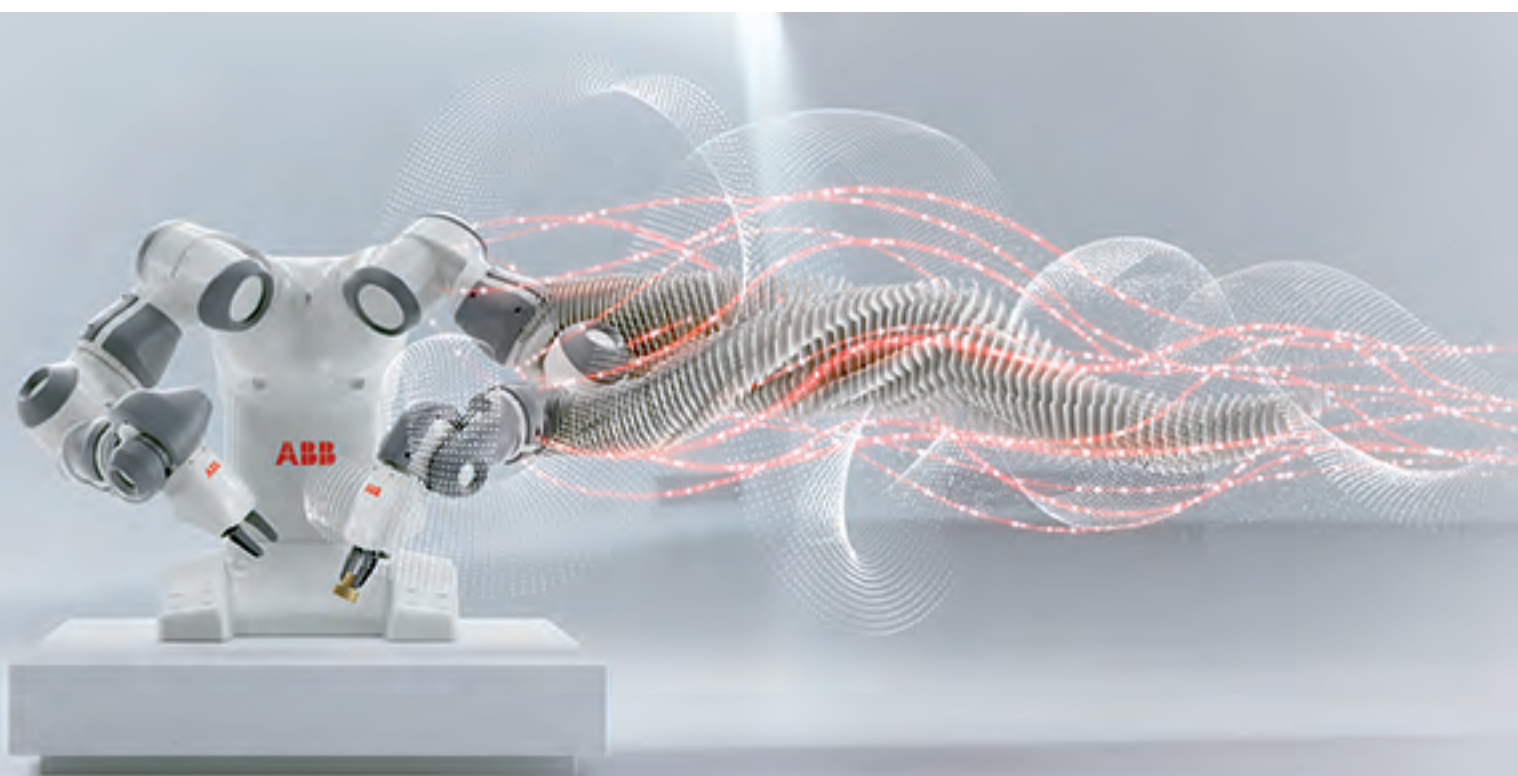


ROBOTICS

# Technical reference manual

## Lubrication in gearboxes



Trace back information:  
Workspace R17-2 version a11  
Checked in 2017-09-20  
Skribenta version 5.1.011

# **Technical reference manual**

## **Lubrication in gearboxes**

**M98, M2000, M2000A, M2004**

**Document ID: 3HAC042927-001**

**Revision: R**

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# Overview of this manual

## About this manual

This manual contains information about:

- the type of lubrication oil or grease that is used in gearboxes
- the article numbers for lubrication oil or grease
- the amount of lubrication oil or grease that is used in gearboxes
- the amount of lubrication oil or grease that is delivered as spare part.

## Usage

This manual shall be used during:

- inspection of lubrication oil or grease levels
- changing lubrication oil or grease.

## Who should read this manual?

This manual is intended for:

- installation personnel
- maintenance personnel
- repair personnel.

## Prerequisites

Maintenance/repair/installation personnel working with an ABB Robot must:

- be trained by ABB and have the required knowledge of mechanical and electrical installation/maintenance/repair work.

## References

Information how to inspect or change lubrication oil or grease in gearboxes, as well as maintenance schedules, is found in the product manual for the respective manipulator.

Reference	Document ID
<i>Operating manual - General safety information</i> <sup>i</sup>	3HAC031045-001
<i>Product manual - IRB 120</i>	3HAC035728-001
<i>Product manual - IRB 140</i>	3HAC027400-001
<i>Product manual - IRB 260</i>	3HAC026048-001
<i>Product manual - IRB 360</i>	3HAC030005-001
<i>Product manual - IRB 460</i>	3HAC039842-001
<i>Product manual - IRB 660</i>	3HAC025755-001
<i>Product manual - IRB 760</i>	3HAC039838-001
<i>Product manual - IRB 1200</i>	3HAC046983-001
<i>Product manual - IRB 1410</i>	3HAC026320-001
<i>Product manual - IRB 1520</i>	3HAC043435-001
<i>Product manual - IRB 1600/1660</i>	3HAC026660-001

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## Overview of this manual

Continued

Reference	Document ID
Product manual - IRB 2400	3HAC022031-001
Product manual - IRB 2600	3HAC035504-001
Product manual - IRB 4400	3HAC022032-001
Product manual - IRB 4600	3HAC033453-001
Product manual - IRB 4600 Foundry Prime	3HAC040585-001
Product manual - IRB 6400RF	3HAC027076-001
Product manual - IRB 6600/6650 Type A	3HAC020938-001
Product manual - IRB 6600/6650 Type A Foundry Prime	3HAC044349-001
Product manual - IRB 6600/6650 Type B	3HAC023082-001
Product manual - IRB 6600/6650 Type B Foundry Prime	3HAC041132-001
Product manual - IRB 6620	3HAC027151-001
Product manual - IRB 6620LX	3HAC035737-001
Product manual - IRB 6640	3HAC026876-001
Product manual - IRB 6640 Foundry Prime	3HAC040586-001
Product manual - IRB 6650S	3HAC020993-001
Product manual - IRB 6660	3HAC028197-001
Product manual - Product.ProductName	Document.ID-1
Product manual - IRB 7600	3HAC022033-001
Product manual - IRB 7600 Foundry Prime	3HAC044350-001
Product manual - IRB 8700	3HAC052853-001
Product manual - IRB 910SC	3HAC056430-001
Product manual - IRBT 4004/6004/7004	3HAC028506-001
Product manual - IRBP /D2009	
Product manual - Motor Units and Gear Units	3HAC040148-001

<sup>i</sup> This manual contains all safety instructions from the product manuals for the manipulators and the controllers.

## Revisions

Revision	Description
-	First edition.
A	<ul style="list-style-type: none"> <li>The heading <i>Spare Part number</i> in tables is replaced by <i>WebConfig number</i>. Spare part number is only shown in section <a href="#">Amount of lubrication when ordered as spare part on page 14</a>.</li> <li>Spare part number for Shell Tivela S150 is updated.</li> <li>The WebConfig number for Mobil SHC Cibus 220 is corrected.</li> </ul>
B	<ul style="list-style-type: none"> <li>The amount of oil in the axis-6 gearbox for IRB 7600, with insulated turning disk, is corrected, see <a href="#">IRB 7600 on page 54</a>.</li> </ul>

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Revision	Description
C	<ul style="list-style-type: none"> <li>A caution has been added throughout the manual (valid for IRB 120, IRB 1520, IRB 1600, IRB 1600ID, IRB 6620, IRB 6620LX and IRB 6640), informing to observe the different amount in a new wrist compared to when it is refilled after draining.</li> <li>Lubrication oil for IRB1600ID in axis-4, axis-5 and axis-6 is added.</li> <li>The amount of oil for IRB 4400/4450S in the axis-2 and axis-3 gearboxes is separated for better understanding.</li> <li>The information in the tables of IRB 4600 is updated for better understanding.</li> <li>The information in the tables of IRB 6600/6650 type B and 6600ID/6650ID type B is updated for better understanding.</li> <li>The amount of oil in the axis-6 gearbox of IRB6600ID and 6650ID type B is changed.</li> <li>Information about axis-6 gearbox for IRB 6620 Foundry Plus and Standard is updated for better understanding.</li> <li>The amount of oil in the axis-6 gearbox for IRB 6620 is changed.</li> <li>The amount of oil in the axis-6 gearbox for IRB 6620LX is changed.</li> <li>The amount of oil in the axis-6 gearbox for IRB 6640 with wrist type 2 is changed.</li> <li>Information about oil in the axis-6 gearbox for IRB 6640 with wrist type 1 is added.</li> <li>The amount of oil for positioners is added, see <a href="#">IRBP on page 68</a>.</li> </ul>
D	<ul style="list-style-type: none"> <li>Lubrication oil for IRB 2600 is added for serial numbers from 101000- or 501000-.</li> <li>Lubrication oil for IRB 4600 Type C is added.</li> <li>IRBP Y-X is removed from the manual. The product is phased out.</li> </ul>
E	<ul style="list-style-type: none"> <li>Lubrication for IRBT 4003/6003/7003 is added.</li> <li>Quantity of lubrication for IRBT 4004/6004/7004 is added.</li> <li>Lubrication oil for IRB 4600 in axis-4 gearbox is corrected for <i>Type C</i> and <i>Other design than Type C</i>.</li> </ul>
F	<ul style="list-style-type: none"> <li>The product name <i>Shell Tivela S 150</i> is changed to <i>Shell Omala S4 WE 150</i>.</li> <li>The amount of oil in axis-1 gearbox of IRB 140 is changed.</li> <li>The amount of grease in axis-5 gearbox of IRB 1410 is changed.</li> <li>The amount of grease in axis-3 gearbox of IRB 120 is changed.</li> <li>The unit has changed from "liter" to "milliliter" (ml) in IRB 360. Amount is not changed.</li> </ul>
G	<ul style="list-style-type: none"> <li>Lubrication oil for IRB 6700 -235/2.65, -205/2.80, -175/3.05, -150/3.20 is added.</li> <li>Correction regarding serial numbers for IRB 2600ID-15/1.85, -8/2.0 floor mounted, M2004.</li> </ul>
H	<ul style="list-style-type: none"> <li>Lubrication oil for IRB 4600 in axis-4 gearbox is corrected for both <i>Type C</i> and <i>Other design than Type C</i>.</li> <li>The article number and name for grease in axis-5 and -6 gearbox of IRB 1410 is changed.</li> </ul>
J	<ul style="list-style-type: none"> <li>Lubrication oil for IRB 6700 -200/2.60, -155/2.85, -300/2.70, -245/3.00 is added.</li> <li>The illustration showing different oil groups is updated.</li> <li>The caution informing about mixing oil types is updated throughout the manual.</li> </ul>

Continues on next page

Revision	Description
K	<ul style="list-style-type: none"><li>• The amount of oil is updated to an indicative value for IRB 6600, IRB 6620, IRB 6620LX, IRB 6640, IRB 6650S, IRB 6660, IRB 6700, and IRB 7600. Always judge the correct amount of filling by inspecting the oil level according to the procedure in the product manual. By doing this, the following risks are avoided:<ul style="list-style-type: none"><li>- Too much lubrication may cause leakage due to over pressure in the gearbox.</li><li>- Too little lubrication may cause reduced lifetime of the gearbox due to lack of lubrication.</li></ul></li><li>• Lubrication for IRB 1200 is added.</li></ul>
L	<ul style="list-style-type: none"><li>• Lubrication oil for IRB 8700 is added.</li><li>• Lubrication oil for IRBT 2005 is added.</li></ul>
M	<ul style="list-style-type: none"><li>• Lubrication for IRB 4400 Foundry plus added for axis 4-6.</li><li>• The article number and amount of grease on each axis is changed for IRB 120.</li><li>• The amount of grease on axes 2, 3, and 5 is changed for IRB 1200.</li><li>• Name change of grease (Longtime PD 0 → Tribol GR 100-0 PD)</li><li>• Lubrication for IRB 1600ID-6/1.55 is added.</li><li>• Lubrication for IRB 910SC is added.</li><li>• Lubrication for IRB 120, Food Grade lubrication is added.</li><li>• Lubrication for IRB 1200, Food Grade lubrication is added.</li></ul>
N	<ul style="list-style-type: none"><li>• Rename of the variant IRB 1600ID - 6/1.55 to IRB 1660ID - 6/1.55.</li></ul>
P	<ul style="list-style-type: none"><li>• Lubrication for IRB 1600ID-4/1.55 is added.</li></ul>
Q	<ul style="list-style-type: none"><li>• Lubrication for IRB 360-6/1600 and -8/1130 are added.</li></ul>
R	<ul style="list-style-type: none"><li>• Added information about IRB 6700Inv.</li></ul>

# 1 Introduction

## 1.1 Before you start



### Note

Before starting any inspection, maintenance, or changing activities of lubrication, **always** verify that you have the latest available revision of this manual. Any updates of the manual in between the main releases will be published on ABB Library. Contact your local ABB for information.

---

### Content in this manual

This manual contains information about the lubrication oil or grease in the gearboxes of the manipulators. It covers all currently available manipulators (IRB, IRBT, IRBP, and MU/GU), each presented in a separate chapter. This lubrication manual is a complement to the product manuals for the manipulators.

The information in this manual - type of lubrication, article numbers and the amount used in gearboxes - is only presented here.

---

### Inspection and change of lubrication

The instructions for inspecting the lubrication levels and changing the lubrication are found in the product manuals for the manipulators.

# 1 Introduction

## 1.2 Compatibility of lubrication oils

### 1.2 Compatibility of lubrication oils

#### Mixing of oils

Some lubrication oils cannot be mixed with other oils. Severe damage may be caused if they are mixed.

The figure [Groups of oil on page 12](#) shows two different groups of oil types. The oils within each group are mixable with each other, but not with any other oil outside the group.

If oils from different groups are mixed, the gearbox must be thoroughly rinsed as described in [Rinsing the gearbox on page 13](#).

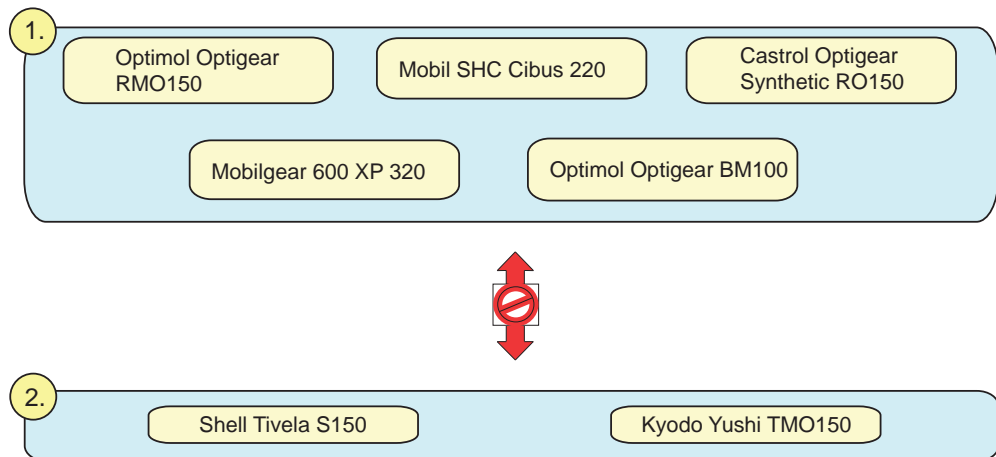
If oils within the same group are mixed, it is sufficient to drain and refill the gearbox with the correct type of oil.



#### Note

Even if the oils within a group are mixable, it does not mean that they are equivalent! Always use the type of oil that is specified in the table for each robot.

#### Groups of oil



xx120000013

1	Oil group 1	The oils in this group are mixable within the group, but not with any other oil outside the group. Optimol Optigear RMO 150, Castrol Optigear Synthetic RO 150, Mobilgear 600 XP 320, Mobil SHC Cibus 220, Mobil SHC Cibus 220, Optimol Optigear BM 100.
2	Oil group 2	The oils in this group are mixable within the group, but not with any other oil outside the group. Shell Omala S4 WE 150, (old product name Shell Tivela S150), Kyodo Yushi TMO 150.

Continues on next page

### Mixing types of oil may cause severe damage!

When refilling or replacing oil in a gearbox it is important to first check which type of oil is recommended for use in the gearbox. As Kyodo Yushi TMO 150 and Shell Tivela S 150 (new product name Shell Omala S4 WE 150) are not compatible with mineral oil, contamination with other types of oil in the gearboxes is not acceptable. Equipment used in handling Kyodo Yushi or Shell Tivela S 150 (new product name Shell Omala S4 WE 150) must be carefully cleaned before use!

If the type of oil needs to be changed to an oil from a different group of oils (see figure [Groups of oil on page 12](#)), the gearbox must be thoroughly rinsed. See [Rinsing the gearbox on page 13](#).

### Rinsing the gearbox

Depending on which types of oil are mixed and which type of oil shall be filled in the gearbox after rinsing, use the appropriate procedure.

The same applies if the type of oil shall be changed in the gearbox.



#### Note

The explanation given for Kyodo Yushi TMO 150 also applies to Shell Tivela S 150 (new product name Shell Omala S4 WE 150).

The explanation given for Mobilgear 600 XP 320 also applies to Mobil Gearlube X320.

#### Kyodo Yushi TMO 150 mixed with Optimol Optigear RMO 150 or Castrol Optigear RO 150

Use this procedure to rinse the contaminated gearbox if the oil type Kyodo Yushi TMO 150 is mixed with Optimol Optigear RMO 150 or Castrol Optigear RO 150.

- 1 Flush the gearbox properly three times with the correct type of oil. Use a service program when flushing.
- 2 Refill the gearbox with the correct type of oil.

#### Kyodo Yushi TMO 150 mixed with Mobilgear 600 XP320

Use this procedure to rinse the contaminated gearbox if the gearbox shall contain Kyodo Yushi TMO 150 and it is mixed with Mobilgear 600 XP320.

- 1 Flush the gearbox properly three times with Kyodo Yushi TMO 150. Use a service program when flushing.
- 2 Refill the gearbox with Kyodo Yushi TMO 150.

# 1 Introduction

## 1.3 Amount of lubrication when ordered as spare part

### 1.3 Amount of lubrication when ordered as spare part

#### Lubrication as spare part

When lubrication is ordered as spare part it is delivered in drums (or containers). Hence the exact amount of oil or grease that is needed, cannot always be ordered. The tables show in which amount the lubrication is delivered when ordered as a spare part.

#### Order size for lubrication oil

This table shows in which amounts that the lubrication oil can be ordered.

Product name	Spare part number	WebConfig number	Amount in container (drum)
Kyodo Yushi TMO 150	3HAC032140-002	3HAC032140-001	209 liters
Kyodo Yushi TMO 150	3HAC032140-004	3HAC032140-001	20 liters
Shell Omala S4 WE 150 (old product name Shell Tivela S150)	3HAC043226-001	3HAC021469-001	1 liter
Shell Omala S4 WE 150 (old product name Shell Tivela S150)	3HAC043226-002	3HAC021469-001	5 liters
Shell Omala S4 WE 150 (old product name Shell Tivela S150)	3HAC043226-003	3HAC021469-001	10 liters
Shell Omala S4 WE 150 (old product name Shell Tivela S150)	3HAC043226-004	3HAC021469-001	20 liters
Optimol Optigear BM 100	3HAC042564-001	3HAC0860-1	5 liters
Castrol Optigear RO150	3HAC042589-001	3HAC031291-001	1.000 liters
Castrol Optigear RO150	3HAC042592-001	3HAC031291-001	206 liters
Castrol Optigear RO150	3HAC042577-001	3HAC031291-001	10 liters
Mobilgear 600 XP 320	3HAC042471-001	11712016-604	10 liters
Mobil SHC Cibus 220	3HAC6450-3	3HAC6450-2	0.9 liters
Mobil SHC Cibus 220	3HAC042574-001	3HAC6450-2	0.2 liters

#### Order size for lubrication grease

This table shows in which amounts that the lubrication grease can be ordered.

Product name	Spare part number	WebConfig number	Amount in container (drum)
Optimol Long time PD0	3HAC042534-001	3HAA1001-294	420 ml
Optimol Long time PD2	3HAC9408-1	-	420 ml
Shell GADUS S2 V220AC 2	3HAC042536-001	3HAB3537-1	400 g
Harmonic Grease 4B No.2	3HAC037302-001	3HAC031695-001	500 g

## 2 Articulated robots - four axes

### 2.1 IRB 260



#### CAUTION

When filling the gearbox with oil, do not mix different types of oil as this may cause severe damage to the gearbox! Always use the type of oil that is specified in the table!

If oils from different oil groups are mixed, then the gearbox must be thoroughly rinsed! See [Groups of oil on page 12](#) and [Rinsing the gearbox on page 13](#).



#### Note

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

#### Type of oil - currently used

This table shows the lubrication oil that is currently used in the gearboxes of the robot.

IRB 260 - all variants, M2004

Axis	WebConfig number	Type	Amount
Axis 1	11712016-604	Mobilgear 600 XP 320	6,400 ml
Axis 2	11712016-604	Mobilgear 600 XP 320	4,500 ml
Axis 3	11712016-604	Mobilgear 600 XP 320	3,800 ml
Axis 4	Not applicable		
Axis 5	Not applicable		
Axis 6	3HAC032140-001	Kyodo Yushi TMO 150	70 ml

The information in the table updated: July 4 2012.

## 2 Articulated robots - four axes

---

### 2.2 IRB 460

### 2.2 IRB 460



#### Note

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

---

#### Type of oil - currently used

This table shows the lubrication oil that is currently used in the gearboxes of the robot.

#### IRB 460-110/2.4, M2004

Axis	WebConfig number	Type	Amount
Axis 1	3HAC032140-001	Kyodo Yushi TMO 150	5,900 ml
Axis 2	3HAC032140-001	Kyodo Yushi TMO 150	3,200 ml
Axis 3	3HAC032140-001	Kyodo Yushi TMO 150	3,200 ml
Axis 4	Not applicable		
Axis 5	Not applicable		
Axis 6	3HAC032140-001	Kyodo Yushi TMO 150	300 ml

The information in the table updated: September 27 2013.



## 2.3 IRB 660

**Note**

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

**Type of oil - currently used**

This table shows the lubrication oil that is currently used in the gearboxes of the robot.

IRB 660-180/3.15, -250/3.15, M2004

Axis	WebConfig number	Type	Amount
Axis 1	3HAC032140-001	Kyodo Yushi TMO 150	8,000 ml
Axis 2	3HAC032140-001	Kyodo Yushi TMO 150	5,000 ml
Axis 3	3HAC032140-001	Kyodo Yushi TMO 150	5,000 ml
Axis 4	Not applicable		
Axis 5	Not applicable		
Axis 6	3HAC032140-001	Kyodo Yushi TMO 150	250 ml

The information in the table updated: July 4 2012.

## 2 Articulated robots - four axes

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### 2.4 IRB 760

### 2.4 IRB 760



#### Note

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

---

#### Type of oil - currently used

This table shows the lubrication oil that is currently used in the gearboxes of the robot.

#### IRB 760-450/3.2, M2004

Axis	WebConfig number	Type	Amount
Axis 1	3HAC032140-001	Kyodo Yushi TMO 150	8,000 ml
Axis 2	3HAC032140-001	Kyodo Yushi TMO 150	5,000 ml
Axis 3	3HAC032140-001	Kyodo Yushi TMO 150	5,000 ml
Axis 4	Not applicable		
Axis 5	Not applicable		
Axis 6	3HAC032140-001	Kyodo Yushi TMO 150	850 ml

The information in the table updated: July 4 2012.

## 3 Articulated robots - six axes

### 3.1 IRB 120



#### Note

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

#### Type of grease - currently used

This table shows the lubrication grease that is currently used in the gearboxes of the robot.

#### IRB 120-3/0.6, M2004



#### Note

The gearboxes contain grease, not lubrication oil!  
The amount is measured in grams.

Axis	WebConfig number	Type	Amount
1	3HAC031695-001	Harmonic grease 4B No. 2	58 gram
2	3HAC031695-001	Harmonic grease 4B No. 2	40 gram
3	3HAC031695-001	Harmonic grease 4B No. 2	11 gram
4	3HAC031695-001	Harmonic grease 4B No. 2	3.5 gram
5	3HAC031695-001	Harmonic grease 4B No. 2	5 gram
6	3HAC031695-001	Harmonic grease 4B No. 2	3.5 gram

The information in the table updated: February 19 2016.

#### IRB 120-3/0.6, food grade lubrication, M2004



#### Note

The gearboxes contain grease, not lubrication oil!  
The amount is measured in grams.

Axis	WebConfig number	Type	Amount
1	3HAC043771-001	LUBRIPLATE SYNXTREME FG-0	66 gram
2	3HAC043771-001	LUBRIPLATE SYNXTREME FG-0	40 gram
3	3HAC043771-001	LUBRIPLATE SYNXTREME FG-0	11 gram
4	3HAC043771-001	LUBRIPLATE SYNXTREME FG-0	3.5 gram
5	3HAC043771-001	LUBRIPLATE SYNXTREME FG-0	5 gram
6	3HAC043771-001	LUBRIPLATE SYNXTREME FG-0	3.5 gram

The information in the table updated: February 19 2016.

### 3 Articulated robots - six axes

---

#### 3.2 IRB 140 type C

#### 3.2 IRB 140 type C



#### Note

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

---

#### Type of oil - currently used

This table shows the lubrication oil that is currently used in the gearboxes of the robot.

IRB 140-6/0.8 & IRB 140T-6/0.8, M2004



#### CAUTION

The total amount of lubrication oil in a new wrist can not be refilled after the gearbox has been drained. In order to avoid future leakage due to overpressure, refill the gearbox with the amount shown in the table.

Axis	WebConfig number	Type	Amount
1	11712016-604	Mobilgear 600 XP 320	1,200 ml
2	11712016-604	Mobilgear 600 XP 320	1,000 ml
3	11712016-604	Mobilgear 600 XP 320	300 ml
4	11712016-604	Mobilgear 600 XP 320	200 ml
5-6	3HAC0860-1	Optimol Optigear BM 100	New wrist: 350 ml Refilling the wrist: 300 ml

The information in the table updated: January 15 2013.

## 3.3 IRB 1200

**Note**

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

**Type of grease - currently used**

This table shows the lubrication grease that is currently used in the gearboxes of the robot.

IRB 1200 all variants, M2004

**Note**

The gearboxes contain grease, not lubrication oil!  
The amount is measured in grams.

Axis	WebConfig number	Type	Amount
1	3HAC037302-001	Harmonic grease 4B No. 2	80 gram
2	3HAC037302-001	Harmonic grease 4B No. 2	60 gram
3	3HAC037302-001	Harmonic grease 4B No. 2	32 gram
4	N/A	N/A	N/A
5	3HAC037302-001	Harmonic grease 4B No. 2	9 gram
6	3HAC037302-001	Harmonic grease 4B No. 2	8.5 gram

The information in the table updated: February 19 2016.

IRB 1200 all variants, food grade lubrication, M2004

**Note**

The gearboxes contain grease, not lubrication oil!  
The amount is measured in grams.

Axis	WebConfig number	Type	Amount
1	3HAC043771-001	LUBRIPLATE SYNXTREME FG-0	80 gram
2	3HAC043771-001	LUBRIPLATE SYNXTREME FG-0	60 gram
3	3HAC043771-001	LUBRIPLATE SYNXTREME FG-0	32 gram
4	N/A	N/A	N/A
5	3HAC043771-001	LUBRIPLATE SYNXTREME FG-0	9 gram
6	3HAC043771-001	LUBRIPLATE SYNXTREME FG-0	8.5 gram

The information in the table updated: February 19 2016.

### 3 Articulated robots - six axes

#### 3.4 IRB 1410

#### 3.4 IRB 1410



#### CAUTION

When filling the gearbox with oil, do not mix different types of oil as this may cause severe damage to the gearbox! Always use the type of oil that is specified in the table!

If oils from different oil groups are mixed, then the gearbox must be thoroughly rinsed! See [Groups of oil on page 12](#) and [Rinsing the gearbox on page 13](#).



#### Note

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

#### Type of oil - currently used

This table shows the lubrication oil and grease that is currently used in the gearboxes of the robot.

IRB 1410 all variants, M2004



#### Note

Axis-5 and axis-6 contains grease!

Axis-1, axis-2, axis-3, and axis-4 contains lubrication oil.

Axis	WebConfig number	Type	Amount
1	11712016-604	Mobilgear 600 XP 320	2,000 ml
2	11712016-604	Mobilgear 600 XP 320	1,700 ml
3	11712016-604	Mobilgear 600 XP 320	1,700 ml
4	11712016-604	Mobilgear 600 XP 320	30 ml
5-6	3HAC042536-001	Shell GADUS S2 V220AC 2	60 gram

The information in the table updated: September 27 2013.

## 3.5 IRB 1520

**CAUTION**

When filling the gearbox with oil, do not mix different types of oil as this may cause severe damage to the gearbox! Always use the type of oil that is specified in the table!

If oils from different oil groups are mixed, then the gearbox must be thoroughly rinsed! See [Groups of oil on page 12](#) and [Rinsing the gearbox on page 13](#).

**Note**

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

**Type of oil - currently used**

These tables show the lubrication oil that is currently used in the gearboxes of the robot, depending on version.

## IRB 1520ID -4/1.5 floor mounted, M2004

**CAUTION**

The total amount of lubrication oil in a new wrist can not be refilled after the gearbox has been drained. In order to avoid future leakage due to overpressure, refill the gearbox with the amount shown in the table.

Axis	WebConfig number	Type	Amount
1	3HAC032140-001	Kyodo Yushi TMO 150	350 ml
2	3HAC032140-001	Kyodo Yushi TMO 150	520 ml
3	3HAC032140-001	Kyodo Yushi TMO 150	320 ml
4	11712016-604	Mobilgear 600 XP 320	350 ml
5-6	3HAC0860-1	Optimol Optigear BM 100	New wrist: 130 ml Refilling the wrist: 110 ml

The information in the table updated: January 15 2013.

## IRB 1520ID -4/1.5 suspended, M2004

**CAUTION**

The total amount of lubrication oil in a new wrist can not be refilled after the gearbox has been drained. In order to avoid future leakage due to overpressure, refill the gearbox with the amount shown in the table.

Axis	WebConfig number	Type	Amount
1	3HAC032140-001	Kyodo Yushi TMO 150	600 ml
2	3HAC032140-001	Kyodo Yushi TMO 150	520 ml

*Continues on next page*

### 3 Articulated robots - six axes

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#### 3.5 IRB 1520

*Continued*

Axis	WebConfig number	Type	Amount
3	3HAC032140-001	Kyodo Yushi TMO 150	320 ml
4	11712016-604	Mobilgear 600 XP 320	350 ml
5-6	3HAC0860-1	Optimol Optigear BM 100	New wrist: 130 ml Refilling the wrist: 110 ml

The information in the table updated: January 15 2013.



## 3.6 IRB 1600/1660ID type A

**CAUTION**

When filling the gearbox with oil, do not mix different types of oil as this may cause severe damage to the gearbox! Always use the type of oil that is specified in the table!

If oils from different oil groups are mixed, then the gearbox must be thoroughly rinsed! See [Groups of oil on page 12](#) and [Rinsing the gearbox on page 13](#).

**Note**

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

**Type of oil - currently used**

This table shows the lubrication oil currently used in the gearboxes.

IRB 1600, all variants, M2004

IRB 1600 -5/1.2, -5/1.45, -6/1.2, -6/1.45, -7/1.3, -7/1.45, -8/1.2, -8/1.45

**CAUTION**

The total amount of lubrication oil in a new wrist can not be refilled after the gearbox has been drained. In order to avoid future leakage due to overpressure, refill the gearbox with the amount shown in the table.

Axis	WebConfig number	Type	Amount
1	11712016-604	Mobilgear 600 XP 320	3,400 ml
2	11712016-604	Mobilgear 600 XP 320	3,400 ml
3	11712016-604	Mobilgear 600 XP 320	500 ml
4	11712016-604	Mobilgear 600 XP 320	350 ml
5-6	3HAC0860-1	Optimol Optigear BM 100	New wrist: 350 ml Refilling the wrist: 300 ml

The information in the table updated: January 15 2013.

IRB 1600ID - 4/1.5, M2004

**CAUTION**

The total amount of lubrication oil in a new wrist can not be refilled after the gearbox has been drained. In order to avoid future leakage due to overpressure, refill the gearbox with the amount shown in the table.

Axis	WebConfig number	Type	Amount
1	11712016-604	Mobilgear 600 XP 320	3,400 ml

*Continues on next page*

### 3 Articulated robots - six axes

#### 3.6 IRB 1600/1660ID type A

Continued

Axis	WebConfig number	Type	Amount
2	11712016-604	Mobilgear 600 XP 320	3,400 ml
3	11712016-604	Mobilgear 600 XP 320	500 ml
4	11712016-604	Mobilgear 600 XP 320	300 ml
5	11712016-604	Mobilgear 600 XP 320	15 ml
5-6	3HAC0860-1	Optimol Optigear BM 100	New wrist: 130 ml Refilling the wrist: 110 ml

The information in the table updated: January 15 2013.

IRB 1660ID - 6/1.55, - 4/1.55, M2004



#### CAUTION

The total amount of lubrication oil in a new wrist can not be refilled after the gearbox has been drained. In order to avoid future leakage due to overpressure, refill the gearbox with the amount shown in the table.

Axis	WebConfig number	Type	Amount
1	11712016-604	Mobilgear 600 XP 320	3,400 ml
2	11712016-604	Mobilgear 600 XP 320	3,400 ml
3	11712016-604	Mobilgear 600 XP 320	500 ml
4	11712016-604	Mobilgear 600 XP 320	350 ml
5	3HAC0860-1	Optimol Optigear BM 100	15 ml
6	3HAC0860-1	Optimol Optigear BM 100	240 ml

The information in the table updated: October 30 2015.

## 3.7 IRB 2400

**CAUTION**

When filling the gearbox with oil, do not mix different types of oil as this may cause severe damage to the gearbox! Always use the type of oil that is specified in the table!

If oils from different oil groups are mixed, then the gearbox must be thoroughly rinsed! See [Groups of oil on page 12](#) and [Rinsing the gearbox on page 13](#).

**Note**

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

**Type of oil - currently used**

These tables show the lubrication oil that is currently used in the gearboxes of the robot, depending on version.

**IRB 2400 /10, /16, M98, M2000, M2000A & M2004**

Axis	WebConfig number	Type	Amount
1	11712016-604	Mobilgear 600 XP 320	6,400 ml
2	11712016-604	Mobilgear 600 XP 320	4,500 ml
3	11712016-604	Mobilgear 600 XP 320	3,800 ml
4	3HAC0860-1	Optimol Optigear BM 100	1,500 ml
5-6	3HAC0860-1	Optimol Optigear BM 100	800 ml

The information in the table updated: July 4 2012.

**IRB 2400 /L, M98, M2000, M2000A & M2004**

Axis	WebConfig number	Type	Amount
1	11712016-604	Mobilgear 600 XP 320	6,400 ml
2	11712016-604	Mobilgear 600 XP 320	4,500 ml
3	11712016-604	Mobilgear 600 XP 320	3,800 ml
4	11712016-604	Mobilgear 600 XP 320	30 ml
5-6	11712016-604	Mobilgear 600 XP 320	120 ml

The information in the table updated: July 4 2012.

### 3 Articulated robots - six axes

#### 3.8 IRB 2600

#### 3.8 IRB 2600



#### CAUTION

When filling the gearbox with oil, do not mix different types of oil as this may cause severe damage to the gearbox! Always use the type of oil that is specified in the table!

If oils from different oil groups are mixed, then the gearbox must be thoroughly rinsed! See [Groups of oil on page 12](#) and [Rinsing the gearbox on page 13](#).



#### Note

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

#### Type of oil - currently used

These tables show the lubrication oil currently used in gearboxes, depending on version.

#### IRB 2600-20/1.65, -12/1.65, -12/1.85 floor mounted, M2004

This table is valid for robots with serial numbers from 101000- or 501000-.

Axis	WebConfig number	Type	Amount
1	3HAC021469-001	Shell Omala S4 WE 150	600 ml
2	3HAC021469-001	Shell Omala S4 WE 150	800 ml
3	3HAC032140-001	Kyodo Yushi TMO 150	450 ml
4	3HAC0860-1	Optimol Optigear BM 100	1,800 ml
5-6	3HAC0860-1	Optimol Optigear BM 100	800 ml

The information in the table updated: September 26 2013.

#### IRB 2600-20/1.65, -12/1.65, -12/1.85 floor mounted, M2004

This table is valid for robots with serial numbers up to -100999 or -500999.

Axis	WebConfig number	Type	Amount
1	3HAC021469-001	Shell Omala S4 WE 150	1,000 ml
2	3HAC021469-001	Shell Omala S4 WE 150	900 ml
3	3HAC032140-001	Kyodo Yushi TMO 150	450 ml
4	3HAC0860-1	Optimol Optigear BM 100	1,800 ml
5-6	3HAC0860-1	Optimol Optigear BM 100	800 ml

The information in the table updated: September 26 2013.

#### IRB 2600-20/1.65, -12/1.65, -12/1.85 suspended, M2004

This table is valid for robots with serial numbers from 101000- or 501000-.

Axis	WebConfig number	Type	Amount
1	3HAC021469-001	Shell Omala S4 WE 150	1,000 ml

*Continues on next page*

Axis	WebConfig number	Type	Amount
2	3HAC021469-001	Shell Omala S4 WE 150	800 ml
3	3HAC032140-001	Kyodo Yushi TMO 150	450 ml
4	3HAC0860-1	Optimol Optigear BM 100	1,800 ml
5-6	3HAC0860-1	Optimol Optigear BM 100	800 ml

The information in the table updated: September 26 2013.

IRB 2600-20/1.65, -12/1.65, -12/1.85 suspended, M2004

This table is valid for robots with serial numbers up to -100999 or -500999.

Axis	WebConfig number	Type	Amount
1	3HAC021469-001	Shell Omala S4 WE 150	1,400 ml
2	3HAC021469-001	Shell Omala S4 WE 150	900 ml
3	3HAC032140-001	Kyodo Yushi TMO 150	450 ml
4	3HAC0860-1	Optimol Optigear BM 100	1,800 ml
5-6	3HAC0860-1	Optimol Optigear BM 100	800 ml

The information in the table updated: September 26 2013.

IRB 2600ID-15/1.85, -8/2.0 floor mounted, M2004

This table is valid for robots with serial numbers from 101000- or 501000-.

Axis	WebConfig number	Type	Amount
1	3HAC021469-001	Shell Omala S4 WE 150	600 ml
2	3HAC021469-001	Shell Omala S4 WE 150	800 ml
3	3HAC032140-001	Kyodo Yushi TMO 150	450 ml
4	3HAC0860-1	Optimol Optigear BM 100	1,800 ml
5	3HAC0860-1	Optimol Optigear BM 100	15 ml
6	3HAC0860-1	Optimol Optigear BM 100	240 ml

The information in the table updated: September 26 2013.

IRB 2600ID-15/1.85, -8/2.0 floor mounted, M2004

This table is valid for robots with serial numbers up to 101000- or 501000-.

Axis	WebConfig number	Type	Amount
1	3HAC021469-001	Shell Omala S4 WE 150	1,000 ml
2	3HAC021469-001	Shell Omala S4 WE 150	900 ml
3	3HAC032140-001	Kyodo Yushi TMO 150	450 ml
4	3HAC0860-1	Optimol Optigear BM 100	1,800 ml
5	3HAC0860-1	Optimol Optigear BM 100	15 ml
6	3HAC0860-1	Optimol Optigear BM 100	240 ml

The information in the table updated: September 26 2013.

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### 3 Articulated robots - six axes

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#### 3.8 IRB 2600

*Continued*

IRB 2600ID-15/1.85, -8/2.0 suspended, M2004

This table is valid for robots with serial numbers from -100999 or -500999.

Axis	WebConfig number	Type	Amount
1	3HAC021469-001	Shell Omala S4 WE 150	1,400 ml
2	3HAC021469-001	Shell Omala S4 WE 150	900 ml
3	3HAC032140-001	Kyodo Yushi TMO 150	450 ml
4	3HAC0860-1	Optimol Optigear BM 100	1,800 ml
5	3HAC0860-1	Optimol Optigear BM 100	15 ml
6	3HAC0860-1	Optimol Optigear BM 100	240 ml

The information in the table updated: September 26 2013.

## 3.9 IRB 4400/4450S

**CAUTION**

When filling the gearbox with oil, do not mix different types of oil as this may cause severe damage to the gearbox! Always use the type of oil that is specified in the table!

If oils from different oil groups are mixed, then the gearbox must be thoroughly rinsed! See [Groups of oil on page 12](#) and [Rinsing the gearbox on page 13](#).

**Note**

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

**Type of oil - currently used**

These tables shows the lubrication oil that is currently used in the gearboxes of the robot, depending on version.

**Note**

See separate table for information about IRB 4400 Foundry Plus.

**IRB 4400 -45, -60, L30, M2000 & M2004**

Axis	WebConfig number	Type	Amount
1	11712016-604	Mobilgear 600 XP 320	8,200 ml
2	11712016-604	Mobilgear 600 XP 320	5,800 ml
3	11712016-604	Mobilgear 600 XP 320	5,800 ml
4	3HAC0860-1	Optimol Optigear BM 100	3,400 ml
5-6	3HAC0860-1	Optimol Optigear BM 100	3,400 ml

The information in the table updated: January 15 2013.

**IRB 4400 -L10, M2000 & M2004**

Axis	WebConfig number	Type	Amount
1	11712016-604	Mobilgear 600 XP 320	8,200 ml
2	11712016-604	Mobilgear 600 XP 320	5,800 ml
3	11712016-604	Mobilgear 600 XP 320	5,800 ml
4	3HAC0860-1	Optimol Optigear BM 100	3,400 ml
5-6	3HAC0860-1	Optimol Optigear BM 100	800 ml

The information in the table updated: January 15 2013.

*Continues on next page*

### 3 Articulated robots - six axes

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#### 3.9 IRB 4400/4450S

*Continued*

##### IRB 4400 -S, M2000 & M2004

Axis	WebConfig number	Type	Amount
1	11712016-604	Mobilgear 600 XP 320	10,000 ml
2	11712016-604	Mobilgear 600 XP 320	6,000 ml
3	11712016-604	Mobilgear 600 XP 320	6,000 ml
4	3HAC0860-1	Optimol Optigear BM 100	3,400 ml
5-6	3HAC0860-1	Optimol Optigear BM 100	3,400 ml

The information in the table updated: January 15 2013.

##### IRB 4450S, M2000 & M2004

Axis	WebConfig number	Type	Amount
1	11712016-604	Mobilgear 600 XP 320	8,200 ml
2	11712016-604	Mobilgear 600 XP 320	5,800 ml
3	11712016-604	Mobilgear 600 XP 320	5,800 ml
4	3HAC0860-1	Optimol Optigear BM 100	3,400 ml
5-6	3HAC0860-1	Optimol Optigear BM 100	3,400 ml

The information in the table updated: January 15 2013.

##### IRB 4400 Foundry Plus, M2000 & M2004

Axis	WebConfig number	Type	Amount
1	11712016-604	Mobilgear 600 XP 320	10,000 ml
2	11712016-604	Mobilgear 600 XP 320	6,000 ml
3	11712016-604	Mobilgear 600 XP 320	6,000 ml
4	11712016-604	Mobilgear 600 XP 320	4,000 ml
5-6	11712016-604	Mobilgear 600 XP 320	4,000 ml

The information in the table updated: October 9 2015.



## 3.10 IRB 4600

**CAUTION**

When filling the gearbox with oil, do not mix different types of oil as this may cause severe damage to the gearbox! Always use the type of oil that is specified in the table!

If oils from different oil groups are mixed, then the gearbox must be thoroughly rinsed! See [Groups of oil on page 12](#) and [Rinsing the gearbox on page 13](#).

**Note**

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

**Type of oil used in Type C and Type D**

These tables shows the lubrication oil used in the gearboxes of **Type C** and **Type D**, depending on version. The tables shows the amount for both floor and suspended mounted variants.

For a description of the "**Type**", see *Product manual - IRB 4600 (3HAC033453-001)* and *Product manual - IRB 4600 Foundry Prime (3HAC040585-001)*.

IRB 4600-60/2.05, -45/2.05, -40/2.55 floor and suspended mounted, M2004

Axis	WebConfig number	Type	Amount	
			Floor	Suspended
1	3HAC032140-001	Kyodo Yushi TMO 150	2,060 ml	2,060 ml
2	3HAC032140-001	Kyodo Yushi TMO 150	2,740 ml	2,740 ml
3	3HAC032140-001	Kyodo Yushi TMO 150	850 ml	850 ml
4	3HAC0860-1	Optimol Optigear BM 100	3,000 ml	3,000 ml
5-6	3HAC0860-1	Optimol Optigear BM 100	1,900 ml	1,900 ml

The information in the table updated: July 11 2013.

IRB 4600-20/2.50 floor and suspended mounted, M2004

Axis	WebConfig number	Type	Amount	
			Floor	Suspended
1	3HAC032140-001	Kyodo Yushi TMO 150	2,060 ml	2,060 ml
2	3HAC032140-001	Kyodo Yushi TMO 150	2,740 ml	2,740 ml
3	3HAC032140-001	Kyodo Yushi TMO 150	850 ml	850 ml
4	3HAC0860-1	Optimol Optigear BM 100	3,000 ml	3,000 ml
5-6	3HAC0860-1	Optimol Optigear BM 100	800 ml	800 ml

The information in the table updated: July 11 2013.

*Continues on next page*

### 3 Articulated robots - six axes

#### 3.10 IRB 4600

*Continued*

#### Type of oil used in other design than Type C and Type D

These tables shows the lubrication oil used in the gearboxes of other design than Type C or Type D, depending on version. The tables shows the amount for both floor and suspended mounted variants.

For a description of the "Type", *Product manual - IRB 4600 ( 3HAC033453-001)* and *Product manual - IRB 4600 Foundry Prime ( 3HAC040585-001)*.

IRB 4600-60/2.05, -45/2.05, -40/2.55 floor and suspended mounted, M2004

Axis	WebConfig number	Type	Amount	
			Floor	Suspended
1	3HAC021469-001	Shell Omala S4 WE 150	1,000 ml	1,400 ml
2	3HAC032140-001	Kyodo Yushi TMO 150	3,000 ml	3,000 ml
3	3HAC021469-001	Shell Omala S4 WE 150	700 ml	700 ml
4	3HAC0860-1	Optimol Optigear BM 100	3,000 ml	3,000 ml
5-6	3HAC0860-1	Optimol Optigear BM 100	1,900 ml	1,900 ml

The information in the table updated: September 26 2013.

IRB 4600-20/2.50 floor and suspended mounted, M2004

Axis	WebConfig number	Type	Amount	
			Floor	Suspended
1	3HAC021469-001	Shell Omala S4 WE 150	1,000 ml	1,400 ml
2	3HAC032140-001	Kyodo Yushi TMO 150	3,000 ml	3,000 ml
3	3HAC021469-001	Shell Omala S4 WE 150	700 ml	700 ml
4	3HAC0860-1	Optimol Optigear BM 100	3,000 ml	3,000 ml
5-6	3HAC0860-1	Optimol Optigear BM 100	800 ml	800 ml

The information in the table updated: September 26 2013.

## 3.11 IRB 6400RF

**Note**

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

**Type of oil - currently used**

This table shows the lubrication oil that is currently used in the gearboxes of the robot, depending on version.

IRB 6400RF -200/2.5, -200/2.8, M2004

Axis	WebConfig number	Type	Amount
1	11712016-604	Mobilgear 600 XP 320	~11.2 l
2	11712016-604	Mobilgear 600 XP 320	~11.5 l
3	11712016-604	Mobilgear 600 XP 320	~12.0 l
4	11712016-604	Mobilgear 600 XP 320	6.0 l
5	11712016-604	Mobilgear 600 XP 320	6.5 l
6	3HAA1001-294	Tribol GR 100-0 PD	0.30 l

The information in the table updated: July 4 2012.

### 3 Articulated robots - six axes

#### 3.12 IRB 6600/6650 type A

#### 3.12 IRB 6600/6650 type A



#### CAUTION

The stated amount of lubrication is only indicative. Always judge the correct amount of filling by inspecting the oil level according to the procedure in the product manual. By doing this, the following risks are avoided:

- Too much lubrication may cause leakage due to over pressure in the gearbox.
- Too little lubrication may cause reduced lifetime of the gearbox due to lack of lubrication.



#### CAUTION

When filling the gearbox with oil, do not mix different types of oil as this may cause severe damage to the gearbox! Always use the type of oil that is specified in the table!

If oils from different oil groups are mixed, then the gearbox must be thoroughly rinsed! See [Groups of oil on page 12](#) and [Rinsing the gearbox on page 13](#).



#### Note

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

#### Type of oil - currently used

These tables show the lubrication oil that is currently used in the gearboxes of the robot, depending on version.

IRB 6600 -225/2.55, 175/2.8, and IRB 6650 -200/2.75, 125/3.2 type A, M2000, M2000A & M2004

Axis	WebConfig number	Type	Amount
1	3HAC032140-001	Kyodo Yushi TMO 150	~7.5 l
2	3HAC032140-001	Kyodo Yushi TMO 150	~4.5 l or ~2 l <sup>i</sup>
3	3HAC032140-001	Kyodo Yushi TMO 150	~2.5 l
4	11712016-604	Mobilgear 600 XP 320	~8 l
5	11712016-604	Mobilgear 600 XP 320	~6.5 l
6	3HAC032140-001	Kyodo Yushi TMO 150	~0.4 l

<sup>i</sup> The amount is different depending on the design of the axis-2 motor attachment:  
Later designs of motor attachment ~4.5 l  
Early designs of motor attachment ~2 l

The information in the table updated: December 4 2014.

*Continues on next page*

#### IRB 6600 -175/2.55 type A, M2000, M2000A & M2004

Axis	WebConfig number	Type	Amount
1	3HAC032140-001	Kyodo Yushi TMO 150	~7.5 l
2	3HAC032140-001	Kyodo Yushi TMO 150	~4.5 l or ~2 l <sup>i</sup>
3	3HAC032140-001	Kyodo Yushi TMO 150	~2.5 l
4	11712016-604	Mobilgear 600 XP 320	~8 l
5	11712016-604	Mobilgear 600 XP 320	~6.5 l
6	3HAC032140-001	Kyodo Yushi TMO 150	~0.4 l

<sup>i</sup> The amount is different depending on the design of the axis-2 motor attachment:  
 Later designs of motor attachment ~4.5 l  
 Early designs of motor attachment ~2 l

The information in the table updated: December 4 2014.

#### Type of oil - historically used

The type of oil that is used in the gearboxes has been changed over time. Use the serial number of the robot to verify the type of oil.

The amount of oil that is used in the gearboxes has not been changed, see [Type of oil - currently used on page 36](#).

#### Robot serial numbers, generation 1

Before changing the oil, make sure that the original oil has not been changed after delivery.

Robot	Serial number range	Type of oil	
		Axis 1, 2, 3, 6	Axis 4, 5
IRB 6600 M2000 IRB 6650 M2000	66-20000 - 29999	Optimol Optigear RMO 150	Mobilgear 600 XP 320
IRB 6600 M2000A IRB 6650 M2000A	66-30000 - 33999	Optimol Optigear RMO 150	Mobilgear 600 XP 320
IRB 6600 M2004 IRB 6650 M2004	66-50000 - 50999	Optimol Optigear RMO 150	Mobilgear 600 XP 320



#### Note

Optimol Optigear RMO 150 as spare part has been replaced by Castrol Optigear RO 150.

Castrol Optigear RO 150 and Optimol Optigear RMO 150 are mixable but none are mixable with Shell Tivela S 150 (new product name Shell Tivela Omala S4 WE 150) or Kyodo Yushi TMO 150.

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### 3 Articulated robots - six axes

#### 3.12 IRB 6600/6650 type A

*Continued*

##### Robot serial numbers, generation 2

IRB 6600 and IRB 6650 robots delivered from ABB Robotics before August 15 2008 has Shell Tivela S 150 (new product name Shell Omala S4 WE 150) filled in the gearboxes for axes 1, 2, 3, and 6.

During the period August 15 to October 2 2008, Shell Tivela S 150 (new product name Shell Omala S4 WE 150) and Kyodo Yushi TMO 150 were used in parallel. Contact ABB Robotics after sales to verify which oil is used in your robot.

A field service information SI10176, dated September 10 2008, recommended that an oil change shall be done in the gearboxes for axes 2, 3, and 6 from Shell Tivela S 150 (new product name Shell Omala S4 WE 150) to Kyodo Yushi TMO 150. A new maintenance schedule was introduced by SI10176.

Robot	Serial number range	Type of oil		
		Axis 1	Axis 2, 3, 6	Axis 4, 5
IRB 6600 M2000 IRB 6650 M2000	66-40000 -	Shell Tivela S 150 (new product name Shell Omala S4 WE 150)	(Shell Tivela S 150) (new product name Shell Omala S4 WE 150) Kyodo Yushi TMO 150	Mobilgear 600 XP320
IRB 6600 M2000A IRB 6650 M2000A	66-34000 -	Shell Tivela S 150 (new product name Shell Omala S4 WE 150)	(Shell Tivela S 150) (new product name Shell Omala S4 WE 150) Kyodo Yushi TMO 150	Mobilgear 600 XP320
IRB 6600 M2004 IRB 6650 M2004	66-51000 -	Shell Tivela S 150 (new product name Shell Omala S4 WE 150)	(Shell Tivela S 150) (new product name Shell Omala S4 WE 150) Kyodo Yushi TMO 150	Mobilgear 600 XP320



#### Note

Shell Tivela S 150 (new product name Shell Omala S4 WE 150) has been replaced by Kyodo Yushi TMO 150.

Kyodo Yushi TMO 150 and Shell Tivela S 150 (new product name Shell Omala S4 WE 150) are mixable but none are mixable with Castrol Optigear RO 150 and Optimol Optigear RMO 150.

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#### Robot serial numbers, generation 3

IRB 6600 and IRB 6650 robots delivered from ABB Robotics after October 3 2008 has Kyodo Yushi TMO 150 filled in the gearboxes for axes 1, 2, 3, and 6.

During the period August 15 to October 2 2008, Shell Tivela S 150 (new product name Shell Omala S4 WE 150) and Kyodo Yushi TMO 150 were used in parallel. Contact ABB Robotics after sales to verify which oil is used in your robot.

Robot	Serial number range	Type of oil	
		Axis 1, 2, 3, 6	Axis 4, 5
IRB 6600 M2000 IRB 6650 M2000	66-40000 -	Kyodo Yushi TMO 150	Mobilgear 600 XP 320
IRB 6600 M2000A IRB 6650 M2000A	66-34000 -	Kyodo Yushi TMO 150	Mobilgear 600 XP 320
IRB 6600 M2004 IRB 6650 M2004	66-51000 -	Kyodo Yushi TMO 150	Mobilgear 600 XP 320

#### Mixed types of oil may cause severe damage!

When refilling or replacing the oil in a gearbox it is important to first verify which type of oil is recommended for use in the gearbox. As Kyodo Yushi TMO 150 (as well as Shell Tivela S 150, new product name Shell Omala S4 WE 150) is not compatible with mineral oil, contamination with other types of oil in the gearboxes is not accepted. Equipment used in handling Kyodo Yushi TMO 150 (as well as Shell Tivela S 150, new product name Shell Omala S4 WE 150) must be carefully cleaned before use!

If the type of oil needs to be changed, the gearbox must be thoroughly rinsed. See [Rinsing the gearbox on page 13](#).

### 3 Articulated robots - six axes

#### 3.13 IRB 6600/6650 type B, and IRB 6600ID/6650ID type B

#### 3.13 IRB 6600/6650 type B, and IRB 6600ID/6650ID type B



#### CAUTION

When filling the gearbox with oil, do not mix different types of oil as this may cause severe damage to the gearbox! Always use the type of oil that is specified in the table!

If oils from different oil groups are mixed, then the gearbox must be thoroughly rinsed! See [Groups of oil on page 12](#) and [Rinsing the gearbox on page 13](#).



#### CAUTION

The stated amount of lubrication is only indicative. Always judge the correct amount of filling by inspecting the oil level according to the procedure in the product manual. By doing this, the following risks are avoided:

- Too much lubrication may cause leakage due to over pressure in the gearbox.
- Too little lubrication may cause reduced lifetime of the gearbox due to lack of lubrication.



#### Note

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

#### Type of oil - currently used

These tables show the lubrication oil that is currently used in the gearboxes of the robot, depending on version.

IRB 6600 -225/2.55, 175/2.8 type B, M2000, M2000A & M2004

Axis	WebConfig number	Type	Amount
1	3HAC032140-001	Kyodo Yushi TMO 150	~7.5 l
2	3HAC032140-001	Kyodo Yushi TMO 150	~6 l
3	3HAC032140-001	Kyodo Yushi TMO 150	~2.5 l
4	11712016-604	Mobilgear 600 XP 320	~8 l
5	11712016-604	Mobilgear 600 XP 320	~6.5 l
6	3HAC032140-001	Kyodo Yushi TMO 150	~0.4 l

The information in the table updated: December 4 2014.

*Continues on next page*



### 3 Articulated robots - six axes

#### 3.13 IRB 6600/6650 type B, and IRB 6600ID/6650ID type B *Continued*

IRB 6650 -225/2.55, 175/2.8 type B, M2000, M2000A & M2004

Axis	WebConfig number	Type	Amount
1	3HAC032140-001	Kyodo Yushi TMO 150	~7.5 l
2	3HAC032140-001	Kyodo Yushi TMO 150	~6 l
3	3HAC032140-001	Kyodo Yushi TMO 150	~2.5 l
4	11712016-604	Mobilgear 600 XP 320	~8 l
5	11712016-604	Mobilgear 600 XP 320	~5 l
6	11712016-604	Mobilgear 600 XP 320	~0.4 l

The information in the table updated: December 4 2014.

IRB 6600ID -170/2.55 type B, M2000, M2000A & M2004

Axis	WebConfig number	Type	Amount
1	3HAC032140-001	Kyodo Yushi TMO 150	~7.5 l
2	3HAC032140-001	Kyodo Yushi TMO 150	~6 l
3	3HAC032140-001	Kyodo Yushi TMO 150	~2.5 l
4	11712016-604	Mobilgear 600 XP 320	~8 l
5	11712016-604	Mobilgear 600 XP 320	~6.5 l
6	3HAC032140-001	Kyodo Yushi TMO 150	~5.5 l

The information in the table updated: December 4 2014.

IRB 6650ID -185/2.55 type B, M2000, M2000A & M2004

Axis	WebConfig number	Type	Amount
1	3HAC032140-001	Kyodo Yushi TMO 150	~7.5 l
2	3HAC032140-001	Kyodo Yushi TMO 150	~6 l
3	3HAC032140-001	Kyodo Yushi TMO 150	~2.5 l
4	11712016-604	Mobilgear 600 XP 320	~8 l
5	11712016-604	Mobilgear 600 XP 320	~5 l
6	11712016-604	Mobilgear 600 XP 320	~5.5 l

The information in the table updated: December 4 2014.

#### Type of oil - historically used

The type of oil that is used in the gearboxes has been changed over time. Use the serial number of the robot to verify the type of oil.

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### 3 Articulated robots - six axes

#### 3.13 IRB 6600/6650 type B, and IRB 6600ID/6650ID type B

Continued

The amount of oil that is used in the gearboxes has not been changed, see [Type of oil - currently used on page 40](#).

##### Robot serial numbers, generation 1

Before changing the oil, make sure that the original oil has not been changed after delivery.

Robot	Serial number range	Type of oil	
		Axis 1, 2, 3, 6	Axis 4, 5
IRB 6600 M2000 IRB 6650 M2000	66-20000 - 29999	Optimol Optigear RMO 150	Mobilgear 600 XP 320
IRB 6600 M2000A IRB 6650 M2000A	66-30000 - 33999	Optimol Optigear RMO 150	Mobilgear 600 XP 320
IRB 6600 M2004 IRB 6650 M2004	66-50000 - 50999	Optimol Optigear RMO 150	Mobilgear 600 XP 320



##### Note

Optimol Optigear RMO 150 as spare part has been replaced by Castrol Optigear RO 150.

Castrol Optigear RO 150 and Optimol Optigear RMO 150 are mixable but none are mixable with Shell Tivela S 150 (new product name Shell Omala S4 WE 150) or Kyodo Yushi TMO 150.

##### Robot serial numbers, generation 2

IRB 6600 and IRB 6650 robots delivered from ABB Robotics before August 15 2008 has Shell Tivela S 150 (new product name Shell Omala S4 WE 150) filled in the gearboxes for axes 1, 2, 3, and 6.

During the period August 15 to October 2 2008, Shell Tivela S 150 (new product name Shell Omala S4 WE 150) and Kyodo Yushi TMO 150 were used in parallel. Contact ABB Robotics after sales to verify which oil is used in your robot.

A field service information SI10176, dated September 10 2008, recommended that an oil change shall be done in the gearboxes for axes 2, 3, and 6 from Shell Tivela S 150 (new product name Shell Omala S4 WE 150) to Kyodo Yushi TMO 150. A new maintenance schedule was introduced by SI10176.

Robot	Serial number range	Type of oil		
		Axis 1	Axis 2, 3, 6	Axis 4, 5
IRB 6600 M2000 IRB 6650 M2000	66-40000 -	Shell Tivela S 150 (new product name Shell Omala S4 WE 150)	(Shell Tivela S 150) (new product name Shell Omala S4 WE 150) Kyodo Yushi TMO 150	Mobilgear 600 XP320
IRB 6600 M2000A IRB 6650 M2000A	66-34000 -	Shell Tivela S 150 (new product name Shell Omala S4 WE 150)	(Shell Tivela S 150) (new product name Shell Omala S4 WE 150) Kyodo Yushi TMO 150	Mobilgear 600 XP320

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Robot	Serial number range	Type of oil		
		Axis 1	Axis 2, 3, 6	Axis 4, 5
IRB 6600 M2004 IRB 6650 M2004	66-51000 -	Shell Tivela S 150 (new product name Shell Omala S4 WE 150)	(Shell Tivela S 150) (new product name Shell Omala S4 WE 150) Kyodo Yushi TMO 150	Mobilgear 600 XP320



#### Note

Shell Tivela S 150 (new product name Shell Omala S4 WE 150) has been replaced by Kyodo Yushi TMO 150.

Kyodo Yushi TMO 150 and Shell Tivela S 150 (new product name Shell Omala S4 WE 150) are mixable but none are mixable with Castrol Optigear RO 150 and Optimol Optigear RMO 150.

#### Robot serial numbers, generation 3

IRB 6600 and IRB 6650 robots delivered from ABB Robotics after October 3 2008 has Kyodo Yushi TMO 150 filled in the gearboxes for axes 1, 2, 3, and 6.

During the period August 15 to October 2 2008, Shell Tivela S 150 (new product name Shell Omala S4 WE 150) and Kyodo Yushi TMO 150 were used in parallel. Contact ABB Robotics after sales to verify which oil is used in your robot.

Robot	Serial number range	Type of oil	
		Axis 1, 2, 3, 6	Axis 4, 5
IRB 6600 M2000 IRB 6650 M2000	66-40000 -	Kyodo Yushi TMO 150	Mobilgear 600 XP 320
IRB 6600 M2000A IRB 6650 M2000A	66-34000 -	Kyodo Yushi TMO 150	Mobilgear 600 XP 320
IRB 6600 M2004 IRB 6650 M2004	66-51000 -	Kyodo Yushi TMO 150	Mobilgear 600 XP 320

#### Mixed types of oil may cause severe damage!

When refilling or replacing the oil in a gearbox it is important to first verify which type of oil is recommended for use in the gearbox. As Kyodo Yushi TMO 150 (as well as Shell Tivela S 150, new product name Shell Omala S4 WE 150) is not compatible with mineral oil, contamination with other types of oil in the gearboxes is not accepted. Equipment used in handling Kyodo Yushi TMO 150 (as well as Shell Tivela S 150, new product name Shell Omala S4 WE 150) must be carefully cleaned before use!

If the type of oil needs to be changed, the gearbox must be thoroughly rinsed. See [Rinsing the gearbox on page 13](#).

### 3 Articulated robots - six axes

#### 3.14 IRB 6620/6620LX

#### 3.14 IRB 6620/6620LX



#### CAUTION

When filling the gearbox with oil, do not mix different types of oil as this may cause severe damage to the gearbox! Always use the type of oil that is specified in the table!

If oils from different oil groups are mixed, then the gearbox must be thoroughly rinsed! See [Groups of oil on page 12](#) and [Rinsing the gearbox on page 13](#).



#### CAUTION

The stated amount of lubrication is only indicative. Always judge the correct amount of filling by inspecting the oil level according to the procedure in the product manual. By doing this, the following risks are avoided:

- Too much lubrication may cause leakage due to over pressure in the gearbox.
- Too little lubrication may cause reduced lifetime of the gearbox due to lack of lubrication.



#### Note

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

#### Type of oil - currently used

This table shows the lubrication oil that is currently used in the gearboxes of the robot, depending on version.



#### Note

The amount of oil in axis-6 gearbox is different for robots with the protection type Foundry Plus.

#### IRB 6620 -150/2.2, M2004

Axis	WebConfig number	Type	Amount
1	3HAC032140-001	Kyodo Yushi TMO 150	~6 l
2	3HAC032140-001	Kyodo Yushi TMO 150	~4 l
3	3HAC032140-001	Kyodo Yushi TMO 150	~2 l
4	11712016-604	Mobilgear 600 XP 320	~5.5 l
5	11712016-604	Mobilgear 600 XP 320	~3 l
6	3HAC032140-001	Kyodo Yushi TMO 150	Protection type Standard: ~0.3 l
6	3HAC032140-001	Kyodo Yushi TMO 150	Protection type Foundry Plus: ~0.4 l

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The information in the table updated: December 4 2014.

IRB 6620LX -150/1.9, M2004

Axis	WebConfig number	Type	Amount
1	-	Mobil Glygoyl 460	~7 l
2	3HAC032140-001	Kyodo Yushi TMO 150	~4 l
3	3HAC032140-001	Kyodo Yushi TMO 150	~2 l
4	11712016-604	Mobilgear 600 XP 320	~5.5 l
5	11712016-604	Mobilgear 600 XP 320	~3 l
6	3HAC032140-001	Kyodo Yushi TMO 150	~0.4 l

The information in the table updated: December 4 2014.

### 3 Articulated robots - six axes

#### 3.15 IRB 6640/6640ID

#### 3.15 IRB 6640/6640ID



#### CAUTION

When filling the gearbox with oil, do not mix different types of oil as this may cause severe damage to the gearbox! Always use the type of oil that is specified in the table!

If oils from different oil groups are mixed, then the gearbox must be thoroughly rinsed! See [Groups of oil on page 12](#) and [Rinsing the gearbox on page 13](#).



#### CAUTION

The stated amount of lubrication is only indicative. Always judge the correct amount of filling by inspecting the oil level according to the procedure in the product manual. By doing this, the following risks are avoided:

- Too much lubrication may cause leakage due to over pressure in the gearbox.
- Too little lubrication may cause reduced lifetime of the gearbox due to lack of lubrication.



#### Note

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

#### Type of oil - currently used

These tables show the lubrication oil that is currently used in the gearboxes of the robot, depending on version.

IRB 6640 -180/2.55, -235/2.55, -205/2.75, -185/2.8, -130/3.2, M2004

Axis	WebConfig number	Type	Amount
1	3HAC032140-001	Kyodo Yushi TMO 150	~6 l
2	3HAC032140-001	Kyodo Yushi TMO 150	~6 l
3	3HAC032140-001	Kyodo Yushi TMO 150	~2.5 l
4	11712016-604	Mobilgear 600 XP 320	~8 l
5	11712016-604	Mobilgear 600 XP 320	~6.5 l
6	Wrist type 1: 3HAC032140-001	Kyodo Yushi TMO 150	~0.3 l
6	Wrist type 2: 3HAC032140-001	Kyodo Yushi TMO 150	~0.4 l

The information in the table updated: December 4 2014.

IRB 6640ID -200/2.55, 170/2.75, M2004

Axis	WebConfig number	Type	Amount
1	3HAC032140-001	Kyodo Yushi TMO 150	~6 l

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Axis	WebConfig number	Type	Amount
2	3HAC032140-001	Kyodo Yushi TMO 150	~6 l
3	3HAC032140-001	Kyodo Yushi TMO 150	~2.5 l
4	11712016-604	Mobilgear 600 XP 320	~8 l
5	11712016-604	Mobilgear 600 XP 320	~5 l
6	11712016-604	Mobilgear 600 XP 320	~6 l

The information in the table updated: December 4 2014.

### 3 Articulated robots - six axes

#### 3.16 IRB 6650S

#### 3.16 IRB 6650S



#### CAUTION

When filling the gearbox with oil, do not mix different types of oil as this may cause severe damage to the gearbox! Always use the type of oil that is specified in the table!

If oils from different oil groups are mixed, then the gearbox must be thoroughly rinsed! See [Groups of oil on page 12](#) and [Rinsing the gearbox on page 13](#).



#### CAUTION

The stated amount of lubrication is only indicative. Always judge the correct amount of filling by inspecting the oil level according to the procedure in the product manual. By doing this, the following risks are avoided:

- Too much lubrication may cause leakage due to over pressure in the gearbox.
- Too little lubrication may cause reduced lifetime of the gearbox due to lack of lubrication.



#### Note

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

#### Type of oil - currently used

This table show the lubrication oil that is currently used in the gearboxes of the robot, depending on version.

IRB 6650S -90/3.9, -125/3.5, -200/3.0, M2004

Axis	WebConfig number	Type	Amount
1	3HAC032140-001	Kyodo Yushi TMO 150	~7.5 l
2	3HAC032140-001	Kyodo Yushi TMO 150	~6 l
3	3HAC032140-001	Kyodo Yushi TMO 150	~2.5 l
4	11712016-604	Mobilgear 600 XP 320	~8 l
5	11712016-604	Mobilgear 600 XP 320	~6.5 l
6	3HAC032140-001	Kyodo Yushi TMO 150	~0.4 l

The information in the table updated: December 4 2014.

#### Type of oil - historically used

The type of oil that is used in the gearboxes has been changed over time. Use the serial number of the robot to verify the type of oil.

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The amount of oil that is used in the gearboxes has not been changed, see [Type of oil - currently used on page 48](#).

#### Robot serial numbers, generation 1

Before changing the oil, make sure that the original oil has **not** been changed after delivery.

Robot	Serial number range	Type of oil	
		Axis 1, 2, 3, 6	Axis 4, 5
IRB 6650S M2000	66-20000 - 29999	Optimol Optigear RMO 150	Mobilgear 600 XP 320
IRB 6650S M2000A	66-30000 - 33999	Optimol Optigear RMO 150	Mobilgear 600 XP 320
IRB 6650S M2004	66-50000 - 50999	Optimol Optigear RMO 150	Mobilgear 600 XP 320



#### Note

Optimol Optigear RMO 150 as spare part has been replaced by Castrol Optigear RO 150.

Castrol Optigear RO 150 and Optimol Optigear RMO 150 are mixable but none are mixable with Shell Tivela S 150 (new product name Shell Omala S4 WE 150) or Kyodo Yushi TMO 150.

#### Robot serial numbers, generation 2

IRB 6650S robots delivered from ABB Robotics before August 15 2008 has Shell Tivela S 150 (new product name Shell Omala S4 WE 150) filled in the gearboxes for axes 1, 2, 3, and 6.

During the period August 15 to October 2 2008, Shell Tivela S 150 (new product name Shell Omala S4 WE 150) and Kyodo Yushi TMO 150 were used in parallel. Contact ABB Robotics after sales to verify which oil is used in your robot.

A field service information SI10176, dated September 10 2008, recommended that an oil change shall be done in the gearboxes for axes 2, 3, and 6 from Shell Tivela S 150 (new product name Shell Omala S4 WE 150) to Kyodo Yushi TMO 150. A new maintenance schedule was introduced by SI10176.

Robot	Serial number range	Type of oil		
		Axis 1	Axis 2, 3, 6	Axis 4, 5
IRB 6650S M2000	66-40000 -	Shell Tivela S 150 (new product name Shell Omala S4 WE 150)	(Shell Tivela S 150) (new product name Shell Omala S4 WE 150) Kyodo Yushi TMO 150	Mobilgear 600 XP320
IRB 6650S M2000A	66-34000 -	Shell Tivela S 150 (new product name Shell Omala S4 WE 150)	(Shell Tivela S 150) (new product name Shell Omala S4 WE 150) Kyodo Yushi TMO 150	Mobilgear 600 XP320

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### 3 Articulated robots - six axes

#### 3.16 IRB 6650S

Continued

Robot	Serial number range	Type of oil		
		Axis 1	Axis 2, 3, 6	Axis 4, 5
IRB 6650S M2004	66-51000 -	Shell Tivela S 150 (new product name Shell Omala S4 WE 150)	(Shell Tivela S 150) (new product name Shell Omala S4 WE 150) Kyodo Yushi TMO 150	Mobilgear 600 XP320



#### Note

Shell Tivela S 150 (new product name Shell Omala S4 WE 150) has been replaced by Kyodo Yushi TMO 150.

Kyodo Yushi TMO 150 and Shell Tivela S 150 (new product name Shell Omala S4 WE 150) are mixable but none are mixable with Castrol Optigear RO 150 and Optimol Optigear RMO 150.

#### Robot serial numbers, generation 3

IRB 6650S robots delivered from ABB Robotics after October 3 2008 has Kyodo Yushi TMO 150 filled in the gearboxes for axes 1, 2, 3, and 6.

During the period August 15 to October 2 2008, Shell Tivela S 150 (new product name Shell Omala S4 WE 150) and Kyodo Yushi TMO 150 were used in parallel. Contact ABB Robotics after sales to verify which oil is used in your robot.

Robot	Serial number range	Type of oil	
		Axis 1, 2, 3, 6	Axis 4, 5
IRB 6650S M2000	66-40000 -	Kyodo Yushi TMO 150	Mobilgear 600 XP 320
IRB 6650S M2000A	66-34000 -	Kyodo Yushi TMO 150	Mobilgear 600 XP 320
IRB 6650S M2004	66-51000 -	Kyodo Yushi TMO 150	Mobilgear 600 XP 320

#### Mixed types of oil may cause severe damage!

When refilling or replacing the oil in a gearbox it is important to first verify which type of oil is recommended for use in the gearbox. As Kyodo Yushi TMO 150 (as well as Shell Tivela S 150, new product name Shell Omala S4 WE 150) is not compatible with mineral oil, contamination with other types of oil in the gearboxes is not accepted. Equipment used in handling Kyodo Yushi TMO 150 (as well as Shell Tivela S 150, new product name Shell Omala S4 WE 150) must be carefully cleaned before use!

If the type of oil needs to be changed, the gearbox must be thoroughly rinsed. See [Rinsing the gearbox on page 13](#).

## 3.17 IRB 6660

**CAUTION**

When filling the gearbox with oil, do not mix different types of oil as this may cause severe damage to the gearbox! Always use the type of oil that is specified in the table!

If oils from different oil groups are mixed, then the gearbox must be thoroughly rinsed! See [Groups of oil on page 12](#) and [Rinsing the gearbox on page 13](#).

**CAUTION**

The stated amount of lubrication is only indicative. Always judge the correct amount of filling by inspecting the oil level according to the procedure in the product manual. By doing this, the following risks are avoided:

- Too much lubrication may cause leakage due to over pressure in the gearbox.
- Too little lubrication may cause reduced lifetime of the gearbox due to lack of lubrication.

**Note**

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

**Type of oil - currently used**

This table show the lubrication oil that is currently used in the gearboxes of the robot, depending on version.

IRB 6660 -130/3.1, -205/1.90, M2004

Axis	WebConfig number	Type	Amount
1	3HAC032140-001	Kyodo Yushi TMO 150	~8 l
2	3HAC032140-001	Kyodo Yushi TMO 150	~5 l
3	3HAC032140-001	Kyodo Yushi TMO 150	~5 l
4	11712016-604	Mobilgear 600 XP 320	~8 l
5	11712016-604	Mobilgear 600 XP 320	~6.5 l
6	3HAC032140-001	Kyodo Yushi TMO 150	~0.4 l

The information in the table updated: December 4 2014.

### 3 Articulated robots - six axes

#### 3.18 IRB 6700

#### 3.18 IRB 6700



#### CAUTION

When filling the gearbox with oil, do not mix different types of oil as this may cause severe damage to the gearbox! Always use the type of oil that is specified in the table!

If oils from different oil groups are mixed, then the gearbox must be thoroughly rinsed! See [Groups of oil on page 12](#) and [Rinsing the gearbox on page 13](#).



#### CAUTION

The stated amount of lubrication is only indicative. Always judge the correct amount of filling by inspecting the oil level according to the procedure in the product manual. By doing this, the following risks are avoided:

- Too much lubrication may cause leakage due to over pressure in the gearbox.
- Too little lubrication may cause reduced lifetime of the gearbox due to lack of lubrication.



#### Note

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

#### Type of oil - currently used

This table show the lubrication oil that is currently used in the gearboxes of the robot, depending on version.

IRB 6700 -235/2.65, -205/2.80, -175/3.05, -150/3.2

Axis	WebConfig number	Type	Amount for new gearbox
1	3HAC032140-001	Kyodo Yushi TMO 150	~3.5 l
2	3HAC032140-001	Kyodo Yushi TMO 150	~3.5 l
3	3HAC032140-001	Kyodo Yushi TMO 150	~2.5 l
4	11712016-604	Mobilgear 600 XP 320	~7 l
5	11712016-604	Mobilgear 600 XP 320	~3.5 l
6	3HAC032140-001	Kyodo Yushi TMO 150	~0.5 l

The information in the table updated: December 4 2014.

IRB 6700 -200/2.60, -155/2.85

Axis	WebConfig number	Type	Amount for new gearbox
1	3HAC032140-001	Kyodo Yushi TMO 150	~3.5 l
2	3HAC032140-001	Kyodo Yushi TMO 150	~3.5 l
3	3HAC032140-001	Kyodo Yushi TMO 150	~2.5 l

*Continues on next page*

Axis	WebConfig number	Type	Amount for new gearbox
4	11712016-604	Mobilgear 600 XP 320	~6 l
5	11712016-604	Mobilgear 600 XP 320	~2.5 l
6	3HAC032140-001	Kyodo Yushi TMO 150	~0.4 l

The information in the table updated: December 4 2014.

IRB 6700 -300/2.70, -245/3.00

Axis	WebConfig number	Type	Amount for new gearbox
1	3HAC032140-001	Kyodo Yushi TMO 150	~4.9 l
2	3HAC032140-001	Kyodo Yushi TMO 150	~4 l
3	3HAC032140-001	Kyodo Yushi TMO 150	~3.5 l
4	11712016-604	Mobilgear 600 XP 320	~12.5 l
5	11712016-604	Mobilgear 600 XP 320	~4.5 l
6	3HAC032140-001	Kyodo Yushi TMO 150	~0.7 l

The information in the table updated: December 4 2014.

IRB 6700Inv -300/2.60, -245/2.90

Axis	WebConfig number	Type	Amount for new gearbox
1	3HAC032140-001	Kyodo Yushi TMO 150	~4.9 l
2	3HAC032140-001	Kyodo Yushi TMO 150	~4 l
3	3HAC032140-001	Kyodo Yushi TMO 150	~3.5 l
4	11712016-604	Mobilgear 600 XP 320	~12.5 l
5	11712016-604	Mobilgear 600 XP 320	~4.5 l
6	3HAC032140-001	Kyodo Yushi TMO 150	~0.7 l

The information in the table updated: June 28 2017.

### 3 Articulated robots - six axes

#### 3.19 IRB 7600

#### 3.19 IRB 7600



#### CAUTION

When filling the gearbox with oil, do not mix different types of oil as this may cause severe damage to the gearbox! Always use the type of oil that is specified in the table!

If oils from different oil groups are mixed, then the gearbox must be thoroughly rinsed! See [Groups of oil on page 12](#) and [Rinsing the gearbox on page 13](#).



#### CAUTION

The stated amount of lubrication is only indicative. Always judge the correct amount of filling by inspecting the oil level according to the procedure in the product manual. By doing this, the following risks are avoided:

- Too much lubrication may cause leakage due to over pressure in the gearbox.
- Too little lubrication may cause reduced lifetime of the gearbox due to lack of lubrication.



#### Note

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

#### Type of oil - currently used

This table show the lubrication oil that is currently used in the gearboxes of the robot, depending on version.

IRB 7600 -500/2.55, -400/2.55, -340/2.8, -325/3.1, -150/3.5, M2004

Axis	WebConfig number	Type	Amount
1	3HAC032140-001	Kyodo Yushi TMO 150	~7.5 l
2	3HAC032140-001	Kyodo Yushi TMO 150	~5 l
3	3HAC032140-001	Kyodo Yushi TMO 150	~4 l
4 Primary gearbox	3HAC032140-001	Kyodo Yushi TMO 150	~1 l
4 Secondary gearbox	3HAC032140-001	Kyodo Yushi TMO 150	~4 l
5 Primary gearbox	3HAC032140-001	Kyodo Yushi TMO 150	~0.7 l
5 Secondary gearbox	3HAC032140-001	Kyodo Yushi TMO 150	~4 l
6	3HAC032140-001	Kyodo Yushi TMO 150	~0.7 l

The information in the table updated: December 4 2014.

*Continues on next page*

#### Type of oil - historically used

The type of oil that is used in the gearboxes has been changed over time. Use the serial number of the robot to verify the type of oil.

The amount of oil that is used in the gearboxes has not been changed, see [Type of oil - currently used on page 54](#).

#### Robot serial numbers, generation 1

Before changing the oil, make sure that the original oil has not been changed after delivery.

Robot	Serial number range	Type of oil		
		Axis 1, 2, 3	Axis 4 primary, 5 primary, 6	Axis 4 secondary, 5 secondary
IRB 7600 M2000	76-20000 - 26999	Optimol Optigear RMO 150	Shell Tivela S 150 (new product name Shell Omala S4 WE 150)	Mobilgear 600 XP 320
IRB 7600 M2000A	76-30000 - 33999	Optimol Optigear RMO 150	Shell Tivela S 150 (new product name Shell Omala S4 WE 150)	Mobilgear 600 XP 320
IRB 7600 M2004	76-50000 - 50999	Optimol Optigear RMO 150	Shell Tivela S 150 (new product name Shell Omala S4 WE 150)	Mobilgear 600 XP 320



#### Note

Optimol Optigear RMO 150 as spare part has been replaced by Castrol Optigear RO 150.

Castrol Optigear RO 150 and Optimol Optigear RMO 150 are mixable but none are mixable with Shell Tivela S 150 (new product name Shell Omala S4 WE 150, new product name Shell Omala S4 WE 150) or Kyodo Yushi TMO 150.

#### Robot serial numbers, generation 2

IRB 7600 robots delivered from ABB Robotics before August 15 2008 has Shell Tivela S 150 (new product name Shell Omala S4 WE 150) filled in the gearboxes for all axes.

During the period August 15 to October 2 2008, Shell Tivela S 150 (new product name Shell Omala S4 WE 150) and Kyodo Yushi TMO 150 were used in parallel. Contact ABB Robotics after sales to verify which oil is used in your robot.

A field service information SI10177, dated September 10 2008, recommended that an oil change shall be done in the gearboxes for axes 2, 3, 4 primary, 5 primary,

*Continues on next page*

### 3 Articulated robots - six axes

#### 3.19 IRB 7600

Continued

and 6 from Shell Tivela S 150 (new product name Shell Omala S4 WE 150) to Kyodo Yushi TMO 150. A new maintenance schedule was introduced by SI10177.

Robot	Serial number range	Type of oil	
		Axis 1, 4 secondary, 5 secondary	Axis 2, 3, 4 primary, 5 primary, 6
IRB 7600 M2000	76-27000 -	Shell Tivela S 150 (new product name Shell Omala S4 WE 150)	(Shell Tivela S 150, (new product name Shell Omala S4 WE 150 ) Kyodo Yushi TMO 150
IRB 7600 M2000A	76-34000 -	Shell Tivela S 150 (new product name Shell Omala S4 WE 150)	(Shell Tivela S 150, new product name Shell Omala S4 WE 150) Kyodo Yushi TMO 150
IRB 7600 M2004	76-51000 -	Shell Tivela S 150 (new product name Shell Omala S4 WE 150)	(Shell Tivela S 150, new product name Shell Omala S4 WE 150) Kyodo Yushi TMO 150



#### Note

Shell Tivela S 150 (new product name Shell Omala S4 WE 150) has been replaced by Kyodo Yushi TMO 150.

Kyodo Yushi TMO 150 and Shell Tivela S 150 (new product name Shell Omala S4 WE 150) are mixable but none are mixable with Castrol Optigear RO 150 and Optimol Optigear RMO 150.

#### Robot serial numbers, generation 3

IRB 7600 robots delivered from ABB Robotics after October 3 2008 has Kyodo Yushi TMO 150 filled in the gearboxes for all axes.

During the period August 15 to October 2 2008, Shell Tivela S 150 (new product name Shell Omala S4 WE 150) and Kyodo Yushi TMO 150 were used in parallel. Contact ABB Robotics after sales to verify which oil is used in your robot.

Robot	Serial number range	Type of oil, all axes
IRB 7600 M2000	76-27000 -	Kyodo Yushi TMO 150
IRB 7600 M2000A	76-34000 -	Kyodo Yushi TMO 150
IRB 7600 M2004	76-51000 -	Kyodo Yushi TMO 150

#### Mixed types of oil may cause severe damage!

When refilling or replacing the oil in a gearbox it is important to first verify which type of oil is recommended for use in the gearbox. As Kyodo Yushi TMO 150 (as well as Shell Tivela S 150, new product name Shell Omala S4 WE 150) is not compatible with mineral oil, contamination with other types of oil in the gearboxes is not accepted. Equipment used in handling Kyodo Yushi TMO 150 (as well as Shell Tivela S 150, new product name Shell Omala S4 WE 150) must be carefully cleaned before use!

If the type of oil needs to be changed, the gearbox must be thoroughly rinsed. See [Rinsing the gearbox on page 13](#).



## 3.20 IRB 8700

**CAUTION**

When filling the gearbox with oil, do not mix different types of oil as this may cause severe damage to the gearbox! Always use the type of oil that is specified in the table!

If oils from different oil groups are mixed, then the gearbox must be thoroughly rinsed! See [Groups of oil on page 12](#) and [Rinsing the gearbox on page 13](#).

**CAUTION**

The stated amount of lubrication is only indicative. Always judge the correct amount of filling by inspecting the oil level according to the procedure in the product manual. By doing this, the following risks are avoided:

- Too much lubrication may cause leakage due to over pressure in the gearbox.
- Too little lubrication may cause reduced lifetime of the gearbox due to lack of lubrication.

**Note**

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

**Type of oil - currently used**

The table show the lubrication oil currently used in the gearboxes of the robot.

**Note**

The amount shown in the table, is the amount for a new gearbox. When refilling a gearbox, do not fill more oil than up to the level described in the section *Inspection of oil levels* in the product manual. An overfilled gearbox, risks future leakage.

## IRB 8700

Axis	WebConfig number	Type	Amount for new gearbox
1	3HAC032140-001	Kyodo Yushi TMO 150	6,000 ml
2	3HAC032140-001	Kyodo Yushi TMO 150	5,500 ml
3	3HAC032140-001	Kyodo Yushi TMO 150	5,500 ml
4 Primary gearbox	3HAC032140-001	Kyodo Yushi TMO 150	1,650 ml
4 Secondary gear- box	11712016-604	Mobilgear 600 XP 320	9,400 ml
5	11712016-604	Mobilgear 600 XP 320	16,500 ml

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### 3 Articulated robots - six axes

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3.20 IRB 8700

*Continued*

Axis	WebConfig number	Type	Amount for new gearbox
6	3HAC032140-001	Kyodo Yushi TMO 150	1,550 ml

The information in the table updated: June 4 2015.

## 4 Collaborative robots

### 4.1 IRB 14000



#### Note

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

#### Type of oil - currently used

The table show the lubrication grease currently used in the wave generators in the robot.

#### IRB 14000

Axis	WebConfig number	Type	Amount
1	3HAC038379-001	Harmonic drive Flexolub-1A, Article 200241	1.2 ml
2	3HAC038379-001	Harmonic drive Flexolub-1A, Article 200241	1.2 ml
3	3HAC038379-001	Harmonic drive Flexolub-1A, Article 200241	0.8 ml
4	3HAC038379-001	Harmonic drive Flexolub-1A, Article 200241	0.15 ml
5	3HAC038379-001	Harmonic drive Flexolub-1A, Article 200241	0.15 ml
6	3HAC038379-001	Harmonic drive Flexolub-1A, Article 200241	0.15 ml
7	3HAC038379-001	Harmonic drive Flexolub-1A, Article 200241	0.8 ml

The information in the table updated: January 14 2016.

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## 5 Parallel arm robots

### 5.1 IRB 360



#### Note

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

#### Type of oil - currently used

This table shows the lubrication oil that is currently used in the gearboxes of the robot.

IRB 360 -1/1130, -3/1130, -1/800, -1/1600, -6/1600, 8/1130, M2004

Axis	WebConfig number	Type	Amount
Axis 1	3HAC6450-2	Mobil SHC Cibus 220	820 ml
Axis 2	3HAC6450-2	Mobil SHC Cibus 220	820 ml
Axis 3	3HAC6450-2	Mobil SHC Cibus 220	820 ml
Axis 4	3HAC6450-2	Mobil SHC Cibus 220	80 ml

The information in the table updated: November 15 2016

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## 6 SCARA robots

### 6.1 IRB 910SC



#### Note

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

#### Type of oil - currently used

This table shows the lubrication oil that is currently used in the gearboxes of the robot.

IRB 910SC all variants, M2004

Axis	WebConfig number	Type	Amount
1	3HAC031695-001	Harmonic Grease 4b No.2	42 gram
2	3HAC031695-001	Harmonic Grease 4b No.2	42 gram
3	N/A	N/A	N/A
4	N/A	N/A	N/A

The information in the table updated: December 31 2015

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## 7 Other manipulators

### 7.1 IRBT 2005



#### Note

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

#### Type of oil - currently used

Supplier	WebConfig number	Type	Amount
Mobil Oil AB	11712016-604	Mobilgear 600 XP 320	3,900 ml



#### Note

The oil in the gearbox does not need to be changed during the lifetime of the gearbox.

The information is updated: September 2015.

## 7 Other manipulators

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### 7.2 IRBT 4004/6004/7004

### 7.2 IRBT 4004/6004/7004



#### Note

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

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#### Type of oil - currently used

Supplier	WebConfig number	Type	Amount
Mobil Oil AB	11712016-604	Mobilgear 600 XP 320	3,900 ml



#### Note

The oil in the gearbox does not need to be changed during the lifetime of the gearbox.

The information is updated: June 11 2013.

## 7.3 IRBT 4003/6003/7003

**Note**

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

**Type of oil - currently used**

Supplier	WebConfig number	Type	Amount
Mobil Oil AB	11712016-604	Mobilgear 600 XP 320	3,900 ml
Shell		Omala Oil 220	
Statoil		Loadway EP 220	

The information in the table updated: June 11 2013.

## 7 Other manipulators

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### 7.4 IRBP

### 7.4 IRBP



#### Note

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

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#### Type of oil - currently used

The oil in the gearbox does not need to be changed during the lifetime of the gearbox.

Gearbox	WebConfig number	Type	Amount
MTD 250	11712016-604	Mobilgear 600 XP 320	3,900 ml
MTD 500	11712016-604	Mobilgear 600 XP 320	11,500 ml
MTD 750	11712016-604	Mobilgear 600 XP 320	11,500 ml
MTD 2000	11712016-604	Mobilgear 600 XP 320	16,500 ml
MTD 5000	11712016-604	Mobilgear 600 XP 320	58,000 ml
MID 1.1	11712016-604	Mobilgear 600 XP 320	13,500 ml

The information in the table updated: January 15 2013.

#### 7.5 Motor units and gear units (M2004)



##### Note

For spare part number and in which amount the lubrication can be ordered, see [Amount of lubrication when ordered as spare part on page 14](#).

#### Type of oil - currently used

The gearboxes of the motor units and gear units are filled with oil from Mobil Oil AB.

Vendor material number MOBILGEAR 600 XP 320.

ABB Robotics WebConfig number for the oil is 11712016-604.



##### Note

The oil in the gearbox does not need to be changed during the lifetime of the gearbox.

The information in the table updated: July 4 2012.





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