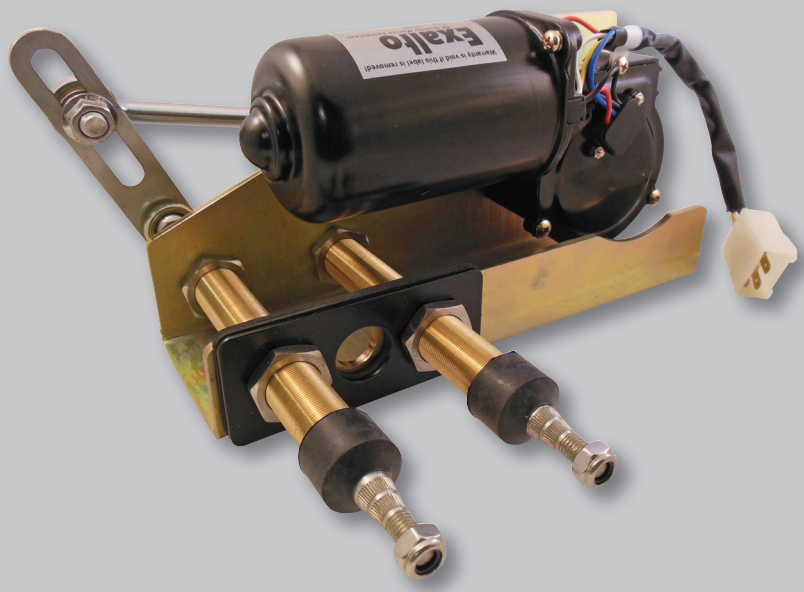
Exalto windshield wiper

Type: 255BS



Cat. nos. 211255.35/211255.65 (12V) - 212455.35/212455.65 (24V)

USER MANUAL

Exalto
Quality Marine Equipment

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 warns you, that injury or damage can occur if a procedure is badly performed.

! 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:

- This wiper comes complete with a built-on cover. It prevents users from direct contact with moving parts of the motor. Never remove this safety provision.
- 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 can 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.

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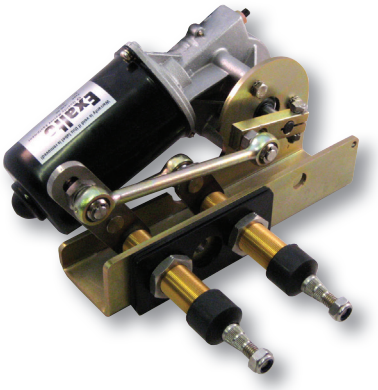
1 Introduction



With this user manual we want to guide you thru the installation and use of the Exalto windshield wiper. Please 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 of the sunlight.

Wiper type 255BS is designed to be mounted in the bulkhead or in the glass window. The wiper arc is stepless adjustable from 40° to 90°. Standard the 255BS is supplied for a bulkhead thickness of 35mm and 65mm. The pantograph arms have adjustable lengths; between 750mm and 1000mm. The motor of the 255BS has insulated earth return.

1.2 Environmental factors

In the wiper, materials are used that are harmful for the environment (e.g. copper). The parts of the wiper can be re-used or recycled. No harmful substances are disseminated 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. Please contact your vendor in case of any questions or if you want to use Exalto wipers in a non-maritime environment or other applications.

2 Technical data

2.1 General

- Product ..... Exalto windshield wiper
- Type 255BS
- Catalogue numbers 211255.35 211255.65 (12V)
  ..... 212455.35 212455.65 (24V)

2.2 Electrical data 12 Volt

- Torque (max.)..... 55 Nm
- Voltage ..... 12 Volt
- Current 7A
- Power consumption (max.) .... 84 W
- Number of revolutions ..... Low 38 rpm, high 60 rpm
- Recommended cable ..... 5 wires, 1½ (16 g) or 2½ mm^2 (14 g)
  ..... up to 10 m long
- Recommended fuse ..... 8 A slow blow
- Grounding ..... Insulated earth return

Electrical data 24 Volt

- Torque (max.)..... 55 Nm
- Voltage ..... 24 Volt
- Current ..... 4 A
- Power consumption (max.) .... 96 W
- Number of revolutions ..... Low 38 rpm, high 60 rpm
- Recommended cable ..... 5 wires, 1½ (16 g) or 2½ mm^2 (14 g)
  ..... up to 10 m long
- Recommended fuse ..... 6 A slow blow
- Grounding ..... Insulated earth return

2.3 Mechanical data

- Dimensions ..... L x w x h = 250 x 126,7 x 126 mm
- Bearing diameters ..... Drive shaft Ø 20 / support shaft Ø 20 mm
- Mounting ..... Through glass or bulkhead
- Bearing ..... Bronze housing, self-lubricating
- Wiperarms ..... Model P10 up to 1000 mm
- Wiperblades ..... Up to 1200 mm
- Wipe arc ..... Wipe arc slot 40°-90°,stepless adjustable
- Number of revolutions ..... Low 38 rpm, high 60 rpm
- Weight ..... Approx. 4,80 kg

3 Installation

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

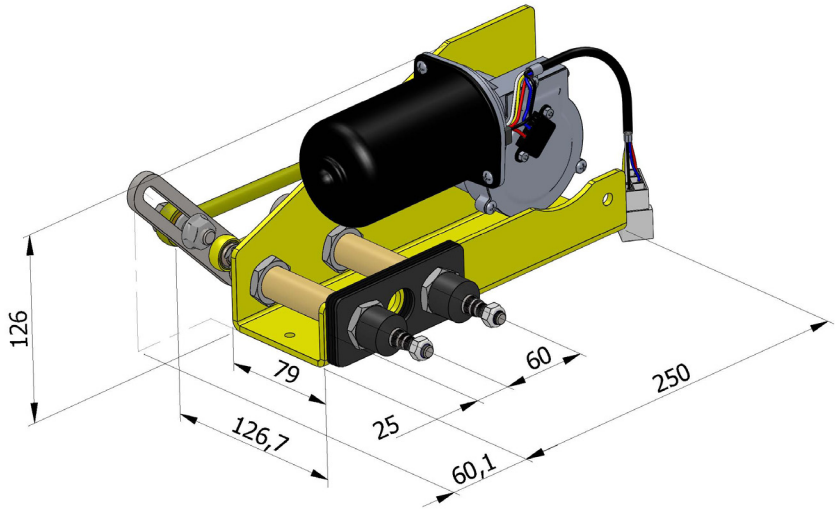
3.1 Preparation

The complete wiper, with packaging, can be handled and transported by hand. Leave the wiper in the packing, until you are 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

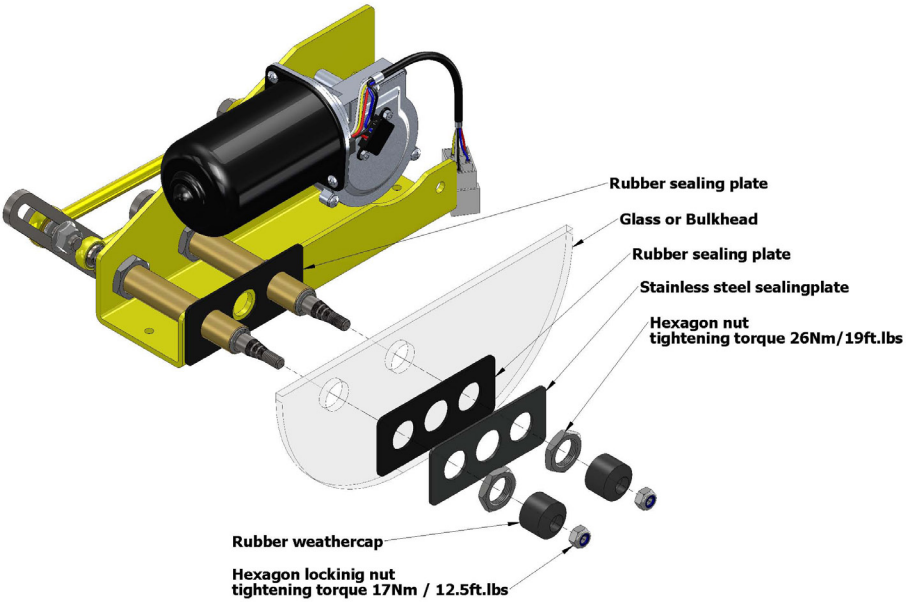
1. The wipe arc of your wiper is not set. Please follow steps described in paragraphs 5.3 and 5.4 to set the wiping arc prior to installation.

   Determine the place where the wiper is to be installed. The dimensions are shown below. The wiper can be installed in any position.



! ***Attention!***

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



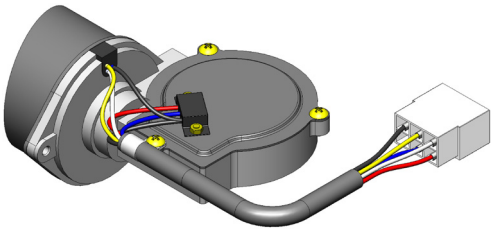
2. Place the windshield wiper in the pre-drilled holes of the bulkhead (see figure). A rubber sealing plate must be placed at both sides of the bulkhead.

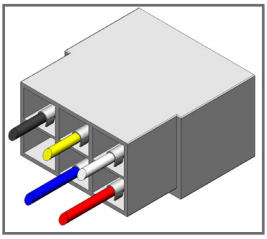
! ***Attention!***

Do not fit the wiper arm before finishing the electrical connections.

3.3 Electrical installation

3. Install a wiper switch in the dashboard.





Wiring diagram 255BS 12/24 Volt

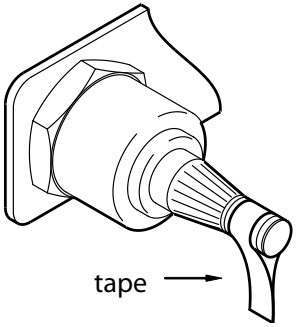
4. Connect the wiper to the ship's electrical installation; see the drawing above (and the colour codes at page 19). Use a cable with 5 wires with a diameter of at least 1½ mm^2 (16 g) up to a maximum length of 10 m. Use larger diameters when using longer cables.

5. Fit a slow blow fuse of 8A (12Volt) or 6A (24 Volt) in the main cable.

6. Connect the switch to the wiper (refer to the switch manual for installation).

3.4 Final installation

7. 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 8.



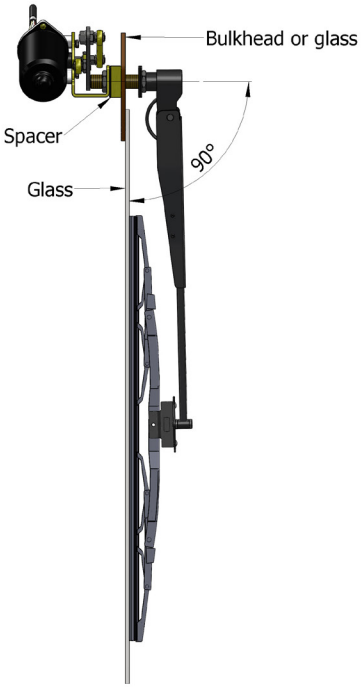
Hint!
If you have doubts regarding the park position, make a vane with tape to simulate the position of the arms.

Attention!
The 255BS is suitable for wiper arms model P10 up to 1000 mm and wiper-blades up to 1200 mm.

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

! *Attention*

To ensure the arm has the right spring pressure, install the wiper arm in such a way that the shaft makes a 90° angle with the window (figure left) ánd that the shaft makes a 90° angle with the wiper arm (figure right). If this is not the case, please install spacer(s) to make the 90° angles.



9. Switch on the power and test the motor briefly again to check the wiped area.

10. If the wipe arc is correct, adjust the position and the length of the arm if necessary. Tighten the nuts properly now.

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 wiping arc cleans the entire window;
- if the park position is correct.

If the wiping arc or the park position is wrong, adjust them again. Follow the procedure in paragraph 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 arm frequently with fresh water (see also paragraph 5.1).

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);
- never use the wiper on a dry window.

5.2 Servicing

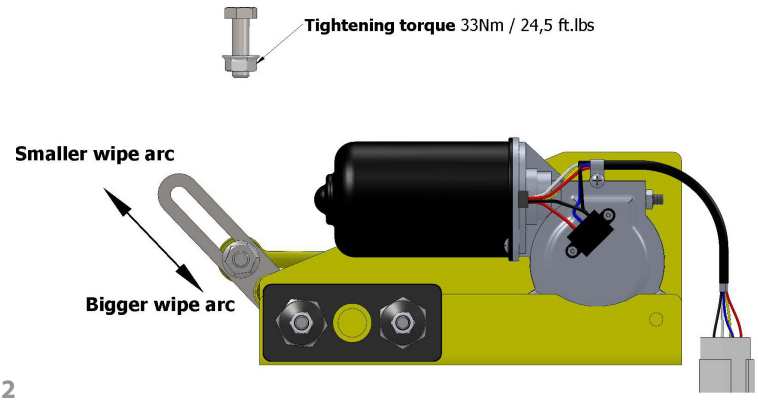
As long as the wiper system functions normally and is kept in good shape (see paragraph 5.1), servicing the motor is not necessary. Check yearly (monthly when used intensively) if the wiper blades are worn. Replace blades when worn or when the blades leave many stripes across the glass. In case of failure or adjustments, have servicing done solely by qualified mechanics. In chapter 6, Troubleshooting, a list is given of possible problems and their solutions.

5.3 Changing the wiping arc and park position

If the wiped area is not optimal, the wipe arc and park position can be changed. Always isolate the electrical circuit before opening the housing.

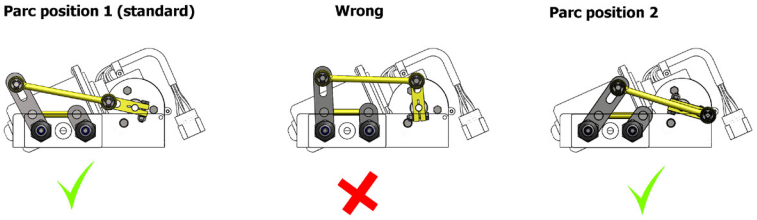
Adjusting the wipe arc

- Isolate the electrical circuit;
- Move the screw in the slot from the shaft lever away from the shaft for a smaller and towards the shaft for a larger wipe arc
- Fasten the nut again (max 33Nm/24,34 ft.lbs)
- Run the motor briefly to park it
- Place the motor lever in the desired park position(see text below)



Adjusting the park position

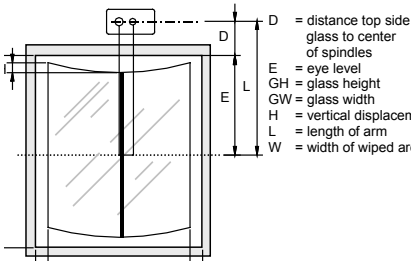
- Place the motor lever loose on the shaft, parking right or left(see drawing in paragraph 3.4 and below for reference)
- Place the motor lever in such a way that it forms an almost straight line with the connection lever(see drawing)
- Tighten the motor lever well now
- Place the wiper in the bulkhead
- Adjust the wiper arm to the correct length, if necessary.



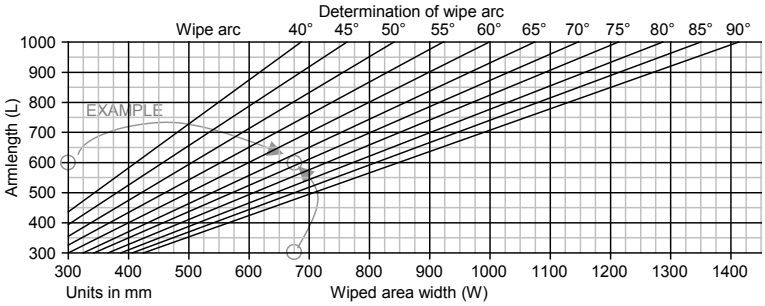
Mount the wiper motor assembly and test run the wiper for a few minutes to check if everything works well.

5.4 Rough determination of wiping arc and wiper blade

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



•Determine length of pantograph arm (L): **L = E + D**
•Get the maximum wiped area width (W): **W = ±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);
•Now the wiper blade length can be calculated:



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)

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 (19, 12, 21) and plates (16, 17) on the outside.
4. Remove the wiper from the holes in the bulkhead.
5. If you want to replace the wiper, follow chapter 3.

5.5.2 Disassembling the drive crank lever

1. Disconnect all the electric connections of the wiper.
2. Remove the wiper from the bulkhead; (see 5.5.1).
3. Unscrew the nut and bolt on the drive crank-lever and remove the lever.
4. For adjusting the wiping arc and replacing, follow section 5.3.

5.5.3 Removing the motor from the wiper assembly

1. Disconnect all the electric connections of the wiper.
2. Remove the wiper arm.
2. Disassemble the drive crank lever (9) (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 drive crank lever in the correct park position.

6 Troubleshooting

In this chapter, several malfunctions are mentioned combined with possible causes and solutions. 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 wiping arc if needed (see paragraph 5.4) and set the wiping arc again (see paragraph 5.3).
3. Check and reconnect the wiring (see the scheme in paragraph 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

MANUFACTURER'S DECLARATION
according to Appendix II sub B of Directive 89/392/EEG (Machines)

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The Netherlands
Phone: +31 (0)184 615 800
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hereby declares that

Exalto windshield wiper type 255BS

... 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.

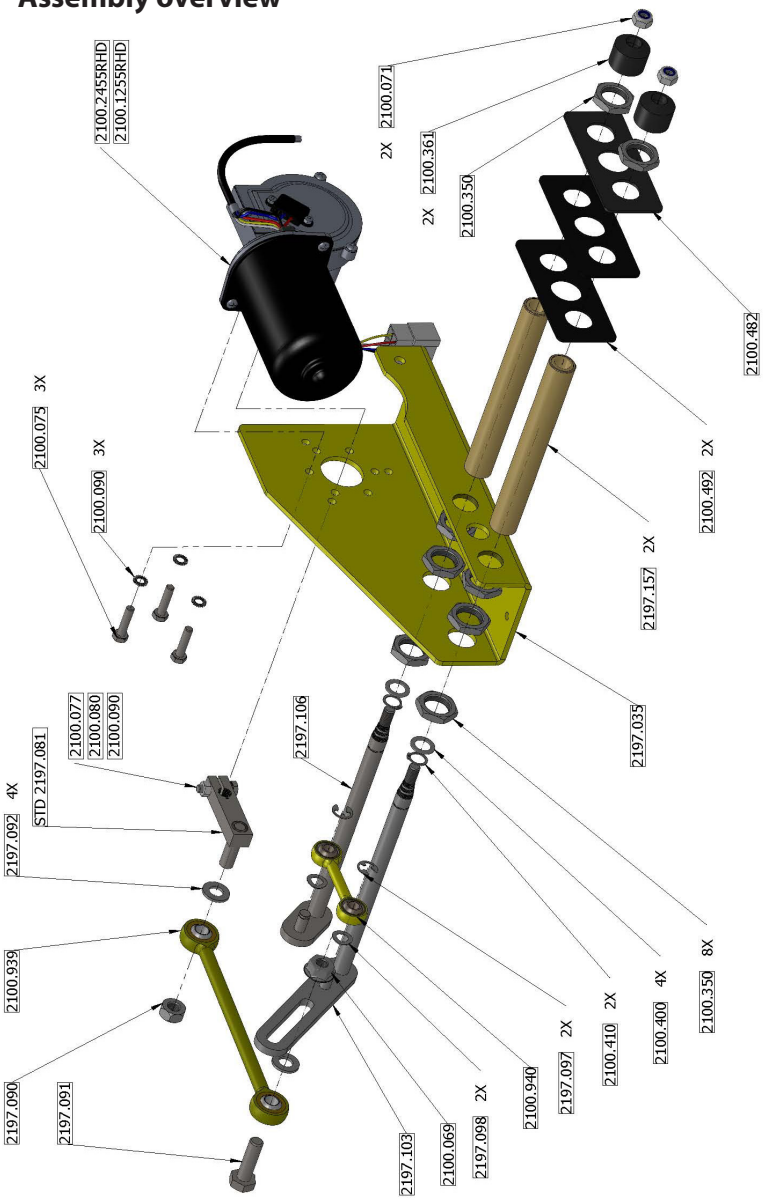
Hardinxveld-Giessendam
10-12-2012 (m-d-y)

8 Parts list

Qua	Part	Dimensions	Cat. no.
1	Motor 24 Volt		2100.2455RHD
1	Motor 12 Volt		2100.1255RHD
1	Wiper housing 255 BS		2197.035
2	Shaft bulkhead 35 mm		2197.157
	Driven Spindle with lever		2100.850
2	Shaft bulkhead 65 mm		2197.187
1	Idler spindle with lever bh 35mm		2197.106
1	Idler spindle with lever bh 65mm		2197.107
1	Driven Spindle with lever bh 35mm		2197.103
1	Driven Spindle with lever bh 65mm		2197.104
2	Nyloc Nut M8	M8	2100.071
1	Nut M6 A4	M6	2100.080
1	Hex Bolt M6x25	M6x25	2100.077
1	Motorlever 255 BS		2197.081
	Spacer	M8	2197.098
3	Hex Bolt M6x16		2100.075
3	Serrated lockwasher ss M6	M6	2100.090
8	Nut	M20x1	2100.350
2	Weathercap	Ø26 x 20	2100.361
4	Spacer	18x12x1 mm	2100.400
2	Locking Ring	Ø12 x 4	2100.410
2	Spacer	M8	2197.098
2	Locking ring 6mm		2197.097
1	S.S. Plate		2100.482
2	Rubber locking plate		2100.492
1	Connection lever		2100.939
1	Connection lever		2100.940
1	Nut M10 din934 A4	M10	2197.090
1	Hex Bolt M10x35	M10x35	2197.091
4	Spacer M10	M10	2197.092
1	Hex. flange nut wih teeth, M10	M10	2100.069

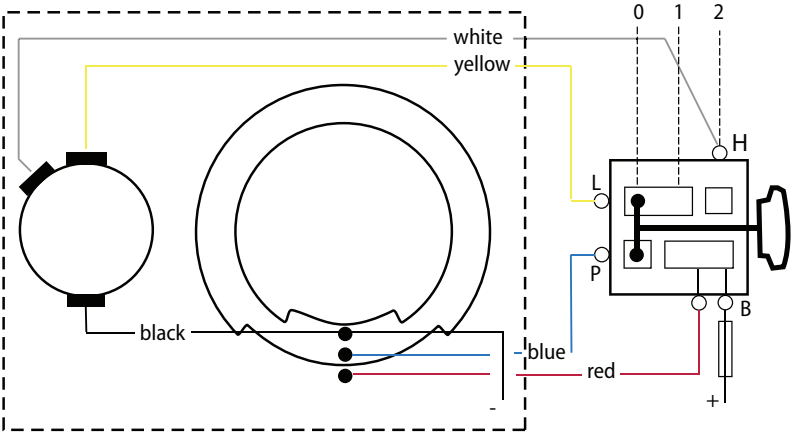
9 Drawings and schemes

9.1 Assembly overview



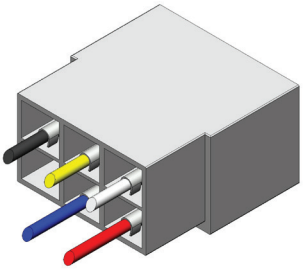
9.2 Internal wiring diagram

The following diagram explains the way the wiper motor works.



Wiring diagram

Function	Polarity	Switch code	Cable 12/24V
high speed	+	H	white
low speed	+	L	yellow
earth	-		black
common leg		P	blue
self parking	+	B	red



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