PART NO.

HITACHI

# Workshop Manual

EX

# EX3600-5

## Hydraulic Excavator

Service Manual consists of the following separate Part No.
Technical Manual (Operational Principle)
Technical Manual (Troubleshooting)
Workshop Manual

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## WELDING ROD SPECIFICATION

**IMPORTANT: In order to dry the welding rods, heat them to 300 to 350 °C for one hour before using.**

*NOTE: 1 °C=1.8 °C+32*
*1 mm=0.03937 in*

Welding Rods for Underlaying: JIS Z 3211 D4316 Shinko Make LB26×4 mm dia. or equivalent to AWS 7016, BSE 614 H

**Example of Chemical Composition(%) of Deposited Metal**

| C | Si | Mn | P | S |
|---|---|---|---|---|
| 0.08 | 0.44 | 0.97 | 0.013 | 0.009 |

**Example of Mechanical Properties of Deposited Metal**

| Yield Point N / mm$^2$ (kgf / mm$^2$) | Breaking Strength N / mm$^2$ (kgf / mm$^2$) | Elongation % | Absorption Energy J (kgf·m) | Heat Treatment |
|---|---|---|---|---|
| 470 (48) | 540 (55) | 33 | 220 (22) | As Welded |
| 410 (42) | 500 (51) | 34 | 240 (24) | 620 °C×1 hr |

**Dimensions and Current Range (AC or DC ⊕)**

| Rod Diameter (mm) | | 2.0 | 2.6 | 3.2 | 4.0 | 5.0 | 6.0 | 7.0 | 8.0 |
|---|---|---|---|---|---|---|---|---|---|
| Rod Length (mm) | | 300 | 350 | 350 | 400 | 450 | 450 | 450 | 450 |
| Current Range (A) | Flat Welding Vertical Overhead | 35 to 60 | 55 to 85 | 100 to 140 | 140 to 190 | 190 to 250 | 260 to 320 | 300 to 380 | 340 to 440 |
| | Vertical Overhead Welding | 30 to 55 | 50 to 80 | 90 to 130 | 120 to 180 | 160 to 210 | - | - | - |

Welding Rods for Overlaying:
JIS DF 2A-450-B Shinko Make HF-450×5 mm dia.
or Philip 450 or Acrossdiamond 500

**Example of Chemical Composition (%) of Deposited Metal**

| C | Si | Mn | P | S | Cr | Mo | V |
|---|---|---|---|---|---|---|---|
| 0.20 | 1.21 | 0.39 | 0.011 | 0.008 | 2.54 | 0.57 | 0.30 |

**Example of Hardness of Deposited Metal (Vickers Hardness)**

| As Welded | | Heat Treatment | |
|---|---|---|---|
| Pre-Heat Temperature / Temperature between Welding Paths (150 °C) | Pre-Heat Temperature / Temperature between Welding Paths (300 °C) | 550 °C×6 hr | 625 °C×6 hr |
| 452 | 408 | 443 | 348 |

**Dimensions and Current Range (AC or DC⊕)**

| Rod Diameter | (mm) | 4.0 | 5.0 | 6.0 |
|---|---|---|---|---|
| Rod Length | (mm) | 400 | 400 | 450 |
| Current Range (A) | Flat welding | 140 to 180 | 190 to 240 | 220 to 300 |

Rod End Color: Red
Derivative Color: Pink



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## REMOVE AND INSTALL BUSHING

**Remove Bushings**

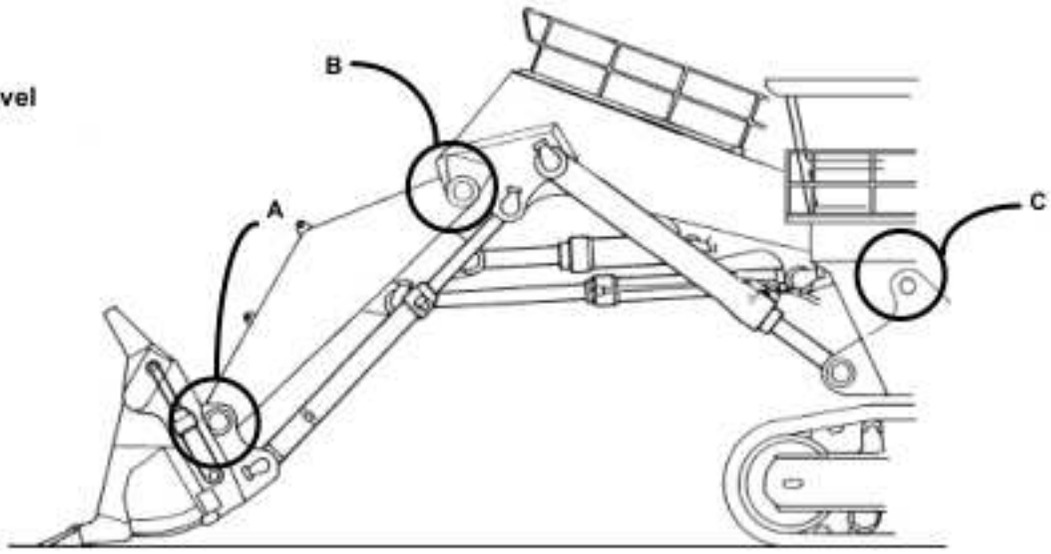
1. Remove dust seals (1) and bushings (2).

*NOTE: If the bushing does not come out, cut it out with a torch.*

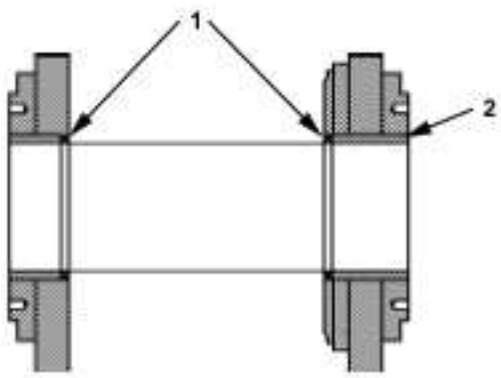
**Install Bushings**

1. Cool bushings (2) with dry ice.
2. Install bushings (2) and dust seals (1).

**Loading Shovel**

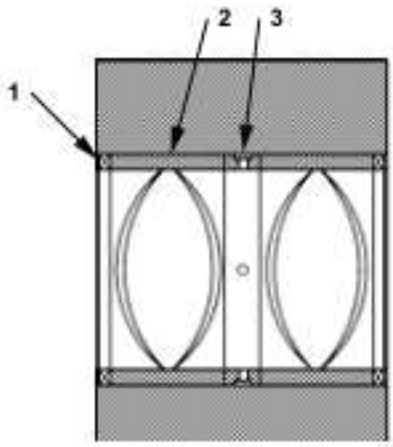



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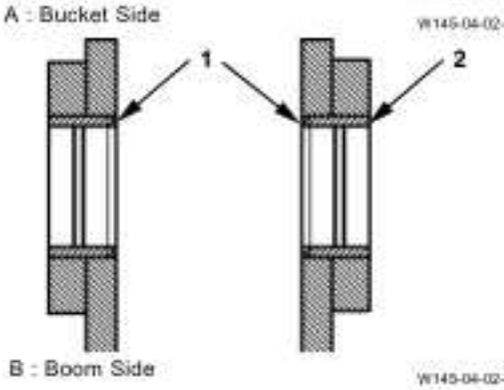

A : Bucket Side

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A : Arm Side
B : Arm Side
C : Boom Side

W145-04-02-003




B : Boom Side

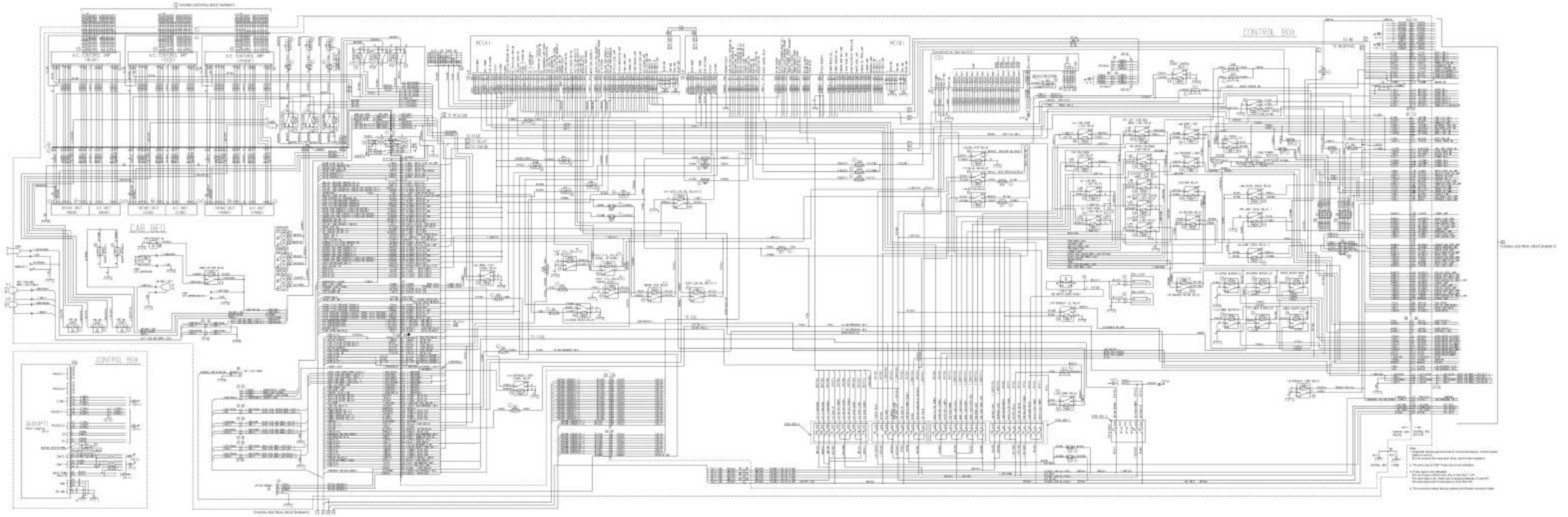
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1 - Dust Seals 2 - Bushings 3 - Spacers



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# EX3600-5 ELECTRICAL CIRCUIT DIAGRAM 2/3






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