



**WORKSHOP MANUAL
DIESEL ENGINE
MANUAL D'ATELIER
MOTEUR DIESEL
WERKSTATTANLEITUNG
DIESELMOTOR**

**70mm STROKE SERIES
MOTEUR DE 70mm DE COURSE
SERIENMOTOR MIT 70mm HUB**

Kubota

TO THE READER

This Workshop Manual has been prepared to provide servicing personnel with information on the mechanism, service and maintenance of KUBOTA Diesel Engines 70 mm STROKE SERIES. It is divided into two parts, "Mechanism" and "Disassembling and Servicing".

■ Mechanism

Information on construction and functions are included for each engine section. This part should be understood before proceeding with troubleshooting, disassembling and servicing.

■ Disassembling and Servicing

Under the heading "General" come general precautions, troubleshooting, lists of servicing specifications and periodic inspection items. For each engine section, there are "Checking and Adjustment", "Disassembling and Assembling", and "Servicing" which cover procedures, precautions, factory specification and allowable limits.

All information, illustrations and specifications contained in this manual are based on the latest production information available at the time of publication. The right is reserved to make changes in all information at any time without notice.

Due to covering many models of this manual, illustration or picture being used have not been specified as one model.

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INTRODUCTION

Ce manuel d'atelier a été préparé pour permettre au personnel d'entretien de disposer d'informations sur les mécanismes, les entretiens et la maintenance des moteurs Kubota Diesel moteur de série à 70 mm de course. Il est divisé en deux sections: "Mécanismes" et "Démontage et entretien".

■ Mécanisme

Des informations sur la construction et les fonctions sont données pour chaque partie du moteur. Cette partie du manuel doit être comprise avant que l'on commence les opérations de recherche des anomalies, de démontage et d'entretien.

■ Démontage et entretien

Sous le titre "Généralités" on trouvera des précautions générales, les procédures de recherche des anomalies et les listes de caractéristiques d'entretien et items de vérification périodique. Pour chaque partie du moteur, on trouvera les titres "Vérification et réglage", "Démontage et remontage" et "Entretien" où sont reprises les précautions, les caractéristiques d'usine et les limite de service.

Toutes les informations, illustrations et spécifications contenues dans ce manuel sont basées sur les dernières informations de production disponibles au moment de la publication. Nous nous réservons le droit de modifier tout élément de ces informations, à tout moment et sans préavis.

Ce manuel couvrant de nombreux modèles, les illustrations ou photos utilisées sont données à titre indicatif.

Avr. '88

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FÜR DEN LESER

Dieses Handbuch soll dem Wartungspersonal Informationen über die Funktion, den Betrieb und die Wartung der KUBOTA-Dieselmotoren Serienmotormit 70 mm Hub liefern. Es ist in zwei Teile, "Funktion" und "Ausbau und Wartung" aufgliedert.

■ Mechanismus

Für jeden Motorabschnitt werden Informationen bezüglich Konstruktion und Funktion gegeben. Dieser Teil sollte sorgfältig gelesen werden, bevor mit der Störungssuche, dem Ausbau und der Wartung begonnen wird.

■ Ausbau und Wartung

Der Abschnitt "allgemeines" beinhaltet allgemeine Vorkehrungen, Störungssuchen und Listen von Wartungsdaten sowie von regelmäßig zu überprüfenden Teilen. Für jeden Motorabschnitt ist ein Kapitel "Prüfung und Einstellung", "Aus- und Einbau" und "Wartung" vorgesehen, welches über Verfahrensweisen, Vorkehrungen, Werkdaten und zulässige Grenzwerte Aufschluß gibt.

Allen in diesem Handbuch enthaltenen Informationen, Abbildungen und technischen Merkmalen liegen die letzten, zum Zeitpunkt der Veröffentlichung verfügbaren Informationen zugrunde. Eine Änderung aller Informationen zu jeder Zeit und ohne Ankündigung bleibt vorbehalten.

Da in diesem Handbuch mehrere Modelle beschrieben werden, wurden die jeweilig verwendeten abbildungen oder Bilder nicht für ein einzelnes Modell präzisiert.

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SPECIFICATIONS

Model		Z500-B	Z600-B	ZH600-B	D650-B	D750-B
Number of Cylinders		2			3	
Type		Vertical, water-cooled, 4-cycle diesel engine				
Bore x Stroke mm (in.)		68 x 70 (2.68 x 2.76)	72 x 70 (2.83 x 2.76)		64 x 70 (2.52 x 2.76)	68 x 70 (2.68 x 2.76)
Total Displacement cm ³ (cu. in.)		508 (31.00)	570 (34.78)		675 (41.2)	762 (46.5)
Brake Horsepower	SAE Net kW/rpm	6.3/3000	8.2/3200	8.6/3600	8.6/3000	9.7/3000
	Cont. (HP/rpm)	(8.5/3000)	(11/3200)	(11.5/3600)	(11.5/3000)	(13.0/3000)
	SAE Net kW/rpm	7.46/3000	9.3/3200	10.4/3600	9.7/3000	11.2/3000
	Intermittent (HP/rpm)	(10.0/3000)	(12.5/3200)	(14.0/3600)	(13.0/3000)	(15.0/3000)
	SAE Gross kW/rpm	8.2/3000	10.4/3200	11.5/3600	11.2/3000	12.7/3000
	Intermittent (HP/rpm)	(11.0/3000)	(13.8/3200)	(15.5/3600)	(14.3/3000)	(16.5/3000)
	DIN6271-NA kW/rpm	6.25/3000	8.1/3200	8.5/3600	8.5/3000	9.6/3000
	(PS/rpm)	(8.5/3000)	(11.0/3200)	(11.5/3600)	(11.5/3000)	(13.0/3000)
DIN6271-NB kW/rpm	7.0/3000	8.8/3200	9.9/3600	9.2/3000	10.7/3000	
(PS/rpm)	(9.5/3000)	(12.0/3200)	(13.5/3600)	(12.5/3000)	(14.5/3000)	
DIN70020 kW/rpm	7.7/3000	9.6/3200	10.7/3600	10.3/3000	11.8/3000	
(PS/rpm)	(10.5/3000)	(13.0/3200)	(14.5/3600)	(14.0/3000)	(16.0/3000)	
Maximum Bare Speed rpm		3200	3500	3780	3200	
Minimum Idling Speed rpm		800				
Maximum torque N·m/rpm		28.0/1800	32.9/2000	33.2/2000	36.5/1800	42.2/1800
kgf·m/rpm		2.86/1800	3.36/2000	3.39/2000	3.72/1800	4.30/1800
ft-lbs/rpm		20.72/1800	24.29/2000	24.52/2000	26.94/1800	31.08/1800
Combustion Chamber		Spherical Type				
Fuel Injection Pump		Bosch K Type Mini Pump				
Governor		Centrifugal Ball Mechanical Governor				
Direction of Rotation		Counter-clockwise (viewed from flywheel side)				
Injection Nozzle		Bosch Throttle Type				
Injection Timing		25° (0.44 rad.) before T.D.C.				
Firing Order		1-2			1-2-3	
Injection Pressure		140 kgf/cm ² (13.73 MPa, 1991 psi)				
Compression Ratio		22:1				
Lubricating System		Forced Lubrication by Pump				
Oil Pressure Indicating		Electrical Type Switch				
Lubricating Filter		Full Flow Paper Filter (Cartridge Type)				
Cooling System		Pressurized Radiator, Forced Circulation with Water Pump (Not included in the basic engine)				
Starting System		Electric Starting with Starter (12, 0.8)			Electric Starting with Starter (12, 0.8)	
Starting Support Device		By Glow Plug in Combustion Chamber				
Battery		12V, 45AH, equivalent			12V, 65AH, equivalent	
Dynamo for Charging		12 V, 150 W				
Fuel		Diesel Fuel No.2-D (ASTM D975)				
Lubricating Oil		MIL-L-46152, MIL-L-2104C, quality better than CC class (API)				
Lubricating Oil Capacity ℓ		2.55 (2.70 U.S. qts., 2.24 Imp. qts.)			4.6 (4.86 U.S. qts., 4.05 Imp. qts.)	
Weight (Dry) kg (lbs)		69.7 (153.7)	70.5 (155.5)		82.6 (182.1)	82.1 (181.0)
Application		General Power Source				

D850-B	DH850-B	D950-B	V1100-B	VH1100-B	V1200-B
3			4		
Vertical, water-cooled, 4-cycle diesel engine					
72 x 70 (2.83 x 2.76)		75 x 70 (2.95 x 2.76)	72 x 70 (2.83 x 2.76)		75 x 70 (2.95 x 2.76)
855 (52.2)		927 (56.6)	1140 (69.56)		1237 (75.49)
11.6/3000 (15.5/3000)	13.1/3600 (17.5/3600)	12.7/3000 (17.0/3000)	15.29/3000 (20.5/3000)	17.15/3600 (23/3600)	16.79/3000 (22.5/3000)
13.4/3000 (18.0/3000)	15.7/3600 (21.0/3600)	14.5/3000 (19.5/3000)	17.90/3000 (24.0/3000)	20.89/3600 (28.0/3600)	19.40/3000 (26.0/3000)
14.9/3000 (19.8/3000)	17.2/3600 (23.0/3600)	16.0/3000 (21.5/3000)	19.77/3000 (26.5/3000)	22.98/3600 (30.8/3600)	21.26/3000 (28.5/3000)
11.4/3000 (15.5/3000)	12.9/3600 (17.5/3600)	12.5/3000 (17.0/3000)	15.08/3000 (20.5/3000)	16.92/3600 (23.0/3600)	16.55/3000 (22.5/3000)
12.5/3000 (17.0/3000)	14.7/3600 (20.0/3600)	13.6/3000 (18.5/3000)	16.55/3000 (22.5/3000)	19.86/3600 (27.0/3600)	18.02/3000 (24.5/3000)
14.0/3000 (19.0/3000)	16.2/3600 (22.0/3600)	15.1/3000 (20.5/3000)	18.39/3000 (25.0/3000)	21.70/3600 (29.5/3600)	19.86/3000 (27.0/3000)
3200	3780	3200	3200	3780	3200
800					
50.6/1800	49.9/2400	55.6/1800	68.45/1800	66.49/2400	74.04/1800
5.16/1800	5.09/2400	5.67/1800	6.98/1800	6.78/2400	7.55/1800
37.30/1800	36.78/2400	41.00/1800	50.45/1800	49.04/2400	54.65/1800
Spherical Type					
Bosch K Type Mini Pump					
Centrifugal Ball Mechanical Governor					
Counter-clockwise (viewed from flywheel side)					
Bosch Throttle Type					
25° (0.44 rad.) before T.D.C.					
1-2-3			1-3-4-2		
140 kgf/cm ² (13.73 MPa, 1991 psi)					
22:1					
Forced Lubrication by Pump					
Electrical Type Switch					
Full Flow Paper Filter (Cartridge Type)					
Pressurized Radiator, Forced Circulation with Water Pump (Not included in the basic engine)					
Electric Starting with Starter (12, 0.8)			Electric Starting with Starter (12, 1.0)		
By Glow Plug in Combustion Chamber					
12 V, 65 AH, equivalent			12 V, 80 AH, equivalent		
12V, 150W					
Diesel Fuel No.2-D (ASTM D975)					
MIL-L-46152, MIL-L-2104C, quality better than CC class (API)					
4.6 (4.86 U.S. qts., 4.05 Imp. qts.)	3.7 (3.91 U.S.qts., 3.26 Imp.qts.)	4.6 (4.86 U.S.qts., 4.05 Imp. qts.)	5.7 (6.0 U.S. qts.,5.02 Imp. qts.)		
82.6 (182.1)		83.1 (183.2)	103.3 (227.8)		104 (229.3)
General Power Source					