Hydraulic Breaker

F SERIES

(F6,F9,F12,F19,F22,F27,F35,F45,F70)

INSTRUCTION MANUAL

⚠ WARNING

Inadvertent use of the breaker may cause serious injury or death.
Operators and service personnel shall carefully read this breaker operation manual to thoroughly understand the details.
Read the operation manual for the carrier as well.

FURUKAWA

CONTENTS

■ Safety

■ Operation

■ Inspection/Maintenance

Standard specifications

Item \ Model			F6	F9	F12
Weight of body (incl. rod)		kg	195	300	500
Total weight	T-BOX	kg	305	465	760
	Side plate	kg	320	480	825
	Side bracket	kg	305	475	875
Weight of top bracket		kg	45	70	80
Hydraulic oil pressure		MPa	10-14	12-15	16-18
Required oil qty		liter/min	50-90	65-110	100-130
Number of blows		min^{-1}	650-1050	550-900	450-625
Hose dia.	High-pressure side	mm	19	19	19
	Low-pressure side	mm	19	19	19

Item \ Model			F19	F22	F27
Weight of body (incl. rod)		kg	640	865	960
Total weight	T-BOX	kg	1130	1410	1550
	Side plate	kg	1250	1640	2000
	Side bracket	kg	1200	1640	1980
Weight of top bracket		kg	200	200	250
Hydraulic oil pressure		MPa	16-18	16-18	16-18
Required oil qty		liter/min	120-155	145-180	155-190
Number of blows		min^{-1}	400-525	360-460	340-440
Hose dia.	High-pressure side	mm	25	25	25
	Low-pressure side	mm	25	25	25

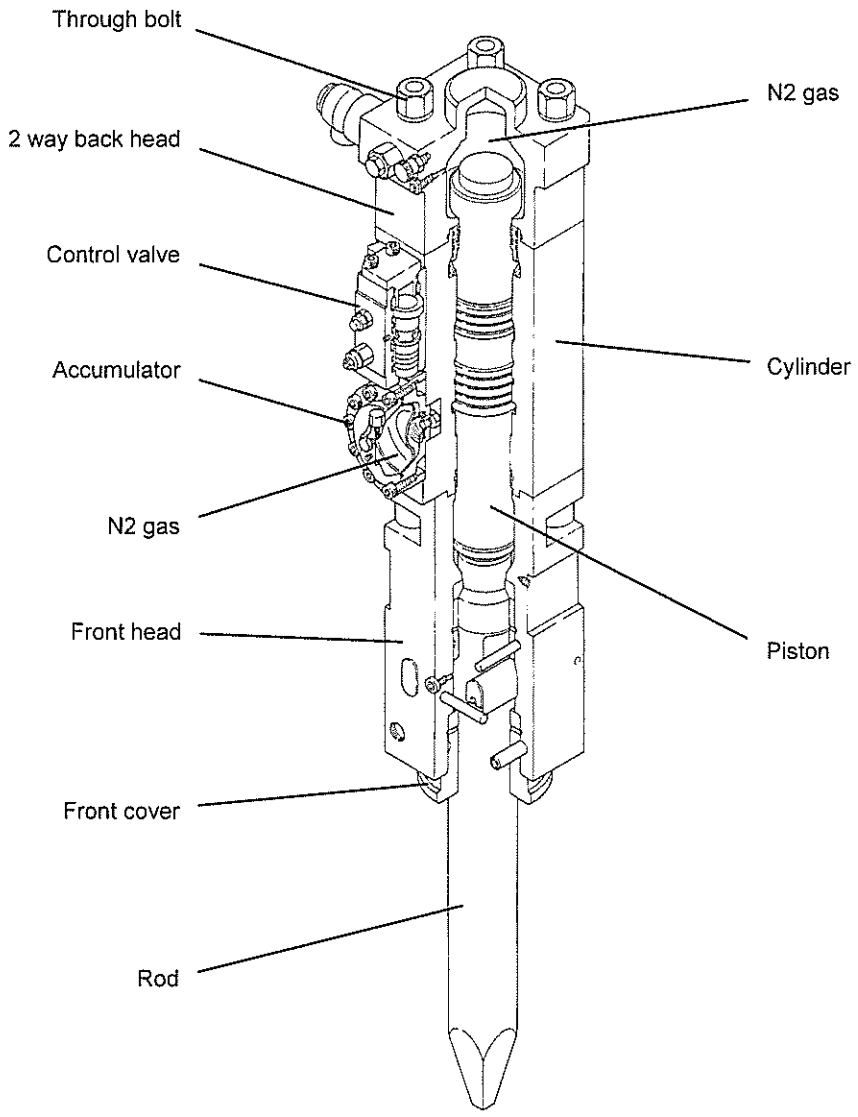
Item \ Model			F35	F45	F70
Weight of body (incl. rod)		kg	1210	1590	2250
Total weight	T-BOX	kg	2050	2950	3800
	Side plate	kg	2300	3190	
	Side bracket	kg	2520	3280	
Weight of top bracket		kg	250	360	515
Hydraulic oil pressure		MPa	16-18	16-18	16-18
Required oil qty		liter/min	175-220	200-250	250-340
Number of blows		min^{-1}	320-400	300-350	250-320
Hose dia.	High-pressure side	mm	25	32	32
	Low-pressure side	mm	25	32	32

⚠ CAUTION

Use tunnel breaker for tunneling work. Use of standard breaker for tunneling work will be no warranty.

For underwater operation, ask your dealer for an air compressor kit.

FUNCTION OF EACH PART



The illustration is the F22 optional specifications
(T-BOX type.)

Through bolt

4 connecting bolts for fixing the front head, cylinder and back head of the breaker body..

Cylinder

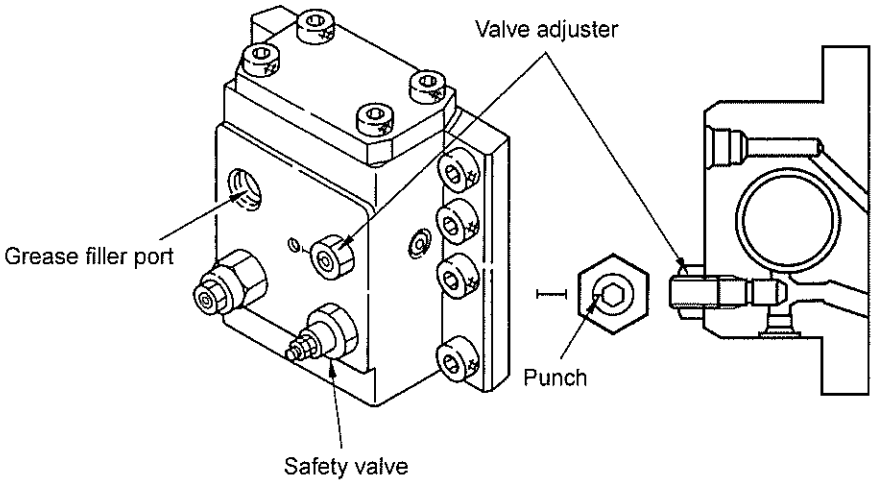
Hydraulic circuit for reciprocating the piston and stroke adjustment circuit is built in. The cylinder is the heart of the breaker body.

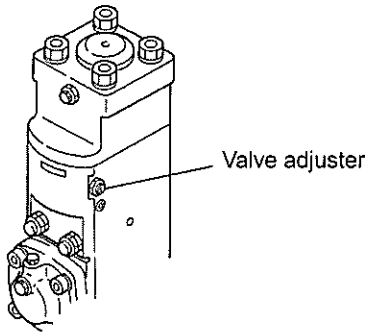
Accumulator

N2 gas is charged inside. The accumulator compensates for pressure in the hydraulic circuit and prevents pulsation. (See "Charging accumulator with N2 gas and inspection of charge pressure," p.3-28.)

Valve adjuster

The valve adjuster controls the quantity of breaker consumption oil.





Location of F6/F9 valve adjuster

- Adjusting valve adjuster is only needed when breaker is installed on a carrier other than recommended crrier so once breaker is installed, do not adjust it unnecessarily.

(See p.3-32.)

* The marking of completely closed state is punched in alignment with the ⊢⊣ mark on the valve housing when the valve adjuster is tightened completely. (0-point adjusting mark)
Turning valve adjuster counterclockwise increases number of blows and consumption oil and turning it clockwise decreases number of blows and consumption oil.

Safety valve (F12-F45)

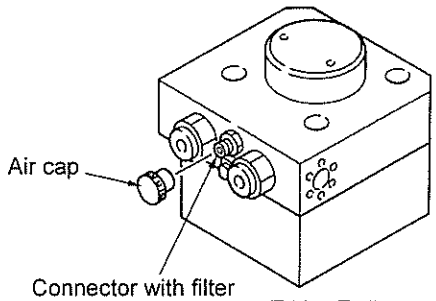
This valve protects the breaker from the overloaded oil pressure which rises to 21-22 MPa.

- Do not disassemble safety valve. If repairing is needed, ask your Furukawa dealer.

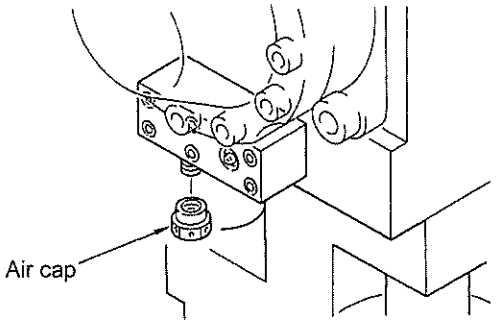
Grease supply port

- F12-F45 have grease nipple atop valve housing to grease front cover and thrust bush through internal passage.
- F6 and F9 grease thrust bush through grease nipple at front head.
- F70 greases front cover and thrust bush through grease nipple at cylinder port block or front head.

Air supply port



F12 - F45

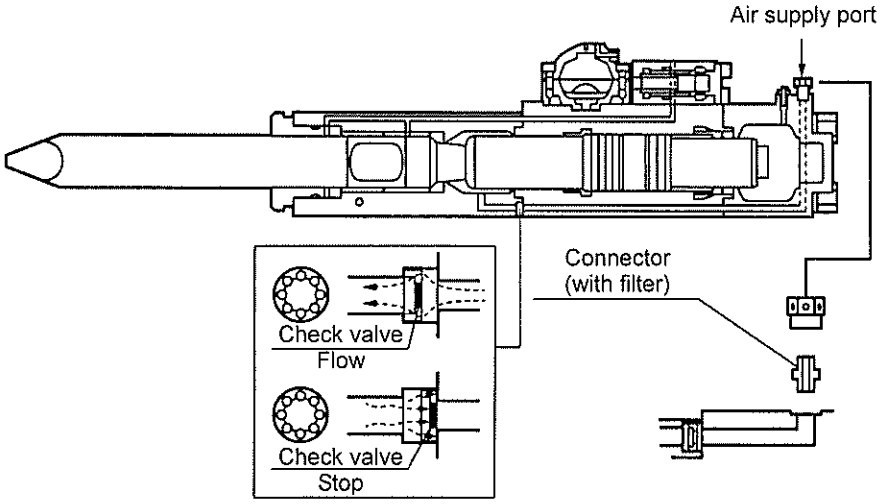


F70

An air check valve is installed inside the breaker to prevent an air pump phenomenon in the piston chamber.

- The connector with a filter in the air supply port prevents suction of dust.
- Clean filter periodically.

Explanation of operation



- When the piston moves up, a negative pressure is generated in the piston chamber, and air enters into the piston chamber through the air check valve.
- When the piston moves down (blow process), the pressure inside the piston chamber increases, causing a back flow. However, the air check valve operates to stop the back flow, and prevents entry of dust by releasing the air to the rod side.

★ NOTICE

Do not operate the breaker with the air cap removed.

Attach air compressor pipeing to air supply port for operation in tunnel or underwater.

(See "Tunneling specifications," p.3-41.)
(See "Underwater specifications," p.3-42.)