

Valve Linkages

Q455C, D, F

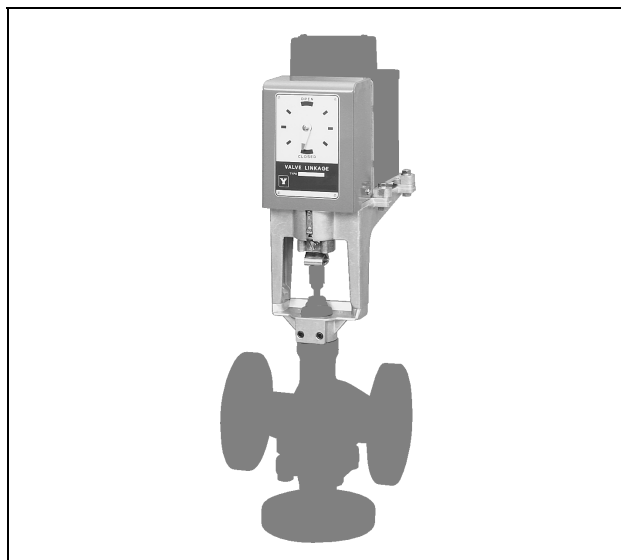
General

The Q455C, D, F valve linkage series is used to connect a modutrol motor to a control valve. The crank mechanism of the linkage converts the rotary motion of a modutrol motor into the reciprocating motion of a valve to control the valve position.

The C-type is used for low and middle-capacity valves; the D-type is for high-capacity valves; and the F-type, connected to a low-torque motor such as a spring return motor, is for low-capacity valves.

Features

- Easy-to read indicator showing valve positions
- Strain relief. It prevents excessive forces from being imposed on the modutrol motor when the valve is completely closed.
- Easy adjustment and installation.



Model No.

Model Number	Seal-off Force on Valve Stem	Lift Adjustment
Q455C	715N	9.5 to 19 mm
Q455D	715N	9.5 to 38 mm
Q455F	352N	9.5 to 19 mm

Specification

Item	Specifications
Finish	Cover: Gray enamel Frame: Aluminium die casting (printing coat)
Accessories	Bolts, nuts, washers (four for each) and a 4-mm Allen wrench
Replacement parts	1) Cover assembly 170110A 2) Bracket assembly (for Q455C and F) 81404199-001 Bracket assembly (for Q455D) 81404199-002 3) Guide tube assembly for Q455C and D ... 81404200-001 Guide tube assembly for Q455F 81404200-002 4) Crank arm 186511 5) Stem cramp 81446017-001 6) Attachment parts set N-3033 7) Stopper N-5014
Ordering information	When ordering, specify the model number

Table1 Valve/Motor/Linkage Selection

Valve		Single-seated two-way valve		Double-seated two-way valve		Three-way mixing valve		
		V5011A	V5063A VY5063C	V5064A		V5013A	V5065A	
Rotation	Modutrol Motor	½ to 1 inch	½ to 3 inch	1½ to 3 inch	4 to 6 inch	¾, 1 inch	1 to 3 inch	4 to 6 inch
160°	M9185A1075, M6285A1047 (Spring-return model)	Q455F			Not available *2	Q455F		
160°	M904F1100	Q455F				Q455F	Not available *2	
90° *1	M904F1084, M6284C1028, M904H1009/1017, M931E1005/1013, M7284C1059, M7284Q1033, M604F1007/1015							
160°	M904F1076/1092, M6284A1030, M6284F1039 ^{*3} , M904E1382/1390, M931A1306 ^{*4} , M9184F1026 ^{*4} , M7284C1067, M7284Q1041, M604C1166, M604F+R7000A,	Q455F			Q455F	Q455F		

*1: When modutrol motor of 90° rotation is used, fully open or fully closed position is not applied.

*2: Q455D cannot be used with low torque (less than 12.5 Nm) motor of 90° rotation (M9185A1075, M6285A1047, M904F1100/1084, M6284C1028, M904H1009/1017, M931E1005/1013, M7284C1059, M7284Q1033, M604F1007/1015).

*3: M6284F1039 can be switched (90°/160°). It is set to 90° when shipped.

*4: M931A1306 and M9184F1026 can be switched (90°/160°).








Safety Instructions

Please read instructions carefully and use the product properly. Please keep this instruction on hand for reference at any time.

Usage Restrictions

This product is targeted for general air conditioning. Do not use this product in a situation where human life may be affected. If this product is used in clean rooms or places where reliability or control accuracy is particularly required, please contact Yamatake's sales representatives. Yamatake Building Systems Co., Ltd. bears no responsibility for any benefit, or lack of benefit, derived from the operation by the customer.

 CAUTION

-  • Installer must be a trained, experienced technician.
-  • Check the ratings given in this instructions to prevent equipment damage.
-  • Check the environment given in this instructions to prevent equipment damage.
-  • When this valve is used with a controller of another manufacture, contact your Yamatake sales representatives.
-  • Avoid excessively numerous or short operating cycles. Such operation can shorten the product's life.
-  • Do not put heavy load on the actuator.
-  • Do not disassemble the casing except for wiring. May result in equipment damage.

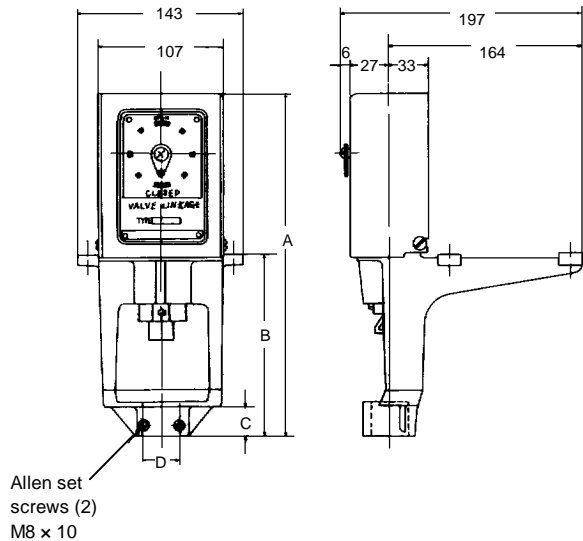


Fig. 1 Dimensions

Model Number	A	B	C	D
Q455C	289	153	25	34.9 φ
Q455D	347	211	83	47.7 φ
Q455F	289	153	25	34.9 φ

Table3 Close-off ratings when connected to single-seated valve VY5063C (kPa)

Valve		Linkage	
Size (A)	Cv	Q455C	Q455F
20	1.0	980	980
20	2.5	980	980
20	4.0	980	980
20,25	6.3	980	980
25,40	11	980	539
40,50	24	470	225
50	44	313	137
65	68	186	88
80	99	127	88

Table2 Maximum Pressure Difference

Valve			Max. Pressure Difference (kPa)		
Model Number	Size (A)	Cv	Q455 Valve Linkage		
			C type	D type	F type
V5011A Single- Seated	15 x 6	0.6	980	/	980
	15 x 8	1.0	980	/	980
	15 x 10	2.5	980	/	980
	15 x 15	4.0	980	/	980
	20 x 20	6.3	980	/	842
25 x 25	10.0	980	/	735	
V5063A V5063C Single- Seated	15 x 6	0.6	980	/	980
	15 x 8	1.0	980	/	980
	15 x 10	2.5	980	/	980
	15 x 15	4.0	980	/	980
	20 x 20	6.3	980	/	980
	25 x 25	11	980	/	539
	40 x 32	17	470	/	225
	40 x 40	25	470	/	225
	50 x 50	44	313	/	137
V5064A Double- Seated	65 x 65	68	186	/	88
	80 x 80	99	127	/	58
	40 x 32	20	980	/	862
	40 x 40	28	980	/	862
	50 x 50	50	980	/	637
	65 x 65	78	882	/	441
	80 x 80	112	686	/	343
	100 x 100	200	/	490	/
125 x 125	260	/	294	/	
V5013A Three-Way Mixing	150 x 150	380	/	245	/
	20 x 15	4.0	980	/	823
	20 x 20	6.3	980	/	480
V5065A Three-Way Mixing	25 x 25	10.0	980	/	539
	25 x 20	6.3	980	/	539
	25 x 25	11	980	/	539
	40 x 32	18	470	/	225
	40 x 40	28	470	/	225
	50 x 50	50	313	/	137
	65 x 65	72	186	/	84
	80 x 80	102	127	/	55
	100 x 100	188	/	81	/
	125 x 125	280	/	47	/
150 x 150	360	/	33	/	

Note: Shows close-off ratings for single-seated valves and three-way valves. maximum differential pressure for double-seated valves.

Installation

When Installing this Product ...

- 1) Check to see that the combination of valve, modutrol motor and valve linkage is correct.
- 2) Apply the valve where the maximum pressure difference is below the one specified in Table 2.
- 3) To prevent condensate from splashing over the linkage and motor, place the linkage above the valve. Position the valve so that the motor shaft is always horizontal.

Connecting Valve Linkage to Modutrol Motor

1) Tighten the setscrews with the linkage frame attached to the valve bonnet.

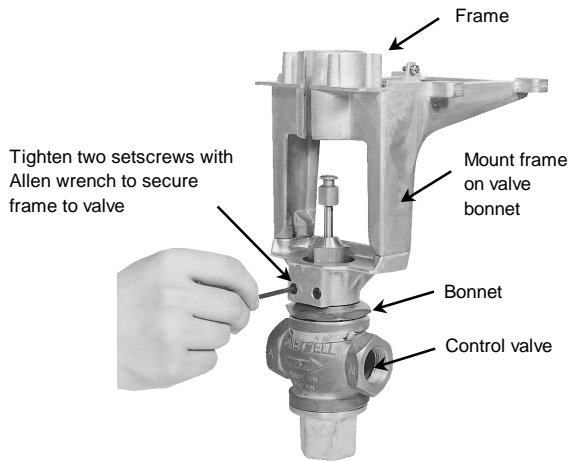


Fig. 2 Frame Mounting

2) Place guide tube in frame cylinder.

3) Place clamp on stem button neck and connect guide tube to the stem.

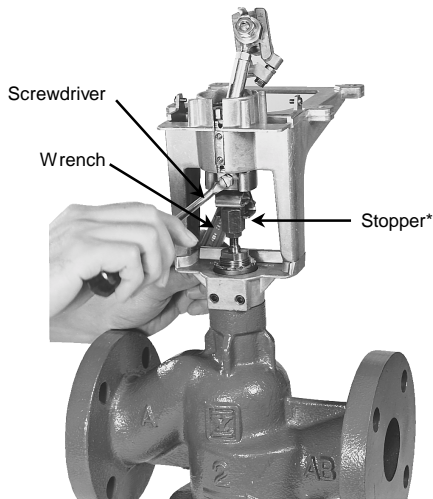


Fig. 3 Valve Stem Mounting

4) Place modutrol motor in frame and connect it tightly with the accompanying bolts, nuts and washers.

5) Make sure that modutrol motor is in closed position from the key position of motor shaft.

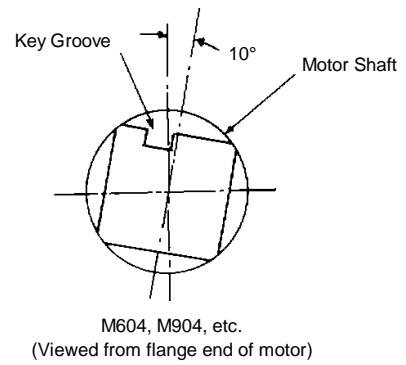


Fig. 4 Closed Position of Modutrol Motor

6) To connect linkage to motor, insert crank arm in motor shaft so that crank shaft protrusion aligns with key groove.

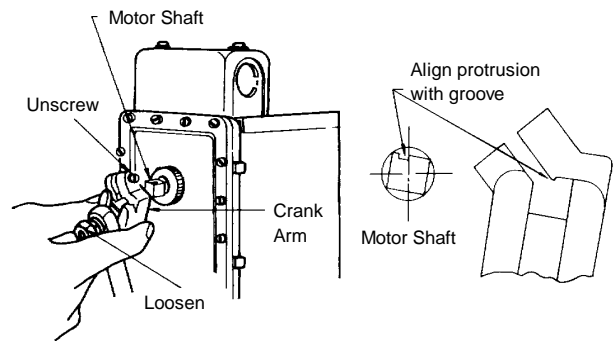
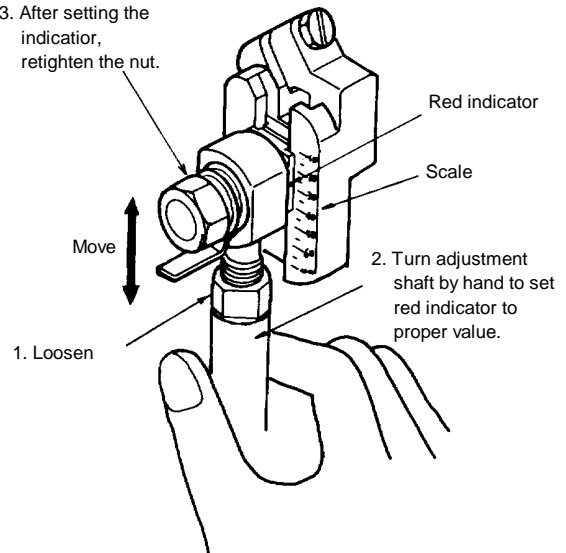


Fig. 5 Connecting Linkage to Modutrol Motor

7) Gently turn adjustment shaft by hand to set the red indicator to the proper value:

3. After setting the indicator, retighten the nut.



1. Loosen

For two-way valves: (lift distance) + (approx. 3.5 mm) thus, for a 19 mm lift, the value will be about 22.5 mm.
 For three-way valves: (lift distance) + (approx. 6 mm) thus, for a 19 mm lift, the value will be about 25 mm.

Fig. 6 Setting the Valve Lift

8) To adjust strain relief, gently turn adjustment shaft with wrench so that the position of washer shifts a half or one scale (see Figs. 6, 7, 8). Perform the adjustment carefully. Excessive washer movement can cause damages to the system and related hardware.

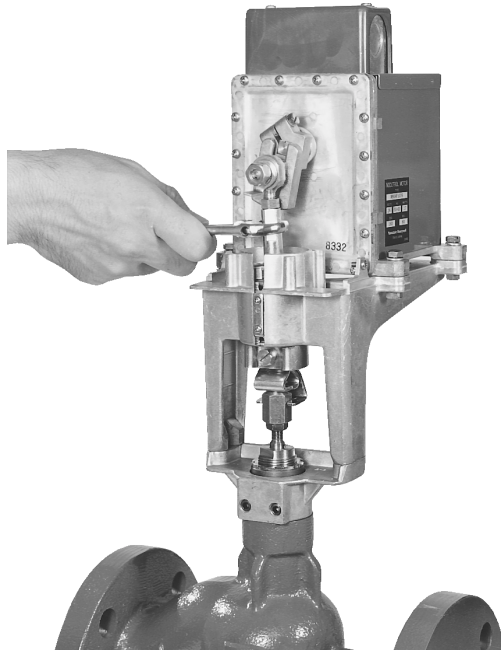
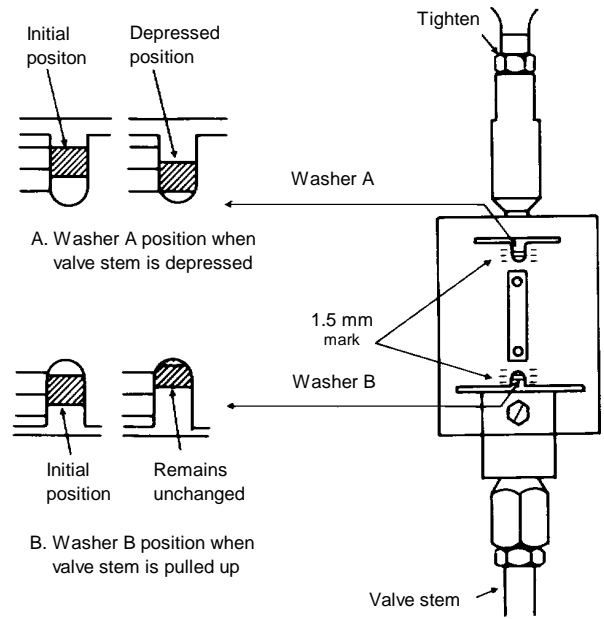


Fig. 7 Strain Relief Adjustment

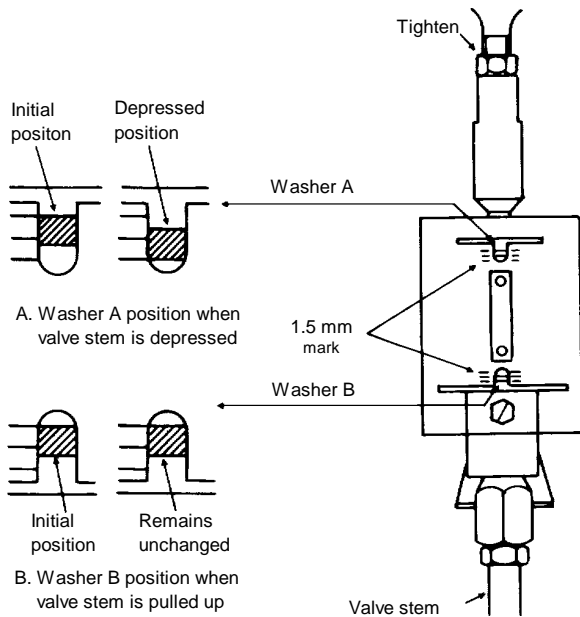


NOTE: Make sure that washers A and B shift slightly (half or one scale). If the washer movement is less than half a scale, return to step 7 and readjust the setting by slightly increasing the stroke. If the washer movement is more than one scale, decrease the stroke slightly.

Fig. 9 Strain Relief Adjustment for Three-Way Valves

9) Tighten locknut.

10) Insert pin in guide slot at the rear end of cover.



Washer B position must remain unchanged. If the position is above the initial position, return to step 7 and readjust the setting by sight reducing the stroke.

Fig. 8 Strain Relief Adjustment for Two-Way Valves

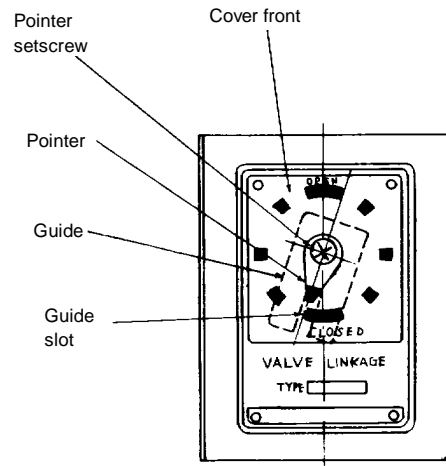


Fig. 10 Cover Mounting

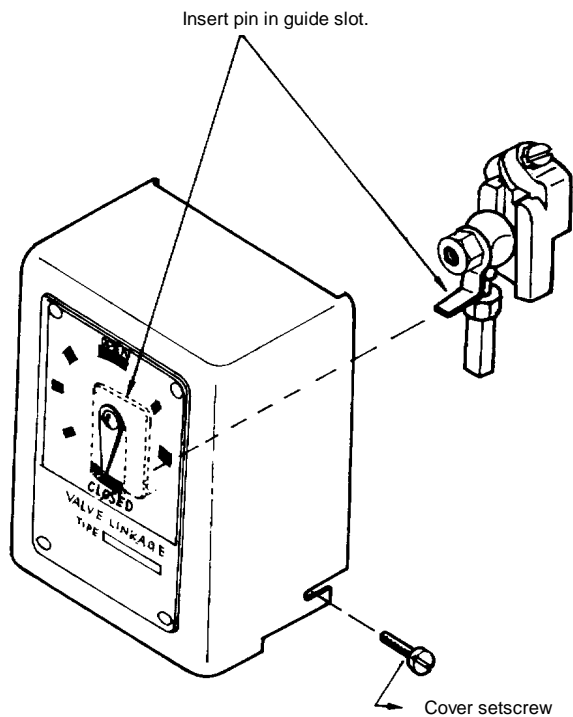


Fig. 11 Pointer Adjustment

Note: When reversed indication is required, just reverse the direction of the pointer.

Maintenance

Check for loose connection of screws or deteriorated parts once every six month. If abnormal condition is found, replace the product or the part.

Specifications are subjects to change without notice.

YAMATAKE

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