HYODO YUSHI TMO150 20L

Official ABB IRB 6660 maintenance excerpt

DOCUMENT IDENTITY

ABB Robotics Product manual - IRB 6660, document 3HAC028197-001 Revision AG. The following five pages are reproduced unchanged from the official manual and cover the axes 2 and 3 gearbox-oil procedure.

EVIDENCE BOUNDARY

The excerpt documents Kyodo Yushi TMO 150 in the IRB 6660 service context, including isolation, plug locations, draining, refilling and the instruction not to mix this oil with other oil types. Robot-specific values are not general lubricant specifications.

Included official pages

- IRB 6660 manual pages covering required equipment and the axes 2 and 3 gearbox locations.
- Oil-plug identification and the controlled drain-and-refill sequence.
- The manufacturer warning not to mix Kyodo Yushi TMO 150 with other oil types.
- Robot-specific tightening and refill instructions that must be applied only to the cited IRB 6660 procedure.

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3.4.2 Changing oil, axis-1 gearbox
Continued

	Action	Note
7	Open the hose end and drain the oil into a vessel. **CAUTION** Drain as much oil as possible.	**Note** Draining is time-consuming. Elapsed time depends on the temperature of the oil.
8	Close the oil drain hose, and put it back inside the base.	
9	Refit rear cover by securing it with its attachment screws.	

Filling oil, axis-1 gearbox

Use this procedure to fill gearbox axis 1 with oil.

	Action	Note
1	**DANGER** Turn off all: • electric power supply • hydraulic pressure supply • air pressure supply to the robot, before entering the safeguarded space.	
2	**WARNING** Handling gearbox oil involves several safety risks, see *Gearbox lubricants (oil or grease) on page 34*.	
3	Open the *oil plug, filling.*	Shown in figure *Location of oil plugs on page 146*.
4	Refill the gearbox with clean *lubricating oil.* The correct oil level is detailed in section *Inspecting the oil level in axis-1 gearbox on page 114*.	Where to find type of oil and total amount is detailed in *Type and amount of oil in gearboxes on page 144*.
5	**Note** Do not mix Kyodo Yushi TMO 150 with other oil types!	
6	Refit the oil plug, filling.	Tightening torque: 24 Nm.

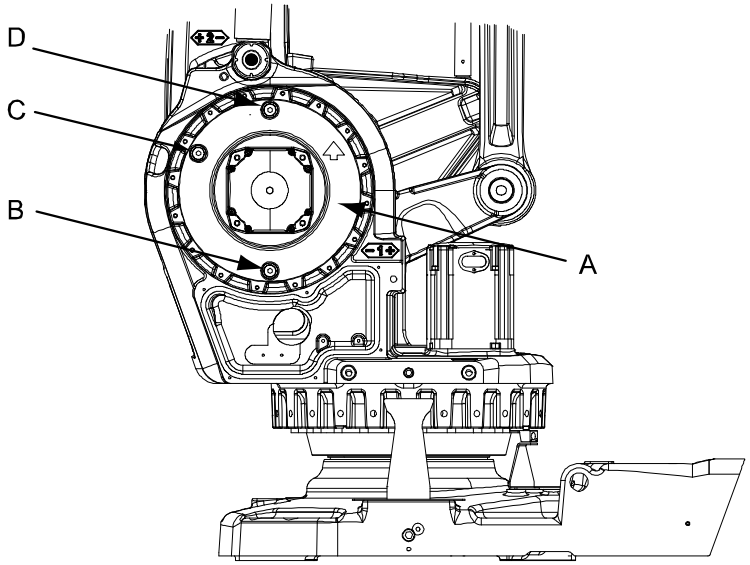
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3.4.3 Changing oil, gearbox axes 2 and 3

Location of oil plugs

Gearboxes, axes 2 and 3, are located in lower arm rotational center, underneath motor attachment.

The figure shows the position of gearbox, axis 2.



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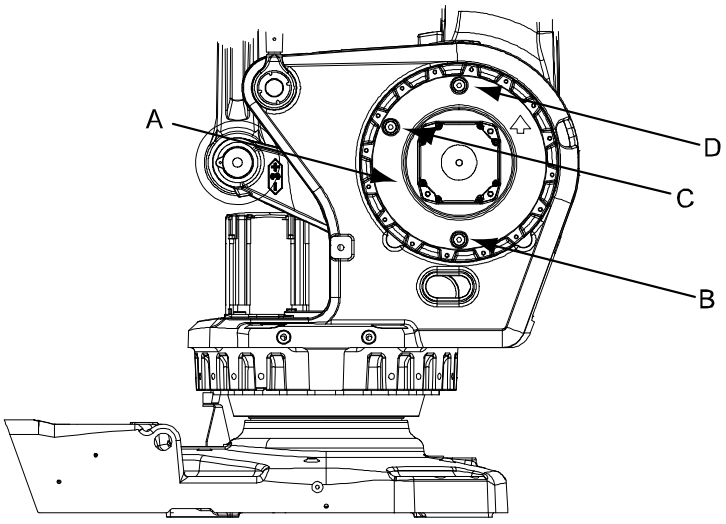
A	Gearbox axis 2
B	Oil plug, draining
C	Oil plug, filling
D	Ventilation hole plug, gearbox axis 2

The figure shows position of gearbox, axis 3.

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3.4.3 Changing oil, gearbox axes 2 and 3
Continued



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A	Gearbox, axis 3
B	Oil plug, draining
C	Oil plug, filling
D	Ventilation hole plug, gearbox axis 3

Required equipment

Equipment etc.	Art. no.	Amount	Note
Lubricating oil	See *Type and amount of oil in gearboxes on page 144*.	See *Type and amount of oil in gearboxes on page 144*.	**Note** Do not mix with other oils!
Oil collecting vessel			Capacity: 6,000 ml
Oil exchange equipment	3HAC021745-001		Content is defined in section *Special tools on page 393*.
Standard toolkit	-		Content is defined in section *Standard tools on page 392*.

Draining, axes 2 and 3

Use this procedure to drain oil in gearbox axes 2 and 3.

When using oil change equipment, follow the instructions enclosed with kit.

	Action	Note
1	**DANGER** Turn off all: • electric power supply • hydraulic pressure supply • air pressure supply to the robot, before entering the safeguarded space.	

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	Action	Note
2	**WARNING** Handling gearbox oil involves several safety risks, see *Gearbox lubricants (oil or grease) on page 34*.	
3	Remove the *ventilation hole plug.*	Shown in *Location of oil plugs on page 149*.
4	Remove the *oil plug, draining*, and drain gearbox using a hose with a nipple and an oil collecting vessel.	Shown in *Location of oil plugs on page 149*. Vessel capacity is specified in *Required equipment on page 150*. Draining is time-consuming. Elapsed time varies depending on the temperature of the oil.
5	Refit the oil plug, draining.	Tightening torque: 24 Nm.

Filling, axes 2 and 3

Use this procedure to fill gearboxes of axes 2 and 3 with oil.

When using oil change equipment, follow the instructions enclosed with kit.

	Action	Note
1	**DANGER** Turn off all: • electric power supply • hydraulic pressure supply • air pressure supply to the robot, before entering the safeguarded space.	
2	**WARNING** Handling gearbox oil involves several safety risks, see *Gearbox lubricants (oil or grease) on page 34*.	
3	Remove the *oil plug, filling*. (*Ventilation hole plug* should also be removed.)	Shown in *Location of oil plugs on page 149*. Tightening torque: 24 Nm.
4	**Note** Don´t mix Kyodo Yushi TMO 150 with other oil types!	
5	Refill gearbox with *lubricating oil*. The *amount of oil* to be filled depends on the amount that was previously drained.	Art.no. and total amount are specified in *Required equipment on page 150*.

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3.4.3 Changing oil, gearbox axes 2 and 3
Continued

	Action	Note
6	Refit *oil plug,filling* and *ventilation hole plug*.	Shown in *Location of oil plugs on page 149*. Tightening torque: 24 Nm.

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