

KOBELCO

SERVICE MANUAL

**HYDRAULIC EXCAVATOR
MD400LC**

Applicable: YS-00101~

S5YS0001E

07/03

HYDRAULIC EXCAVATOR

**SHOP
MANUAL**

model

MD400 

機器

COMPONENTS

装置

SYSTEMS

全般

GENERAL

要領

PROCEDURE

MDI/YUTANI

Book code No. S5YS0001E①

巻頭言

本書はMDI YUTANI 油圧ショベルの、ショップマニュアルです。当マニュアルは、MD400LC型機の整備や修理に必要な情報を集めた技術資料として作成されたもので、全般・装置・機器・要領の4編で構成されています。

・全般編には、仕様・運転操作・トラブルシューティング等、各装置のシステムを離れて機械全体として説明した方がわかりやすいものや便利なものが集められています。

・装置編では、たとえば「3.旋回システム」の様に各装置のシステム毎に、各機器の役割・相互の関係と共に整備・脱着要領まで含めて説明されています。

・機器編では、各機器について構造・作動・分解組立要領・整備基準に至るまで詳細に記載されています。

・要領編には、オプション仕様とするために使用する部品の取付要領・改造要領等が含まれています。

機械の点検・修理作業等にのぞみ、まず本書を熟読され、実務の効率UP・信頼性の向上にと最大限に活用していただければ幸いです。なお、機械の保守・点検項目につきましては、「取扱説明書」「定期自主検査記録」(本体出荷時の添付図書)にも記載されていますので、あわせて御利用下さい。

当マニュアルは、印刷・製本時点での最新情報にて編集されていますが、機械の改良等により、内容および説明が実機内容と合致しない部分が出るかも知れません。もし説明のズレが見られましたら、当社サービスセンターにお問い合わせの上、最新の情報にて訂正されます様、お願いいたします。なお、仕様の変更がありました際は、該当項目の含まれる分冊毎に改訂版を発行し見直しをはかる予定ですので、その配布にて御連絡とさせていただきます。

当マニュアルでは種々の部品に対して説明の都合上符号を付けていますが、この符号は、当マニュアルにおいてのみ通用するものですから、修理部品の発注用には使わないで下さい。部品注文には、該当機種の部品型録を参照の上、正規の部品番号を御使用願います。

お問い合わせは最寄りの当社サービスセンターが受け給わります。何なりとお申し出ください。

1989年3月

(株)神戸製鋼所

FOREWORD

This is the shop manual for the MDI YUTANI hydraulic excavator. It is a collection of necessary technical data concerning the maintenance and repair of model MD400LC. It has been divided into 4 sections: GENERAL, SYSTEMS, COMPONENTS, and PROCEDURE.

・ In the GENERAL section, we have collected information on the specification, operation, troubleshooting etc. of the machine as a whole, i.e. apart from examining each system, as this explanation is more easily comprehensible and convenient.

・ In the SYSTEMS section, there are included explanations of each mechanism's role, its mutual relationships, procedure for repair or maintenance, removing and installing as in, for example, "3. SWING SYSTEM."

・ In the COMPONENTS section, information concerning the structure, function, disassembly and reassembly, as well as maintenance standard for the components are covered in detail.

・ The PROCEDURE section, includes instructions pertaining to how to install parts to be used for optional specification and subsequent modification.

We hope that when you wish to check or repair the machine, you will initially read the manual carefully and use it as much as possible to increase working efficiency and improve reliability. Moreover, in regards to the items of maintenance and check, information is also covered in "OPERATORS MANUAL" (Booklet accompanying Shipment) so we request that you please use this in conjunction with the manual.

Although our manual was compiled according to the latest data at the time it went to press, certain contents and explanations may not conform to the actual machine due to improvements that accompany ongoing technological progress. If you notice any such explanatory discrepancies, after inquiring at one of our Service Centers, please update your manual according to the latest data. Also, in the event of any specification changes, we plan to issue a revised edition and review of each section that includes relevant items, and hope to keep you informed through its wide distribution.

In this manual although there are numbers attached to many kinds of parts for explanatory convenience, these are only used in this manual so please do not use them when ordering parts for repair. When ordering parts, please use the correct number by checking the parts catalogue for that particular machine.

Please inquire at your neighboring service center and tell us whatever is on your mind.

March, 1989

KOBE STEEL LIMITED

油圧シヨベル性能検査成績表
HYDRAULIC EXCAVATOR SHIPPING PERFORMANCE

機種
Model

備考 Remarks: Oil temperature 50°C

| 機械番号 Machine No. | 検査年月日 Inspect.date | 検査員 Inspector | | | |
|-------------------------------|-----------------------|---------------------------------------|---|------------------------------|--------------|
| | 19 年 月 日 | | | | |
| | No. | 検査項目 TEST ITEM | 基準値 Performance standard | 試験データ Performance date | 判定 Result |
| シリンダ速度 CYINDER SPEED | 1 | ブーム上げ Boom raising | 4.0 ~ 5.0 秒 Second | | |
| | 2 | ブーム下げ Boom lowering | 8.0 ~ 4.0 秒 Second | | |
| | 8 | アーム掘削 Arm digging | 4.8 ~ 5.6 秒 Second | | |
| | 4 | アーム伸ばし Arm extetion | 4.8 ~ 5.5 秒 Second | | |
| | 5 | バケット掘削 Bucket digging | 5.4 ~ 6.4 秒 Second | | |
| | 6 | バケット放出 Bucket dumping | 8.2 ~ 8.8 秒 Second | | |
| 旋回性能 SWING PERFORMANCE | 7 | 旋回速度(左) Swing speed(left) | 7.9 ~ 9.0 秒/回 | | |
| | 8 | 旋回速度(右) Swing speed(Right) | Second/Rev. | | |
| | 9 | 旋回ブレーキ(左) Swing braking(left) | 26'8" ~ 89'4" (8.0 ~ 12.0 m) | | |
| | 10 | 旋回ブレーキ(右) Swing braking(Right) | | | |
| 走行性能 TRAVEL PERFORMANCE | 11 | 走行速度(前) Travel speed(Forward) | High. 28.2 ~ 25.3 秒/65'7"(20m) / | / | |
| | 12 | 走行速度(後) Travel speed(Backward) | Low. 16.5 ~ 18.8 秒/65'7"(20m) Second/65'7"(20m) / | | |
| | 18 | 走行偏向(前) Travel deviation(Forward) | Under 3.9"/65'7" (1200mm/20m) | and | |
| | 14 | 走行偏向(後) Travel deviation(Backward) | Under 2"/6'7" (50mm/2m) | | |
| 油圧性能 OIL TIGHTNESS | 15 | バケット爪先降下量 Total drop of bucket tip | Under 31.5"/10min (800mm/10min) | | |
| | 16 | 旋回流れ(左) Swing oil leak(left) | Under 7'8"(200mm) /20 Second | | |
| | 17 | 旋回流れ(右) Swing oil leak(Right) | | | |
| 圧力設定 PRESSURE SETTING | 18 | 第1ポンプ(アーム) No.1 Pump(Arm) | 4479~4622 Psi (315~325kgf/cm ²) | at Heavy lift | |
| | 19 | 第2ポンプ(バケット) No.2 Pump(Bucket) | 4479~4622 Psi (315~325kgf/cm ²) | at Heavy lift | |
| | 20 | 第3ポンプ(旋回) No.3 Pump(Swing) | 3341~3555 Psi (235~250kgf/cm ²) | | |
| | 21 | 第3ポンプ(Att) No.3 Pump(Att) | 3839~4053 Psi (270~285kgf/cm ²) | at Heavy lift | |
| | 22 | パイロットポンプ Pilot pump | 711 ~ 782 Psi (50 ~ 55kgf/cm ²) | | |
| | 28 | 作動油タンク Oil reserver tank | 8.5~17. Psi (0.6~1.2kgf/cm ²) | | |
| E/G 回転 ENGINE SPEED | 24 | エンジン回転数(最高) Engine speed(Max) | 2025~2145 RPM | | |
| | 25 | エンジン回転数(最低) Engine speed(Min) | 630 ~ 780 RPM | | |

SHOP MANUAL

model

MD400

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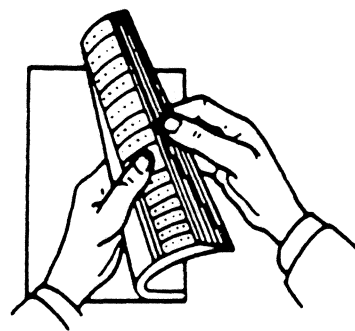
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| 2. 運 転.....OPERATION | YS02 |
| 3. 機器配置と重量.....LOCATION OF COMPONENT AND WEIGHT | YS03 |
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○ ショップマニュアルの各章索引法

当ショップマニュアルの全般編は上記目次に表わされています様に7項目で構成されており、その各章は右図に示される様にヘリマークで容易に索引することが出来ます。けん索を迅速に行なうためにぜひ御利用ください。

○ How to Index each Shop Manual Section

The GENERAL of this shop manual consists of 7 headings as shown above. Each section can be easily referred to by indexes appended to the margin of the page as indicated on the right. Please use the indexes for speedy reference.



全般

GENERAL

MDI/YUTANI

MD400 LIST OF SHOP MANUAL GENERAL SECTION

| 名称・Title | 資料 No.・Book Code NO. | | |
|-------------------------------------|------------------------------|-----------------------|--|
| | 配布年月・Distribution Year—Month | | |
| 仕様 SPECIFICATION | S5YS0101E 1986-11 | S5YS0101E① 1988-12 | |
| 運転 OPERATION | S5YS0201E 1986-11 | | |
| 機器配置と重量 LOCATION OF COMPONENTS | S5YS0301E 1986-11 | | |
| 整備基準とテスト要領 MAINTENANCE STANDARDS | S5YS0401(E) 1986-11 | | |
| トラブルシューティング TROUBLE SHOOTING | S5YS0501E 1986-11 | | |
| 保守 PREVENTIVE MAINTENANCE | S5YS0601E 1986-11 | S5YS0601E① 1988-12 | |
| 作業基準 WORKING STANDARDS | S5YG0701E 1986-10 | | |
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| 適用号機 APPLICABLE MACHINES | YS-0101~ | | |

Book code No. S5 YS01 01E①



SHOP MANUAL

MD400

SPECIFICATION

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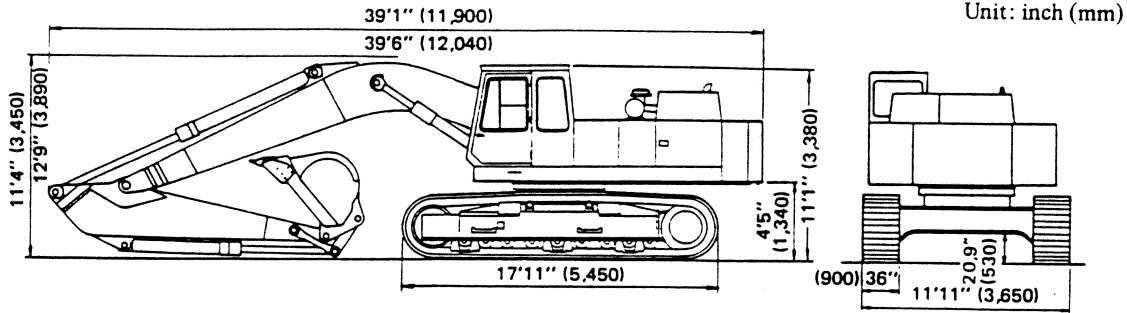
Applicable Machines
YS-00101~

| Revision | Date of Issue | Remarks |
|----------------|----------------|---------|
| First edition | November, 1986 | ® |
| Second edition | December 1988 | ® |
| | | |
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| | | |
| | | |

1. MACHINE DIMENSIONS (COMPLETE MACHINE)

1.1 RIGID TYPE

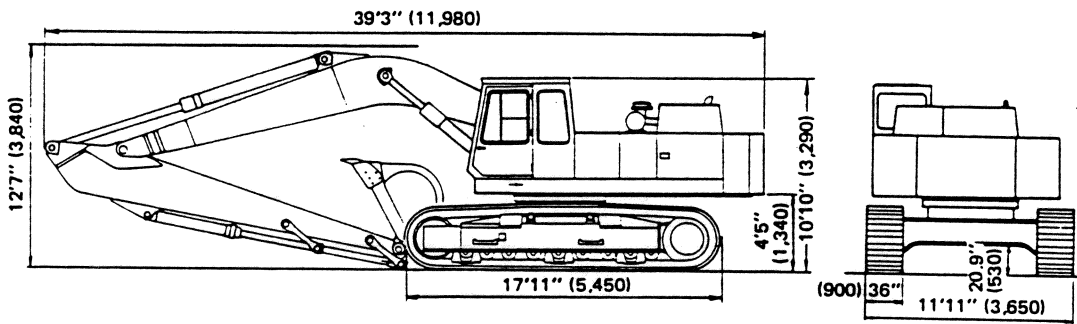
BACKHOE WITH 11'2" (3.4m) [8'10" (2.7m)] ARM



NOTE

Dimension in [parentheses] are those of backhoe with 8'10" (2.7m) arm.

BACKHOE WITH 15'9" (4.8m) ARM



2. MAJOR SPECIFICATION

SPEED AND GRADABILITY

| | | | | |
|------------------|----------|---------------------------------|---|---|
| | | Rigid Type | - | - |
| Swing Speed | | 7.1rpm | - | - |
| Travelling Speed | High/Low | 2.67/1.86M/Hr (4.3/3.0km/Hr) | - | - |
| Gradability | | 35° (70%) | - | - |

WEIGHT

| | | | | |
|---------------------------|------------------|----------------------------------|---|---|
| Working Weight (Standard) | | 97,883lbs (44,400kg) | - | - |
| Ground Pressure | | 7.5psi (0.52kg/cm ²) | - | - |
| | (Width of Shoes) | 36" (900mm) | - | - |

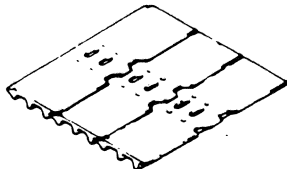
ENGINE

| | | |
|------------------------------------|--------------------|---|
| Model | | Mitsubishi 6D22CT |
| Type | | Water-cooled 4 cycle, Direct Injection Type Turbo-charged Diesel |
| Number of Cylinder X Bore X Stroke | | 6 x 5.1" x 5.5" (6 x 130mm x 140mm) |
| Total Displacement | | 680cu.in (11,149cc) |
| Rated Output Power/Revolution | (JIS D1005 Net) | 250PS/2,000rpm |
| | (SAE J1349 Net) | 184KW/2,000rpm |
| | (DIN 6270 Net) | 250PS/2,000rpm |
| Maximum Torque/Revolution | (JIS D1005 Net) | 106kg-m/1,200rpm |
| | (SAE J1349 Net) | 1,039N-m/1,200rpm |
| | (DIN 6270 Net) | 106kg-m/1,200rpm |

HYDRAULIC COMPONENTS

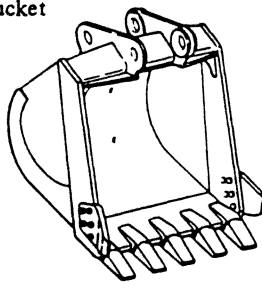
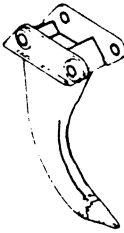
| | |
|------------------------------|---|
| Hydraulic Pump | 3 – Variable Displacement Axial Piston Pump |
| Hydraulic Motor (Swing) | Axial Piston Motor |
| Hydraulic Motor (Travel) | 2 – Axial Piston Two-speed Motor |
| Control Valve | 5 Spools · 3 Spools · 1 Spool |
| Cylinder (Boom, Arm, Bucket) | Double Acting Type Cylinders |
| Return Filter | Paper Type with Safety Valve |
| Oil Cooler | Air-cooled Type |

3. TYPE OF SHOES

| Lower Frame | Shape | | Width of Shoe inch (mm) | Overall Width of Crawler inch (mm) | Ground Pressure psi (kg/cm ²) |
|---------------|---|------------------------|----------------------------|--|--|
| Rigid Type | Grouser (Equal Height)  | 53 Links L-1516 | 35.4" (900) | 11'11" (3,650) | 7.5 (0.52) |

4. TYPE AND COMBINATION OF ATTACHMENTS

TYPE OF BUCKET

| Hoe Bucket  | Heaped Capacity cu.yd (m ³) | Outer Width ft-in (mm) | | Number of Tooth | Side Cutters | Convert- ing | Weight lbs(kg) |
|--|---|------------------------|------------------------|-----------------------|-----------------|-----------------|--|
| | | With Side Cutter | Without Side Cutter | | | | |
| L-1852 | 2.62 (2.0) | 5'4" (1,630) | 5'1" (1,550) | 5 | Yes | OK | 3,747 (1,700) |
| | 2.35 (1.8) | 4'11" (1,500) | 4'8" (1,420) | 5 | Yes | OK | 3,571 (1,620) |
| | 2.09 (1.6) | 5'1" (1,560) | 4'10" (1,480) | 5 | Yes | OK | 3,307 (1,500) |
| | 1.83 (*1.4) | - | - | 4 | No | OK | - |
| | 1.83 (1.4) | 4'6" (1,370) | 4'3" (1,290) | 5 | Yes | OK | 2,932 (1,330) |
| | 1.57 (1.2) | 3'10" (1,190) | 3'7" (1,110) | 4 | Yes | OK | 2,711 (1,230) |
| | Ripper  | | | | | | Converting: No. Weight: 2,910lbs (1,320kg) |

* indicate for heavy duty digging.

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