

DIRECTORATE GENERAL BORDER ROADS
GENERAL REPAIR INSTRUCTION NO 59
ON
FUEL INJECTION PUMP SETTING
OF
TATA DIRECT INJECTION DIESEL ENGINE 692D

Introduction

1. This instruction lays down the correct method of INJECTION PUMP SETTING and GOVERNOR SETTING of TATA Direct Injection Diesel Engine Fuel Injection Pump, as recommended by M/s Tata Engineering & Locomotive Co.

Item affected

2. Fuel Injection Pump with Governor.

Action by

3. (a) Base Workshops (GREF) : The calibration of Fuel Injection Pump is done in the Base workshops (GREF) on calibrating machine by the specially trained personnel for the job. Setting of the Injection Pump and Governor should always be done as per the manufacturer's recommendations.

(b) Field Workshops (GREF) : To initiate Work Order on the GREF Base Workshops for deposit repair, or declare as BLR for Base repairs, whenever found beyond their capacity.

Details

4. Details of Injection Pump and Governor setting have been tabulated in Appendix 'A' to this Instruction.

HQ DGBR GRI No 59
Dated 15 Jun 73

----- E N D -----

FUEL INJECTION PUMP

HB-PES 6 A 80 C 410 RS 2329

Feed Pump : HB-FP/KE 22 AD 280/2

Nozzle holder : HB-KDAL 74 S 3/19

Nozzle : HB-DLL 150 S 554
(Opening Pressure :
200 kp / cm²)

GOVERNOR

HB-EP/RSV 300..1400 A2B 1026 DL
1038 DL
1048 DL
1049 DL

ENGINE TYPE

TATA

(Direct Injection)
692 D

INJECTION PUMP SETTING

Clockwise rotation Cam sequence : 1-5-3-6-2-4. cam displacement : 60⁰.
Pre-stroke : 2.15 – 2.25 mm. Plunger clearance at T.D.C. D.2 mm (min).

Basic Setting :

Speed (rpm)	C.Tr (mm)	Delivery quantity (cm 3/100 str)	Max difference in delivery Quantity (cm 3/100 str)
1000	6	2.4 – 3.2	0.4
	9	5.7 – 6.2	
	15	11.7 – 13.0	
200	6	1.4 – 2.3	

Basic setting should be done at 9mm C.Tr (control rod travel) at 1000 rpm.

GOVERNOR SETTING

1. Mechanical setting: Screw out shut-off screw, supplementary idling spring capsule and adapter capsule. Control lever in stop position, adjust control rod measuring scale to '0' and then screw in shut-off screw so that the control rod moves by 0.3 – 1 mm. Move the adjusting arm of the control lever adjusting device 0 681 440 006 (EFP 56 C) so as to bring the control lever to vertical position and adjust the scale on the device to 40⁰. At a speed of 500 rpm and the control lever in vertical position, the governor should not cut-in. If it cuts, tighten the notch screw. Now, at 500 rpm and the control lever in the vertical position, adjust the full load stop screw to

17 – 18 mm C.Tr. Increase the speed till the governor cuts off completely and check whether the control rod has come back to 0.3 – 1mm. If not, the compensating washers between the bearing and the adjusting pin of the guide lever have to be changed.

NOTE : The distance of 19 – 0.2 mm between the inner shoulder of the actuating 'T' of the guide lever and the governor housing face with the flyweights in their collapsed position should be maintained as mentioned in the repair instructions of RSV governor.

0.5 mm shim varies the control rod travel by 1 mm approximately.

2. Governing at upper range : Set control lever to 58° approximately and screw in maximum speed stop screw till it just touches the control lever, the C.Tr must be minimum 20 mm. Pump at 1500 rpm and the control lever in the above maximum position, set pre-tension on the main governor spring by adjusting notch screw or maximum speed stop screw or both to obtain 16 mm C/Tr without tolerance and then check the following readings :-

R.P.M	1500	1550/15550	1600
C.Tr.	16	11.5 – 11.7	6.9 – 7.1

If the above readings are not obtained, adjust the notch screw (rough adjustment) and the maximum speed stop screw (fine adjustment).

3. Maximum Output : Pump at 1400 rpm and the control lever at maximum speed stop, adjust the full load stop screw to 25.4 – 26.6 cm³/500 str.

4. Adjustment of adapter capsule (torque control device) : Pump at 750 mm and the control lever at maximum speed stop, note down the C.Tr. Then screw in adapter capsule till the C.Tr. is increased by about 1 mm and check the following delivery values :-

R.P.M	750	1000
Cm ³ /500 Strs.	23.4 – 25.5	23.4 – 25.5

If these delivery values are not obtained, re-adjust the adapter capsule.

5. Adjusting supplementary idling spring : Pump at 300 rpm, move control lever till the C.Tr. is 5 – 5.5 mm. The control lever should be at 20° approximately. Then screw in supplementary idling spring to 6 mm C.Tr. and check the following readings:-

R.P.M	120	250	300	500	650
C.Tr.	19 – 21	8 – 12	5.8 – 6.2	2 – 4	0.3 – 1.0

The readings should lie in the middle of the given values, if not, the control lever and the supplementary idling spring capsule are to be readjusted.

6. Control lever at maximum speed stop, check the following readings :-

R.P.M	1600	1660	1800
C.Tr.	5.7 – 8.3	2.5 – 5	0.3 - 1

7. Adjustment of governor cutting in speed and degree of regulation :

(a) Adjust the governor cutting in speed to 1435 – 1445 rpm by readjusting the maximum speed stop screw only.

(b) Increase the speed till the control rod returns to 4 mm and observe the rpm and it should be 1485 – 1495. If not, adjust both the notch screw and the maximum speed stop screw. Again check the speeds for governor cutting in and for the 4 mm C/Tr.

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