M9961-03E070



SERVICE MANUAL

FUEL INJECTION EQUIPMENT

MODEL YPD-MP2/YPD-MP4 SERIES



Introduction

This document describes the features, disassembly, reassembly and adjustment procedure of the fuel injection unit (Model YPD-MP2,MP4) for Yanmar Diesel Engine Model TNV.

Fuel injection unit is an essential mechanism of diesel engines, and thus, has to be designed to allow fine adjustment to the engine load.

Therefore, the components of the fuel injection pumps are required to be given high-precision. To meet this requirement, we process and assemble them very accurately.

Accordingly, when performing disassembly and adjustment works in the market, keep the workbenches and their environment clean to surely prevent dirt and dust from attaching to the components of the unit, and take special care that the components are not rusted.

Please note that the specifications of the components are revised to improve the quality of the product, and thus, the details of the changed specifications will be notified through the correction table every time the change occurs.

Contents

1. F	R SAFE SERVICING · · · · · · · · · · · · · · · · · · ·	• • • 1
1.1.	Warning Symbols · · · · · · · · · · · · · · · · · · ·	1
1.2.	Safety Precautions	2
2. G	NERAL INFORMATION · · · · · · · · · · · · · · · · · · ·	• • • 4
2.1.	Outline of MP pump	• • • 4
2.2.	Specifications · · · · · · · · · · · · · · · · · · ·	5
2.3.	Outline of fuel injection pump	6
2.4.	Construction of MP-Pump	7
2.4.	Fuel Injection Part	7
2.4.		
2.4.	. Delivery Part	17
	Function of Component	
2.5.	. F.O. Feed Pump	18
2.6.	Timer Mechanism	20
2.6.	. Structure and Functions	20
	C.S.D.(Cold Start Device)	
2.7.	. Cold Starting Advancer	21
3. D	SASSEMBLY ,REASSEMBLY AND INSPECTION · · · · · · · · · · · · · · · · · · ·	22
3.1.	Disassembly	
3.1.		22
3.1.	1 0 0	
3.1.	. Disassembling the hydraulic head · · · · · · · · · · · · · · · · · · ·	23
3.1.	. Separating hydraulic head CMP	25
3.1.	1 0	
3.1.	. Disassembling the hydraulic head CMP	27
3.2.	Disassembling the Governor	28
3.3.	Reassembly	
3.3.	. Re-assembling the hydraulic head	29

3.3.2.	Re-assembling Cam Shaft	
3.3.3.	Install the hydraulic head CMP.	• • 34
3.3.4.	Assembling the Hydraulic Head	35
3.4. Re-	assembling the Governor	39
3.5. Cor	mbining Governor and Pump Bodies	• • 40
J.J. CUI	mbining Governor and I ump bodies	40
4. ADJU	JSTMENT OF FUEL INJECTION PUMP AND GOVERNOR · · · · · · · · · · · · · · · · · · ·	• • 42
4.1. Pre	eparations · · · · · · · · · · · · · · · · · · ·	• 42
4.2. Bot	ttom clearance adjustment(Fuel Injection Timing)	· · 44
4.2.1.	The bottom clearance adjusting value and the Cam classification	• 45
4.3. Adj	justment of Governor	•• 46
4.3.1.	Adjustment of No Load Max. Engine Speed	· · 46
4.3.2.	Adjustment of Fuel Limit Bolt	· · 46
4.3.3.	Adjustment of Torque-Rise Point	
4.3.4.	Adjustment of Reverse Angleich	· 47
4.3.5.	Adjustment of Staring Injection Amount	· · 48
4.3.6.	Checking the Injection Stop	
	_ INJECTION NOZZLE · · · · · · · · · · · · · · · · · · ·	40
5.1. Fu	nctioning of fuel injection nozzle	•• 49
5.2. Ty _l	pe/construction of fuel injection nozzle · · · · · · · · · · · · · · · · · · ·	•• 49
5.3. Fu	el injection nozzle disassembly	50
5.4. Fu	el injection nozzle inspection	51
5.4.1.	Washing	
5.4.2.	Nozzle inspection	
5.5. Fu	el injection nozzle reassembly	• 53
5.6. Adj	justing fuel injection nozzle	53
5.6.1.	Adjusting opening pressure	
5.6.2.	Injection test	
6. TROI	UBLESHOOTING · · · · · · · · · · · · · · · · · · ·	· · 55
6.1 Tro	publeshooting of fuel injection nump	• • 55

6.2.	. Major faults and troubleshooting	55
7.	TIGHTENING TORQUES FOR MAIN BOLTS AND NUTS	58
7.1.	. Pump part	58
7.2.	. Mechanical governor part	59
8.	TOOLS · · · · · · · · · · · · · · · · · · ·	60

1. For Safe Servicing

- Most accidents are caused by negligence of basic safety rules and precautions. For accident prevention, it is important to avoid such causes before development to accidents.
 - Please read this manual carefully before starting repair or maintenance to fully understand safety precautions and appropriate inspection and maintenance procedures.
 - Attempting at a repair or maintenance job without sufficient knowledge may cause an unexpected accident.
- It is impossible to cover every possible danger in repair or maintenance in the manual. Sufficient
 consideration for safety is required in addition to the matters marked CAUTION. Especially for safety
 precautions in a repair or maintenance job not described in this manual, receive instructions from a
 knowledgeable leader.

1.1. Warning Symbols

Safety marks used in this manual and their meanings are as follows:



DANGER indicates an imminently hazardous situation, which if not avoided, WILL result in death or serious injury.



WARNING indicates a potentially hazardous situation, which if not avoided, COULD result in death or serious injury.



CAUTION indicates a potentially hazardous situation, which if not avoided, may result in minor or moderate injury.

Any matter marked [NOTICE] in this manual is especially important in servicing.
 If not observed, the product performance and quality may not be guaranteed.