

**PUMP SPECIFICATION**

Rotation: Clockwise.  
 Governor type: Mechanical two speed with dual rate idle.  
 Gov. Link Length:  $42.8 \pm 0.2$  mm.  
 Plunger Diameter: 7.0 mm (4 off).  
 Drive Type: Uprated with supported shaft.  
 Advance Type: Servo advance with light load via rocking lever.  
 Transfer pressure adjuster in end plate.  
 Cambox pressurising valve.  
 Solenoid shut-off device, 12 volts.  
 Scroll plate max. fuel adjustment, with dual rate torque control.  
 Hydraulic excess fuel control with latch valve.  
 Fast idle & cold idle advance linked for waxstat operation.  
 Automatic high pressure venting system.

**ISO TEST CONDITIONS.**

This data is only valid for the test conditions specified and the following test benches: HA3000/HA2500/HA1150/HA1100MkII/HA875  
 HA700/HA400/AVM/PGM

Test Fluid: ISO 4113 at  $40 \pm 2^\circ\text{C}$ .  
 Inlet feed pressure: 0.1 bar  
 Nozzles Holder: ISO 7440 + YDB288 Edge filter assy.  
 Nozzles: BDL0S6844  
 Nozzle Opening Pressure:  $172 + 3 - 0$  bar.  
 H.P. pipes: 6 x 1.8 x 450 mm

**PRE-TEST NOTES**

T.P. adjusting screw to protrude 10.5 mm from the underside of end plate sleeve plug.  
 Remove CIA assembly, fit test plug 7244-572 and advance gauge 7244-447 with spindle 7244-574 and set to  $0^\circ$ .  
 Advance servo spring fitted with 4 mm shim, shim up to 6 mm max.  
 Fully screw in pre-load & stroke adjusters, and remove locking device from the torque control.  
**TORQUE TRIMMER SHIMMING:** Large 0.5 mm originally fitted. Shim up to 1.0 mm additional, if required. Small 0.5 mm shim originally fitted, and may be removed but no additional shimming.  
 Max speed screw to be positioned so that throttle ball centre is 96 mm from flange mounting face, throttle in max.speed position.  
 Turn vernier plate and advance cam fully anti-clockwise.  
 Anti-stall screw to protrude 12 mm clear of its locknut.

**ISO TEST PROCEDURE**

Test	Operation	S/C	RPM	Requirements
1.	Priming	(C)	100	Obtain delivery from all injectors and clear flow of fuel from backleak and governor cover vent.
Stop test machine. Wait for 30 seconds.				
2.	Priming	(C)	100	Obtain delivery from all injectors and clear flow of fuel from backleak and governor cover vent.
3.	Stabilisation	(C)	2400	TP 6,2 - 6,75 bar(90 - 98 Run pump for 3 minutes to stabilise. Cambox pressure to be 0.6 - 1.15 bar (9 - 17
4.	Advance	(C)	2400	$9.0 \pm 0.5^\circ$ , ( $7.2 \pm 0.4$ m). With throttle lever closed. (After test, stop test machine.)
5.	Advance	(C)	0	$0^\circ$ .
6.	Transfer Press.	(C)	100	Minimum 0.4 bar, ( 6 psi).
7.	Excess fuel	(C)	100	Minimum 5.5 cm <sup>3</sup> .
8.	Max. Delivery	(S)*	2000	$41.5 \pm 1.2$ mm <sup>3</sup> /st.
Run test machine at 600 rpm before next test.				
9.	Transfer Press.	(C)	1300	4.1 to 5.0 bar( 60 to 72psi)
10.	Advance	(S)	1300	Adjust screw on rocking lever to give $2.50 \pm 0.50^\circ$ ( $2.0 \pm 0.4$ ). Re-shim if necessary. Lock locknut.
11.	Advance	(C)	2000	5.0 to $6.5^\circ$ , ( 4.0o 5.2m).
12.	Advance	(S)	2000	$6.5 - 7.0^\circ$ (5.2 - 5.6 ust TP.
13.	Back leakage.	(C)	2000	30 to 50 cm <sup>3</sup> per 100 strokes. Flow rate 600to 1000 cm <sup>3</sup> /min.
14.	Transfer Press.	(C)	2600	7.6 to 9.7 bar(100 to 140psi)
Stop test machine. Remove pressure gauges and fit stop solenoid or plug.				
15.	Max. Delivery	(S)*	2000	$43.3 \pm 0.5$ mm <sup>3</sup> /st. Rotate whole torque control assembly. Lock collar. Record delivery. Max.spread 1.0 mm <sup>3</sup> /st
Stop test machine and remove pre-load spring from torque control device. Re-start machine and run up to 1000 rpm to latch out.				
16.	Torque Curve	(S)*	600	$28.9 \pm 1.0$ mm <sup>3</sup> /st(Stroke adjuster)
Stop test machine and replace pre-load spring. Re-start machine and vent as in test (1). Run up to 1000 rpm to latch out.				
17.	Torque Curve	(S)*	600	Delivery as test (16) $\pm 1.0$ mm <sup>3</sup> /st Pre-load adjuster fully backed off

18.	Torque Curve	(S)*	600	without leaking. Shim if required. Screw in pre-load adjuster to obtain delivery as test(16)+ ( 1.5 ± 0.5) mm <sup>3</sup> /st.
19.	Delivery	(C)	1250	7.9 to 8.9 cm <sup>3</sup> .
20.	Vernier plate	(S)	2150	4.0 to 6.0 cm <sup>3</sup> .
21.	Advance- Low Load	(S)	1200e	t throttle to give 2.7 - 3.2 delivery. Adjust cam on lever to give 4.25 - 4.75 to 3.8 mm) advance.
22.	Governor	(S)	2150	5.0 to 5.8 cm <sup>3</sup> .
23.	Delivery	(C)	2200	2.8 to 4.8 cm <sup>3</sup> .
24.	Delivery	(C)*	2000	As test (15) ± 0.4 mm <sup>3</sup> /st.
25.	Throttle - position	(C)	2000	Throttle ball in max. speed position to be 92 - 100mm from flange face. If not reset to 96 mm, repeat tests ( 19 ) to ( 24 ).
26.	Delivery	(C)*	1250	As test (19) ± 0.5 mm <sup>3</sup> /st. Move throttle lever to closed position. Run test machine at 300 rpm before next test.
27.	Throttle stop	(S)	400	Insert 3.5 mm shim between throttle lever & stop screw. Maximum 1.0 cm <sup>3</sup> . Fit idle linkage.
28.	Idle delivery	(S)	400	Remove shim, set idle lever to give 1.0 to 1.7 cm <sup>3</sup> . Lock screw.
29.	Throttle stop	(S)	460	Maximum 0.5 cm <sup>3</sup> .
30.	Anti-stall	(S)	800	0.8 cm <sup>3</sup> .
31.	Idle - Hot	(C)	410	1.0 ± 0.3 cm <sup>3</sup> .
32.	Idle - Cold	(C)	540	4.5 ± 0.5 cm <sup>3</sup> .
33.	Throttle travel	(C)	410	20.0 to 31.5 mm. Run test machine down to 100 rpm and stop. Screw latch valve adjuster fully in.
34.	Latch valve	(S)	460	Unscrew latch valve. Delivery to be 4.0 to 7.0 cm <sup>3</sup> .
Stop test machine. Wait for 10 seconds.				
35.	Latch out	(C)	410	Delivery to be 9.0 cm <sup>3</sup> Minimum.
			500	Delivery to be 5.0 to 7.0 cm <sup>3</sup> .
36.	Shut-off - Solenoid	(C)	500	De-energise solenoid, wait 5 seconds. Max. 0 cm <sup>3</sup> .
Stop machine, remove advance gauge and test plug, then re-fit CIA device. Connect linkage to CIA and lever assembly in the "cold" position, CIA spindle slot to align with marks on CIA body. Re-energise solenoid. Prime as at test (1). Stop test machine.				

Wait for 30 seconds.

Prime as at test (1).

Operate CIA mechanism.

37. Excess fuel (C) 100

Minimum 5.5 cm<sup>3</sup>.

38. Timing S/C

Outlet 'X', Pressure 55 bar

Offset 3.5 degrees against the

normal direction of pump rotation.

Driveshaft torque 80 lbf.in

Note : Outlet 'X' marked with No. 1

on outlet clamp plate.

REFER TO STATEMENT AT END OF EXPLANATORY NOTES REGARDING MAXIMUM FUEL AND SPEED SETTING AND VARIATIONS IN ENGINE PERFORMANCE.