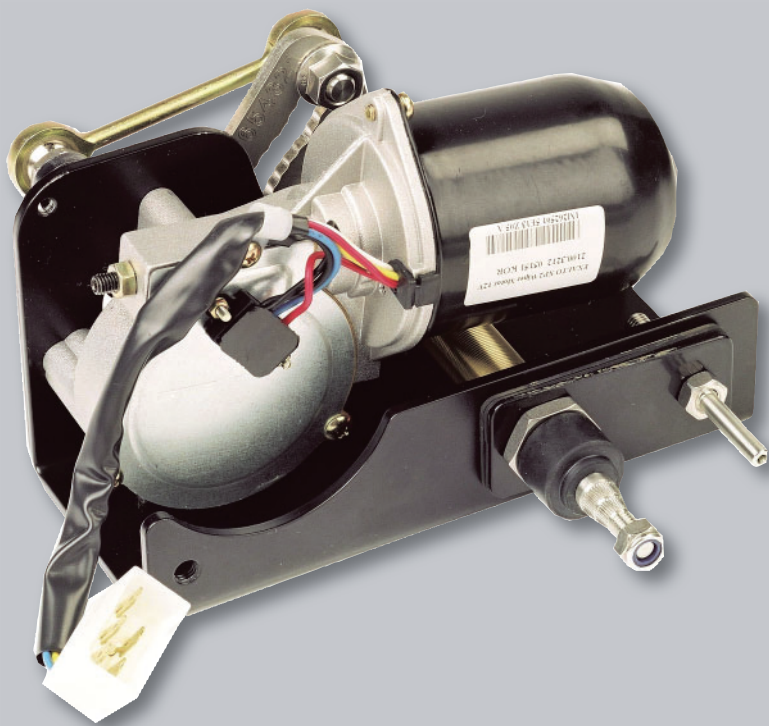


Exalt windshield wiper

Type: 230XP



Cat. nos. 211230.25/50 (12Volt) and 212430/50 (24 Volt) - vs03

Safety

Exalto windshield wipers are easy to install yet a fair amount of technical knowledge (mechanical and electrical) is required of the installer. Please consult the manual or contact your vendor in case of doubt during installation or malfunctioning.

Safety symbols



An exclamation mark in front of the text indicates you, that injury or damage may occur if a procedure is executed incorrectly.

Dangers

The installation and use of Exalto wipers will not inflict any personal dangers or damage, provided that installation is done according to the procedures specified in the manual.

- Never remove covers or other safety provisions, unless maintenance is being performed and all safety requirements are obeyed.
- The installer must provide all necessary covers.
- Always disconnect the electrical circuit when performing maintenance. Prevent the installation from being started (accidentally) by others.



Safety provisions

The safety provisions will protect the user against contact with moving, electrical or hot parts. Some of them have to be provided by the installer. There are several safety provisions:



- Cover or panel (obligatory): covers moving parts and electrical connections. The installer **MUST** provide a self-made cover or place the wiper behind a panel.
- Make sure the wiper has enough ventilation when placing it behind a panel or cover.
- Place a fuse (see specifications) in the main cable.

Safety requirements

Before the Exalto wiper is installed, we strongly recommend the following:

- Read the entire manual before installation.
- Make sure your working environment as well as the wiper parts are clean.
- Check to be sure no parts are missing or damaged.
- Use only high quality tools and have them within reach when installing.
- Handle the parts with care.
- Never install or maintain the wiper with the electrical voltage applied, unless this is specifically mentioned in the manual.
- Clear your tools after installation.

Use of the manual

Read the entire manual before installation. In this manual you will find the following expressions and symbols:

Hint!

Gives you advice on how to perform a task more easily.



Attention!

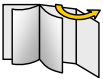
Alerts you to possible problems and safety warnings.

Careful!

Warns if the product can be damaged when working carelessly.

Warning!

You could hurt yourself or damage the product severely.



At the back of the manual

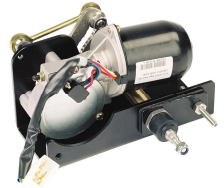
Look at the back of the manual for a drawing.

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1 Introduction

With this user manual we want to guide you in the installation and use of the Exalto windshield wiper. Follow all instructions and install all safety provisions.



1.1 Introduction

The Exalto windshield wipers are especially designed to keep working even with the most extreme weather conditions at sea. All external parts are made of corrosion resistant materials. The housing of the self-lubricating bearings is made of bronze. All arms and blades have a black, weather-resistant coating, to prevent reflection.

Wiper type 230 XP BS is designed to be mounted in the bulkhead. The wiper arc is adjustable from 40° to 90°. By standard the 230 XP can be supplied for bulkhead thickness of 25 and 50 mm. The pantograph arms are adjustable in length, to set the wipe area accurately. The motor of the 230 XP has insulated earth return.

1.2 Environmental factors

In the wiper, materials are used that are harmful for the environment (e.g. copper). Upon disposal of the wiper, parts can be re-used or recycled. No harmful materials are released when using or disassembling the wiper.

1.3 Modified use and guarantee conditions

All modifications or defects in the product are subject to the Orgalime General Conditions of Sale. Contact your vendor if you want to use Exalto wipers for a non-maritime environment or for another application, or in case of any doubt.

2 Technical data

2.1 General

- Product Exalto windshield wiper
- Types 230 XP – 12 Volt and 24 Volt
- Cat. No. 12V 211230.25/50
- Cat. No. 24V 212430.25/50

2.2 Electrical data 12 Volt

- Torque (max.) 30 Nm
- Voltage 12 Volt
- Current 3 A
- Power consumption (max.) 36 W
- Number of revolutions Low 38 rpm, high 59 rpm
- Recommended cable 5 wires, 1½ (16 g) or 2½ mm² (14 g)
..... up to 10 m long
- Recommended fuse 6 A slow blow
- Grounding insulated earth return

2.3 Electrical data 24 Volt

- Torque (max.) 30 Nm
- Voltage 24 Volt
- Current 1.5 A
- Power consumption (max.) 36 W
- Number of revolutions Low 35 rpm, high 56 rpm
- Recommended cable 5 wires, 1½ (16 g) or 2½ mm² (14 g)
..... up to 10 m long
- Recommended fuse 4 A slow blow
- Grounding insulated earth return

2.4 Mechanical data

- Dimensions l x w x h = 204 x 125 x 137 mm
- Bearing diameters Drive shaft Ø 20 / support shaft Ø 8 mm
- Mounting In bulkhead (25, or 55 mm)
- Bearing Bronze housing, self-lubricating
- Wiperarms Model PU up to 750 mm
- Wiperblades Up to 800 mm
- Wipe arc Slotted lever 40°-90°, adjustable
- Weight approx. 2.3 kg

3 Installation

Read the chapter on safety. Check before installation if all parts are present and undamaged. In case of errors, contact your vendor.

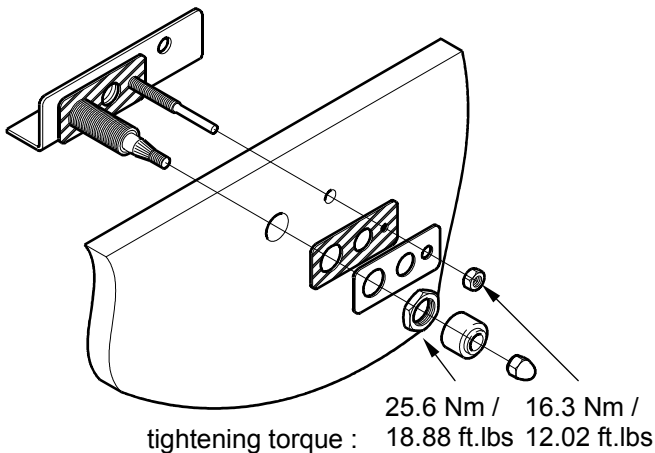
3.1 Preparation

The complete wiper, with packaging, can be handled and transported by hand. Leave the wiper in the packing, until you're ready to install it; this to reduce the risk of damage. Make sure all parts, tools and other means are ready.

3.2 Installation of mechanical parts

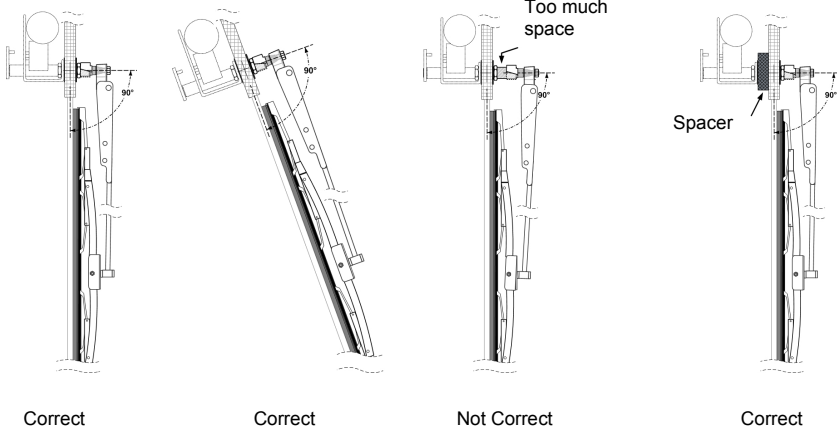
- If your wiper is supplied with the wipe arc lever uninstalled, please follow steps 5.3 and 5.4 (pages 11-12) to set the wiping arc prior to installation.
- Determine the position where the wiper is to be installed.

Attention!



When installing the wiper, reserve space for a housing or cover.

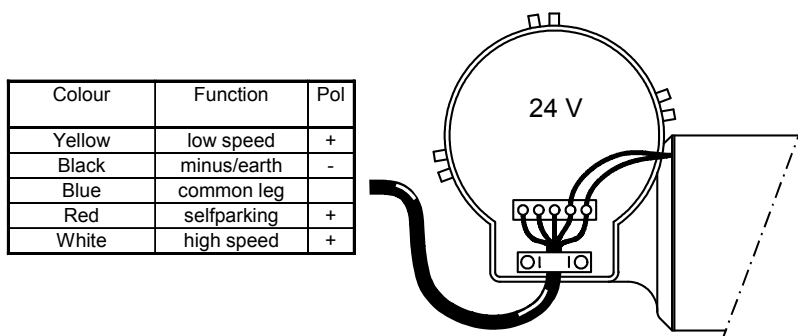
- Place the windshield wiper in the pre-drilled holes of the bulkhead. (see figure)
- A nitrile plate must be placed at both sides of the bulkhead.
- Do not fit the wiper arm before finishing the electrical connections.
- To ensure that the arm has the right springpressure, install the wiper arm in such a way that the shaft makes a 90° angle with the window and fuse a spacer from the inside when there is too much space between the bulkhead and the rubber dustcap.



3.3 Electrical installation

- Install a wiper switch in the dashboard.

Wiring diagram 230XP 12/24 Volt



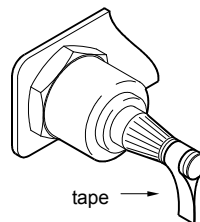
- Connect the wiper to the ship's electrical installation; see the diagram above. Use a cable with 5 wires with diameter of at least $1\frac{1}{2}$ mm² (16 g) up to a maximum length of 10 m. Use larger diameters when using longer cables.
- Fit a slow blow fuse of 10 A (12 Volt) or 6A (24 Volt) in the main cable.
- Connect the switch to the wiper (refer to that specific manual for installation).

3.4 Final installation

- Switch on the power and test the motor briefly. Wait until the motor stops after turning off the switch. The motor will be in park position. The standard park position is shown in the figure under point 9.

Hint!

If you have doubts regarding the park position, make a vane with tape to simulate the position of the arms.

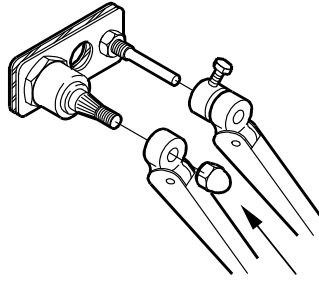


Attention!

The motor is suitable for wiper arms model PU up to 750 mm with wiper blades up to 800 mm.

- Place the wiper arm with the blade on the shafts. Fasten the nuts loosely onto the shafts.

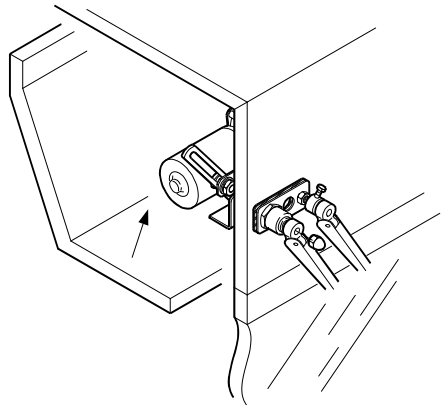
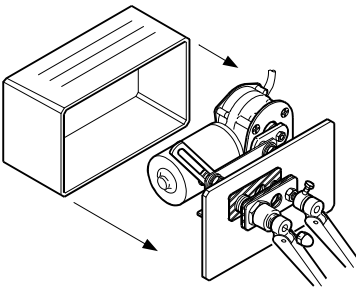
park position



16.3 Nm /
tightening torque : 12.02 ft.lbs

- Switch on the power and test the motor briefly again to check the wiped area.
- If the wipe arc is correct, adjust the position and the length of the arm if necessary. Tighten the nuts properly now.
- ! • To complete the installation, the wiper must be enclosed by means of a panel or cover. Make sure to provide the wiper motor with sufficient ventilation

Place a protection cover or panel.
Provide sufficient ventilation.



4 Operation and use

4.1 *Preparation for first use*

If the wiper has been installed and been adjusted, the system can be prepared for first use. We recommend a thorough inspection of the system to ensure proper operation.

Check:

- ... if there are no leaks where the shafts go through the bulkhead;
- ... if the wipe arc cleans the entire window;
- ... if the park position is correct.

If the wipe arc or the park position is wrong, adjust them again. Follow the procedure in section 5.3

4.2 *Use*

All Exalto windshield wipers are provided with the following functions:

- low speed;
- high speed;
- self parking.

Do not use the wiper on a dry window; excessive wear of the blades and the motor can occur in this case. Clean the wiper frequently with fresh water

Because of the big variety of wiper switches, we refer to the user manual of the installed switch to learn about the functions of that specific switch.

5 Maintenance

5.1 General maintenance

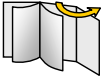
To keep the Exalto wiper in good condition, you are advised to:

- clean wiper, arms and blades with fresh water after every journey in salt water (to prevent salt from clogging moving parts);
- do not use the wiper on a dry window.

5.2 Servicing

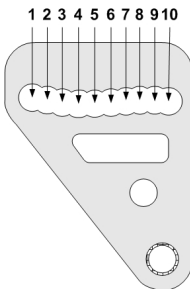
As long as the wiper system functions normally and is kept in good shape, servicing the motor is not necessary. Check yearly (monthly when used intensively) if the wiper blades are worn. Replace blades when worn or when the blades leave many stripes across the glass. In case of failure or adjustments, have servicing done solely by qualified mechanics. In chapter 6, "Troubleshooting", a listing is given of possible problems and their solutions.

5.3 Changing the wipe arc and park position

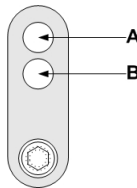


- If the wiped area is too small or too large, the wipe arc and park position can be changed. Always disconnect the power supply before opening the housing.
- adjust the wiper arm to the correct length, if necessary

Drive shaft lever with 10 settings



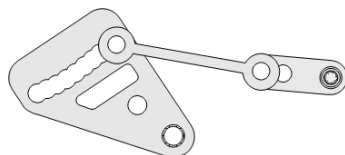
Motor lever with 2 settings



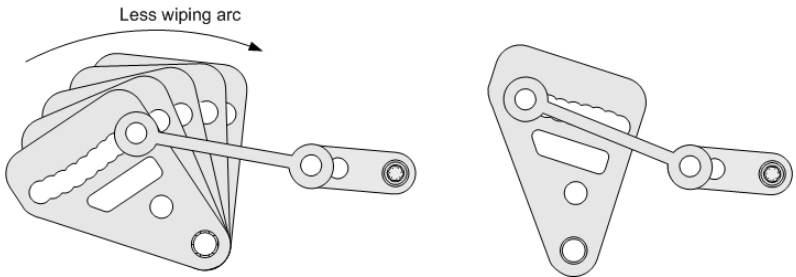
Settings:

A + 10 = 90°	B + 10 = 60°
A + 9 = 88°	B + 9 = 58°
A + 8 = 86°	B + 8 = 57°
A + 7 = 84°	B + 7 = 56°
A + 6 = 82°	B + 6 = 55°
A + 5 = 80°	B + 5 = 53°
A + 4 = 76°	B + 4 = 51°
A + 3 = 72°	B + 3 = 48°
A + 2 = 68°	B + 2 = 46°
A + 1 = 64°	B + 1 = 44°

Example of the setting for 90° wiping arc

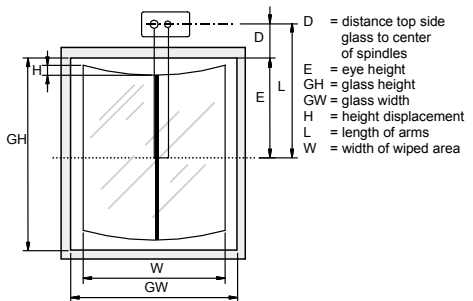


Loosen the nut of the special pin + slide the pin in the desired location of the slot of the drive shaft lever, making use of the table with the settings. Tighten the nut. Testrun the wiper to check the wiped width. Should another setting be required, slide the pin towards the next location, tighten the nut and testrun again. If it's OK, tighten the nut properly.

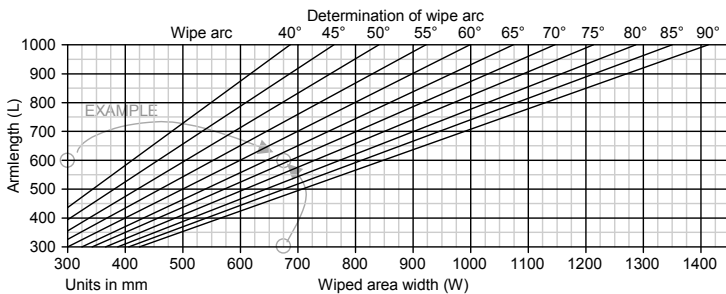


5.4 Rough determination of wipe arc and wiper blade

With this method the wipe arc and the wiper blade length can roughly be determined. Please contact your vendor to calculate your configuration more accurately



- Determine length of panto-graph arm (L): $L = E + D$
- get the maximum wiped area width (W): $W = \pm 0.9 * GW$
- find the intersection of L en W in the diagram below;



- the wipe arc-line closest to the intersection, shows the wipe arc;

- find in the table below the vertical displacement of the blade (H);

Determining the vertical displacement of the wiper blade

Armlength (L)	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	
Wipe arc	40°	19	21	25	26	30	34	37	40	43	45	48	51	54	57	60
	45°	23	27	30	35	38	42	46	50	53	57	61	65	68	72	76
	50°	26	33	36	43	47	52	56	61	66	70	75	80	84	89	94
	55°	34	40	45	51	57	62	66	74	79	85	90	96	102	107	113
	60°	40	47	54	60	67	74	80	87	94	100	107	114	121	127	134
	65°	47	55	63	71	79	86	94	102	110	117	125	133	141	149	157
	70°	55	63	73	81	90	100	109	118	127	136	145	154	163	172	181
	75°	62	73	83	93	104	114	124	135	145	155	165	176	186	196	207
	80°	70	82	94	105	117	129	140	152	164	175	187	199	211	222	234
	85°	79	92	105	119	132	145	158	171	184	197	210	223	236	250	263
90°	86	103	117	132	146	161	176	190	205	220	234	249	264	278	293	

Units in mm Vertical displacement of the blade (H)

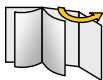
- Now the wiper blade can be calculated:

Length of wiper blade = $0.9 * 2 * (E - H)$

5.5 Disassembly and assembly



Prevent injuries when disassembling: disconnect the wiper from the power supply. Keep all necessary tools within reach and remember the chapter on safety. Provide well protected packaging, if you're going to stock or transport the wiper assembly.



5.5.1 Removing the wiper assembly from the bulkhead

1. Disconnect all the electric connections of the wiper.
2. Remove the wiper arms.
3. Remove the nuts and plates on the outside.
4. Remove the wiper out of the holes in the bulkhead.
5. If you want to replace the wiper, follow chapter 3.

5.5.2 Dissembling the wipe arc shaft and motor lever

1. Disconnect all the electric connections of the wiper.
2. Remove the wiper from the bulkhead
3. Unscrew the nut on the motor shaft and remove the motor lever.
4. For adjusting the wipe arc, follow section 5.3

5.5.3 Removing the motor from the wiper assembly

1. Disconnect all the electric connections of the wiper.
2. Disassemble the motor lever (5) (see 5.5.2).
3. Unscrew the motor and remove it.
4. When replacing, screw the motor on the housing. Follow section 5.3 to install the wipe arc disc in the correct park position.

6 Troubleshooting



In this chapter, several malfunctions are mentioned combined with possible causes. Please leave servicing to qualified mechanics.

6.1 *Wiper does not work after switching on*

- Possible causes:
 1. Wiper switch is not working properly.
 2. Burned or incorrectly sized fuse.
 3. Electrical connections are wired incorrectly or might be damaged.
 4. The wiper motor has failed.
- Solutions:
 1. Test and replace it. Check if the current is (and keeps being) too high.
 2. (See solution 1).
 3. Measure the voltage across the motor and check all connections if there is none.
 4. Replace the motor and check for drag or a high current.

6.2 *Wiped area or park position is not correct*

- Possible causes:
 1. The wiper arms were placed without parking the motor first.
 2. The wipe arc is set wrong or changed due to high loads (e.g. spring pressure of arms too high, drag).
 3. The wires are connected incorrectly.
- Solutions:
 1. Remove the wiper arms. Run the motor shortly to park it and re-install the arms according to chapter 3.
 2. Determine the wipe arc if needed (see section 5.4) and set the wipe arc again (see chapter 5.3).
 3. Check and reconnect the wiring (see the scheme in section 3.3).

6.3 *Motor runs, but arms do not move*

- Possible causes:
 1. Mechanical joints are loose.
 2. Parts are broken.
 3. Grooves of shafts are worn.
- Solutions:
 1. Check if the arms are well fastened. If not, open the housing (follow chapter 5) and check all joints and parts to see if they are loose, broken or worn.

7 Declaration of conformity

In accordance to Appendix II sub B of Directive 89/392/EEG (Machines)

Exalto B.V.

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3371 XE Hardinxveld-Giessendam
The Netherlands
☎ +31 (0)184-61.58.00
Fax: +31 (0)184-61.40.45

hereby declares that

Exalto windshield wiper type 230 XP

- ... is intended to be built into another machine or as a component, or is to be integrated with other machines to a machine where Directive 89/392/EEG applies to;
- ... **does not** fully comply to the requirements of mentioned Directive;
- ... complies to the following harmonised standards:

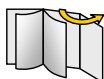
Pleasure yachts

- ... NEN-EN-ISO 10133 Extra-low voltage D.C. installations (1997)
(regarding color codes)

...and declares that the sub-assembly in question shall not be set into operation until the complete machine, into which the sub-assembly is fitted, shall be complete and conforms to all aspects of Directive 89/392/EEG.

Hardinxveld-Giessendam
12-15-2006 (m-d-y)

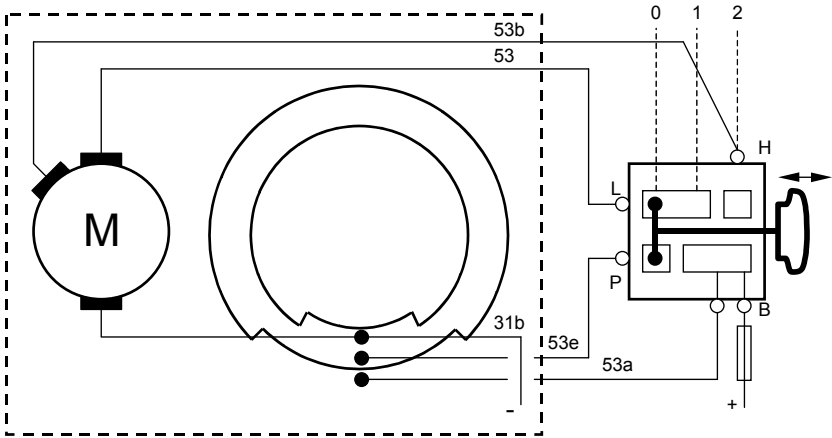
8 Parts list



No	Qua	Part	Dimensions	Cat. nr.
1	1	Motor 12 Volt 30 Nm		2100.3012
		Motor 24 Volt 30 Nm		2100.3024
2	3	Socket screw s.s. countersunk (DIN 965)	M6x16	2100.050
3	1	Serrated nut	M10	2100.069
4	1	Nut s.s., nylock A4	M8	2100.071
5	3	Nut, 304 s.s.	M20x1	2100.350
6	1	Adjusting bolt, A2	M10x8x33	2100.082
7	1	Wiper housing for XP 30Nm		2100.105
8	1	Motorlever		2100.114
9	1	Bearing shell, bh 25 mm	M20x145	2100.329
		Bearing shell, bh 50 mm	M20x170	2100.331
10	1	Nut s.s.	M20x1	2100.350
11	1	Weather cap	Ø26x20	2100.361
12	2	Ring s.s.	Ø18x12x1	2100.400
13	1	Circlip	Ø12x4	2100.410
14	1	Idler shaft for 25 mm bulkhead	M8X85	2100.441
	1	Idler shaft for 50 mm bulkhead	M8X110	2100.447
15	1	Rubber plate	90x45x3	2100.481
16	2	S.s. plate	90x45x3	2100.494
17	1	Nut s.s. flat	M8x4	2100.760
18	1	Nut s.s., wrench size 13	M10*6.5	2100.761
19	1	Connecting pin	M8x26	2100.920
20	2	Adapter bush	10x10	2100.926
21	1	Push rod	110x24x10	2100.936
22	1	Wipe arc plate with shaft, bh 25 mm		2100.371.XP
		Wipe arc plate with shaft, bh 50 mm		2100.372.XP
23	4	Retaining ring for shaft	Ø 6mm	2197.097

9 Internal wiring diagram

The following diagram explains the way the wiper motor works.



Function	Polarity	Motor code	Switch code	24V
high speed	+	53b	H	white
low speed	+	53	L	yellow
earth	-	31b		black
common leg		53e	P	blue
Self-parking	+	53a	B	red

10-2014

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