESSURE	880 kPaG (125 psiG)
SET RANGE	35 – 700 kPaG (5–100 psiG)

番号 No.	部品名称 PART NAME	備考 REMARKS	番号 No.	部品名称 PART NAME	備考 REMARKS
1	ボデー BODY		15	Oリング O-RING	
2	ハウジング HOUSING		16	ダイヤフラム S/A DIAPHRAGM S/A	
3	プラグ PLUG		17	スプリング ボタン SPRING BUTTON	
4	ピストン PISTON		18	スプリング ケース SPRING CASE	
5	インサート リテーナー INSERT RETAINER		19	アジャスティング スクリュー ADJUSTING SCREW	
6	パイロット PILOT		20	ロック ナット LOCK NUT	
7	パイロット リテーナー PILOT RETAINER		21	ナット NUT	
8	ラバー インサート RUBBER INSERT		22	スプリング ワッシャー SPRING WASHER	
9	スプリング SPRING		23	スプリング SPRING	
10	Oリング O-RING		24	ナット NUT	
11	Oリング O-RING		25	スクリュー SCREW	
12	Oリング O-RING		26	ボトム キャップ BOTTOM CAP	
13	Oリング O-RING		27	シム SHIM	
14	Oリング O-RING				
△				#77-80H トランスファーバルブ 断面図	
△				#77-80H TRANSFER VALVE SECTIONAL DRAWING	
△					
改訂 REV.	改訂内容 DESCRIPTION	改訂日 DATE	担当 BY	図面番号 DRAWING No.	S-F7780H



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SET RANGE	35 – 700 kPaG (5–100 psiG)

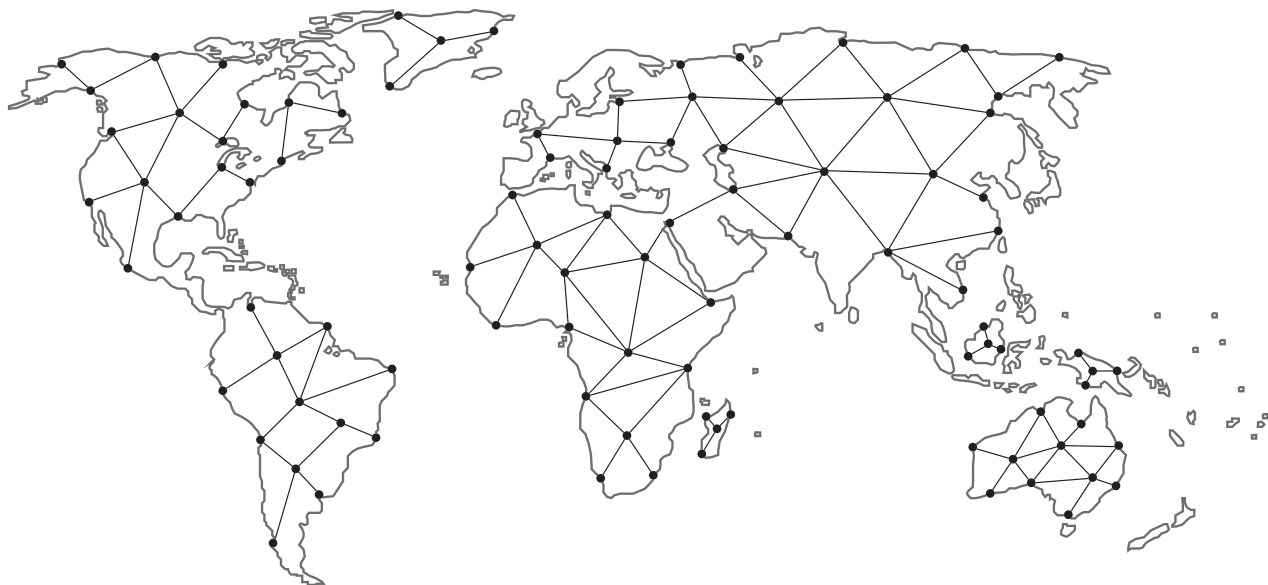
番号 No.	部品名称 PART NAME	備考 REMARKS	番号 No.	部品名称 PART NAME	備考 REMARKS
1	ボデー BODY		11	ロック ナット LOCK NUT	
2	プラグ PLUG		12	スプリング ワッシャー SPRING WASHER	
3	ピストン PISTON		13	ボトム キャップ BOTTOM CAP	
4	インサート リテーナー INSERT RETAINER		14	ヘッド キャップ HEAD CAP	
5	ラバー インサート RUBBER INSERT		15	スクリュー SCREW	
6	Oリング O-RING				
7	Oリング O-RING				
8	Oリング O-RING				
9	Oリング O-RING				
10	スプリング SPRING				
△				00-80H トランスファーバルブ 断面図	
△				00-80H TRANSFER VALVE SECTIONAL DRAWING	
△					
改訂 REV.	改訂内容 DESCRIPTION	改訂日 DATE	担当 BY	図面番号 DRAWING No.	S-F0080H

NOTES

NOTES

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