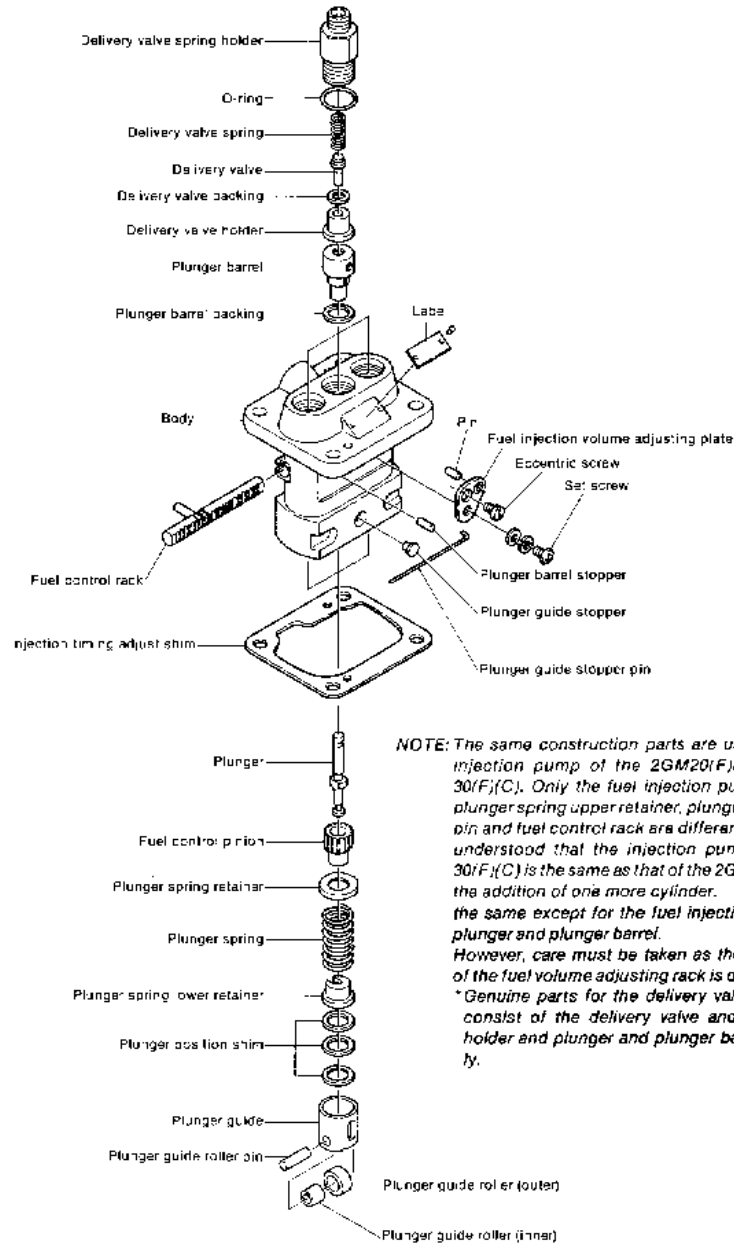


2-12 2GM20(F)(C), 3GM30(F)(C), 3HM35(F)(C)



NOTE: The same construction parts are used for the fuel injection pump of the 2GM20(F)(C) and 3GM30(F)(C). Only the fuel injection pump body itself, plunger spring upper retainer, plunger guide stopper pin and fuel control rack are different, and it may be understood that the injection pump of the 3GM30(F)(C) is the same as that of the 2GM20(F)(C) with the addition of one more cylinder.

the same except for the fuel injection pump body, plunger and plunger barrel.

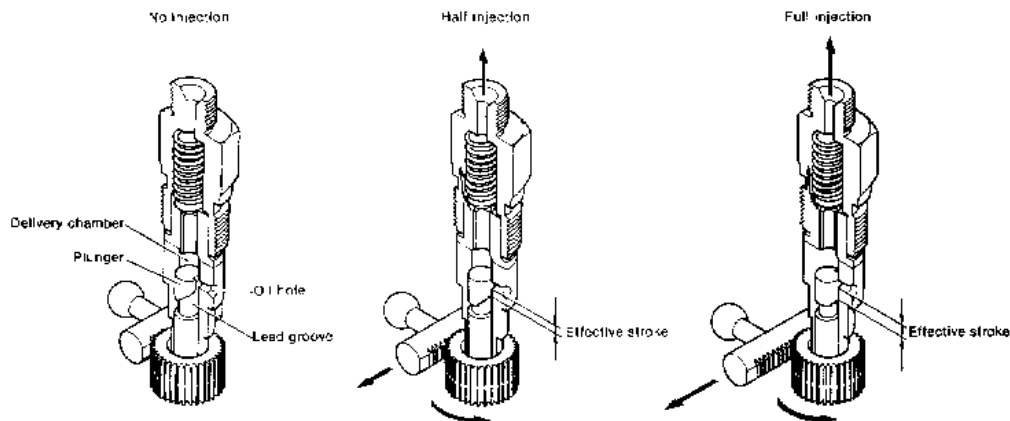
However, care must be taken as the basic surface of the fuel volume adjusting rack is different.

*Genuine parts for the delivery valve and plunger consist of the delivery valve and delivery valve holder and plunger and plunger barrel respectively.

2-3.1 Fuel control

When the plunger (1) is at bottom dead center, the oil, which comes in through the oil hole, fills the delivery chamber (3) to above the plunger. The oil pressure then builds up as the plunger rises and closes the oil hole, and by opening the delivery valve, the oil is force-fed toward the fuel injection tube. As the plunger, pushed by the plunger guide, rises further, the pressure of the oil between the delivery chamber and the nozzle also increases. When this oil

pressure builds up to 155 to 165 kg/cm², the nozzle opens, and the fuel oil is injected into the spiral vortex type combustion chamber. However, if the plunger keeps rising and the lead groove (4) lines up with the oil hole (2), the oil under high pressure in the delivery chamber passes up the lead from the longitudinal groove and is driven back into the suction chamber from the oil hole. At the same time, force feeding of the fuel is suspended.



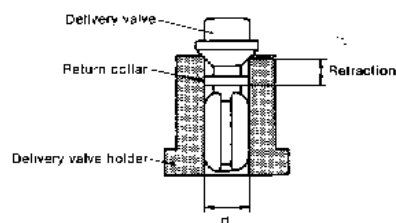
As a result of the above action, the plunger is rotated by the fuel control rack and the angle of this rotation changes the effective stroke of the plunger and controls the discharge of the pump. Also, when the fuel control rack lines up the longitudinal groove on the plunger with the oil hole, the oil hole does not close, despite the rise of the plunger, but rather the fuel is driven back to the suction chamber. As a result the fuel is not force-fed but the amount of injection is reduced to zero. At this time the fuel control rack is at the cylinder side end; when it reaches the opposite side end the maximum amount of fuel is injected. Before the maximum injection level is reached, the fuel injection control shaft regulates the amount of fuel injected to the normal operation level.

NOTE: The plunger is an integral part of the plunger barrel and takes in and compresses fuel by reciprocating inside the plunger barrel. The plunger and plunger barrel are precisely machined, and because the plunger is driven in an extremely small space, the two should be used together and should not be changed with other cylinders.

2-3.2 Action of the delivery valve and the sucking-back of fuel

The delivery valve on top of the plunger prevents the fuel inside the injection tube from flowing backward toward the plunger side and also serves to suck back the fuel to pre-

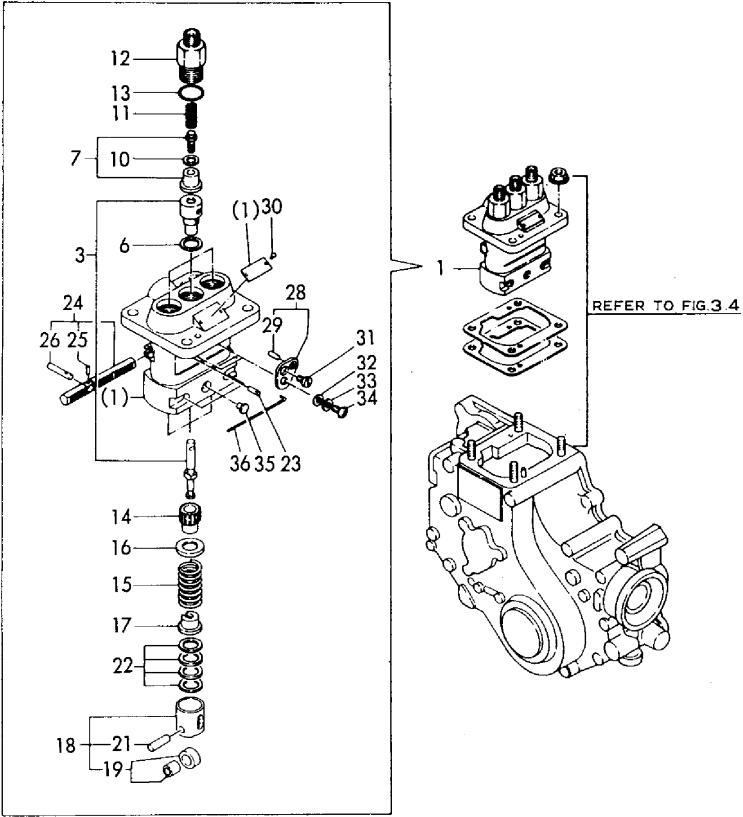
vent the backward dripping of the nozzle valve. When the notch (lead) of the plunger comes up to the oil hole of the plunger barrel, the feeding pressure acting on the fuel oil drops, and the delivery valve falls due to the force of the spring. After the sucking-back collar has first shut off the fuel injection tube and the delivery chamber, the delivery valve drops further until comes in contact with the seat surface, in correspondence with the amount of fall (i.e., increase in volume), the fuel oil pressure within the injection tube drops, speeding up the closure of the nozzle valve, and sucking up the fuel before it drips back. This enhances the durability of the nozzle and improves fuel oil combustion.



$$\text{Amount of fuel retraction} = \frac{\pi}{4} d^2 l = 23.5 \text{ mm}^3 / \text{stroke} \quad (0.0014 \text{ in}^3 / \text{st.})$$

Fig.43. FUEL INJECTION PUMP

Fig. **43** 燃料噴射ポンプ
FUEL INJECTION PUMP



OCF10-G50602 43. FUEL INJECTION PUMP

(A)=3GM30
(B)=3GM30VE
(C)=3GM30B
(D)=3GM30C
(E)=3GM30F
(F)=3GM30FVE

REF.	LEV.	PARTS NO.	DESCRIPTION	Q'TY						I	R
				(A)	(B)	(C)	(D)	(E)	(F)		
1	1	728374-51100	PUMP ASSY. F.INJECT.	1		1	1	1			
I 1-1	1	728374-51101	PUMP ASSY. F.INJECT.	1	1	1	1	1	1	N	
		(A=E13959)	(C=E00394) (D=E01583)		(E=E13924)						
3	2	128170-51101	PLUNGER W/BARREL	3	3	3	3	3	3		
6	2	124950-51270	GASKET	3	3	3	3	3	3		
7	2	128170-51300	VALVE W/SEAT, DELIV.	3		3	3	3			
I 7-1	2	105500-51300	VALVE W/SEAT, DELIV.	3	3	3	3	3	3	N	
		(A=E13959)	(C=E00394) (D=E01583)		(E=E13924)						
10	2	124550-51350	GASKET, DELIVERY	3	3	3	3	3	3		
11	2	124550-51320	SPRING, DELIV. VALVE	3	3	3	3	3	3		
12	2	124550-51341	RETAINER	3	3	3	3	3	3		
13	2	124550-51370	O-RING, DELIVERY	3	3	3	3	3	3		
14	2	124950-51510	PINION	3	3	3	3	3	3		
15	2	124950-51190	SPRING, PLUNGER	3	3	3	3	3	3		
16	2	174307-51170	RETAINER A	3	3	3	3	3	3		
17	2	174307-51181	RETAINER B	3	3	3	3	3	3		
18	2	124550-51200	TAPPET	3	3	3	3	3	3		
19	3	111100-51220	ROLLER	3	3	3	3	3	3		
21	3	174100-54120	PIN, ROLLER	3	3	3	3	3	3		
22	2	174307-51700	SHIM SET	3	3	3	3	3	3		
23	2	103854-51251	PIN, PLUNGER	1	1	1	1	1	1		
24	2	121450-51500	RACK, CONTROL	1	1	1	1	1	1		
25	3	121450-51550	PIN	1	1	1	1	1	1		
26	3	124550-51590	LOCKER	1	1	1	1	1	1		
28	2	124950-51640	SHIM SET, CONTROL	2	2	2	2	2	2		
29	3	124950-51670	PIN	2	2	2	2	2	2		
30	2	124220-51890	RIVET, LABEL	2	2	2	2	2	2		
31	2	103854-51660	SCREW	2	2	2	2	2	2		
I 32	2	22117-050000	WASHER 5	2		2	2	2		Z	
		(A=E0000)	(C=E0000) (D=E0000) (E=E0000)								
I 33	2	22217-050000	SPRING WASHER 5	2		2	2	2		Z	
		(A=E0000)	(C=E0000) (D=E0000) (E=E0000)								
34	2	26587-050102	SCREW M 5X 10	2		2	2	2			
I 34-1	2	26033-050102	SCREW M 5X 10	2	2	2	2	2	2	N	
		(A=E0000)	(C=E0000) (D=E0000) (E=E0000)								
35	2	124950-51450	PIECE, GUIDE	3	3	3	3	3	3		
36	2	121150-51460	PIN	1	1	1	1	1	1		