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PRODUCT INFORMATION BULLETIN		
DATE ISSUED		PIB #
03/01/2011	WEXCO WIPER KIT INSTALLATION INSTRUCTIONS	017
YEAR / BRAND / TYPE / MODEL #		
<p>This information is for all Class A motorhomes that have Wexco's Wiper System installed.</p>		
PRODUCT INFORMATION		
<p>Wexco Industry's Wiper System is installed on the following coaches:</p> <ul style="list-style-type: none">• 2009-Current BSCA• 2009-Current CSCA <p>Please review the attached installation and torque instructions when servicing and installing Wexco Industry's Wiper System.</p>		

If you have any questions regarding this P.I.B., please contact a Warranty Service Representative at Newmar Corporation.

WEXCO

INDUSTRIES

HEAVY DUTY WIPERS & COMPONENTS



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Wiper Systems

Configuring the optimum wiper system for a vehicle requires the proper motor, linkage, arms and blades. Attention must be focused on the correct application of these parts to ensure that a robust yet cost-effective system is achieved. The following information will assist in determining system requirements, selecting components and configuring the system.

Step 1: Define the Sweep Pattern

Everything starts with the sweep pattern. In order to develop the most appropriate pattern, input from persons knowledgeable about where the vehicle operator needs to see must be utilized. The sweep pattern is then created, defining the sweep angle, arm configuration and blade length. Always allow an additional 5% of the nominal sweep angle **on each side** of the pattern for growth of the wipe angle (due to wear and installation tolerances of wiper arms). This will prevent collisions between the wiper blade and window frame or molding. Also make sure in multiple arm systems that there cannot be any collisions between adjacent wiper blades. Once the sweep pattern is established, the next step is determining the proper motor size to run the system.

Step 2: Select the proper size motor

The wiper motor must have sufficient torque to move the wiper arms/blades under worst case conditions. A motor which is under-sized will overheat and trip its thermoswitch, rendering the wipers temporarily inoperative. An over-sized motor adds unnecessary cost and requires stronger, costlier system components to handle the higher motor stall torque. The following formula has been used successfully to determine proper motor size*.

$$\text{Motor torque} = 5 \times \text{Arm Length} \times \text{Arm Tip Force} \times \sin \left(\frac{1}{2} \text{ Wipe Angle} \right)$$

Motor Torque is measured in Nm, Newton Meters

Arm Length is measured in Meters

Arm Tip Force is measured in Newtons (refer to the arm drawing)

sin is a trigonometric function on scientific calculators and will yield a number between 0 and 1

Note: this formula assumes that the wiper linkage (to be designed in the next step) has symmetrical force angles between link and pivot lever and is planar within 10 degrees.

Calculate the required motor torque for each wiper arm and total for multiple arm systems. Select a motor that has 10% to 15% **more** torque on low speed than the calculation. This ensures that the motor will not stall (and thus stop) under adverse conditions.

*for small systems where the Wexco oscillating motor, WWF, is to be used, check the guidelines for maximum arm/blade lengths for each wipe angle. No motor/linkage calculations are required.

Wiper Systems

Step 3: Select linkage components

The linkage components must now be selected to produce the required wipe angle(s) and allow the pivot(s) to be located in the vehicle to produce the required sweep pattern. Wipe angle is determined by the ratio of the motor crank length to the pivot lever length. It is customary to either start with a known motor crank and find the corresponding pivot to obtain the desired wipe angle or vice versa. The following formula will assist you to select appropriate parts

$$\text{Wipe angle}^\circ = \sin^{-1}(C_r/P_r) \times 2$$

\sin^{-1} is a trigonometric function called “inverse sin” and is found on scientific calculators

C_r is the crank radius or crank arm length in mm

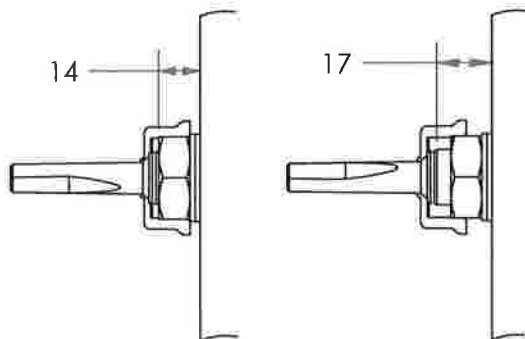
P_r is the pivot radius or pivot lever length in mm

The housing length requirement of the pivot assembly must also be determined. Generally speaking, a pivot assembly will need to pass through the vehicle outer skin and any structure in between. The threaded portion of the pivot housing also needs to extend beyond the vehicle skin so that there is sufficient length to install the mounting nut and washer and any protective cap. For any given pivot, there is a small range of protrusion lengths that will work for a given application. Diagrams depicting protrusion lengths of a Pivot are shown below. If a pivot is too long and an appropriate shorter one cannot be found, then a spacer will need to be added. Refer to the pivot and pivot hardware drawings in this catalog to determine the proper combination of parts. Note: spacers are a customer responsibility.

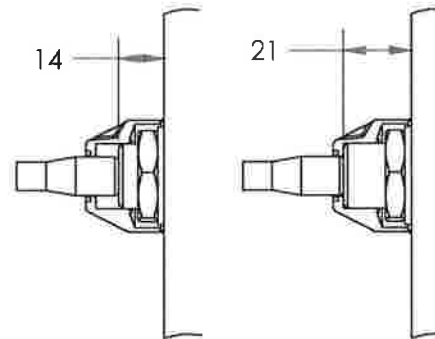
The last linkage component required is the connecting link. The pivot location in the vehicle is dictated by the previously generated sweep pattern. A link length must be selected in order to finalize the motor location. Generally, a motor will be located to the left or right of the pivot and then slightly up or down. Distances are measured from the pivot shaft center to the motor output shaft center. The following assumes this typical scenario.

Measure horizontally left or right of the pivot by exactly the length of the connecting link. Then

Double Flat Pivots Protrusion Length
Min - 14mm/.55" Max 17mm/.67"



A12xM8 DIN Pivots Protrusion Length
Min - 14mm/.55" Max 21mm/.83"



Wiper System

Vertical displacement = $\cos(\frac{1}{2} \text{ wipe angle}^\circ) \times P_r$

cos is a trigonometric function found on scientific calculators

P_r is the pivot radius or pivot lever length

This motor location method optimizes the kinematics of the linkage (balances the force angles at linkage reversal) and also ensures a correct park position. Park is achieved when the motor crank arm and connecting link lie in a straight line. Every wiper system has 2 possible park positions.

Step 4: Select arm and blade

The general arm configuration should be known based on step 1 above. However, wiper blades are designed to operate with a specific range of arm tip force. If the arm has excessive tip force, the blade will be squashed down and lay on its side, causing smearing and increasing permanent set of the rubber insert. Insufficient tip force will not hold the blade down properly against the glass and there will be missed areas in the sweep pattern. The following are general recommendations;

Flat glass, off-road: 10 – 15 Newtons per meter of blade length

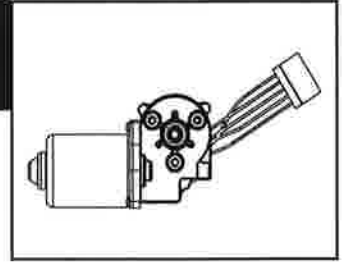
Curved glass, on-road: 13 – 16 Newtons per meter of blade length

Never exceed 18 Newtons per meter of blade length. All arm blade combinations should be evaluated on the actual windshield for proper contact and in the case of on-road vehicles, liftoff at highway speeds. Calculate Newtons per meter of blade length by dividing the arm tip force in Newtons (from the drawing) by the blade length in meters.

Here are a few final comments regarding proper arm and blade selection. Typically, arms are designed to operate on both flat and curved glass. On curved glass, however, the arm will rise and fall as it sweeps across the glass. Arms can function properly within a range of $\pm 10^\circ$ up and down. This angle is measured between the bottom flat surface of the diecast arm head and the top flat surface of the spring retainer, the zero point being when they are parallel. In addition, the total up and down change in angle should be limited to less than 10° maximum. This can be checked on the vehicle or simulated with 3D CAD models. The orientation of the pivot shaft in relation to the glass will control this. Designs operating outside this recommended range will result in excessive forces and cause early arm failure and additional system wear.

Contact Wexco engineering if you have additional technical questions regarding wiper component selection.

J3 Motor

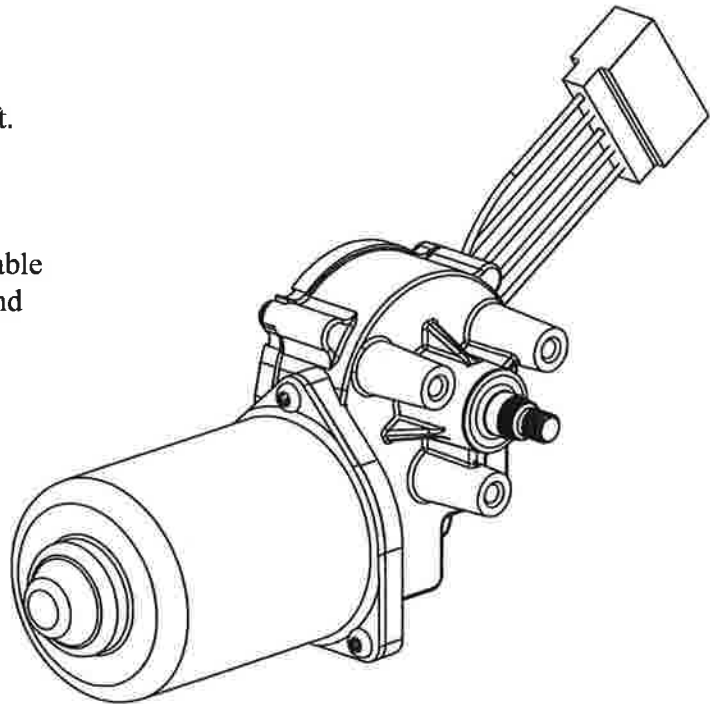


Description

Heavy-duty 12 or 24 Volt J3 windshield wiper motor.

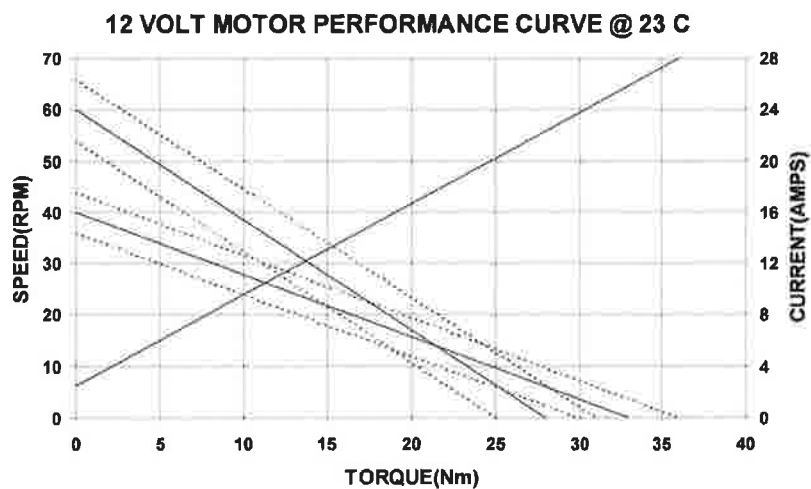
Features

- High Efficiency rotating output shaft.
- Thermoswitch Protected
- Internal R.F.I protection
- Coast to Park or Dynamic park
- Several Electrical Connectors Available
- Ball bearing for greater efficiency and smooth operation.
- 33 Nm stall torque

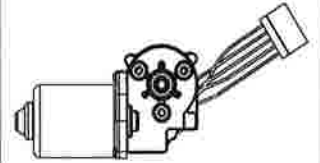


Applications

- Heavy-duty trucks
- Recreational trucks
- Construction equipment
- Agricultural Vehicles
- Utility vans
- School Buses

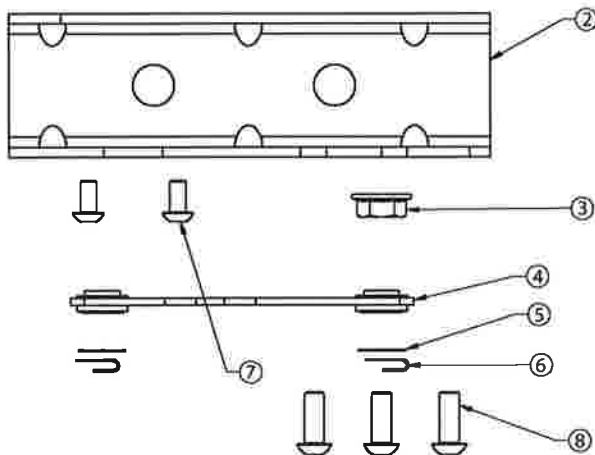
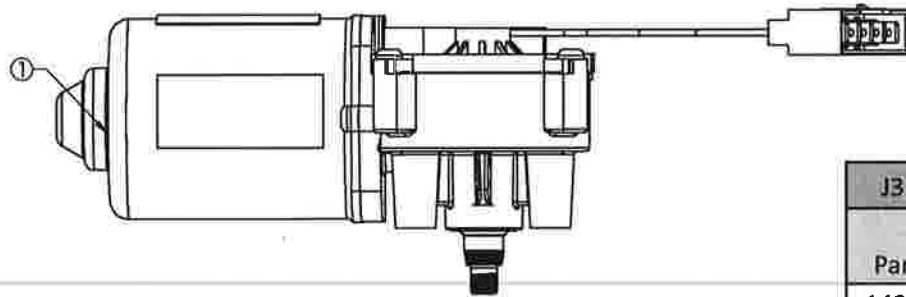


J3 Motor



J3 Motor Part Numbers			
Wexco Part Number	Voltage	Park	Connector
105715	12	Dynamic	JE/UT
105716	24	Dynamic	JE/UT
107372	12	Coast	JE/UT
107373	24	Coast	JE/UT
1999-3110021	12	Dynamic	WeatherPak

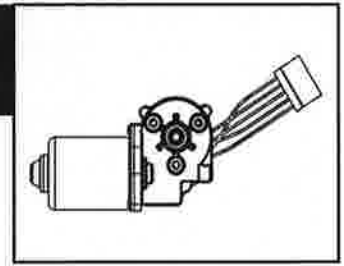
J3 Motor Kits



J3 Motor Kit Part Numbers	
Wexco Part Number	Uses Motor
1422-3110013	107372
1422-3110015	107373
KMPT	Parts Only No Motor

J3 Motor Kit Parts List		
Location	Part Number	Description
1	-	See J3 Motor Kit List
2	102938	JE/UT Motor Bracket
3	400200	M8x1.25 Flanged Hex Nut Torque 14-18 Nm
4	200100	Connecting Link 3.38"
5	300924	Washer for Spring Clip
6	300928	Spring Clip
7	300926	Pivot Housing Screws Torque 3 - 4 Nm
8	106800	M6x1 Pan Head Screw Torque 8-10 Nm

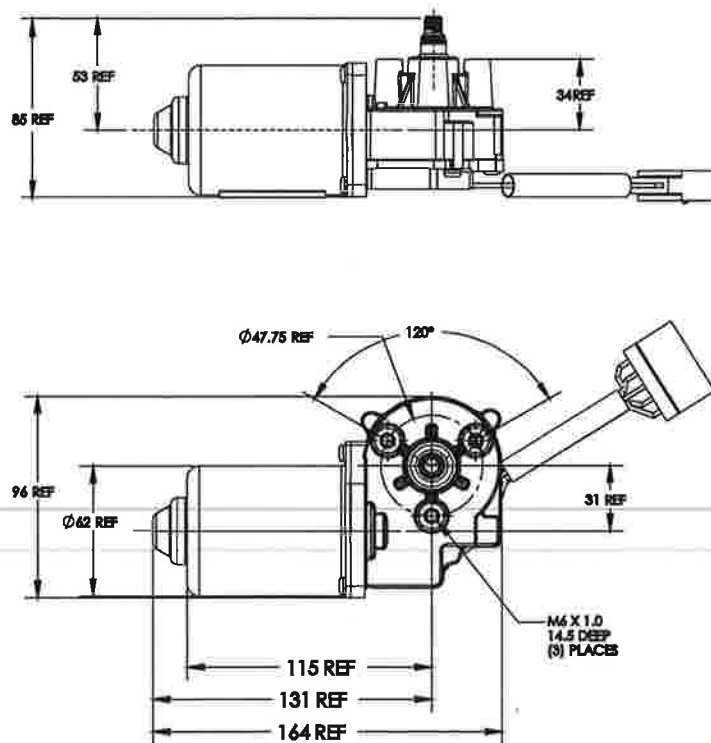
J3 Motor



Specifications

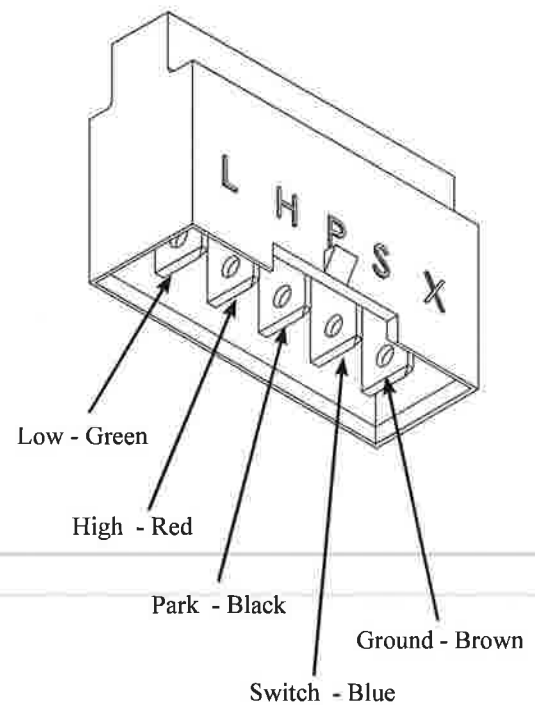
- Counter Clockwise Rotation
- Heavy-duty/lightweight (3 lbs.)
- EMI/RFI: CISPR 25 Level 4
- 33 Nm stall torque
- 12 Volt Motor High/Low Speed
40±3/60±5 rpm
- M8x1.25 Shaft Thread
- Shaft Taper A12 x M8 per DIN 783

Motor Dimensions

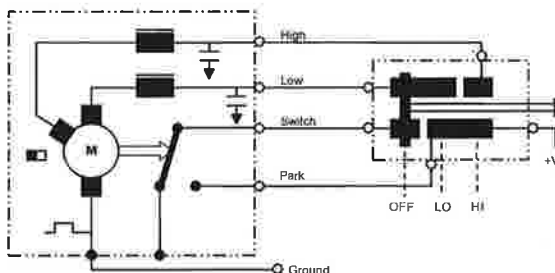


JE/UTA Connector:

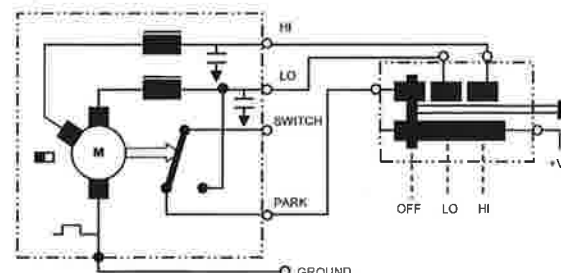
Wexco Part Number 400121



Dynamic Park Circuit



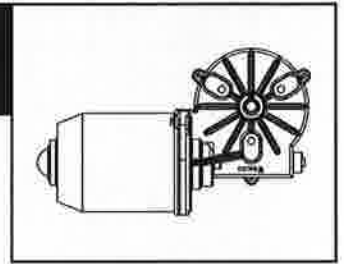
Coast to Park Circuit



WEX Motor

Description

Heavy-duty 12-24 Volt Windshield Wiper Motor.

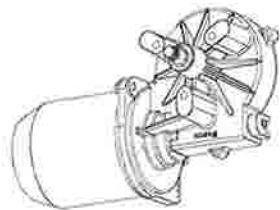


Features

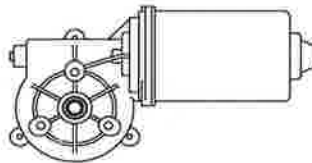
- Coast to Park or Dynamic Park
- EMI Suppression Available
- CE Certification Available
- Thermoswitch Protected
- Several Connectors Available

Applications

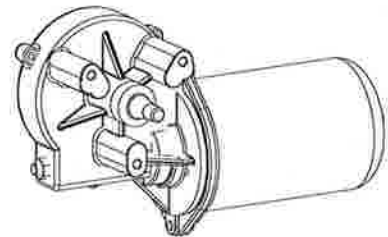
- Heavy-duty trucks
- Recreational trucks
- Construction equipment
- Agricultural Vehicles
- Utility vans
- School Buses



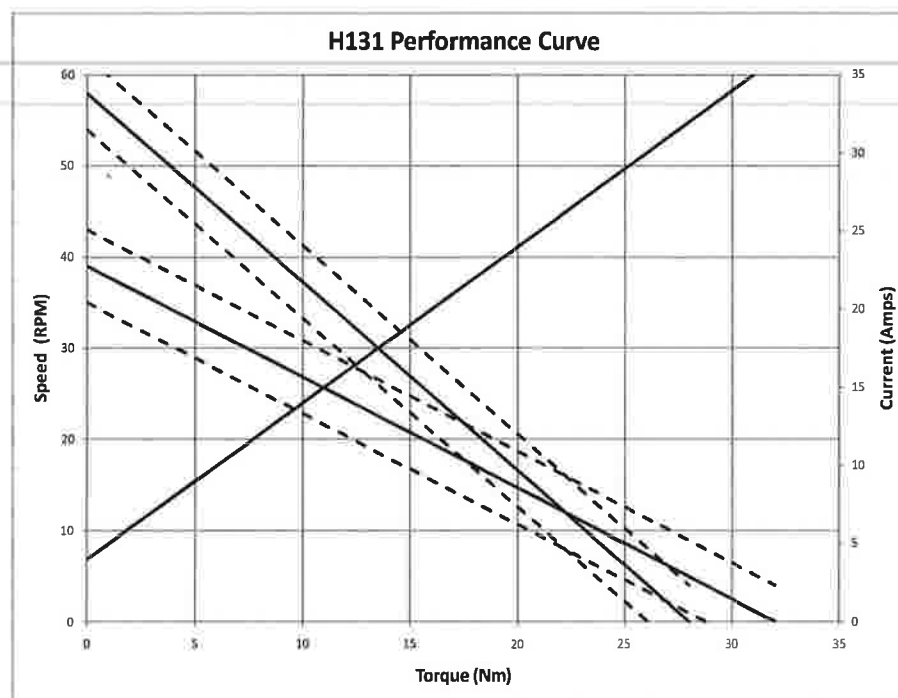
D101, D102, D103,
H130, H131, H132,
H135



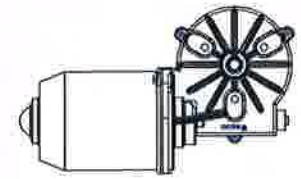
H130



G139



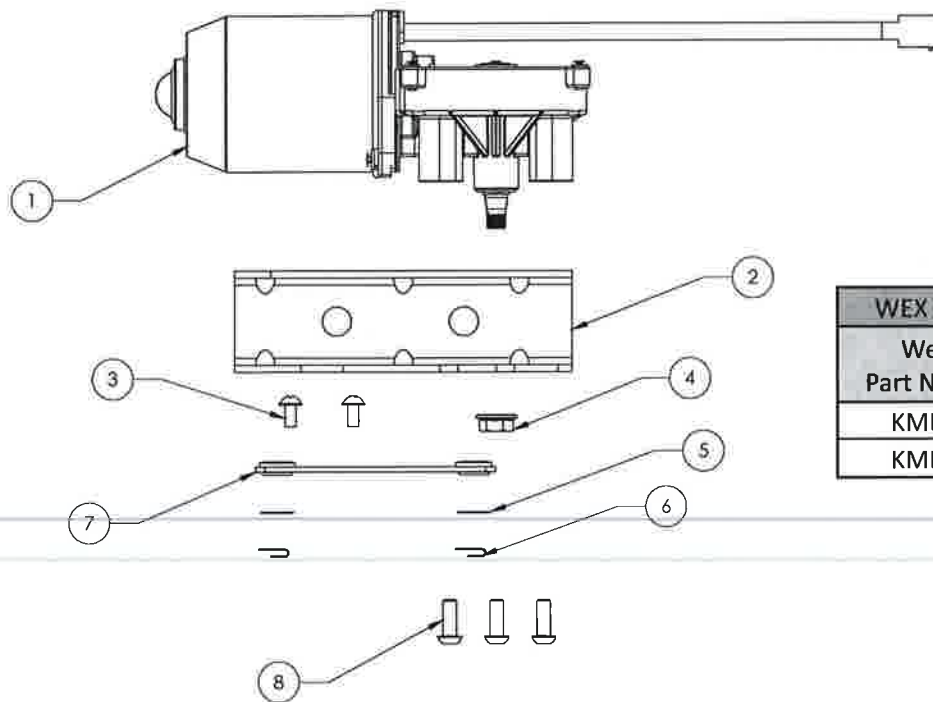
WEX Motor



WEX Motor Part Numbers					
Alias	Wexco #	Torque (Nm)	Park	Voltage	Notes
D101	411.01100.3212	32	Dynamic	12	Metric Threads
D102	411.01100.3224	32	Dynamic	24	Metric Threads
D103	411.01000.3812	38	Dynamic	12	Metric Threads
G126	411.01000.3812	38	Dynamic	12	Metric Threads
G139	400.01100.5512	55	Dynamic	12	Metric Threads
H130	411.02000.2512	25	Coast	12	SAE Threads
H131	411.02000.3212	32	Coast	12	Metric Threads
H132	411.02000.3224	32	Coast	24	Metric Threads
H135	411.02000.3840	38	Coast	40	Metric Threads

H130 SAE Hardware		
Wexco #	Description	Fastening Torque
67877	SAE Motor Shaft Nut	14-18 Nm
6666720	SAE Motor Screws	8-10 Nm

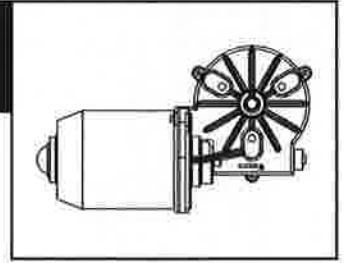
WEX Motor Kit Illustration



WEX Motor Kit Part Numbers	
Wexco Part Number	Uses Motor
KMB131	H131
KMB132	H132

WEX Motor Kit Parts List		
Location	Part Number	Description
1	-	See WEX Motor Kits List
2	102938	JE/UT Motor Bracket
3	300926	Pivot Housing Screws Torque 3 - 4 Nm
4	400200	M8x1.25 Flanged Hex Nut Torque 14-18 Nm
5	300924	Washer for Spring Clip
6	300928	Spring Clip
7	200100	Connecting Link 3.38"
8	106800	M6x1 Pan Head Screw Torque 8-10 Nm

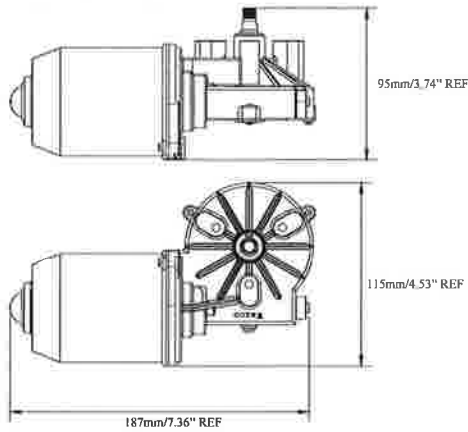
WEX Motor



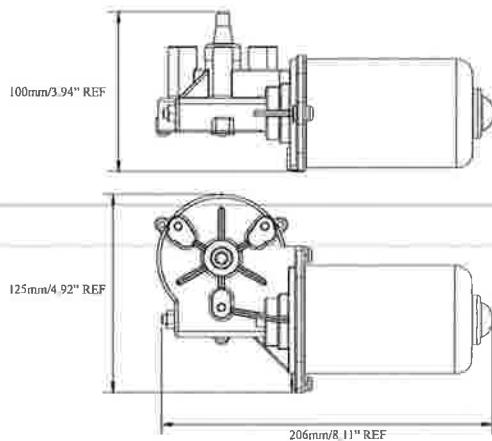
Specifications

- CCW Rotation
- AMP/UT/Weatherpak Connectors Available
- M8x1.25 Shaft Thread
- Shaft Taper A10 x M8 per DIN 783

Motor Envelope



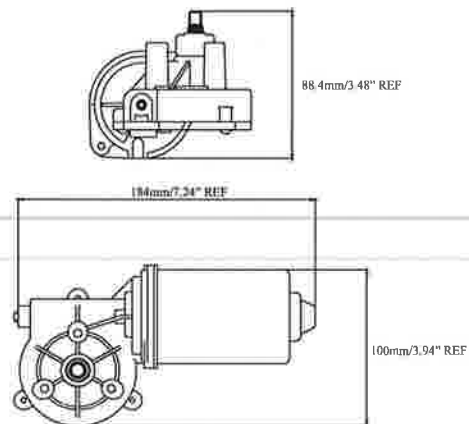
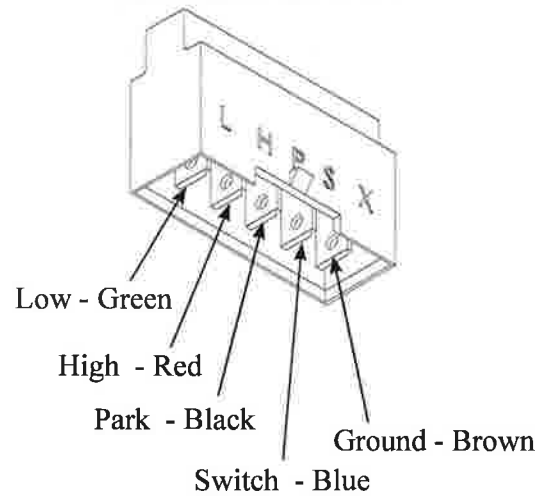
D101, D102, D103,
H131, H132, H135



G138

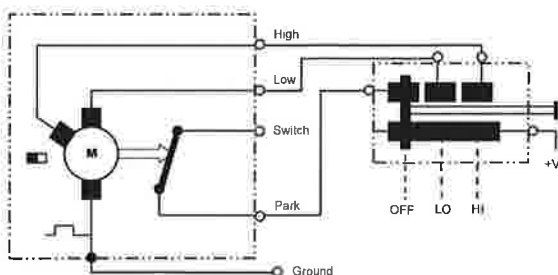
UT/JE Connector

Wexco Part Number 400121

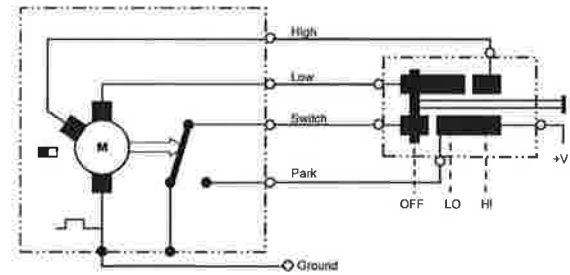


H130

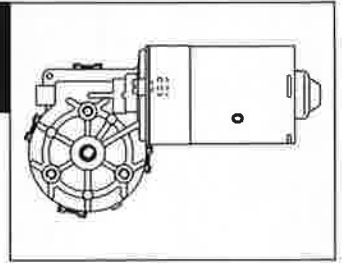
Coast To Park Circuit Diagram



Dynamic Park Circuit Diagram



BOSCH Motor



Description

Heavy-duty 12 or 24 Volt Windshield Wiper Motor.

Features

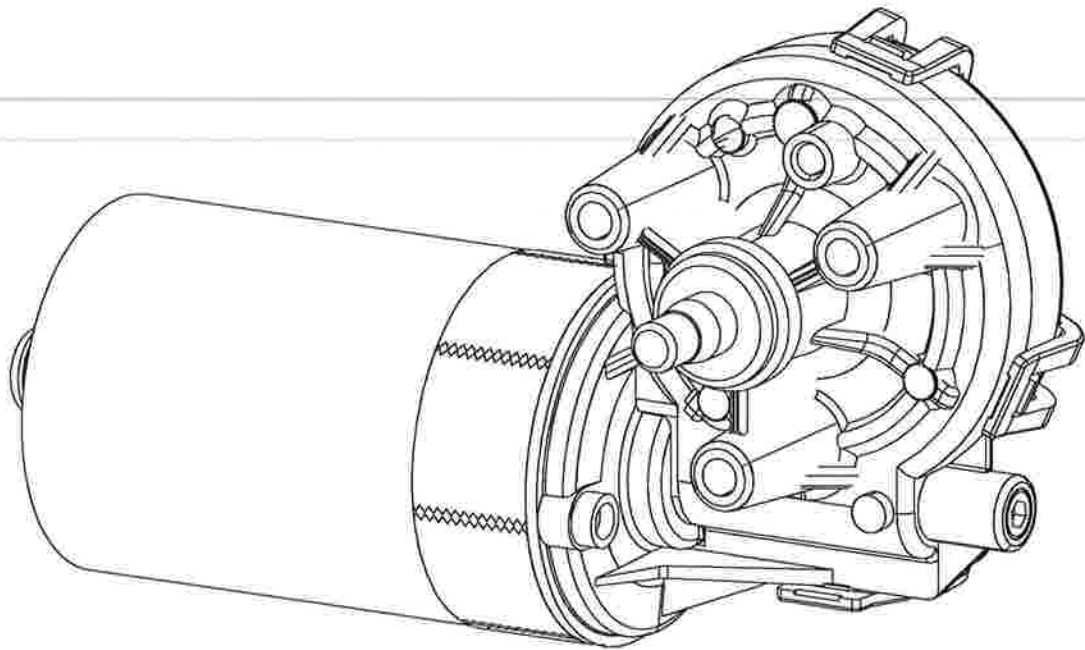
- Dynamic park Motor
- EMI Suppression Standard
- Thermoswitch Protected
- Several Connectors Available

Applications

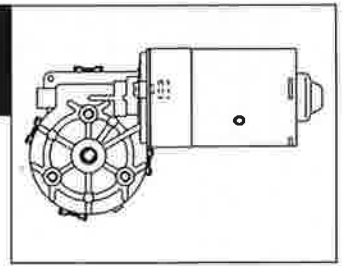
- Heavy-duty trucks
- Recreational trucks
- Construction equipment
- Agricultural Vehicles
- Utility vans
- School Buses

Bosch Motor Part Numbers

Wexco Part Number	Voltage	Connector
F006B20047	12	WeatherPak
F006B20048	24	WeatherPak
F006B20150	12	AMP
F006B20151	24	AMP
F006B20150JE	12	JE/UT



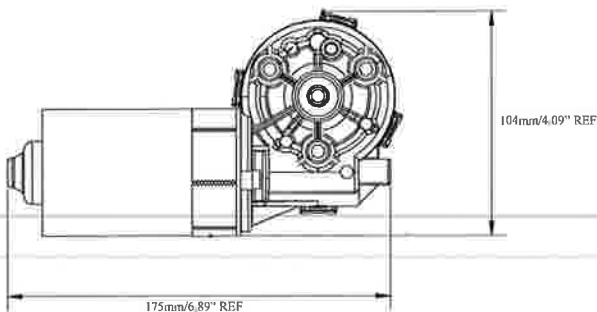
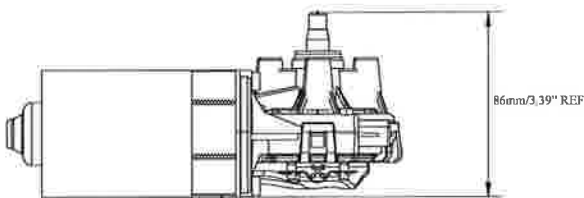
BOSCH Motor



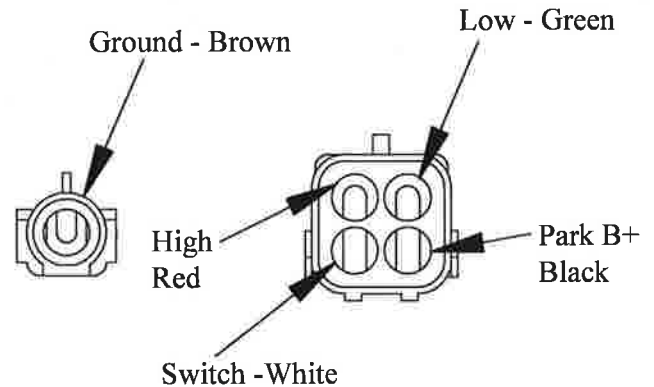
Specifications

- CCW Rotation.
- EMI/RFI: CSIPR Level 3
- M8x1.25 Shaft Thread
- Shaft Taper A10xM8 per DIN 72783
- 26 Nm Stall Torque
- Low/High Speed $33 \pm 5 / 51 \pm 6$
- Additional Electrical Connectors Available

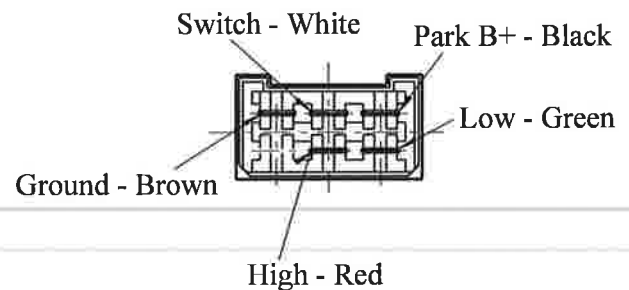
Motor Envelope



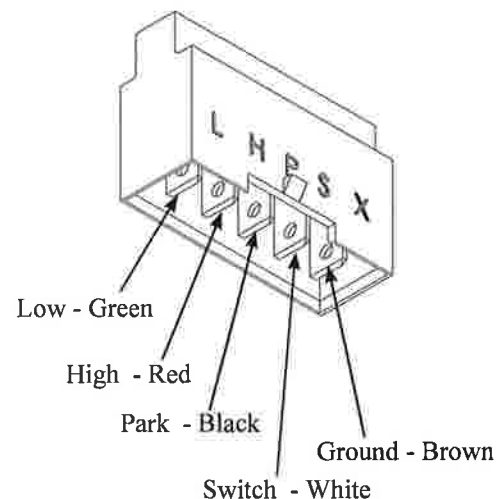
Weatherpak Connector



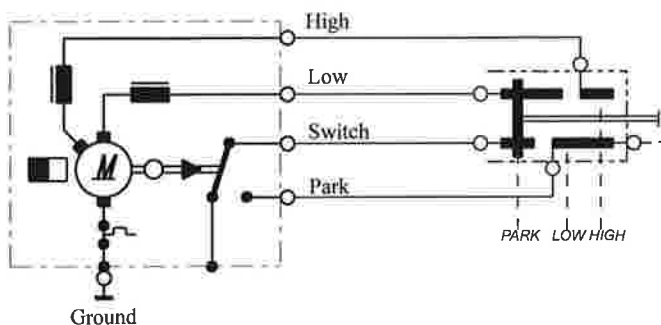
AMP Connector



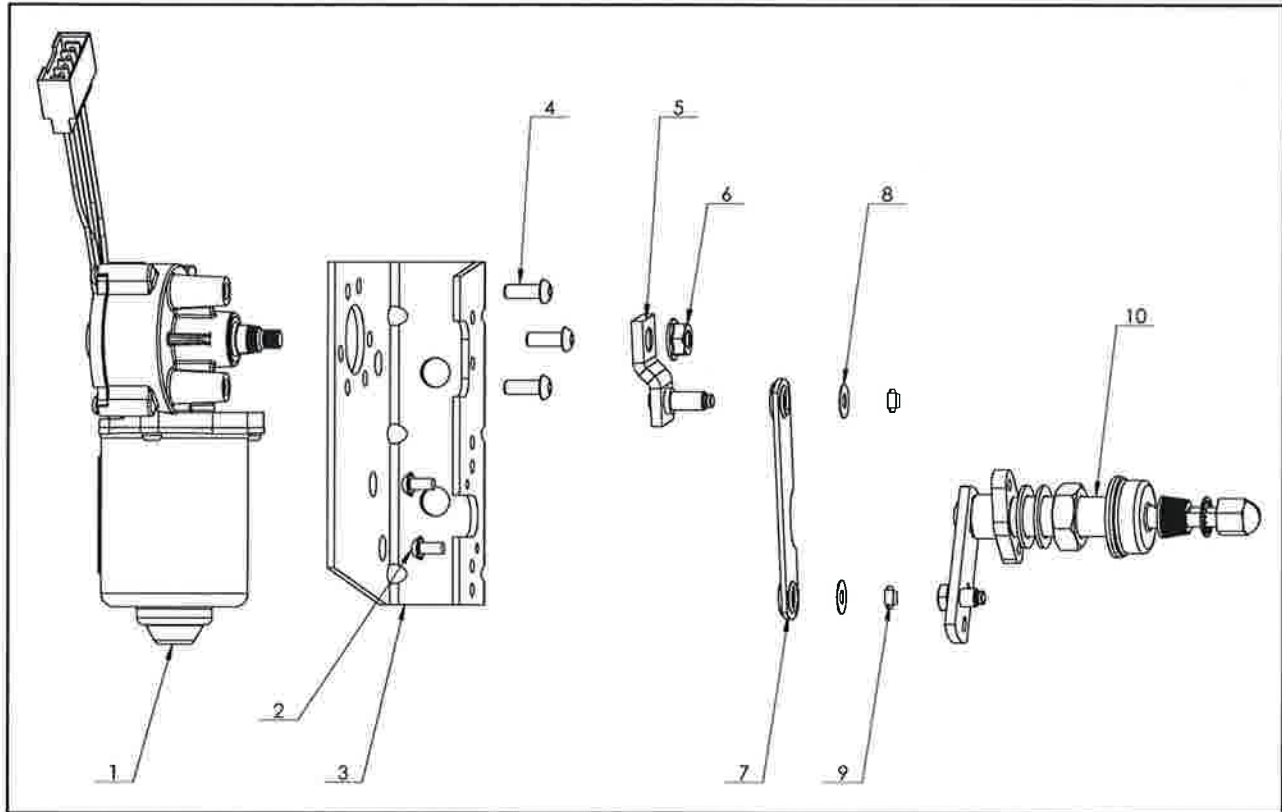
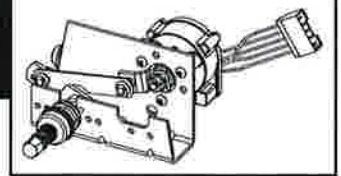
JE/UTA Connector: Wexco Part Number 400121



Circuit Diagram



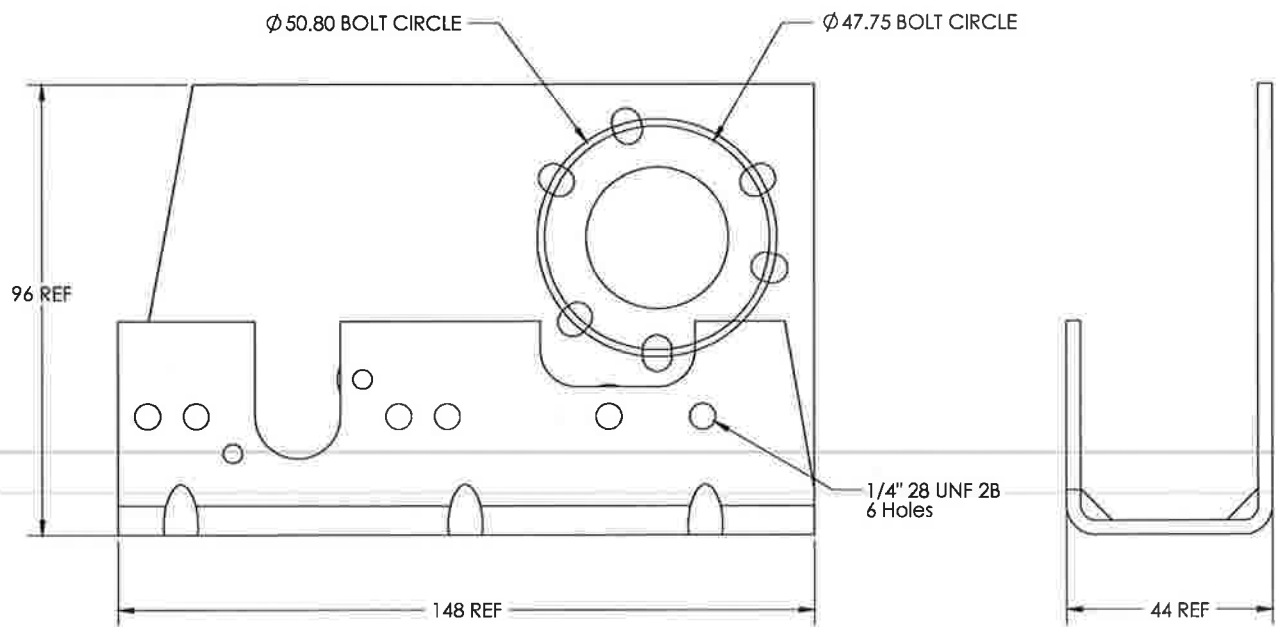
UT/JE Style Unitized Assemblies



Position	Wexco Part #	UT Cross	Qty	Description
1	See pages 6 - 13	-	1	*Motor
2	300926	SC1160	2	Pivot Shaft Screws Torque 3 - 4 Nm
3	102938	6205740	1	JE Style Motor Bracket
4	106800	106800	3	Motor Screws Torque 8 - 10 Nm
5	Refer to chart on page 17 and page 19	-	1	Motor Crank
6	400200	106802	1	Crank Nut Torque 14-18 Nm
7	See page 20	-	1	Connecting Link
8	300924	WA1654	2	Washer
9	300928	1781540	2	Clip Spring
10	See pages 17-18	-	1	Pivot Shaft Assembly

JE/UT Unitized Bracket

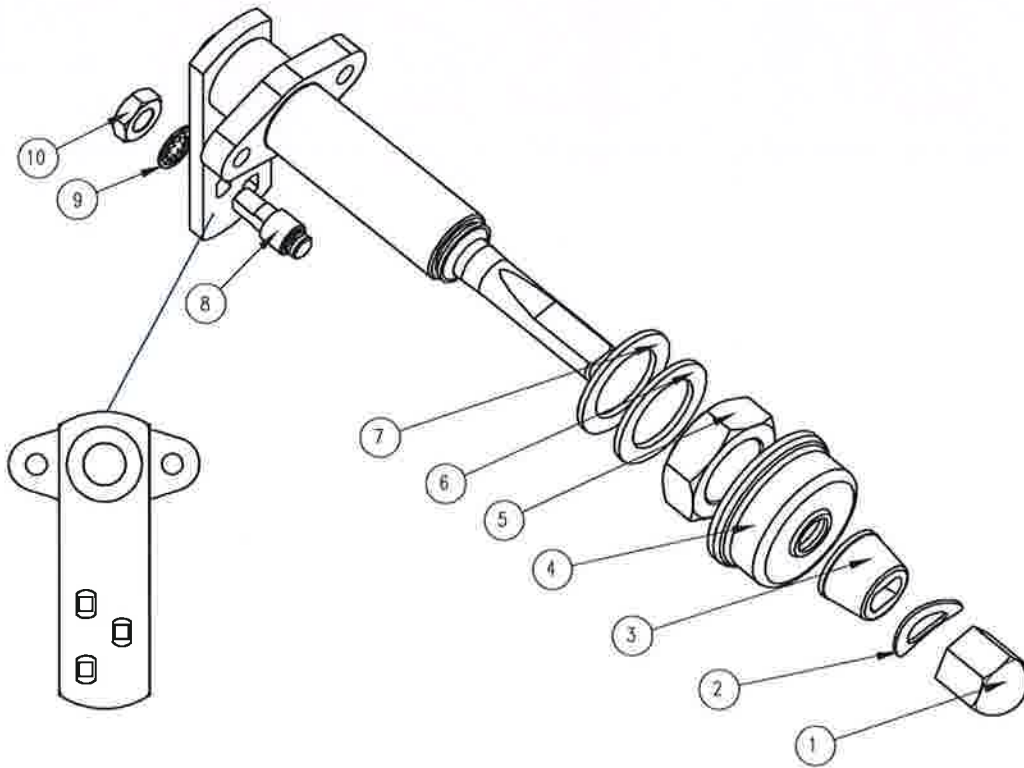
JE/UT Unitized Bracket: Replaces UT/JE & Wexco Brackets
Wexco Part # 102938



The JE/UT Unitized bracket will accept Any J3/WEX/Bosch Motor.

Tapered Double Flat Pivot Shafts

Tapered Double Flat Adjustable Pin Pivot Shaft Hardware:



Pivot Shaft Hardware

Position	Wexco Part Number	Description	JE #
1	300757 *NEW	Acorn Nut Steel 3/8" x 24 UNF 2B Torque 10 - 14 Nm	6257140
2	300755 *NEW	Steel Wavy Washer 3/8" ID	6257840
3	300637	Double Flat Knurled Driver 3/8"	6258040
4	300749	Rubber Seal Cap	6257240
5	300756	Nut 11/16" x 24 UNF 2B	6257740
6	300754	Steel Washer 1.10" OD	6257440
7	300752	Rubber Washer 1.10" OD	6257340
8	300783	Pin, .219" Diameter	6257540
9	300761	Star Lock Washer 1/4" ID -delete	6013429
10	300759	Steel Nut 1/4" - 28 Torque 10 - 12 Nm -delete	6575640

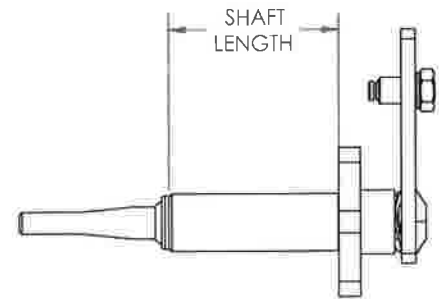


16mm Ball Stud
300753 also available in place of 300783. This allows Double Flat Shaft pivots to be used with Bosch style connecting links.

Tapered Double Flat Pivot Shafts

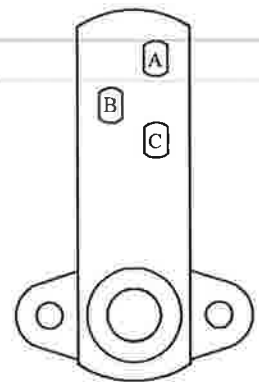
Pin Type Pivot Shafts:

Wexco Part Number	Length	Pin Type	UT Cross
300796	.625"	Adjustable	SH721200AS
300774	1.00"	Adjustable	6271540/SH721201AS
300795	1.25"	Adjustable	6271140
300794	1.50"	Adjustable	-
300775	2.00"	Adjustable	6271240/SH721202AS
300776	3.00"	Adjustable	6271440/SH721203AS
300946	2.50"	Adjustable Ball	-
300650	.669"	Pin	6279040
300651	.669"	Pin	6279140



Wipe Angles for Drive Arm - Link - Pivot Shaft Combinations:

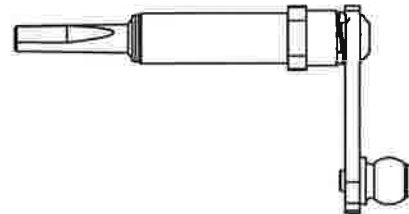
Wexco Crank Part Number	Drive Arm Length	Pivot Shaft Pin Position	3.09" Link Length 200104	3.38" Link Length 200100	Wipe Angle
101517, 102517, 901517	.875"	A		X	57 ¹
101517, 102517, 901517	.875"	A	X		55
62257, 82257, 200185	.950"	A	X		60
62257, 82257, 200185	.950"	B	X		75
62257, 82257, 200185	.950"	C		X	95
62111, 62113, 82113, 82111, 200180, 200194	1.057"	A	X		68
62111, 62113, 82113, 82111, 200180, 200194	1.057"	A		X	70 ¹
62111, 62113, 82113, 82111, 200180, 200194	1.057"	B	X		85
62111, 62113, 82113, 82111, 200180, 200194	1.057"	B		X	87 ¹
62111, 62113, 82113, 82111, 200180, 200194	1.057"	C		X	110 ¹
62259, 82259, 200192	1.230"	A	X		81
62259, 82259, 200192	1.230"	B		X	106
62112, 62114, 82112, 82114, 200181, 200196	1.380"	A	X		93
62112, 62114, 82112, 82114, 200181, 200196	1.380"	A		X	96 ¹
62258, 82258, 92258	1.480"	A	X		102
62258, 82258, 92258	1.480"	A		X	105 ¹
¹ These Wipe Angles May Affect Durability and Product Life and are not recommended for use by Wexco Engineering.					



Tapered Double Flat Pivot Shafts

16mm Ball Stud Type Pivot Shafts:

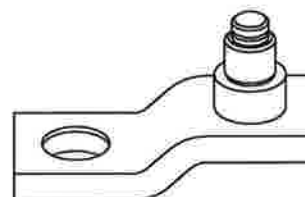
Wexco Part Number	Length	UT Cross	Lever Plate C-C
300898	2.50"	-	2.165"
300657	2.00"	6287240	2.751"
300892	2.00"	-	2.500"
300896	2.00"	6287440	2.338"
300891	2.00"	-	2.165"
301107	1.25"	-	2.425"
300656	1.25"	6706240	2.338"
300658	1.00"	6287140	2.338"
300659	1.00"	6287040	2.165"
300897	0.78"	-	2.338"
300890	0.78"	-	2.338"
300893	0.78"	-	2.165"



Cranks

Heavy Duty Motor Cranks, 3/4" wide with .219" pin:

Wexco Part Number WEX/Bosch Motor w/ 10mm Shaft	Wexco Part Number J3 Motor w/ 12mm Shaft	Length	Stamped ID	Pin Length
62257	82257	0.950"	2-1	Single
62111	82111	1.057"	0-1	Single
62259	82259	1.230"	1-4	Single
62112	82112	1.380"	0-4	Single
62113	82113	1.057"	0-1	Double
62114	82114	1.380"	4-0	Double
101517	102517	0.875"	2-0	Single
62258	82258	1.480"	1-8	Single

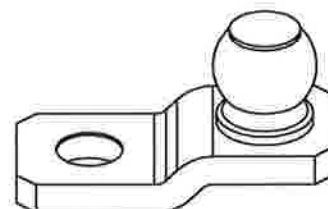


Heavy Duty Motor Cranks, 1" wide with .219" pin:

Wexco Part Number WEX/Bosch Motor	Wexco Part Number J3 Motor	Length	Stamped ID	Pin Length	JE/UT Cross
-	901517	0.875"	2-0	Single	-
200185	-	0.950"	2-1	Single	6225740
200180	-	1.057"	0-1	Single	6211140
200192	-	1.230"	1-4	Single	6225940
-	92259	1.230"	0-2	Single	-
200181	-	1.380"	0-4	Single	6211240
-	92258	1.480"	1-8	Single	-
200194	-	1.057"	0-1	Double	6211340
200196	-	1.380"	4-0	Double	6211440

Bosch Style Motor Cranks with 16mm Ball Stud:

Wexco Part Number	Length	Motor Used on	Shaft Size
200190	27mm	Bosch/WEX	10mm
207100	27mm	J3	12mm



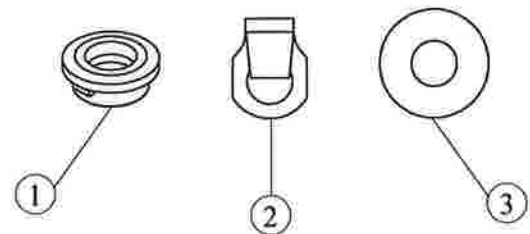
Links

Small Pin Type Connecting Links w/ Nylon Bushing:

Wexco Part Number	Length CC	UT Cross
200100	3.38"	LK721014S
200104	3.09"	5114940
301874	5.75"	LK721038-1
301874 Can not be used on Unitized Assemblies		



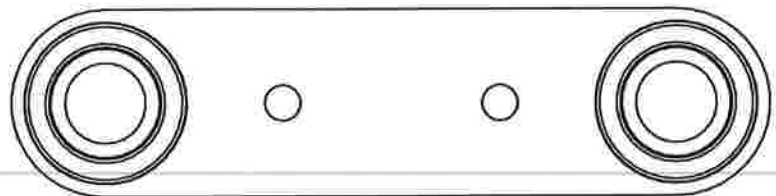
Wexco Part Number	Location	Description
300920	1	Press Fit Bushing
300924	2	Washer
300928	3	Spring Clip



Bosch Style Connecting Link for 16mm Ball Stud:

To be used when substituting 300783 ball stud in Adjustable Pin Pivot shafts

Wexco Part Number	Length CC
307105	69mm
307100	79mm
307102	82mm

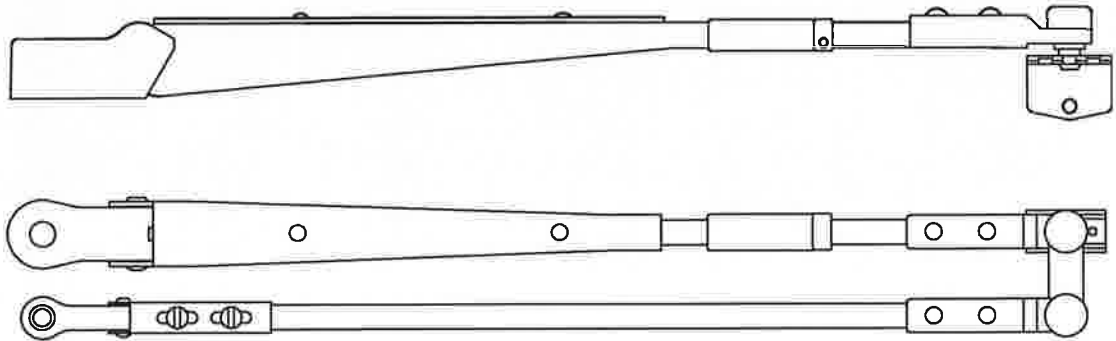
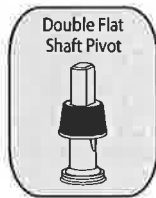


Link 307100 and 307105



Link 307102

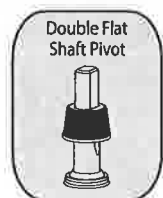
Double Flat Shaft Pantograph Arms



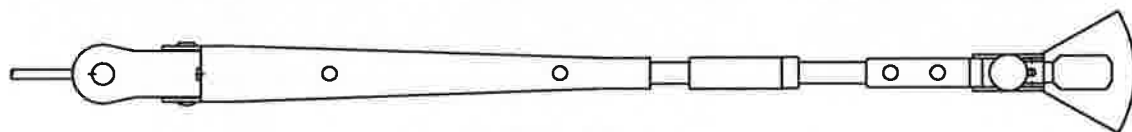
Part #	Size	Description	JE Cross	Anco Cross
200460	14"	Pantograph Dry Dyna Wiper Arm	67023	49-14PN
200461	16"	Pantograph Dry Dyna Wiper Arm	67024	49-16PN
200462	18"	Pantograph Dry Dyna Wiper Arm	67025	49-18PN
200463	20"	Pantograph Dry Dyna Wiper Arm	67026/52186	49-20PN
200464	22"	Pantograph Dry Dyna Wiper Arm	67027/52187	49-22PN
200465	24"	Pantograph Dry Dyna Wiper Arm	67028/52188	49-24PN
200467	28"	Pantograph Dry Dyna Wiper Arm	67030	49-26PN
200423N	20"	Pantograph Wet Dyna Wiper Arm	101447	49-20PN*
200479N	22"	Pantograph Wet Dyna Wiper Arm	67012	49-22PN*
200480N	24"	Pantograph Wet Dyna Wiper Arm	67013	49-24PN*
200489N	26"	Pantograph Wet Dyna Wiper Arm	67014	49-26PN*
200483N	28"	Pantograph Wet Dyna Wiper Arm	67015/67016	49-28PN*
200487N	31.5"	Pantograph Wet Dyna Wiper Arm	-	-

*Anco arms do not include wet kit

Double Flat Shaft Radial Arms



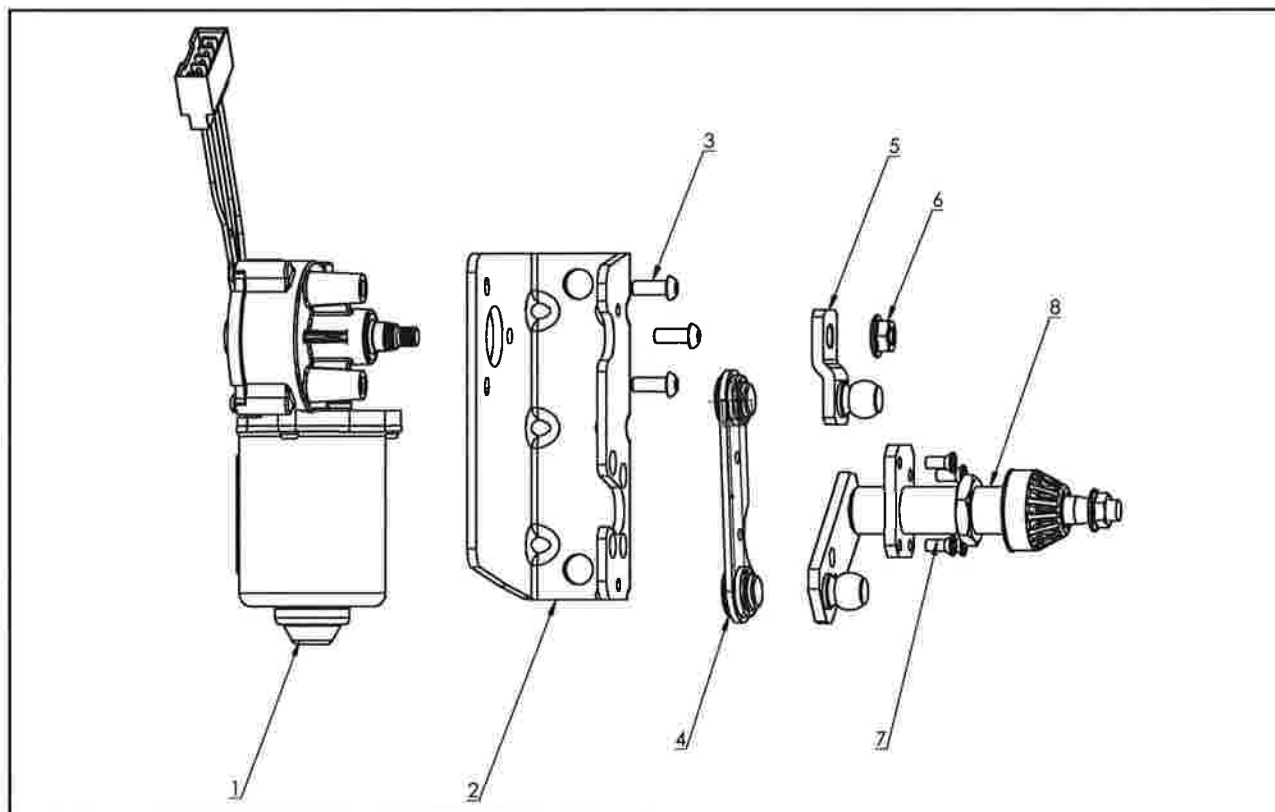
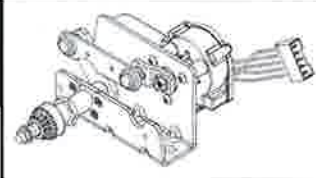
Radial Saddle Arm



Radial 9x3 Arm

Part #	Size	Description	JE Cross	Anco Cross (B)	Anco Cross (S)
201508N	14"	Radial Wet Dyna Wiper Arm	62217	49-14R*	45-23*
201509N	16"	Radial Wet Dyna Wiper Arm	62218	49-16R*	45-25*
201510N	18"	Radial Wet Dyna Wiper Arm	52181	49-18R*	45-27*
201511N	20"	Radial Wet Dyna Wiper Arm	52182	49-20R*	45-29*
201512N	22"	Radial Wet Dyna Wiper Arm	62219	49-22R*	45-30*
201513	24"	Radial Wet Dyna Wiper Arm	62220	-	-
201514N	26"	Radial Wet Dyna Wiper Arm	62221	-	-
201558	14"	Radial Dry Dyna Wiper Arm	52174	49-14R	45-23
201559	16"	Radial Dry Dyna Wiper Arm	52175	49-16R	45-25
201560	18"	Radial Dry Dyna Wiper Arm	52176	49-18R	45-27
201561	20"	Radial Dry Dyna Wiper Arm	52177	49-20R	45-29
201562	22"	Radial Dry Dyna Wiper Arm	52178	49-22R	45-30
201563	24"	Radial Dry Dyna Wiper Arm	52179	-	-
201564	26"	Radial Dry Dyna Wiper Arm	52180	-	-
201570	16"	Radial Wet 9x3 Hook 25° Bend	-	-	-
201571	16"	Radial Wet 9x3 Hook 25° Bend	-	-	-
201572	18"	Radial Wet 9x3 Hook 15° Bend	-	-	-
201573	18"	Radial Wet 9x3 Hook 15° Bend	-	-	-

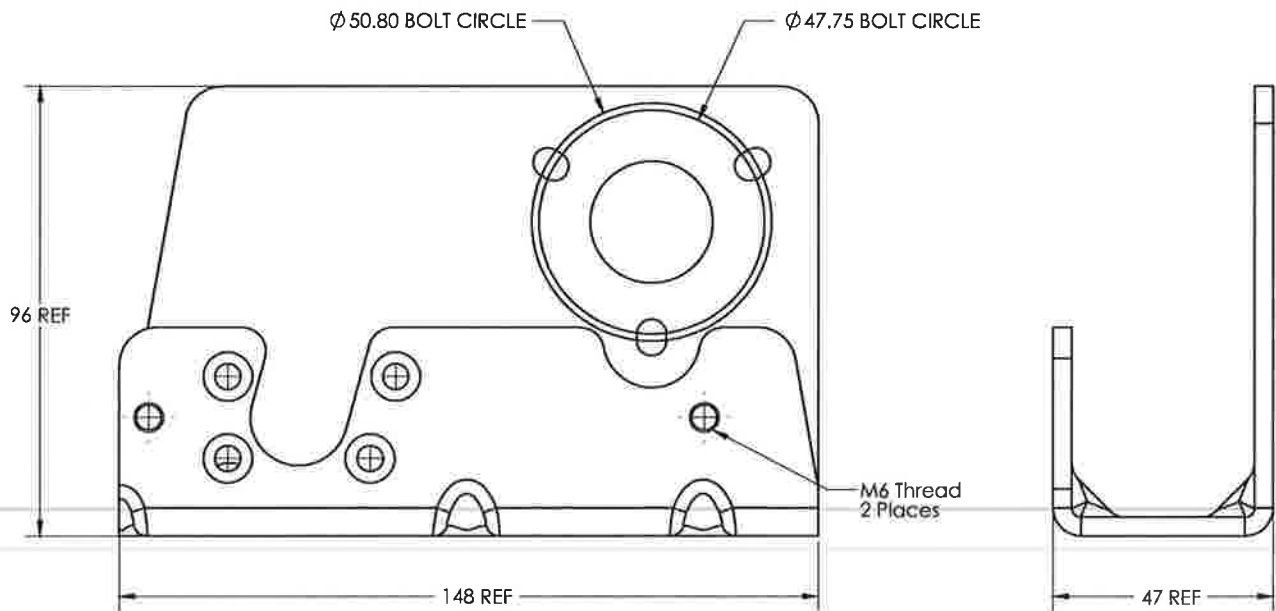
BOSCH Style Unitized Assemblies



Position	Wexco Part #	Bosch Cross	Qty	Description
1	-	-	1	Motor
2	400521	-	1	Bosch Style Motor Bracket
3	106800	-	3	Motor Screws Torque 8 - 10 Nm
4	Refer to chart on page 25	-	1	Bosch Style Connecting Link
5	-	-	1	Bosch Style Motor Crank
6	400200	-	1	Crank Nut Torque 14 - 18 Nm
7	300930	-	4	M5 Flat Head Screw Torque 3 - 4 Nm
8	See page 25	-	1	Bosch Style Pivot Assembly

Bosch Style Unitized Bracket

Heavy Duty Unitized Bracket: Replaces Bosch & Doga Brackets
Wexco Part # 400521

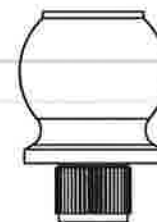
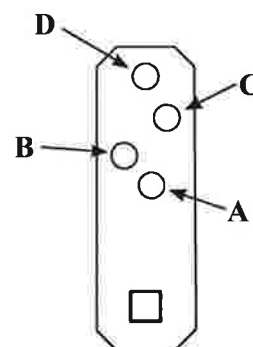
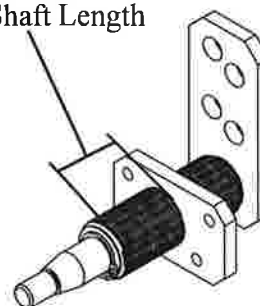


The Bosch style Unitized bracket will accept Any J3/WEX/Bosch Motor.

A12 x M8 Din Taper Pivot Shafts

Wipe Angle	Length	Wexco Part #	Hole
45°	3/4" (23.0mm)	307000	D
	1" (27.0mm)	307009	
	1 1/4" (24.0mm)	307005	
	2" (59.7mm)	307001	
	3" (82.0mm)	307010	
55°	3/4" (23.0mm)	307000	C
	1" (27.0mm)	307009	
	1 1/4" (24.0mm)	307005	
	2" (59.7mm)	307001	
	3" (82.0mm)	307010	
60°	3/4" (23.0mm)	-	C
	1" (27.0mm)	-	
	1 1/4" (24.0mm)	307006	
	2" (59.7mm)	-	
	3" (82.0mm)	-	
68°	3/4" (23.0mm)	307007	C
	1" (27.0mm)	307004	
	1 1/4" (24.0mm)	307008	
	2" (59.7mm)	307003	
	3" (82.0mm)	307002	
70°	3/4" (23.0mm)	307000	B
	1" (27.0mm)	307009	
	1 1/4" (24.0mm)	307005	
	2" (59.7mm)	307001	
	3" (82.0mm)	307010	
80°	3/4" (23.0mm)	-	B
	1" (27.0mm)	-	
	1 1/4" (24.0mm)	307006	
	2" (59.7mm)	-	
	3" (82.0mm)	-	
85°	3/4" (23.0mm)	307007	B
	1" (27.0mm)	307004	
	1 1/4" (24.0mm)	307008	
	2" (59.7mm)	307003	
	3" (82.0mm)	307002	
89°	3/4" (23.0mm)	-	A
	1" (27.0mm)	-	
	1 1/4" (24.0mm)	307006	
	2" (59.7mm)	-	
	3" (82.0mm)	-	
93°	3/4" (23.0mm)	307000	A
	1" (27.0mm)	307009	
	1 1/4" (24.0mm)	307005	
	2" (59.7mm)	307001	
	3" (82.0mm)	307010	
105°	3/4" (23.0mm)	307007	A
	1" (27.0mm)	307004	
	1 1/4" (24.0mm)	307008	
	2" (59.7mm)	307003	
	3" (82.0mm)	307002	

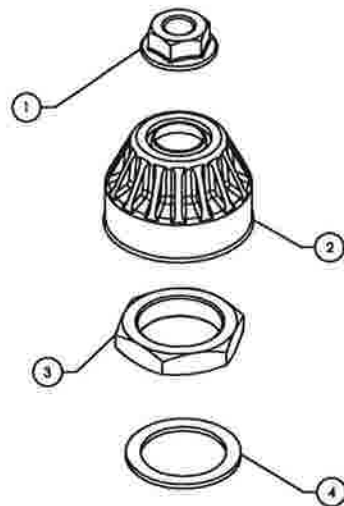
Pivot Shaft Length



Ball stud 200227

Ball stud 200227 is pressed into the hole associated with the desired wipe angle, press force is roughly 3500 Pounds. The lever plate holes are labeled A, B, C and D starting closest to the Pivot shaft and extending radially. Holes are one time use only. Wipe angles assume 27mm Crank length.

A12 x M8 Din Pivot Accessories



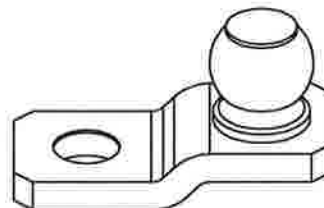
DIN Taper Pivot Hardware Kit
Wexco Part Number 300817

300817 DIN Taper Pivot Hardware Parts Breakdown		
Position	Wexco Part Number	Description
1	400200	M8x1.25 Flanged Hex Nut
2	300933	Plastic Cap for DIN Taper Pivot Shaft
3	300932	M20x1 Nut for DIN Taper Pivot Shaft
4	300931	M20 Washer for DIN Taper Pivot Shaft

Cranks

Bosch Style Motor Cranks with 16mm Ball Stud:

Wexco Part Number	Length	Motor Used on
200190	27mm	Bosch/WEX
207100	27mm	J3



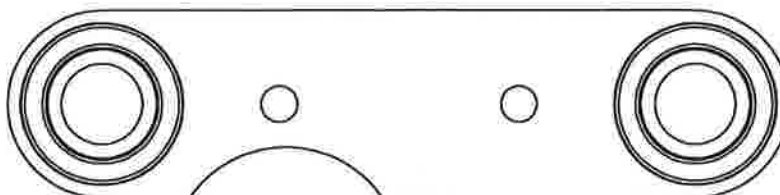
Links

Bosch Style Connecting Link for 16mm Ball Stud:

Wexco Part Number	Length CC
307105	69mm
307100	79mm
307102	82mm

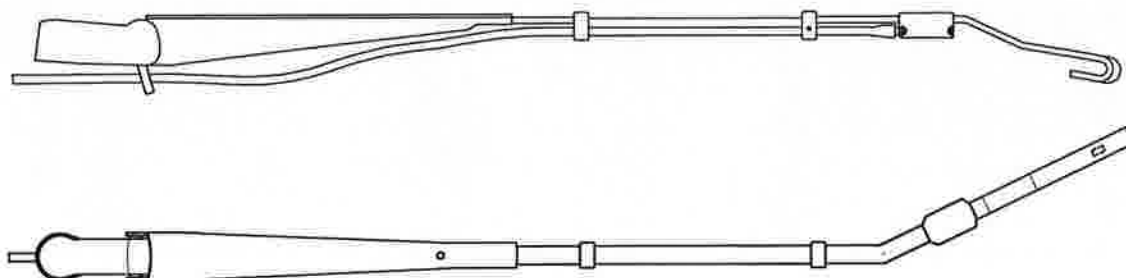
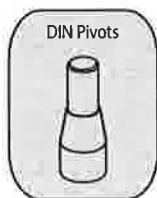


Link 307100 and 307105



Link 307102

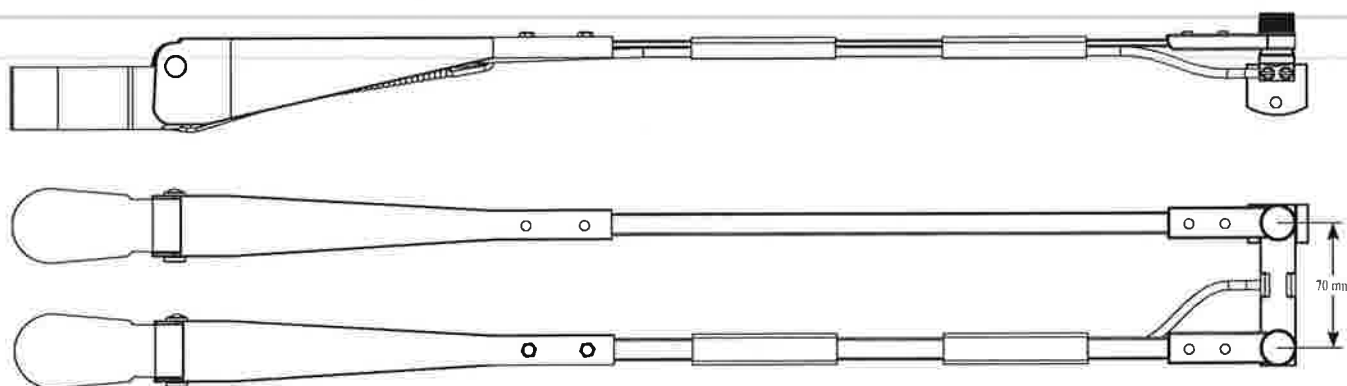
A12 x C8 DIN Arms



Arm shown is 201598

A12 x C8 DIN Taper Radial Arms

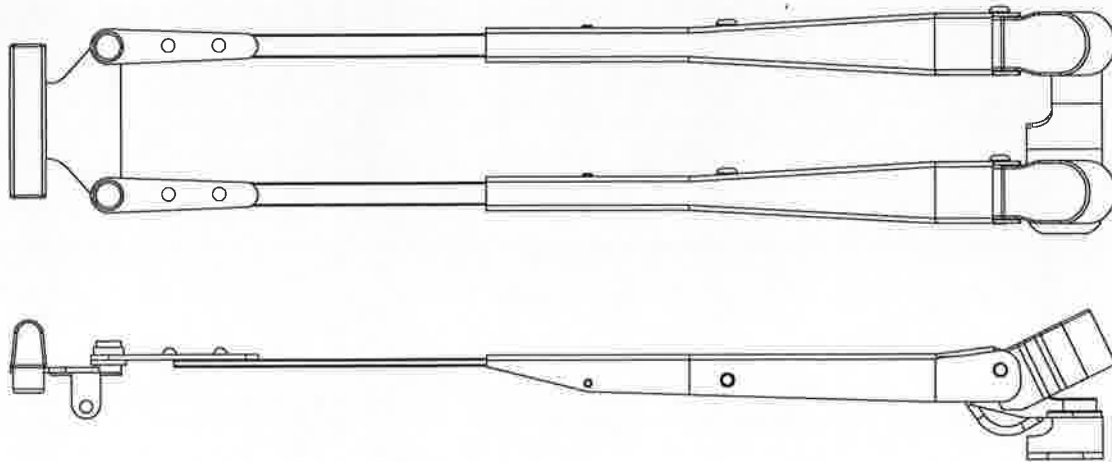
Part #	Size	Description
201578	600mm	A12 x C8 Din Radial Dry 9x3 Hook Arm
201579	432mm	A12 x C8 Din Radial Dry Arm with Block
201589	600mm	A12 x C8 Din Radial Dry 9x3 Hook Arm
201595	450mm	A12 x C8 Din Radial Dry 13.6mm Saddle Arm
201596	500mm	A12 x C8 Din Radial Dry 13.6mm Saddle Arm
201598	510mm	A12 x C8 Din Radial Wet 9x3 Hook Arm (with 22° bend)
201599	600mm	A12 x C8 Din Radial Dry Arm
202202	375mm	A12 x C8 Din Radial Dry 9x3 Hook Arm
202203	400mm	A12 x C8 Din Radial Dry 9x3 Hook Arm
202200	475mm	A12 x C8 Din Radial Dry 9x3 Hook Arm
202204	500mm	A12 x C8 Din Radial Dry 9x3 Hook Arm



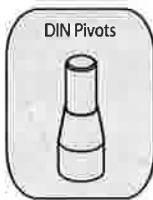
A12 x C8 DIN Taper Pantograph Arms

Part #	Size	Description
104569	680mm	A12 x C8 Din Panto Dry 17mm Saddle 70mm Spacer Arm
104560	680mm	A12 x C8 Din Panto Wet 17mm Saddle 70mm Spacer Arm
104570	800mm	A12 x C8 Din Panto Wet 17mm Saddle 70mm Spacer Arm

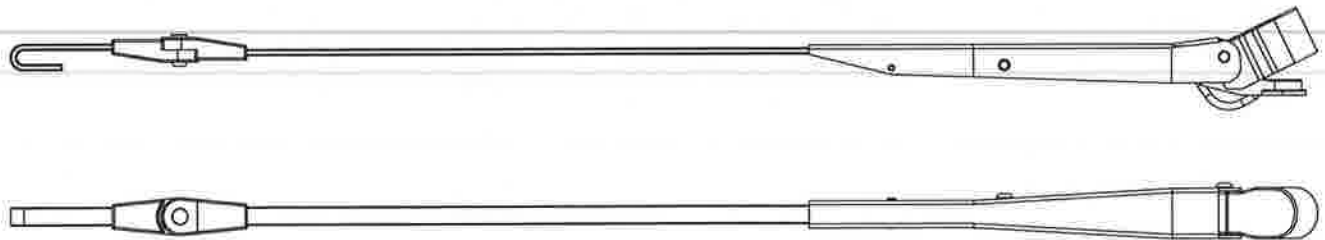
A12 x C8 DIN Adjustable Length Arms



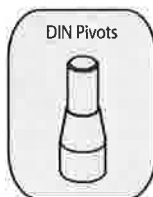
A12 x C8 DIN Adjustable Length Carbon Steel Pantograph Arms



Part #	Size	Description
200710D	14"-18"	A12 x C8 DIN, 350-450mm adj, P/D 13.6mm saddle
200730D	20"-24"	A12 x C8 DIN, 500-600mm adj, P/D 13.6mm saddle
200710W	14"-18"	A12 x C8 DIN, 350-450mm adj, P/W 13.6mm saddle
200730W	20"-24"	A12 x C8 DIN, 500-600mm adj, P/W 13.6mm saddle

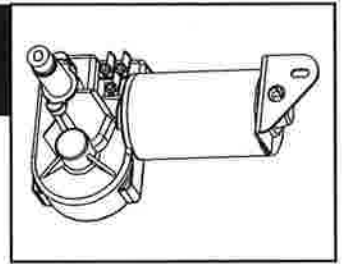


A12 x C8 DIN Adjustable Length Carbon Steel Radial Arms



Part #	Size	Description
200740D	14"-18"	A12 x C8 DIN, 350-450mm adj, R/D 9x3 J hook
200760D	20"-24"	A12 x C8 DIN, 500-600mm adj, R/D 9x3 J hook
200740W	14"-18"	A12 x C8 DIN, 350-450mm adj, R/W 9x3 J hook
200760W	20"-24"	A12 x C8 DIN, 500-600mm adj, R/W 9x3 J hook

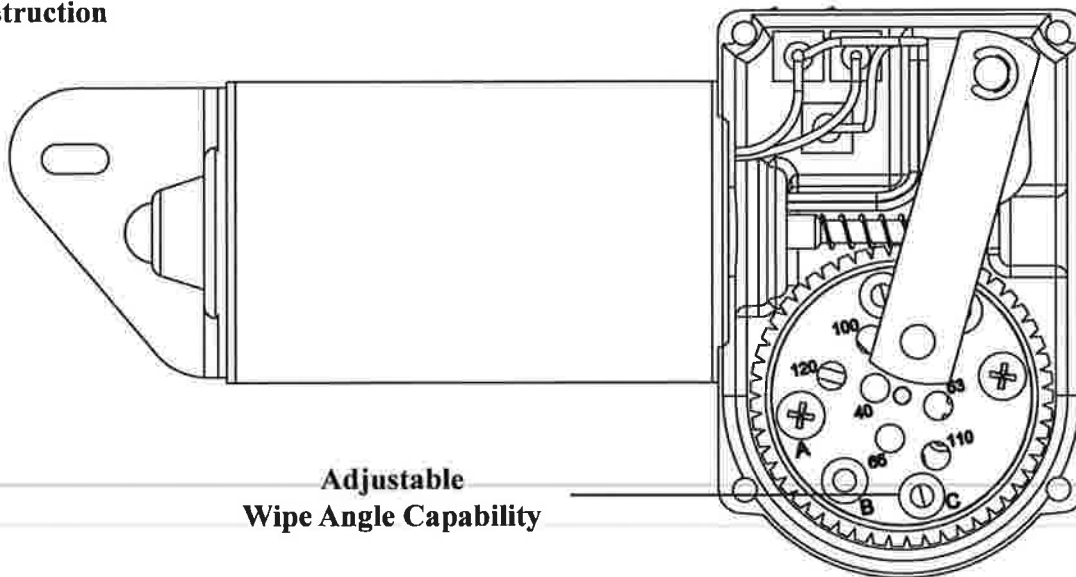
WWF Motor Systems



WWF Motor Description

The WWF wiper system provides a totally self-contained oscillating shaft requiring no external linkage. The universal popularity of the WWF motor is enhanced by the fact that it gives the automotive user marine quality at no extra cost and is, consequently, ideal for any type of service. Parts exposed to weather are corrosion resistant. An "O" ring between the oscillating shaft and its bearing stud prevents water from entering. A worm gear on the armature shaft turns a large molded drive gear.

Construction



The WWF motor is set for a default 110° wipe angle that be adjusted at the time of installation to the angles shown. Quantity orders can be supplied set at 40°, 53°, 65°, 85°, 100° and 110°. Left or right hand park position is determined from view shown above and can be adjusted.

Applications

- Rear-window, motor homes
- Off-highway constructions Equipment
- Agricultural Equipment
- Marine

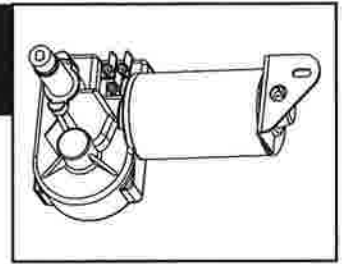
Features

- Left or Right hand park
- Easy to replace switch
- Optional two speed switch

WWF Part Numbers

Wexco Part Number	Voltage	Shaft Length
4R1.12.R110D	12	1"
4R1.24.R110D	24	1"
4R2.12.R110D	12	2"
4R2.24.R110D	24	2"
4R3.12.R110D	12	3"
4R3.24.R110D	24	3"

WWF Motor Systems



Specifications

Voltage: 12 or 24 Volts
 Weight: Approximately 3 lbs.
 Speed: 40/60 rpm $\pm 10\%$
 12V Current Draw: 2/3 Amps low/high, no load
 12V Stall Current: 12 Amps
 Terminals: 1/4" Male Blade
 Hardware Kit: Wexco Part # 400300
 Park Direction: CW/CCW
 Shaft Length: 1", 2" and 3".

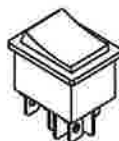
Acceptable WWF Motor Arm & Blade Combinations						
Wipe Angle	12"	14"	16"	18"	20"	Arm length
40°	13" - 20"	13" - 20"	13" - 20"	15" - 25"	14" - 23"	Blade Lengths
53°	13" - 20"	13" - 20"	13" - 20"	15" - 25"	14" - 23"	
65°	13" - 20"	13" - 20"	13" - 20"	15" - 25"	14" - 23"	
85°	13" - 20"	13" - 20"	13" - 20"	15" - 25"	14" - 23"	
100°	13" - 20"	13" - 20"	13" - 20"			
110°	13" - 20"	13" - 20"	13" - 20"			
120°	13" - 20"	13" - 20"	13" - 20"			

Included Switch Bracket

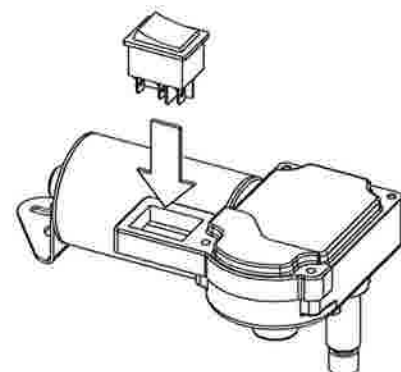
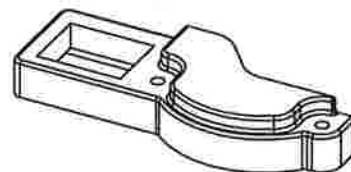
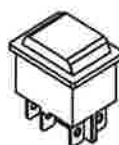
Switch Kits

WWF switch kits are available stand alone or in large enough quantities pre installed by Wexco.

Two speed switch kit
 Park/Low Speed/High Speed
 Wexco Part # 200258



One speed switch kit
 Park/Low Speed or High Speed
 Wexco Part # 200257

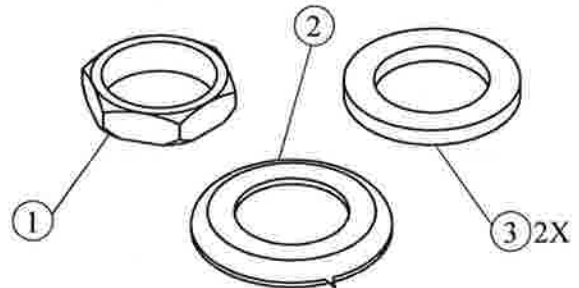


WWF Motor Systems

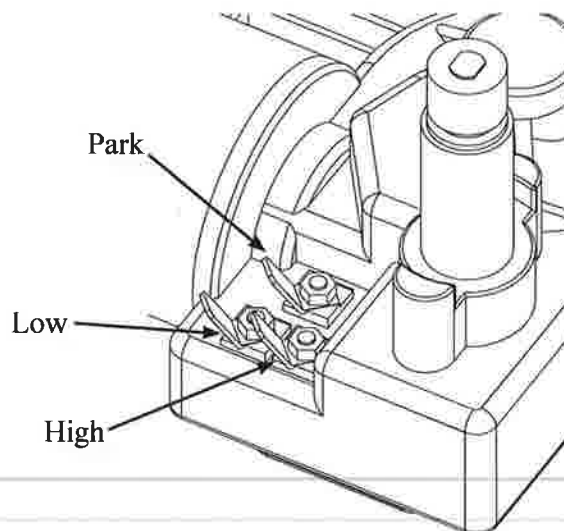
WWF Motor Hardware Kit

Wexco Part # 400300

400300 Parts Breakdown		
Location	Part Number	Description
1	400297	M16x1 Nut
2	400298	Spacer
3	400299	Rubber Washer (2 X)

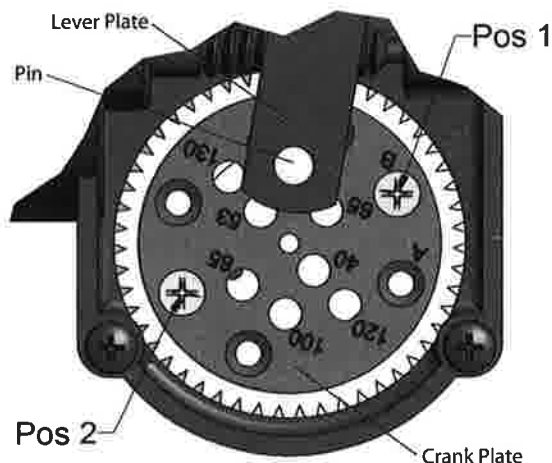


Wiring Diagram



- Wire motor using a coast to park switch, or use the Wexco supplied WWF motor switch kits.
- Must be grounded through vehicle chassis.
- 12V motor Requires 12 Amp external fuse
24V motor Requires 6 Amp external fuse

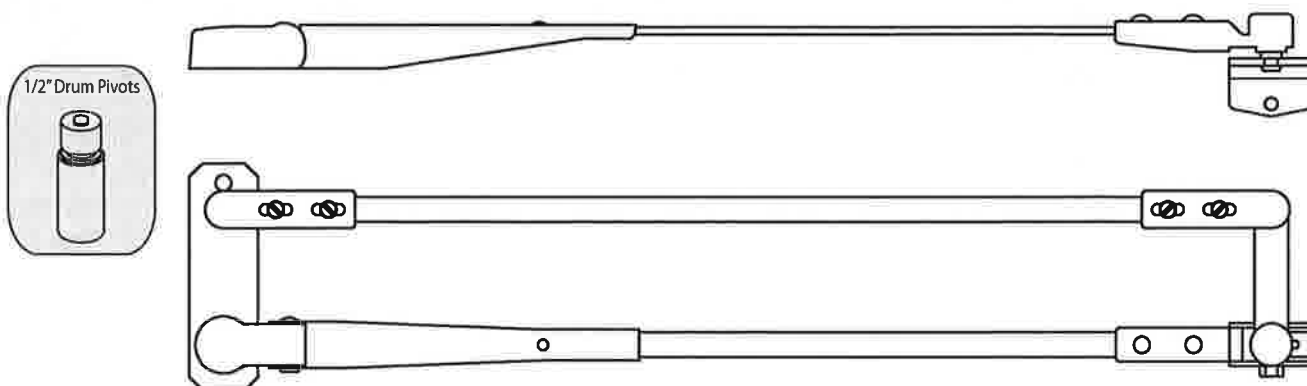
Wipe angle Adjustments



Angle/Park	Hole	Pos.
40/R	C	2
40/L	C	1
53/R	C	1
53/L	C	2
65/R	A	1
65/L	A	2
85/R	A	2
85/L	A	1
100/R	B	2
100/L	B	1
110/R	B	1
110/L	B	2

The WWF motor wipe angle can be adjusted by removing the gear box cover and moving the lever plate pin to the correctly labeled hole. Left or right hand park can be achieved by changing the orientation of the gear plate with regard to pos 1 and pos 2, shown in the diagram.

1/2" DRUM Pantograph Arms

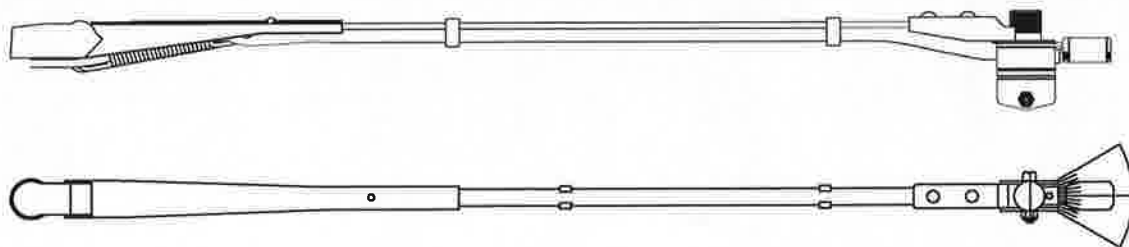
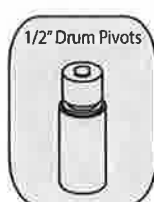


Part #	Size	Description	JE Cross
201405	12"	1/2" Drum Pantograph Dry Saddle Arm	-
201406	14"	1/2" Drum Pantograph Dry Saddle Arm	52189
201407	16"	1/2" Drum Pantograph Dry Saddle Arm	52190
201408	18"	1/2" Drum Pantograph Dry Saddle Arm	-
201409	20"	1/2" Drum Pantograph Dry Saddle Arm	-
201410	22"	1/2" Drum Pantograph Dry Saddle Arm	-

*For flat glass only

1/2" DRUM and 1/2" DRUM adjustable length arms may be used as ANCO replacements.

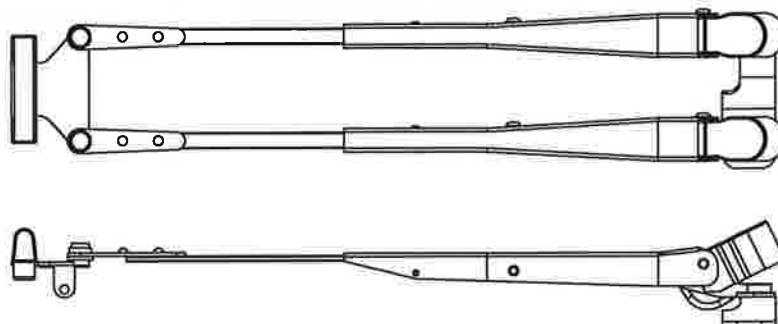
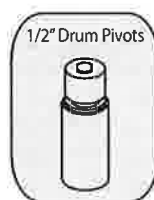
Radial 1/2" DRUM Adjustable Saddle Arms



Part #	Size	Description	Anco Cross
201502N	12"	1/2" Drum Radial Wet Adjustable Saddle Arm	-
201503N	14"	1/2" Drum Radial Wet Adjustable Saddle Arm	44-14*
201504N	16"	1/2" Drum Radial Wet Adjustable Saddle Arm	44-16*
201505N	18"	1/2" Drum Radial Wet Adjustable Saddle Arm	44-18*
201506N	20"	1/2" Drum Radial Wet Adjustable Saddle Arm	44-20*
201523N	22"	1/2" Drum Radial Wet Adjustable Saddle Arm	-
201552	12"	1/2" Drum Radial Dry Adjustable Saddle Arm	-
201553	14"	1/2" Drum Radial Dry Adjustable Saddle Arm	44-14
201554	16"	1/2" Drum Radial Dry Adjustable Saddle Arm	44-16
201555	18"	1/2" Drum Radial Dry Adjustable Saddle Arm	44-18
201556	20"	1/2" Drum Radial Dry Adjustable Saddle Arm	44-20
201557	22"	1/2" Drum Radial Dry Adjustable Saddle Arm	-
*Anco arms do not include wet kit			

*For flat glass only

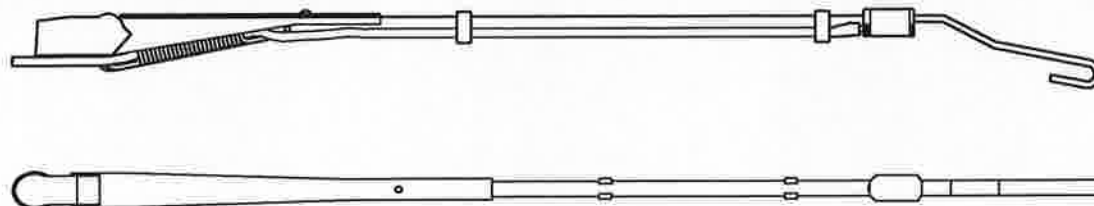
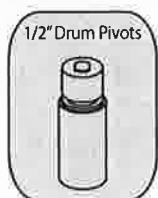
1/2" DRUM Adjustable Length Pantograph Arms



Part #	Size	Description
200715D	14"-18"	1/2" drum, 350-450mm adj, P/D 13.6mm saddle
200716D	20"-24"	1/2" drum, 500-600mm adj, P/D 13.6mm saddle
200715W	14"-18"	1/2" drum, 350-450mm adj, P/W 13.6mm saddle
200716W	20"-24"	1/2" drum, 500-600mm adj, P/W 13.6mm saddle

*For flat glass only

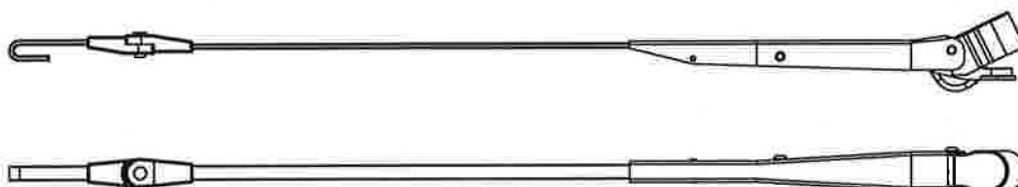
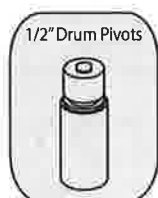
1/2" DRUM Radial 9x3 Hook Arms



Part #	Size	Description
200670N	12"	1/2" Drum Radial Wet 9x3 Hook Arm
200671N	14"	1/2" Drum Radial Wet 9x3 Hook Arm
200672N	16"	1/2" Drum Radial Wet 9x3 Hook Arm
200673N	18"	1/2" Drum Radial Wet 9x3 Hook Arm
200674N	20"	1/2" Drum Radial Wet 9x3 Hook Arm
200675N	22"	1/2" Drum Radial Wet 9x3 Hook Arm
200680	12"	1/2" Drum Radial Dry 9x3 Hook Arm
200681	14"	1/2" Drum Radial Dry 9x3 Hook Arm
200682	16"	1/2" Drum Radial Dry 9x3 Hook Arm
200683	18"	1/2" Drum Radial Dry 9x3 Hook Arm
200684	20"	1/2" Drum Radial Dry 9x3 Hook Arm
200685	22"	1/2" Drum Radial Dry 9x3 Hook Arm

*For flat glass only

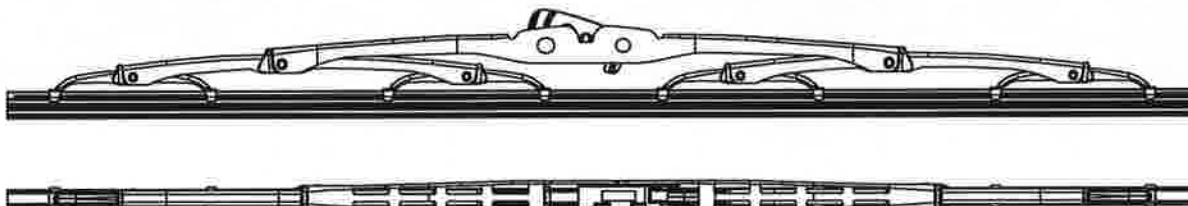
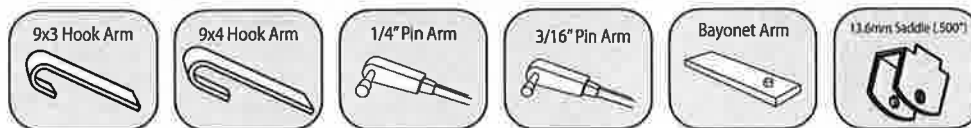
1/2" DRUM Adjustable Length Radial 9x3 Hook Arms



Part #	Size	Description
200717D	14"-18"	1/2" drum, 350-450MM adj, R/D 9x3 J hook
200718D	20"-24"	1/2" drum, 500-600mm adj, R/D 9x3 J hook
200717W	14"-18"	1/2" drum, 350-450mm adj, R/W 9x3 J hook
200718W	20"-24"	1/2" drum, 500-600mm adj, R/W 9x3 J hook

*For flat glass only

DYNA OEM Universal Wipers

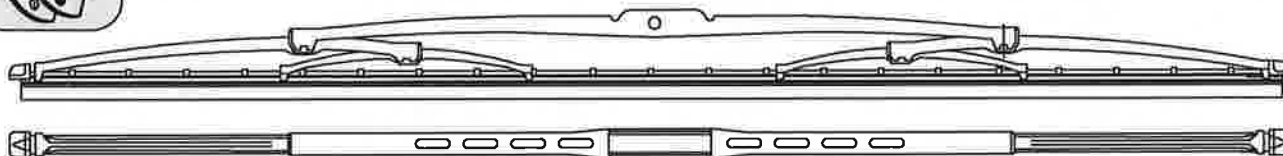


3 Series Wipers:

The 3 Series has the exclusive Dyna aerodynamic metal frame with multiple pressure points to ensure a uniform wipe across the windshield. Articulated pinned joints, a dual stainless steel spine, a zinc coated frame, and a molded chlorinated rubber insert guarantee better stability and excellent performance.

Part #	Size	Description	Anco Cross	Anco Bulk
13311	11"	11" Dyna D3G Universal Wiper Blade	91-11	-
13312	12"	12" Dyna D3G Universal Wiper Blade	91-12	-
13313	13"	13" Dyna D3G Universal Wiper Blade	91-13	-
13314	14"	14" Dyna D3G Universal Wiper Blade	91-14	-
13315	15"	15" Dyna D3G Universal Wiper Blade	91-15	-
13316	16"	16" Dyna D3G Universal Wiper Blade	91-16	-
13317	17"	17" Dyna D3G Universal Wiper Blade	91-17	-
13318	18"	18" Dyna D3G Universal Wiper Blade	91-18	-
13319	19"	19" Dyna D3G Universal Wiper Blade	91-19	31319-25
13320	20"	20" Dyna D3G Universal Wiper Blade	91-20	31320-25
13321	21"	21" Dyna D3G Universal Wiper Blade	91-21	-
13322	22"	22" Dyna D3G Universal Wiper Blade	91-22	31322-25
13324	24"	24" Dyna D3G Universal Wiper Blade	91-24	31324-25
13326	26"	26" Dyna D3G Universal Wiper Blade	91-26	-
13328	28"	28" Dyna D3G Universal Wiper Blade	91-28	-

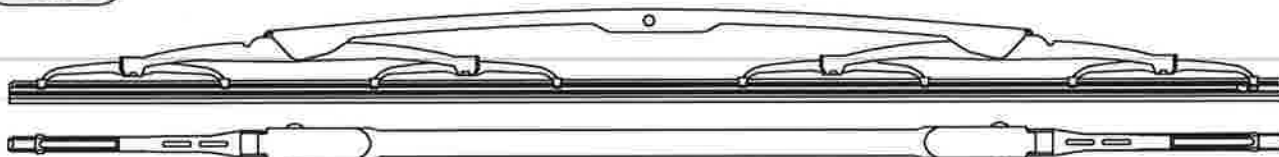
Saddle OEM Heavy Duty Wipers



4 Series Wipers (DYNA OEM):

The 4 Series has an all-metal frame with multiple pressure points to ensure a uniform wipe across the windshield. A dual stainless steel spine, a zinc coated frame, and a molded chlorinated rubber insert guarantee better stability and excellent performance. Used on many OEM heavy duty applications.

Part #	Size	Description	UT Cross	Anco Cross
13412	12"	12" OEM 13.6mm Saddle Wiper	52168	-
13414	14"	14" OEM 13.6mm Saddle Wiper	52169	-
13416	16"	16" OEM 13.6mm Saddle Wiper	52170	-
13418	18"	18" OEM 13.6mm Saddle Wiper	52171	-
13420	20"	20" OEM 13.6mm Saddle Wiper	52172	50-20
13422	22"	22" OEM 13.6mm Saddle Wiper	51916	50-22

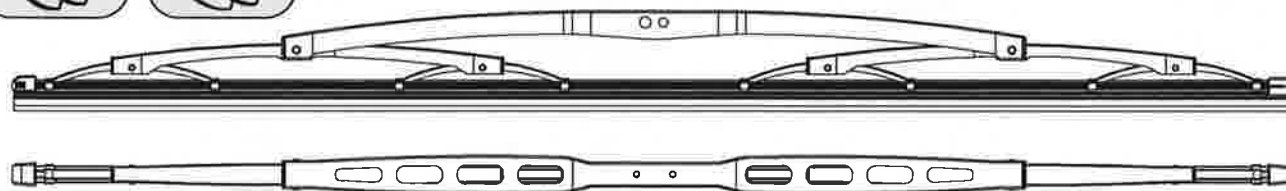


7 Series Wipers:

The 7 Series has an all-metal, solid bridge frame with multiple pressure points to ensure a uniform wipe across the windshield. Articulated pinned joints, a dual stainless steel spine, a zinc coated frame, and a molded chlorinated rubber insert guarantee better stability and excellent performance. Used on many Heavy Duty OEM applications.

Part #	Size	Description	UT Cross	Anco Cross	Trico Cross
13724	24"	24" OEM 13.6mm Saddle Wiper	52147	50-24	68-241
13726	26"	26" OEM 13.6mm Saddle Wiper	52148	50-26	68-261
13728	28"	28" OEM 13.6mm Saddle Wiper	52149	50-28	68-281
13730	30"	30" OEM 13.6mm Saddle Wiper	-	50-30	-
13732	32"	32" OEM 13.6mm Saddle Wiper	-	50-32	-
13734SS	34"	34" 13.6mm/17mm 480 Stainless Steel Saddle Wiper	-	-	-
13736SS	36"	36" 13.6mm/17mm 480 Stainless Steel Saddle Wiper	-	-	-

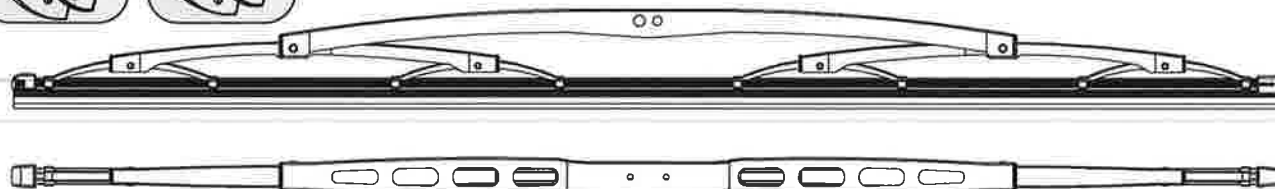
Saddle Heavy Duty Wipers



8 Series Wipers:

The 8 Series has an aerodynamic, all-metal heavy gauged frame with multiple pressure points to ensure a uniform wipe across the windshield. Articulated joints, a dual stainless steel spine, and a molded chlorinated rubber insert guarantee better stability and excellent performance. All the necessary hardware is included in each package.

Part #	Size	Description	Bosch Cross	Trico Cross
13824	24"	24" 13.6/17mm Heavy Duty Saddle Wiper	3 398 110 916	67-241
13826	26"	26" 13.6/17mm Heavy Duty Saddle Wiper	3 398 110 917	67-261
13828	28"	28" 13.6/17mm Heavy Duty Saddle Wiper	3 398 110 918	67-281



700 Series Wipers:

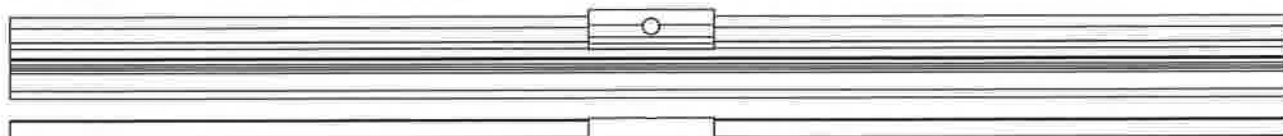
The 700 Series has an aerodynamic, 480 stainless steel heavy gauged frame with multiple pressure points to ensure a uniform wipe across the windshield. Articulated joints, a dual stainless steel spine, and a molded chlorinated rubber insert guarantee better stability and excellent performance.

Part #	Size	Description
137320SS	32"	32" 21mm/27mm 480 Stainless HD Wiper
137340SS	34"	34" 21mm/27mm 480 Stainless HD Wiper
137360SS	36"	36" 21mm/27mm 480 Stainless HD Wiper
137380SS	38"	38" 21mm/27mm 480 Stainless HD Wiper
137400SS	40"	40" 21mm/27mm 480 Stainless HD Wiper

Narrow Saddle Wipers



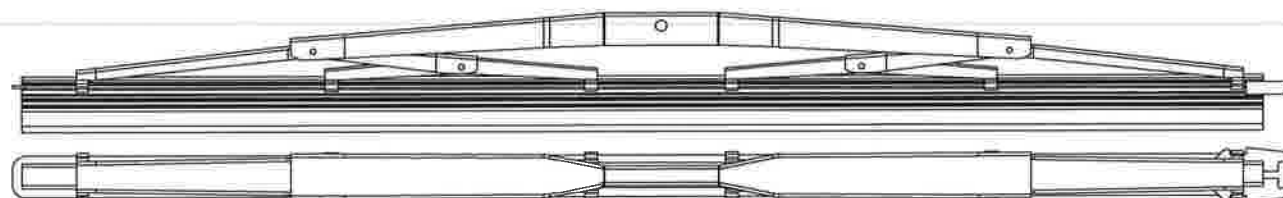
Fits both 1 and 2 Series Wipers



1 Series Wipers:

1 series blades are made with a stainless steel frame and designed specifically for flat windshields. 1 series blades fit .200" width saddle without space and .250" with spacer.

Part #	Size	Description	Anco Cross	Trico Cr. (B)	Trico Cr. (S)
13111	11"	11" Narrow Saddle SS Flat Blade (Silver)	51-11	-	61-110
13112	12"	12" Narrow Saddle SS Flat Blade (Silver)	51-12	-	61-120
13113	13"	13" Narrow Saddle SS Flat Blade (Silver)	51-13	61-131	61-130
13114	14"	14" Narrow Saddle SS Flat Blade (Silver)	51-14	-	61-140
13115	15"	15" Narrow Saddle SS Flat Blade (Silver)	51-15	61-151	61-150
13116	16"	16" Narrow Saddle SS Flat Blade (Silver)	51-16	61-161	61-160
13117	17"	17" Narrow Saddle SS Flat Blade (Silver)	51-17	-	61-170
13118	18"	18" Narrow Saddle SS Flat Blade (Silver)	51-18	61-181	61-180
13119	19"	19" Narrow Saddle SS Flat Blade (Silver)	51-19	-	61-190
13120	20"	20" Narrow Saddle SS Flat Blade (Silver)	51-20	61-201	61-200
13121	21"	21" Narrow Saddle SS Flat Blade (Silver)	51-21	-	61-210
13122	22"	22" Narrow Saddle SS Flat Blade (Silver)	51-22	-	61-220

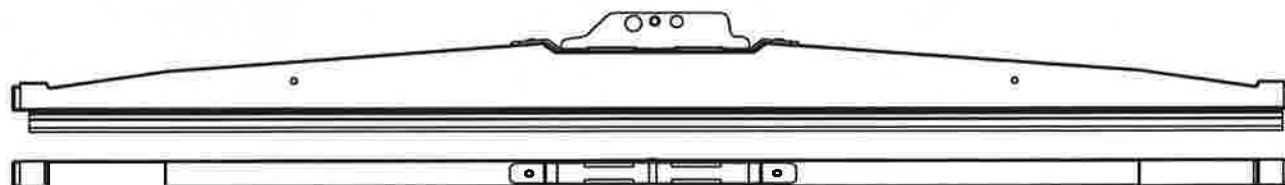
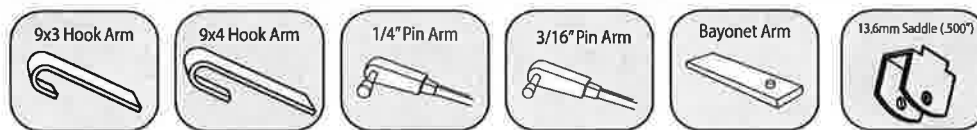


2 Series Wipers:

2 series blades are designed with a heavy duty frame and a heavier rubber element. The 2 series is designed to flex to the contour of the windshield. 2 series blades fit .200" width saddle without space and .250" with spacer.

Part #	Size	Description	Anco Cross	Trico Cr. (B)	Trico Cr. (S)
13215	15"	15" Narrow Saddle Heavy Duty Flex Blade (Black)	52-15	63-151	-
13216	16"	16" Narrow Saddle Heavy Duty Flex Blade (Black)	52-16	-	63-160
13218	18"	18" Narrow Saddle Heavy Duty Flex Blade (Black)	52-18	63-181	63-180
13220	20"	20" Narrow Saddle Heavy Duty Flex Blade (Black)	52-20	63-201	63-200
13222	22"	22" Narrow Saddle Heavy Duty Flex Blade (Black)	52-22	-	-
13224	24"	24" Narrow Saddle Heavy Duty Flex Blade (Black)	52-24	-	-

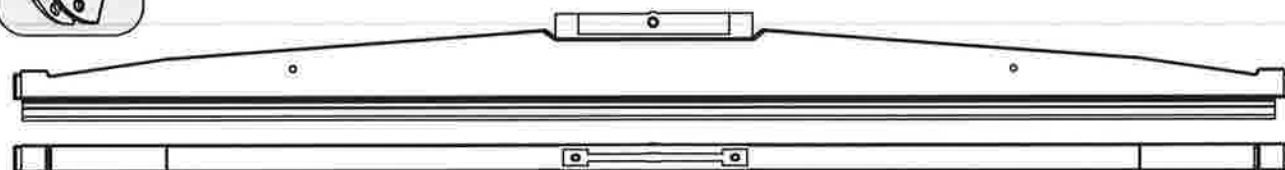
Winter Wipers



Winter Series Wipers:

The W Series is designed with a rubber boot that protect the pin riveted frame from freezing in icy and snowy conditions.

Part #	Size	Description	Anco Cross	Trico Cross
WB13	13"	13" Universal Winter Blade	30-13	37-131
WB15	15"	15" Universal Winter Blade	30-15	37-150
WB16	16"	16" Universal Winter Blade	30-16	37-160
WB18	18"	18" Universal Winter Blade	30-18	37-180
WB20	20"	20" Universal Winter Blade	30-20	37-205
WB22	22"	22" Universal Winter Blade	30-22	37-225
WB24	24"	24" Universal Winter Blade	30-24	37-245
WB26	26"	26" Universal Winter Blade	30-26	37-260
WB28	28"	28" Universal Winter Blade	30-28	37-280

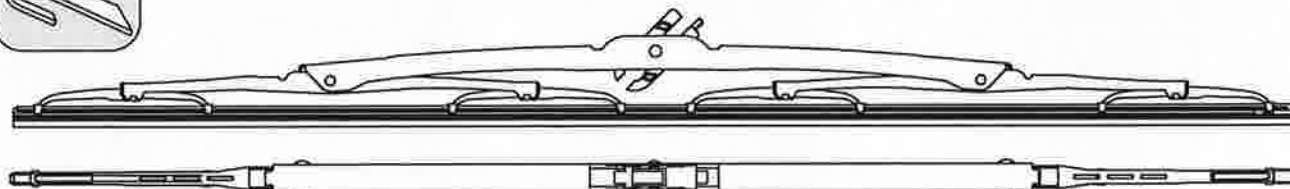


Winter Narrow Series Wipers:

The WN Series is designed with a rubber boot that protect the pin riveted frame from freezing in icy and snowy conditions. WN series blades fit .200" width saddle without space and .250" with spacer.

Part #	Size	Description	Anco Cross	Trico Cross
WNB13	13"	13" Narrow Saddle Winter Blade	59-13	66-130
WNB15	15"	15" Narrow Saddle Winter Blade	59-15	66-150
WNB16	16"	16" Narrow Saddle Winter Blade	59-16	-
WNB18	18"	18" Narrow Saddle Winter Blade	59-18	66-180
WNB20	20"	20" Narrow Saddle Winter Blade	59-20	66-200
WNB22	22"	22" Narrow Saddle Winter Blade	59-22	-
WNB24	24"	24" Narrow Saddle Winter Blade	59-24	-

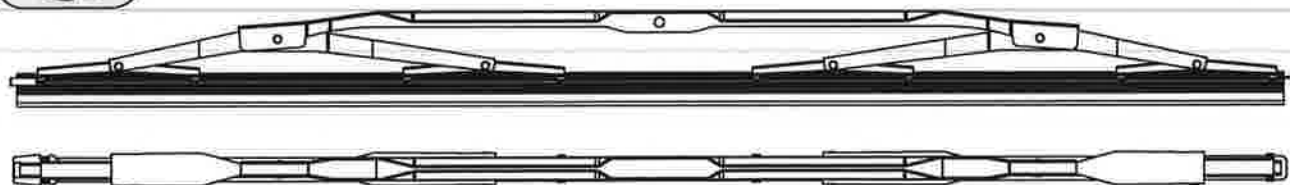
Specialty Wipers



400 Series Wipers:

The 400 Series has an all-metal frame with multiple pressure points to ensure a uniform wipe across the windshield. Pinned joints, a dual stainless steel spine, and a molded chlorinated rubber insert guarantee better stability and excellent performance. Used OEM on Recreational Vehicles

Part #	Size	Description
134240	24"	24" 12x4 Hook Wiper Blade
134260	26"	26" 12x4 Hook Wiper Blade
134280	28"	28" 12x4 Hook Wiper Blade
134300	30"	30" 12x4 Hook Wiper Blade
134320	32"	32" 12x4 Hook Wiper Blade

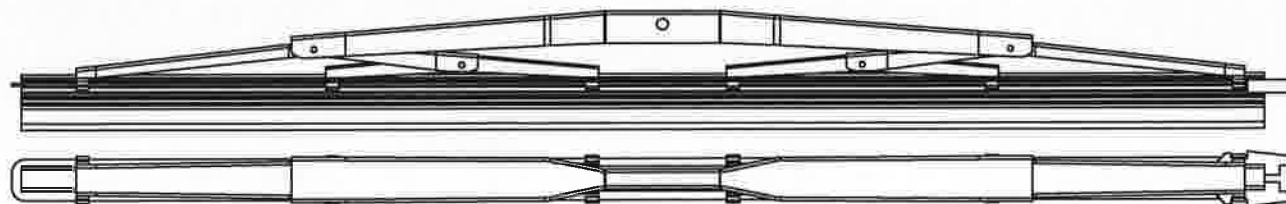


Transit Bus Wipers:

The Transit Series has an all-metal stainless steel frame with multiple pressure points to ensure a uniform wipe across the windshield. Pinned joints, a dual stainless steel spine, and a molded chlorinated rubber insert guarantee better stability and excellent performance.

Part #	Size	Description	Anco (Black) Cross	Anco (Silver) Cross
13226SS	26"	26" .500" Saddle 480 Stainless Steel Transit Wiper	52-27	52-26
13228SS	28"	28" .500" Saddle 480 Stainless Steel Transit Wiper	-	-

Specialty Wipers

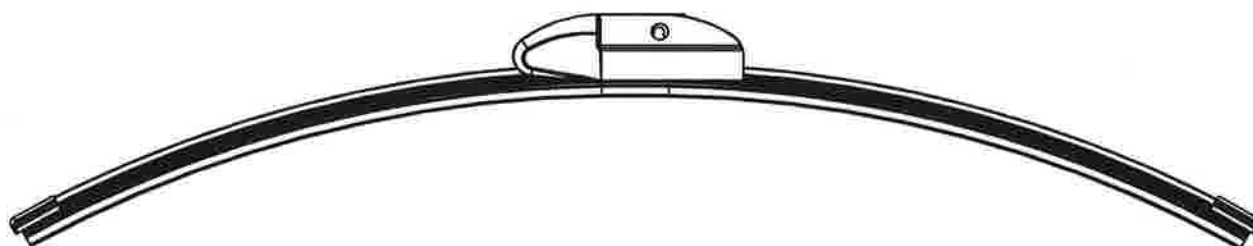
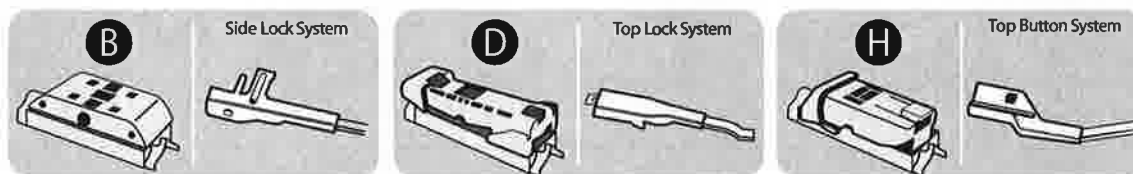


High Curve Series Wiper:

The High Curve Series blade is specifically designed for vehicles with highly curved windshields. High Curve Series blades fit .200" width saddle without space and .250" with spacer.

Part #	Size	Description	Anco Cross
13718	18"	18" High Curve Heavy Duty Wiper (Black)	57-18

ONE Series Beam Blades



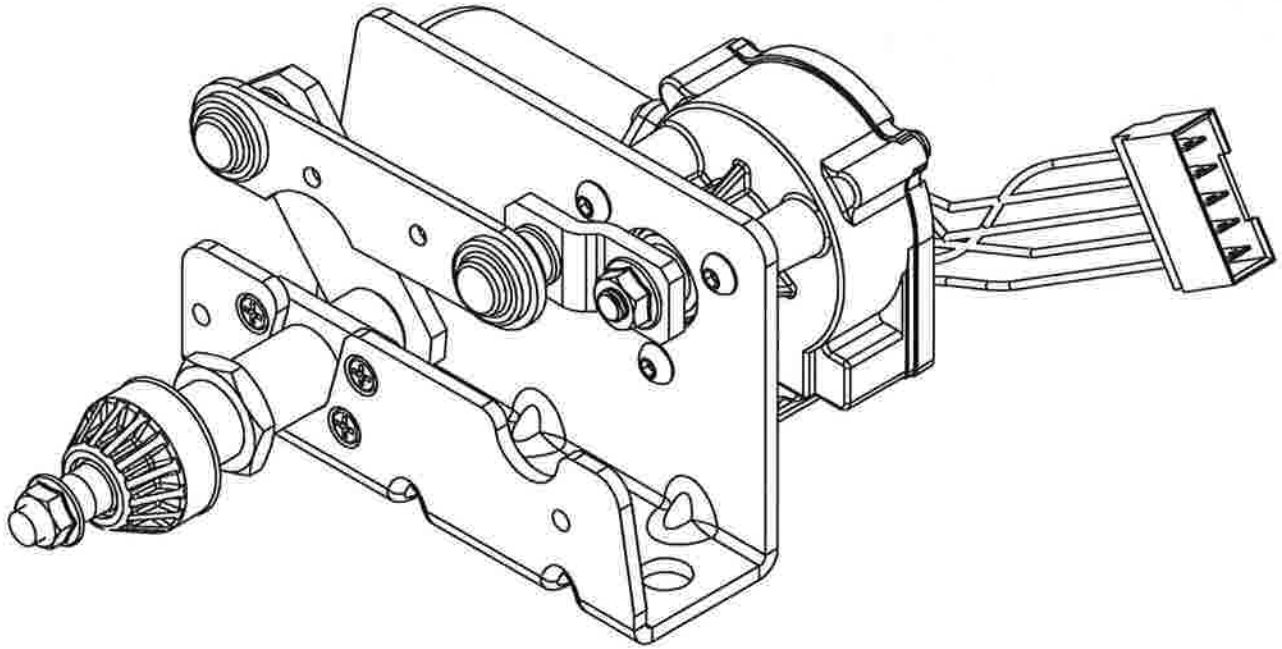
ONE Universal Beam Blades:

- ONE wiper for all seasons
- ONE central pressure point for quiet wiping operation
- ONE Wiper for all new OEM wiper arm applications*

Part #	Size	Description
B15	15"	15" ONE Universal Beam Blade
B16	16"	16" ONE Universal Beam Blade
B17	17"	17" ONE Universal Beam Blade
B18	18"	18" ONE Universal Beam Blade
B19	19"	19" ONE Universal Beam Blade
B20	20"	20" ONE Universal Beam Blade
B21	21"	21" ONE Universal Beam Blade
B22	22"	22" ONE Universal Beam Blade
B24	24"	24" ONE Universal Beam Blade
B26	26"	26" ONE Universal Beam Blade
B28	28"	28" ONE Universal Beam Blade

* Each package contains the necessary connectors needed for all applications

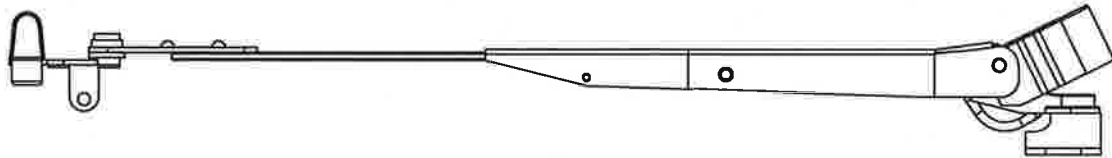
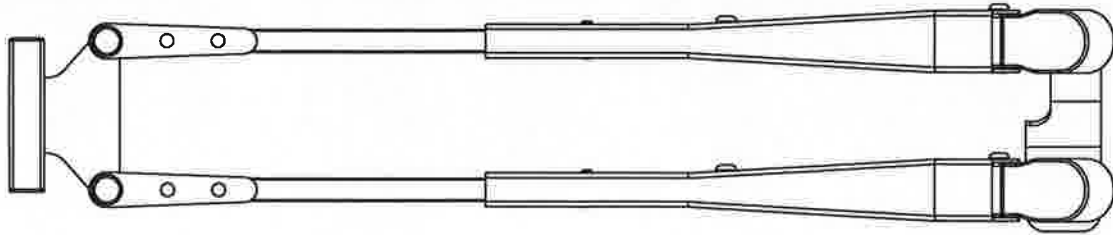
Marine Style Unitized Assemblies



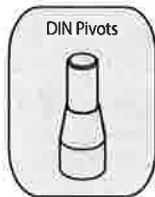
Wexco Marine Unitized assemblies come pre assembled with specialized parts in a variety of pivot lengths and wipe angles to insure a long life in marine applications. For ordering information on a specific wipe angle and pivot shaft combination please contact Wexco sales.

Wipe Angle	Pivot Shaft Length	Unitized Assembly Part Number
45°	2" (59.7mm)	TBD
	3" (82.0mm)	TBD
55°	2" (59.7mm)	TBD
	3" (82.0mm)	TBD
68°	2" (59.7mm)	TBD
	3" (82.0mm)	TBD
70°	2" (59.7mm)	TBD
	3" (82.0mm)	TBD
85°	2" (59.7mm)	TBD
	3" (82.0mm)	TBD
93°	2" (59.7mm)	TBD
	3" (82.0mm)	TBD
105°	2" (59.7mm)	TBD
	3" (82.0mm)	TBD

Marine A12 x C8 DIN Adjustable Length Arms



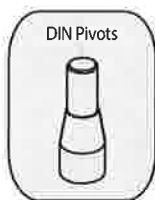
A12 x C8 DIN Adjustable Length 304 Stainless Steel Pantograph Arms



Part #	Size	Description
200707DS	14"-18"	A12 x C8 DIN, 350-450mm adj, 304SS, P/D, 13.6mm saddle
200708DS	20"-24"	A12 x C8 DIN, 500-600mm adj, 304SS, P/D, 13.6mm saddle
200707WS	14"-18"	A12 x C8 DIN, 350-450mm adj, 304SS, P/W, 13.6mm saddle
200708WS	20"-24"	A12 x C8 DIN, 500-600mm adj, 304SS, P/W, 13.6mm saddle

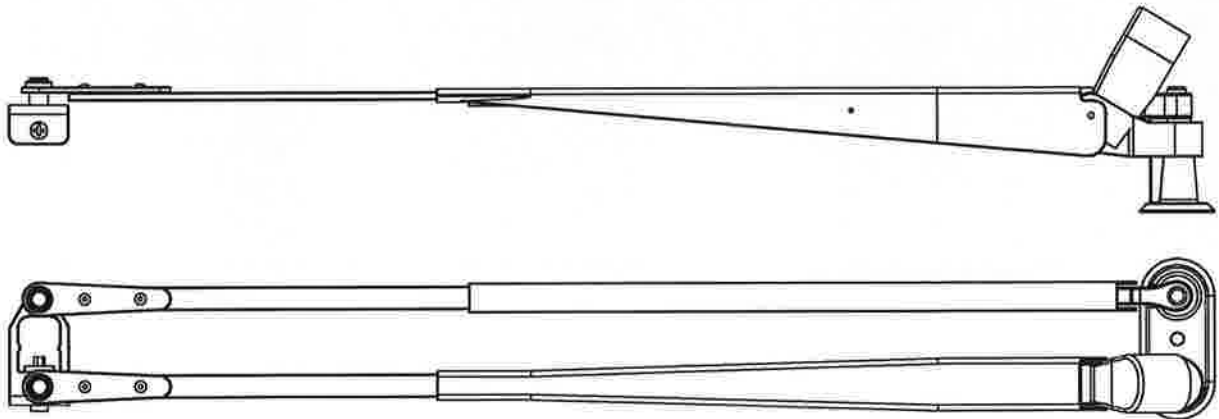


A12 x C8 DIN Adjustable Length 304 Stainless Steel Radial Arms

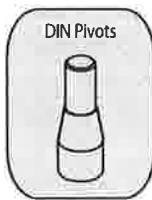


Part #	Size	Description
200709DS	14"-18"	A12 x C8 DIN, 350-450mm adj, 304SS, R/D, 9x3 J hook
200711DS	20"-24"	A12 x C8 DIN, 500-600mm adj, 304SS, R/D, 9x3 J hook
200709WS	14"-18"	A12 x C8 DIN, 350-450mm adj, 304SS, R/W 9x3 J hook
200711WS	20"-24"	A12 x C8 DIN, 500-600mm adj, 304SS, R/W 9x3 J hook

Marine A12 x C8 DIN Fixed Pantograph Arms

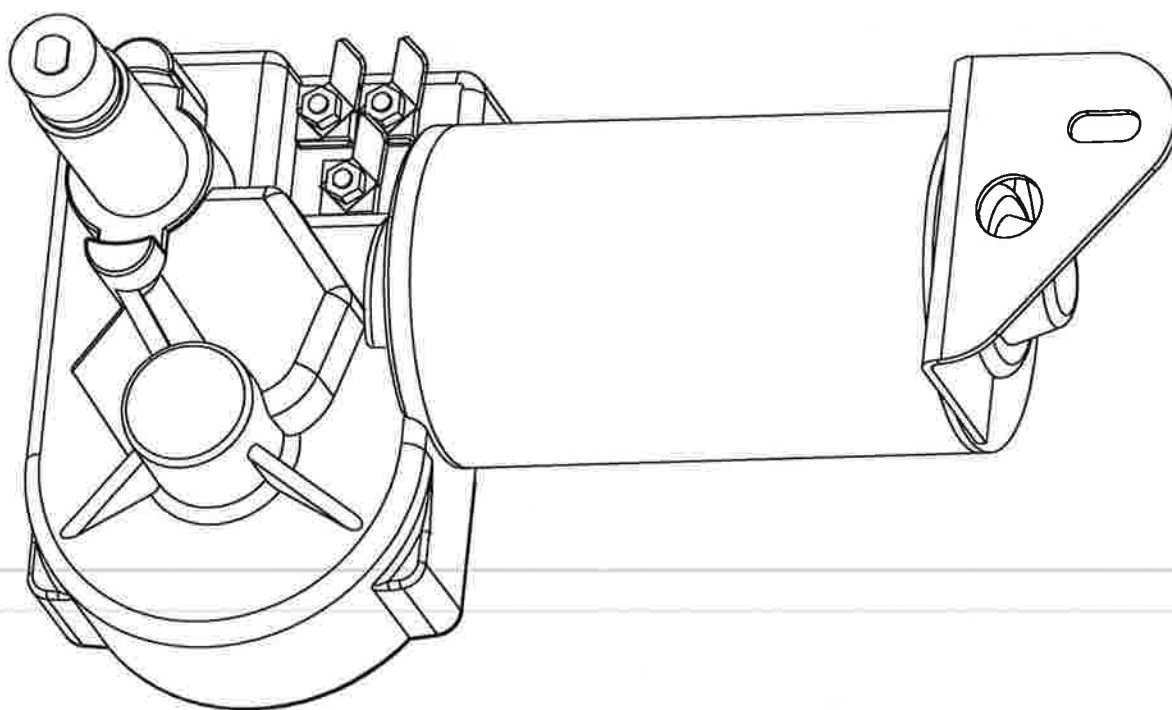


A12 x C8 DIN Fixed Length Stainless Steel Pantograph Arms with Adapter Plate



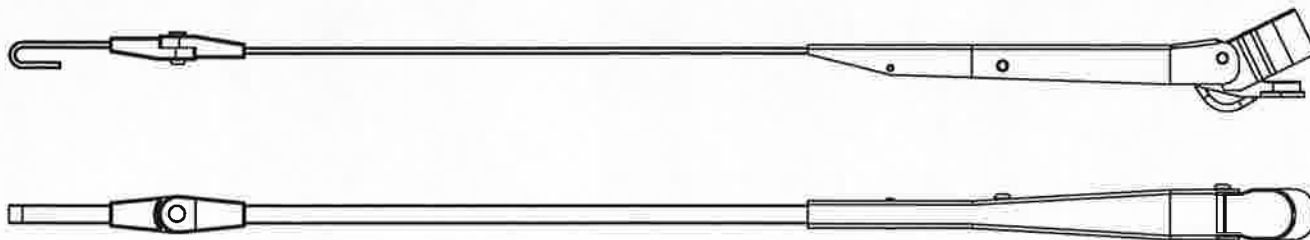
Part #	Size	Description
250020	24"	A12 x C8 DIN, SS, Pantograph Wet with adapter plate
250024	26"	A12 x C8 DIN, SS, Pantograph Wet with adapter plate
250030	28"	A12 x C8 DIN, SS, Pantograph Wet with adapter plate
250030	32"	A12 x C8 DIN, SS, Pantograph Wet with adapter plate
250034	34"	A12 x C8 DIN, SS, Pantograph Wet with adapter plate

Marine WWF Motor Systems

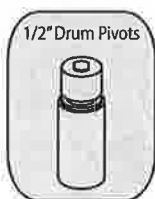


For WWF motor features and specifications refer to pages 30-32

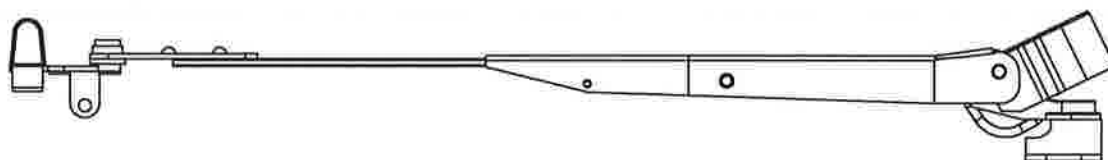
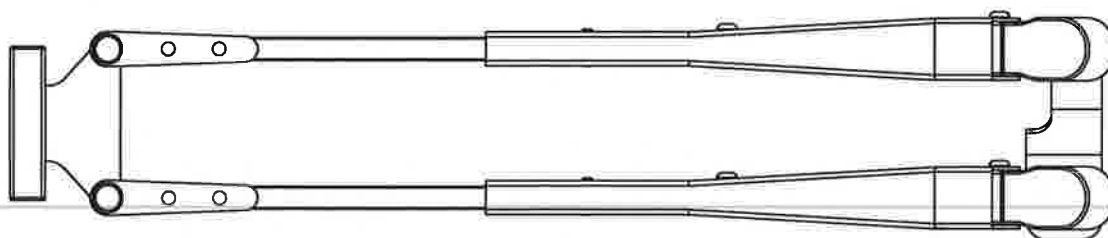
Marine 1/2" DRUM Adjustable Length Arms



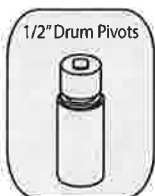
1/2" Drum Adjustable Length 304 Stainless Steel Radial Arms



Part #	Size	Description
200704DS	14"-18"	1/2" Drum Adjustable Length Dry SS Radial Arm
200705DS	18"-22"	1/2" Drum Adjustable Length Dry SS Radial Arm
200706DS	20"-24"	1/2" Drum Adjustable Length Dry SS Radial Arm
200704WS	14"-18"	1/2" Drum Adjustable Length Wet SS Radial Arm
200705WS	18"-22"	1/2" Drum Adjustable Length Wet SS Radial Arm
200706WS	20"-24"	1/2" Drum Adjustable Length Wet SS Radial Arm

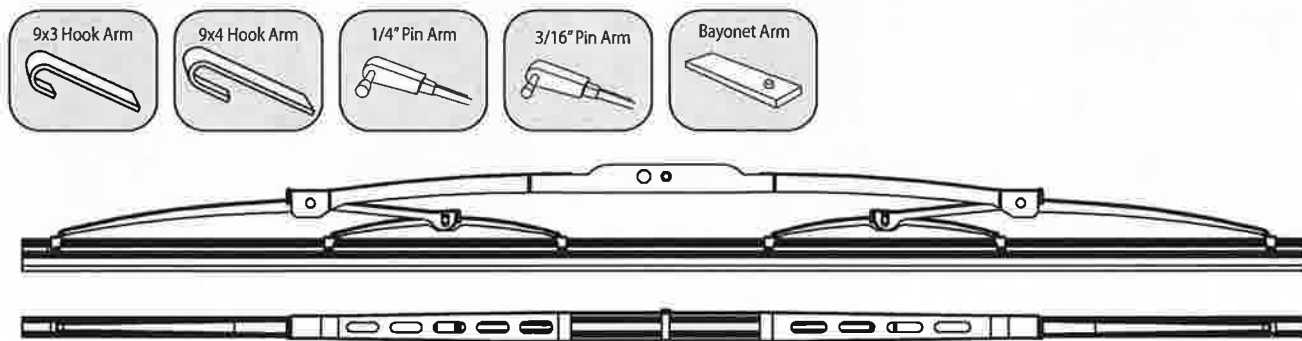


1/2" Drum Adjustable Length 304 Stainless Steel Pantograph Arms



Part #	Size	Description
200701DS	14"-18"	1/2" Drum Adjustable Length Dry SS Pantograph Arm
200702DS	18"-22"	1/2" Drum Adjustable Length Dry SS Pantograph Arm
200703DS	20"-24"	1/2" Drum Adjustable Length Dry SS Pantograph Arm
200701WS	14"-18"	1/2" Drum Adjustable Length Wet SS Pantograph Arm
200702WS	18"-22"	1/2" Drum Adjustable Length Wet SS Pantograph Arm
200703WS	20"-24"	1/2" Drum Adjustable Length Wet SS Pantograph Arm

Marine Universal Wipers



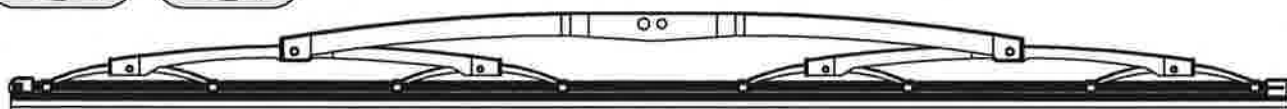
6M Series Wipers:

The 6M Series has a 304 stainless steel frame with pin joints and natural molded rubber. The 304 Stainless Steel frame resists rust in salt water conditions.

Fits 9x3 Hook, 9x4 Hook, 1/4" Pin, 3/16" Pin, and Bayonet style arms. Available in sizes 11" thru 28".

Part #	Size	Description
13612M	12"	12" 304 Stainless Steel Universal Wiper
13613M	13"	13" 304 Stainless Steel Universal Wiper
13614M	14"	14" 304 Stainless Steel Universal Wiper
13615M	15"	15" 304 Stainless Steel Universal Wiper
13616M	16"	16" 304 Stainless Steel Universal Wiper
13617M	17"	17" 304 Stainless Steel Universal Wiper
13618M	18"	18" 304 Stainless Steel Universal Wiper
13619M	19"	19" 304 Stainless Steel Universal Wiper
13620M	20"	20" 304 Stainless Steel Universal Wiper
13621M	21"	21" 304 Stainless Steel Universal Wiper
13622M	22"	22" 304 Stainless Steel Universal Wiper
13624M	24"	24" 304 Stainless Steel Universal Wiper

Marine Saddle Wipers



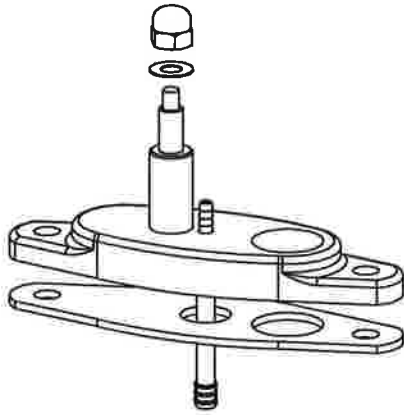
7M Series Wipers:

The 7M Series has a 304 stainless steel aerodynamic, all-metal heavy gauged frame pinned joints, a dual stainless steel spine, and a molded chlorinated rubber insert guarantee better stability and excellent performance. The 304 Stainless Steel frame resists rust in salt water conditions.

Fits 13.6mm and 17mm saddle arms. Available in sizes 28" thru 36".

Part #	Size	Description
13728SSM	28"	28" 304 Stainless 13.6mm/17MM Wiper
13730SSM	30"	30" 304 Stainless 13.6mm/17MM Wiper
13732SSM	32"	32" 304 Stainless 13.6mm/17MM Wiper
13733SSM	34"	34" 304 Stainless 13.6mm/17MM Wiper
13735SSM	35"	35" 304 Stainless 13.6mm/17MM Wiper

Arm & Blade Accessories



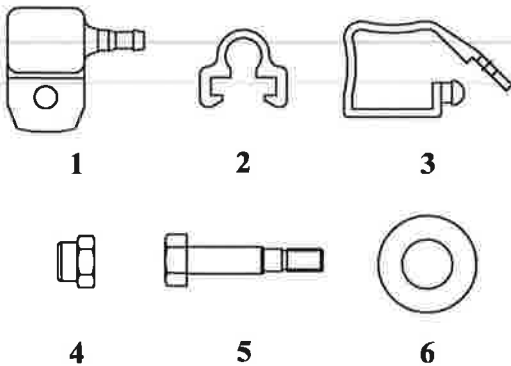
Pantograph Adapters:

- For 1.25" (31.8mm) Idler Center to Center Distance
- For 0.789" Pivot Shaft Bodies
- Black Finish
- Includes Rubber Gasket
- Replacement 1/8" x 3/16" Barb Part # 2002423
- Replacement Nut Part # 2002415
- Replacement Washer Part # 2002416
- Add 3/4" to Pivot Shaft Length when using pantograph adapter.
- Maximum allowable wipe angle while using the pantograph adapter is 93°.

Wexco #	Description	UT Cross	Anco Cross	Sprague Cross
200240	1/8" x 1/8" Hose Barb	4851918	23952-95	-
200241	Dry, No Hose Barb	4851940	23948-90	GC-166
200242	1/8" x 3/16" Hose Barb	-	-	-

Dyna Arm Wet Kit Assembly (Old)

Wexco Part Number 19478



Wet Kit Parts Breakdown

Pos.	Wexco #	Qty	Description
1	200955	1	Spray Jet
2	200349	3	Clip for Flat Arm
3	200345	3	Clip for U-Channel
4	423	1	Nut for Medium Screw
5	346	1	Medium Wet Screw
6	19480	3.94 ft	1/8" ID Rubber Tubing

Wet Kit Nozzle (New) :

Part # 201218 for Pantograph and Radial Arms

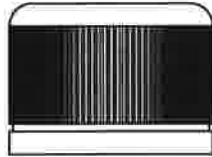
Part # 201220 for 12x4 Hook Arms Only



Arm & Blade Accessories

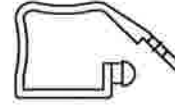
Cap for Dyna Arm

Wexco Part Number 200342



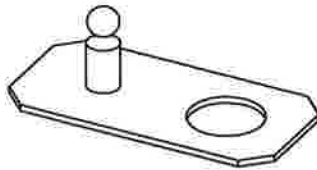
U Channel Clip (Dyna Arms)

Wexco Part Number 200345



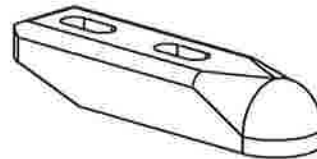
Arm Spacer

Wexco Part Number 200378



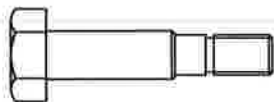
Plastic Hinge

Wexco Part Number 200354



Medium Screw for Dry Arm

Wexco Part Number 343
(For 1/2" Pantograph Arms)



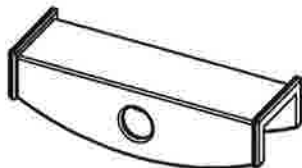
Medium Nut for 343 Screw

Wexco Part Number 421



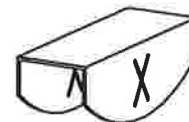
Adater for 17mm Arm

Wexco Part Number M17
with Hardware, Wexco Part Number M17B



X Adapter

Wexco Part Number 1000X



Washer Systems

Reservoir/Pump Washer Bottle Assembly

Part #400713

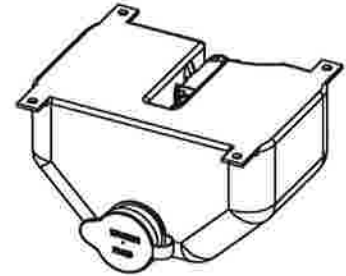
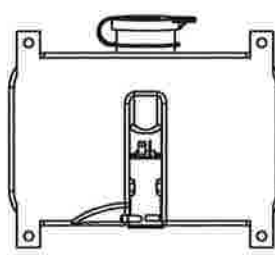
- Reservoir: 1 Gallon
- Pump: 12 Volt

Part #400713S

- 400713 with hardware added

Part #400712

- Reservoir: 1 Gallon
- Pump: 12 Volt
- Dimensions: 7.52(H)x5.51(D)x9.45(W)
- 3/16 (4mm) I.D. Hose Required



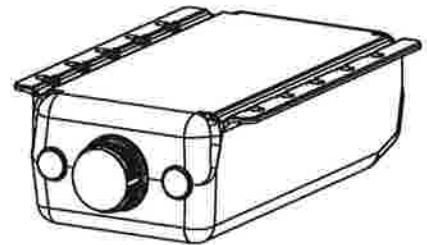
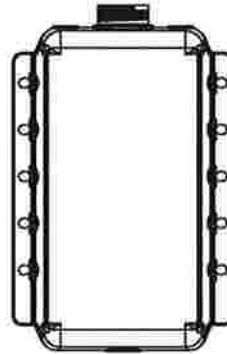
400712 & 400711

Part #400712S

- 400712 with hardware added.

Part #400711

- Reservoir: 1/2 Gallon
- Pump: 12 Volt
- Dimensions: 7.20(H)x5.50(D)x5.20(W)
- 3/16 (4mm) I.D. Hose Required



400713

Part #400711S

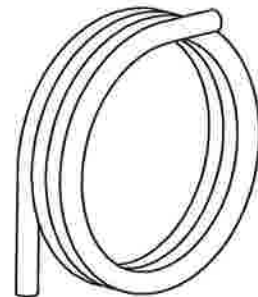
- 400711 with hardware added

Part #721018

- Self tapping screw for reservoirs

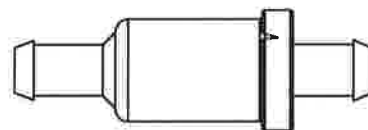
Rubber Tubing for Washer System:

- Meets FMVSS/SAE Specifications (ASTM1149/J492)
- Sold by the foot (Bulk)
- Available Sizes
 - Part # 19481: 3/16" (4mm) I.D., 5/16" (8 mm) O.D.
 - Part # 19479: 1/8" (3.2mm) I.D., 7/32" (5.6mm) O.D.
 - Part # 19480: .106" (2.7mm I.D), .134" (3.4mm) O.D.



Anti Return Valve Part # 100775:

- 3/16" x 3/16" for Wexco Part # 19481

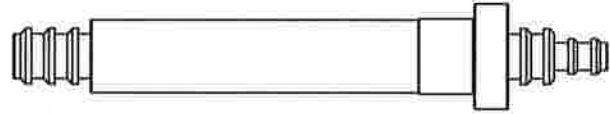


Washer Systems

Brass Inline Fitting:

Part #200255

- For 3/16" x 1/8" Hose
- Includes Nut and Rubber Washer
- 2.7" Length



Part #200256

- For 3/16" x 1/8" Hose
- Includes Nut and Rubber Washer
- 3.6" Length

Hose Connectors:

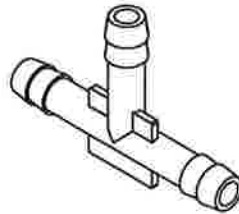
- Material: White ABS

Part #19482

- 3/16" x 3/16" x 3/16"

Part #19484

- 3/16" x 1/8" x 1/8"

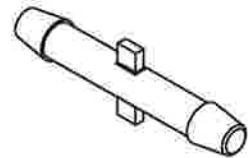


Part #19488

- 3/16" x 3/16"

Part #19486

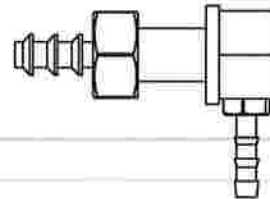
- 1/8" x 3/16"



Bulkhead Cowl Fitting Assembly:

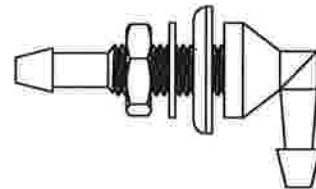
Part #200250

- For 1/8" x 3/16" Hose
(1/8" External Metal Fitting)
- Replaces: F150364 & GW24-1
- Rubber Washer and 5/16" Nut Included



Part #200257 (Direct Bosch Replacement)

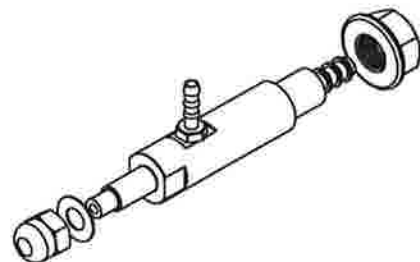
- For 3/16" Hose
- Rubber Washer, gasket and
M8x1.25 Nut Included.



Stainless Steel Idler:

Part #200260HWD

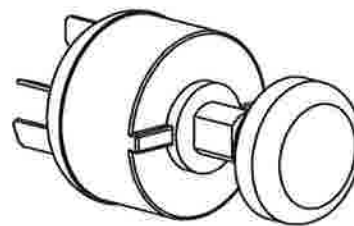
- 3/8" Thread x 41mm



Switches

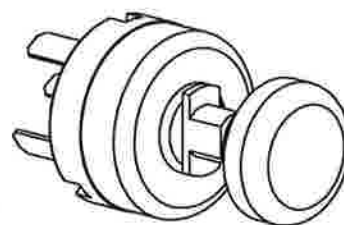
Coast to Park Switch (Wexco Part # 721025):

- **Push to wash feature**
- **Internal Circuit Breaker, 6 Amp**
- **Operates one 12 Volt Motor**



Dynamic Park Switch (Wexco Part # 65058):

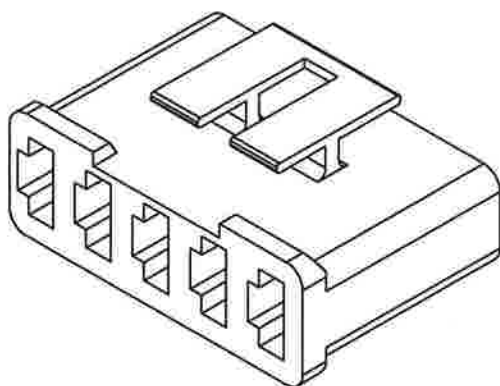
- **Push to wash feature**
- **Internal Circuit Breaker, 6 Amp**
- **Operates one 12 Volt Motor**



Electrical Connectors

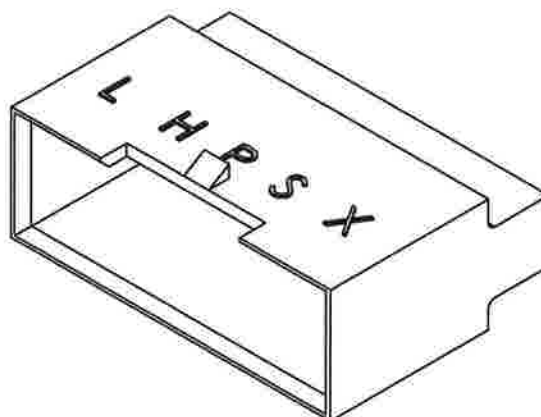
JE/UT Female Connector

Wexco Part Number: 62374



JE/UT Male Connector

Wexco Part Number: 400121



JE/UT/AMERICAN BOSCH Cross Numbers

Wexco Part #	Item Description	JE/UTA Part # (New) J3 motor	JE/UTA Part # (Old) J1 motor
345	Medium Screw	52697	
423	Medium Nut	52695	
13412	12" H.D. Blade	52168	
13414	14" H.D. Blade	52169	
13416	16" H.D. Blade	52170	
13418	18" H.D. Blade	52171	
13420	20" H.D. Blade	52172	
13422	22" H.D. Blade	51916	
13724	24" H.D. Blade	52147	
13726	26" H.D. Blade	52148	
13728	28" H.D. Blade	52149	
19478	Dyna Wet Kit	52191	
19481	Tubing (3/16 ID)	W22	
19482	T Connector 3/16	13055	VT 095
19484	T Connector 1/8x1/8x3/16	W58/W109	VT123
19485	T Connector 1/8x1/8x3/16	W109	
19488	Connector (VT070)	W533	VT 070
65058	Switch with knob & HDWR for DynPk	65058	
66667	SAE Motor Screw	66667	
67877	SAE Nut 5/16 18	67877	67877
102938	Bracket (RH)	102938	62757
106800	6mm Button Head Metric Screw	106800	
107372	J3 12V Motor Coast to Park	107372	65652
107373	J3 24V Coast to Park Motor	107373	65661
200100	Link #LK721014s/200100^	721014	
200104	3.09cc Link PIN #5114940	51149	
200180	Crank Arm #LE62111B^/200180	62111	
200181	Crank Arm Pin #62112	62112	
200183	Crank Arm 6254240	62543	62543
200185	Crank Arm #62257	62257	62257
200187	Crank Arm	65385	
200188	Crank Arm	65386	
200190	Crank Arm #62222	62222	62222
200192	Crank Arm #62259	62259	62259
200194	Crank Arm #62113	62113	
200196	Crank Arm #62114	62114	
200220	Double 16mm Ball Stud 1903440	19034	
200240	Adapter Plate 1/8x1/8-wet	48519W	
200241	Adapter Plate 1/8x3/16-Dry	48519	KT210165
200250	Grommet/Bulkhead Assy	150364	
200342	Cap for Arm Head #200342	52699	
200423	20" Panto Arm Wet	101447	67011
200460	14" Pantograph Arm Dry	67023	
200461	16" Pantograph Arm Dry	67024	

JE/UT/AMERICAN BOSCH Cross Numbers

Wexco Part #	Item Description	JE/UTA Part # (New) J3 motor	JE/UTA Part # (Old)J1 motor
200462	18" Pantograph Arm Dry	67025	
200463	20" Pantograph Arm Dry	67026	
200464	22" Pantograph Arm Dry	67027	
200465	24" Pantograph Arm Dry	67028	
200467	28" Pantograph Arm Dry	67030	
200483	28" Pantograph Arm Wet	67015/67016	
200955	Dyna Nozzle	52698	102886
200955	Nozzle	52698/102866	
201406	14" Pantograph Arm #52189	52189/52697	
201407	16" Pantograph Dry #52190	52190	
201513	24" Radial Arm Wet #62220	62220	
201558	14" Radial Arm Dry #52174	52174	
201559	16" Radial Arm Dry #52175	52175	
201560	18" Radial Arm Dry #52176	52176	
201561	20" Radial Arm Dry #52177	52177	
201562	22" radial Arm Dry #52178	52178	
201563	24" Radial Arm Dry #52179	52179	
201564	26" Radial Arm Dry #52180	52180	
300220	Rubber Seals	64989	
300637	Knurled Driver 3/8 double flat	62580	
300650	Pivot Shaft #627900	62790	
300651	Pivot Shaft #627910	62791	
300656	Pivot 2.6888 16mm	67062	
300657	Pivot 2.6888 16mm Ball	62872	
300658	Pivot 1.6888 16mm Ball	62871	
300659	Pivot 1.6808 16mm Ball	62870	
300749	Soft Rubber Boot	62572	
300752	0089 Washer Rubber 1.10 OD	62573	
300754	0088 Washer Steel 1.10 OD	62574	
300756	0387 Nut 11/16x24 UNEF-28	62577	
300758	0388 Nut 1/4	65756	
300759	408 Acorn Nut 3/18x24UNF	62571	
300761	0012 Lock Washerstar 3/8ID (100)	62578	
300763	0008 Lock Washer 1/4 ID	6013429	
300775	Pivot Shaft 2"	62712	
300776	Pivot Shaft 3"	62714	
300783	Pin .219	62575	
300795	Pivot Shaft 1.25"#6271140/300795	62711	
300796	Pivot Shaft	62710	
300796	Pivot Shaft .625"	721200	
300896	Pivot Shaft #62874	62874	
300920	Bearing For Links #BG7275	BG7275S	
300920	Bearing For Links	BG7275S	
300924	Washer for Retnr#WA1654	WA1654	

JE/UT/AMERICAN BOSCH Cross Numbers

Wexco Part #	Item Description	JE/UTA Part # (New) J3 motor	JE/UTA Part # (Old)J1 motor
300924	Washer for Links	WA1654	
300926	SC1160 Screw	SC1160	
300928	ClipSprngRe#1781550/300928	17815	
300936	SC1160 Screw	SC1160	
301107	Pivot Shaft	62806	
301866	8.50" Link LK721035A-6	721035-6	
301867	14.23" Link Pin	721023	
301868	8.85" Link Pin	721024	
301869	19.89 Link Pin	721026	
301871	32.25" Link Pin	721032	
301872	21.00" Link Pin	721033	
301873	19" Link Pin	721035-5	
301875	27.50" Link Pin	721035-7	
301876	22.50 Link Pin	721035-8	
310870	12.80" Link Pin	721031	
310874	5 3/4 Link #LK721038-1	721038-1	
400200	8mm Flange	106802	
400210	6mm Flange Screw #62667/400210	62667	
400712	Reservoir (1 Gallon)	50406	
721025	Switch with knob & HDWR for CP	721025	
10256020	Drive Unit	102560	
10256120	Drive Unit	102561	
10571520	Motor Only	65791	
10571520	Motor Only	105715	65791
10571620	Motor only	70356	
10737320	Motor Only	65674	
10737320	Motor Only 24V	107373	65674
1128-3110001	Drive Unit		6685420
1128-3110003	Drive Unit	1128-3110003	101930
1422-3110002	Unitized	1422-3110002	65708
1422-3110003	Unitized	1422-3110003	65721
1422-3110004	Unitized	1422-3110004	65722
1422-3110005	Unitized	1422-3110005	65733
1422-3110006	Unitized	1422-3110006	65734
1422-3110007	Unitized	1422-3110007	65736
1422-3110008	Unitized	1422-3110008	65735
1422-3110009	Unitized	1422-3110009	65737
1422-3110010	Unitized	1422-3110010	65743
1422-3110011	Motor & Linkage	1422-3110011	65746
1422-3110012	Unitized	1422-3110012	65753
1422-3110013	Motor Kit	1422-3110013	65775
1422-3110015	Motor Kit	1422-3110015	65776
1422-3110016	Unitized	1422-3110016	65790
1422-3110017	Unitized	1422-3110017	101312

JE/UT/AMERICAN BOSCH Cross Numbers

Wexco Part #	Item Description	JE/UTA Part # (New) J3 motor	JE/UTA Part # (Old)J1 motor
1422-3110018	Unitized	1422-3110018	101444
1422-3110019	Unitized	1422-3110019	101870
1422-3110020	Unitized	1422-3110020	103970
1422-3110021	Unitized	1422-3110021	103974
1999-3110001	Motor & Crank	1999-3110001	65662
1999-3110002	Motor & Crank	1999-3110002	65676
1999-3110003	Motor & linkage	1999-3110003	65679
1999-3110004	Motor & Crank	1999-3110004	65702
1999-3110005	Motor & Linkage	1999-3110005	65745
1999-3110006	Motor & Linkage	1999-3110006	65749
1999-3110007	Motor & Linkage	1999-3110007	65777
1999-3110008	Motor & Linkage	1999-3110008	65780
1999-3110009	Motor & Linkage	1999-3110009	65781
1999-3110010	Motor & Crank	1999-3110010	66855
1999-3110011	Motor & Crank	1999-3110011	102269
1999-3110012	Motor Only	1999-3110012	103913
200479N	22" Pantograph Arm Wet	67012	
200480N	24" Pantograph Arm Wet	67013	
200489N	26" Pantograph Arm	67014	
201508N	14" Radial Arm Wet #62217	62217	
201509N	16" Radial Arm Wet #62118	62188	
201510N	18" Radial Arm Wet #52181	52181	
201511N	20" Radial Arm Wet #52182	52182	
201512N	22" Radial Arm Wet #62219	62219	
4R1.12.R110D		WWF12C1-1010	
4R1.12.R110D		WWF12C15-210	
4R1.12.R110D		WWF12C1-710	
4R1.12.R110D		WWF12C18-210	
4R1.12.R110D		WWF12C18-710	
4R1.12.R110D		WWF12C16-210	
4R1.12.R110D		WWF12C1-210	
4R1.12.R110D		WWF12C18-510	
4R1.12-19S.R110D *		WWF12C19-210	
4R1.12-19S.R110D *		WWF12C19-1010	
4R1.12-19S.R110D *		WWF12C19-710	
4R1.12-19S.R110D *		WWF12C19-910	
4R1.12-19S.R110D *		WWF12C19-510	
4R1.24.R110D		WWF24C1-710	
4R1.24.R110D		WWF24C18-210	
4R1.24-19S.R110D *		WWF24C19-710	
4R1-24.R110D		WWF24C17-210	
4R2.12.R110D		WWF12C15-1020	
4R2.12.R110D		WWF12C1-720	
4R2.12.R110D		WWF12C18-720	

JE/UT/AMERICAN BOSCH Cross Numbers

Wexco Part #	Item Description	JE/UTA Part # (New) J3 motor	JE/UTA Part # (Old)J1 motor
4R2.12.R110D		WWF12C16-220	
4R2.12.R110D		WWF12C17-220	
4R2.12.R110D		WWF12C18-220	
4R2.12-19S.R110D *		WWF12C19-1020	
4R2.12-19S.R110D *		WWF12C19-720	
4R2.24.R110D		WWF24C1-720	
4R2.24.R110D		WWF24C1-220	
4R2.24.R110D		WWF24C18-720	
4R2.24-19S.R110D *		WWF24C19-220	
4R2.24-19S.R110D *		WWF24C19-720	
4R3.12.R110D		WWF12C1-730	
4R3.12.R110D		WWF12C18-730	
4R3.12.R110D		WWF12C17-730	
4R3.12-19S.R110D *		WWF12C19-730	
4R3.24.R110D		WWF24C18-230	
4R3.24.R110D		WWF24C1-730	
C105	32NM Motor 12v		65714
D110	D110/32 NM DYN Motor 12v		65791
H132	H132/32 (CE Cert.) 24v Motor		65661
KMB131	Motor Kit 12V C to P	1422-3110013	6577520 (J1)
KMB132	Motor Kit 24v	1422-3110015	6577620 (J1)
KMPT	Motor Parts #622240	62224	62224
WA1213	Washer for Links	WA1213	WA1213

Conversion Chart

Length		
To Convert	Multiple By	Get
Inches	25.40	Millimeters
Millimeters	0.03937	Inches
Inches	.02540	Meters
Meters	39.37	Inches
Force		
To Convert	Multiple By	Get
Pounds	4.448	Newtons
Newtons	0.2248	Pounds
Torque		
To Convert	Multiple By	Get
Pound Feet	12.00	Pound Inches
Pound Feet	1.356	Newton Meters
Pound Inches	.08333	Pound Feet
Newton Meters	.7375	Pound Feet

Example:

Convert 58.5mm to inches

(To Convert) x (Multiply by) = (Get)

58.5mm x 0.0397 = 2.32in

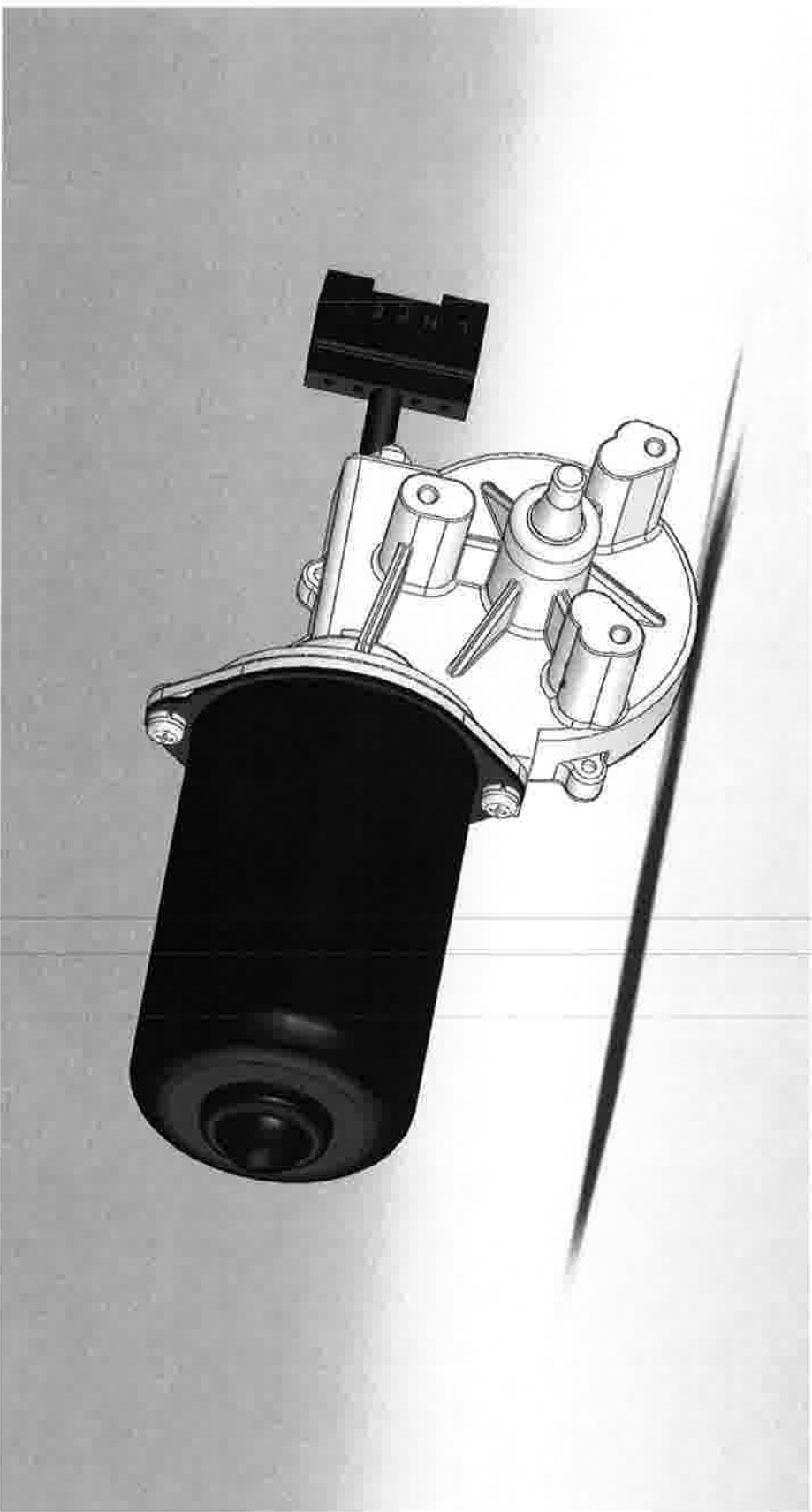
Wiper system troubleshooting



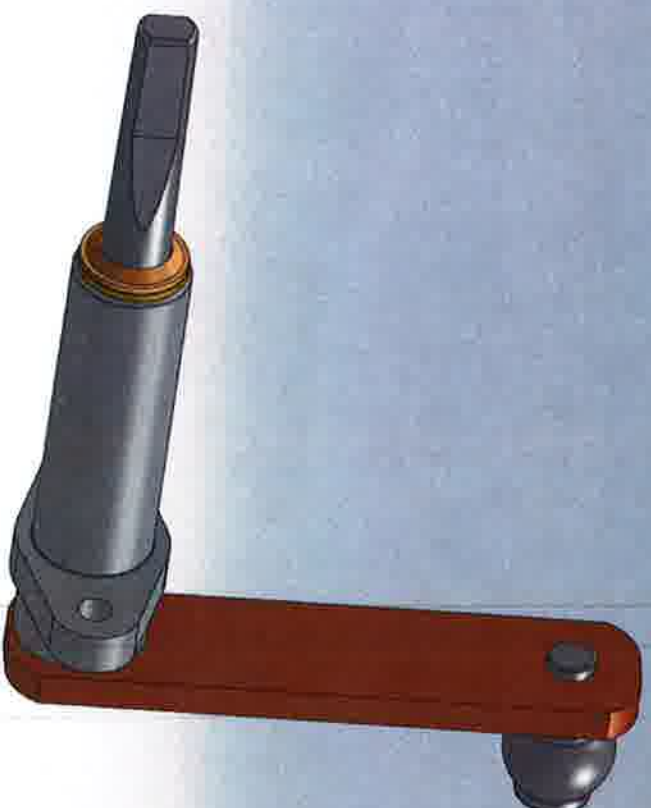
Training session plan

- Wiper 101
 - Terminology
 - Brief technical explanation about wipers
- Trouble shooting
 - Use of flow charts
 - Special procedures
- Q&A

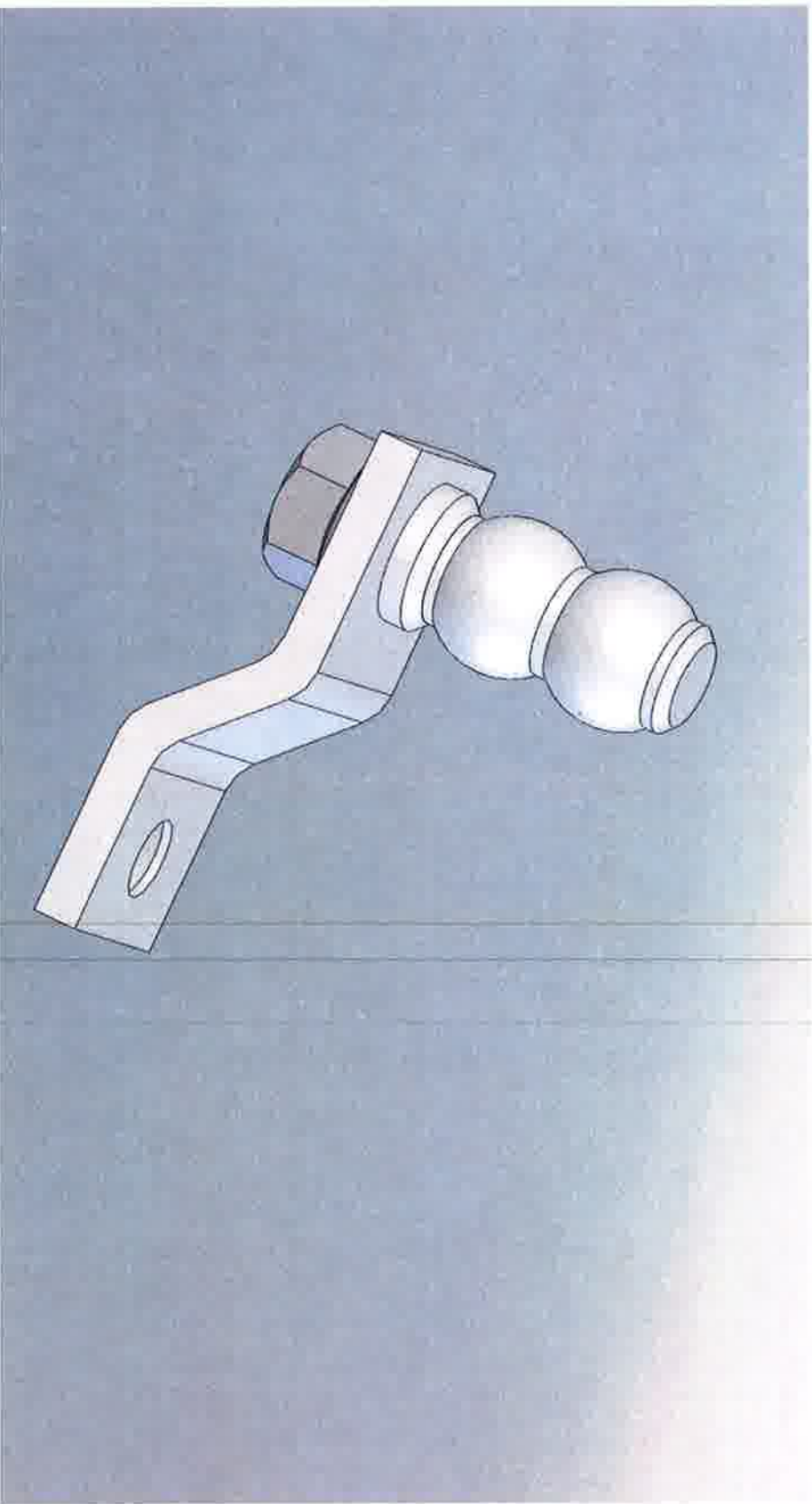
Wiper motor



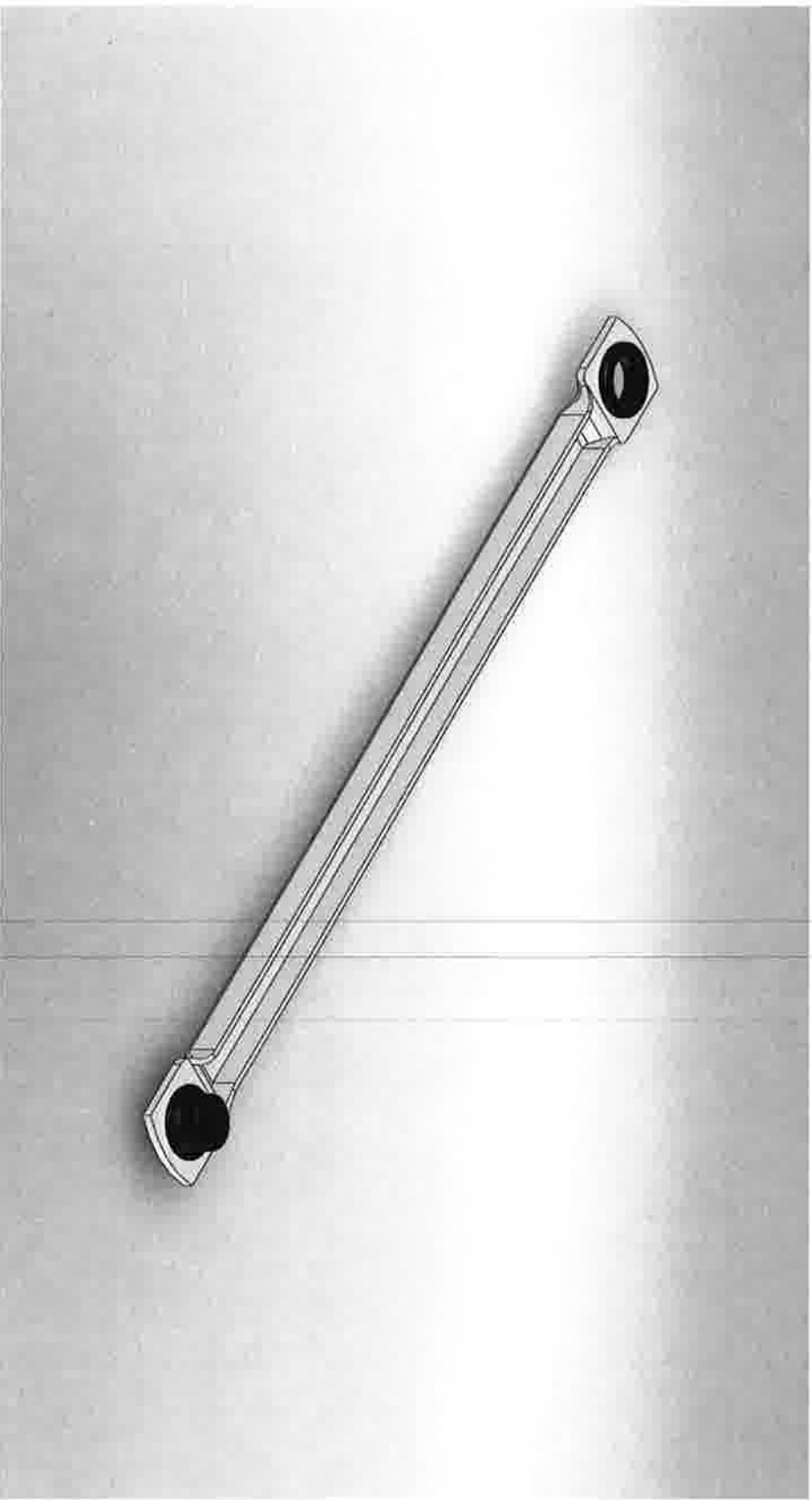
Wiper pivot assembly



Motor crank



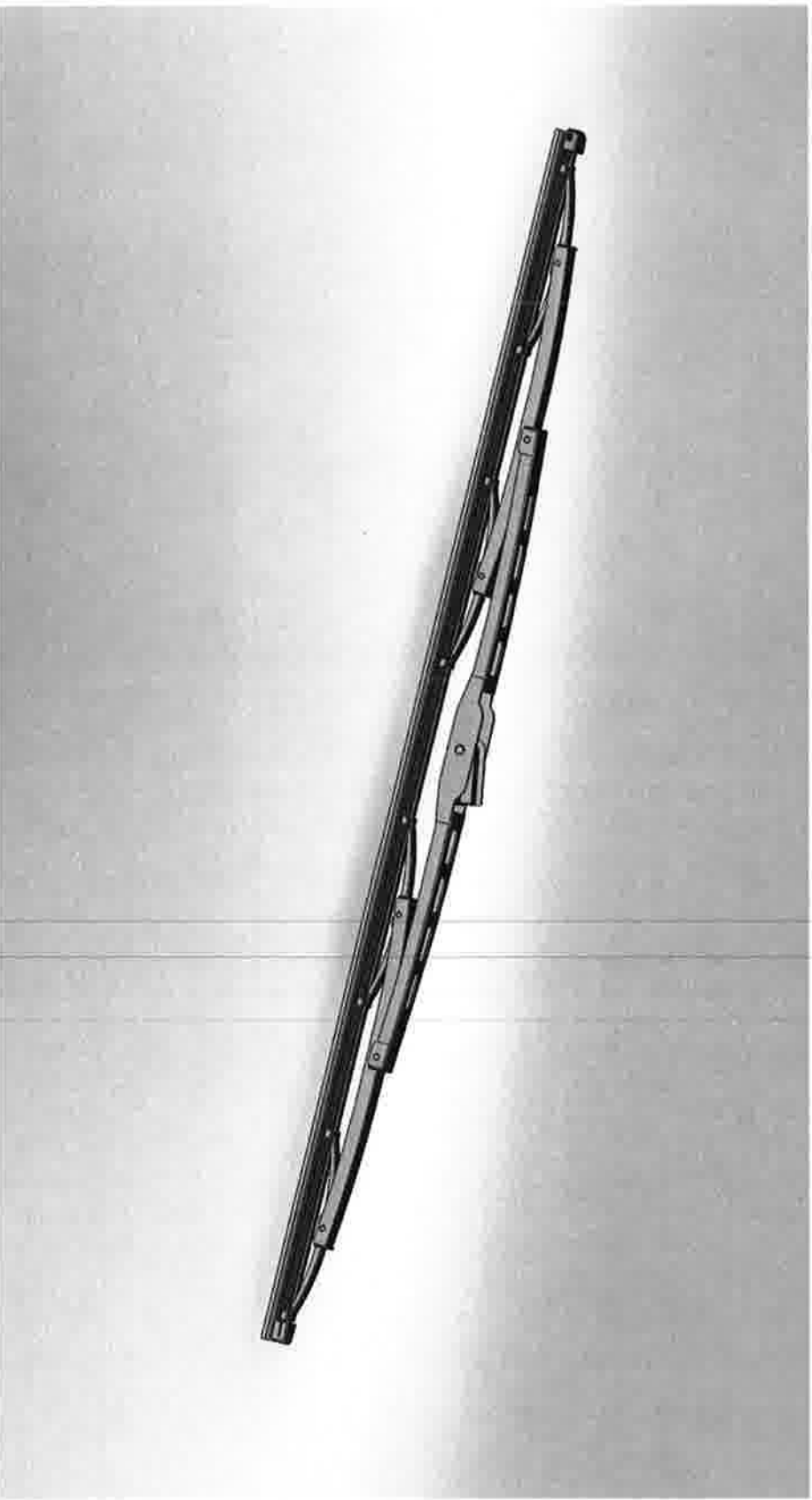
Connecting link



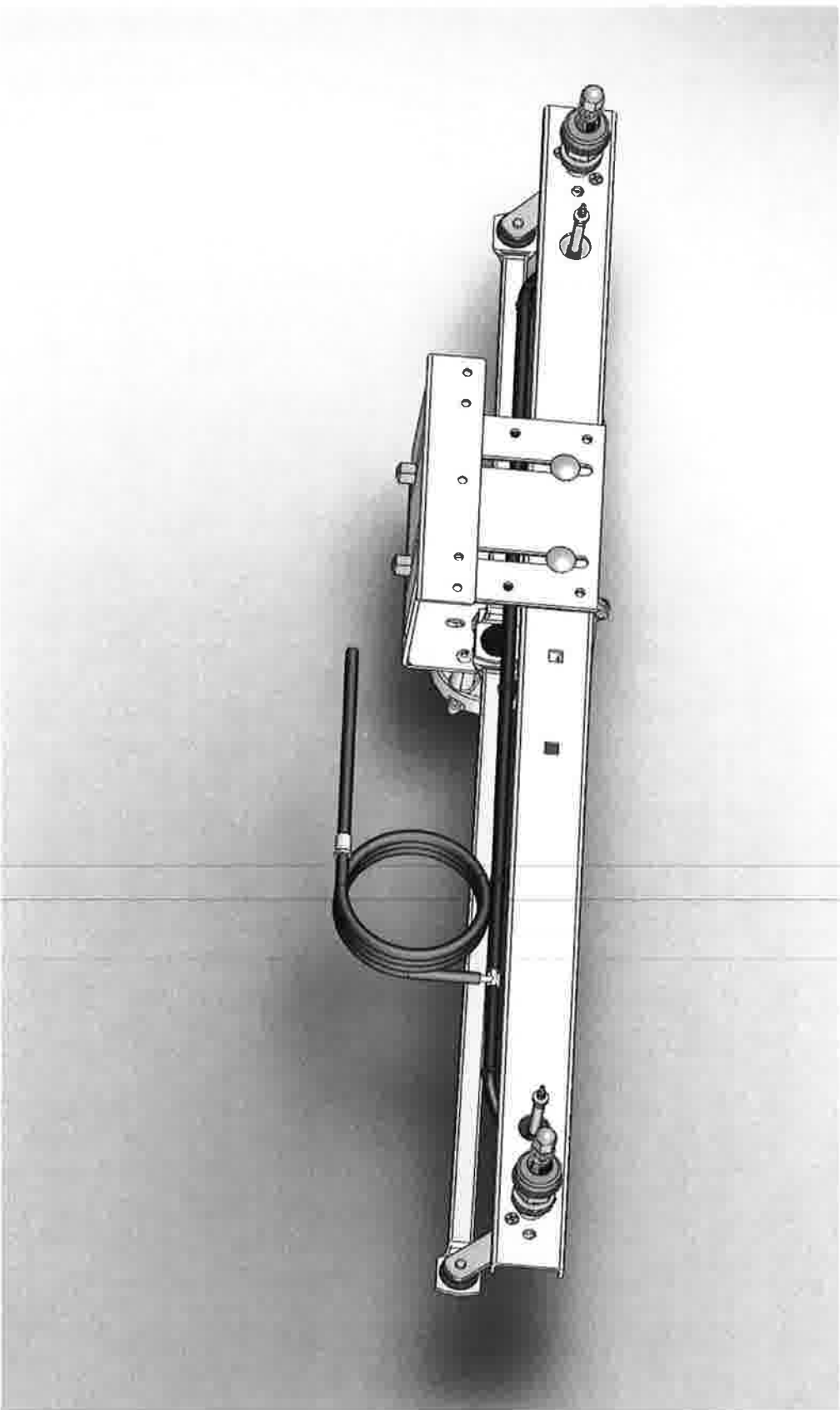
Wiper arm



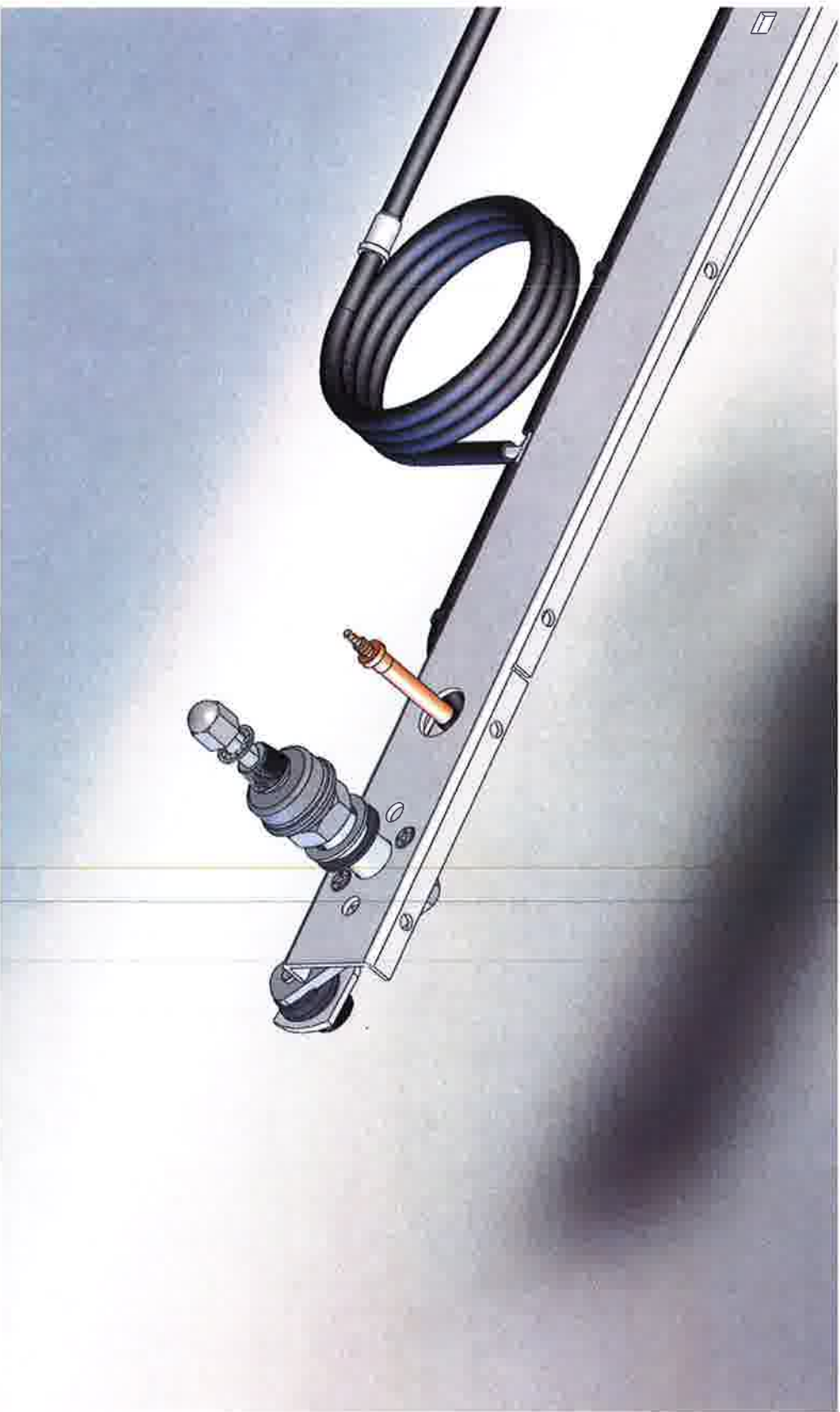
Wiper blade



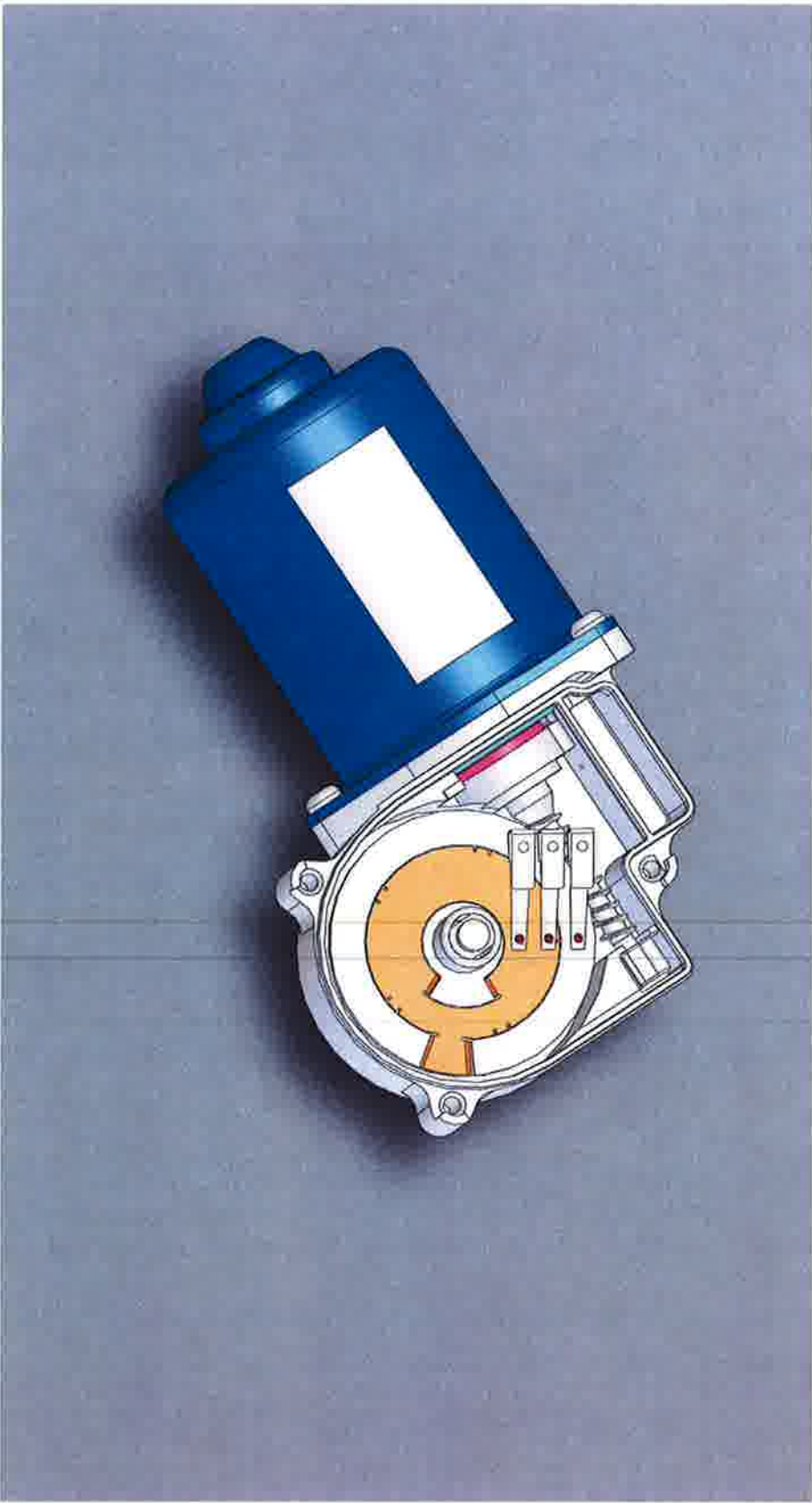
Wiper module



Stringer bracket



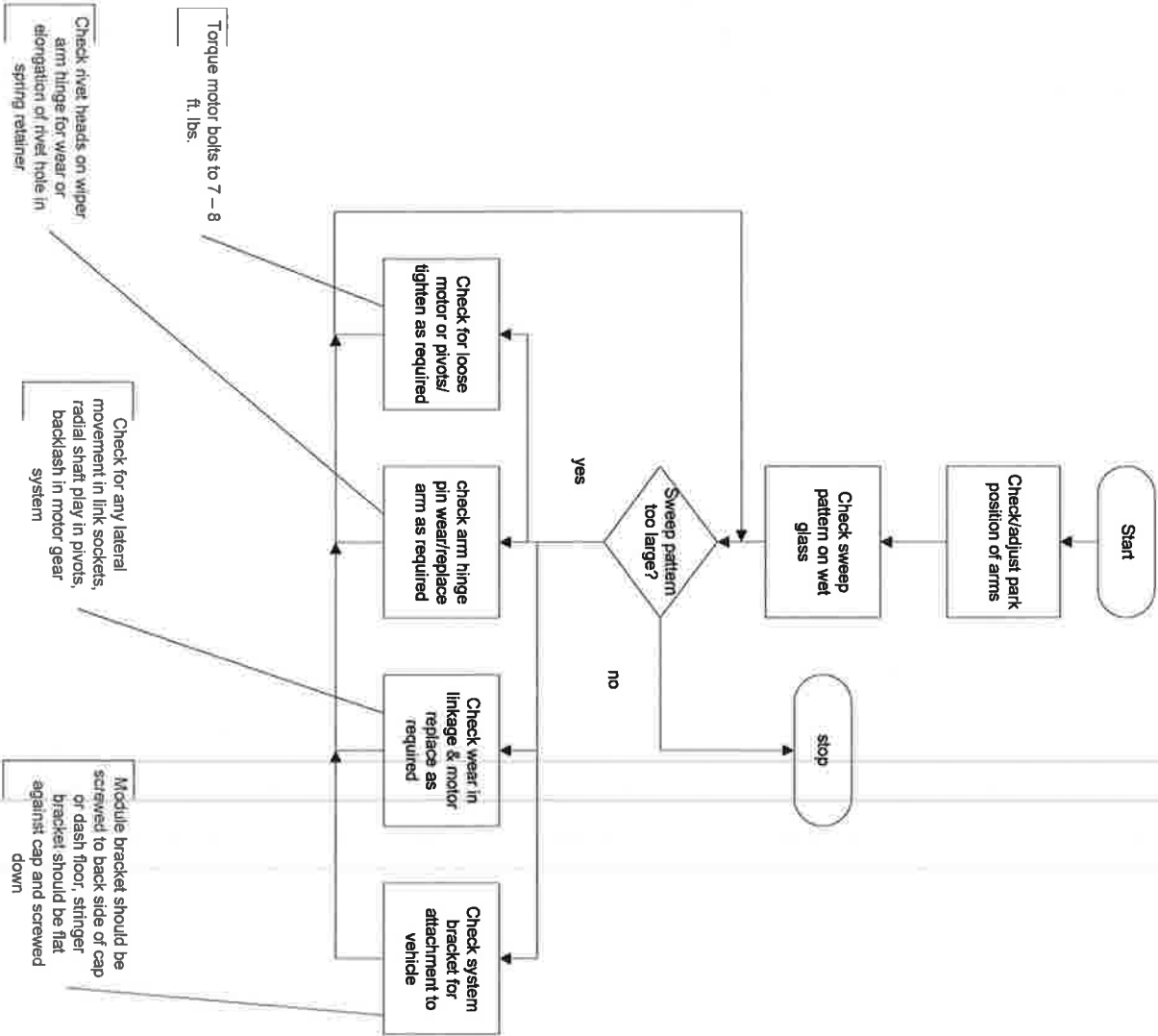
Park switch



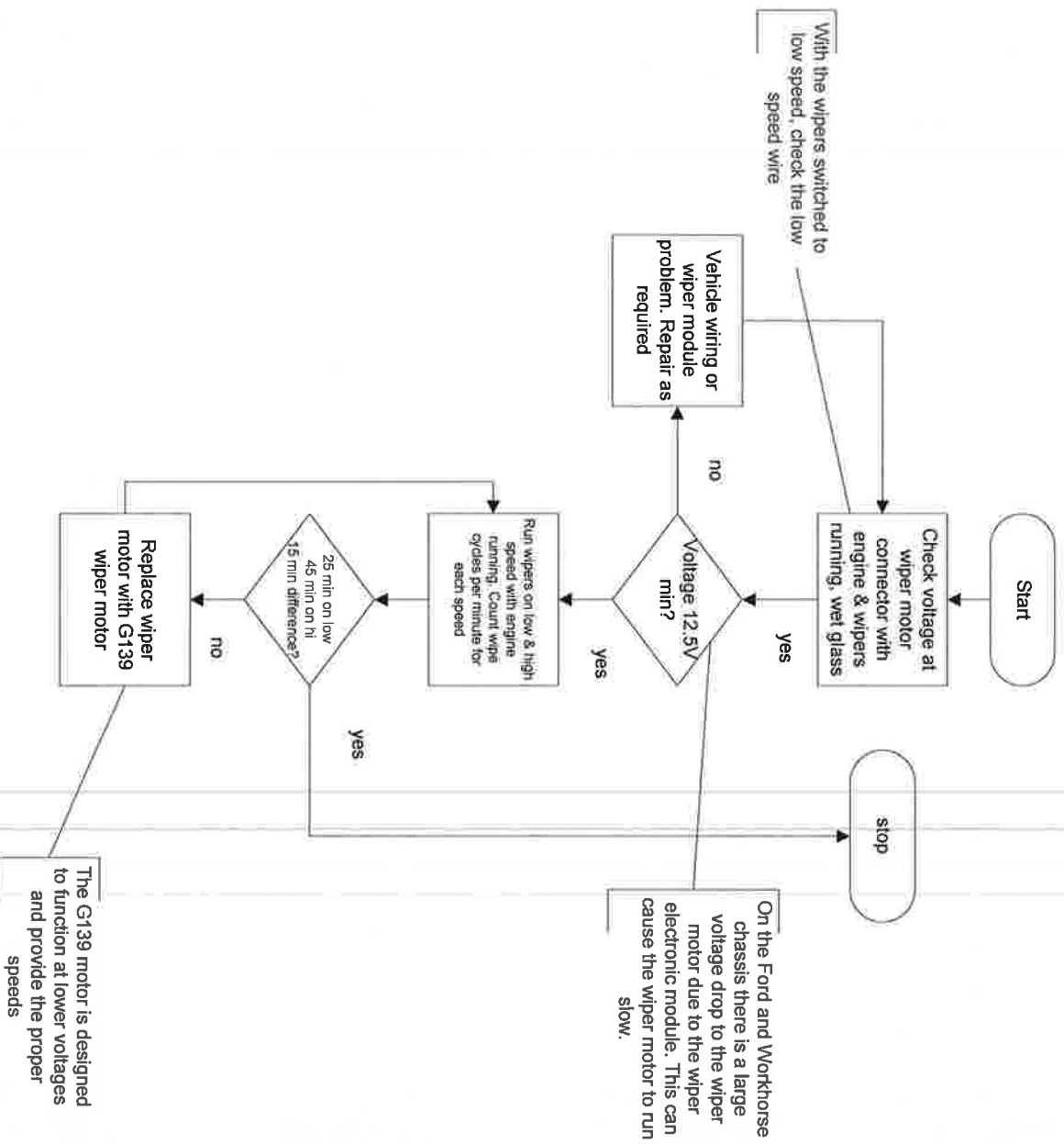
Identify customer complaint

- Note the customer complaint and match it to a symptom from one of the 4 groups below.
- Basic function problems
 - Wipers collide with windshield molding, sweep angle too large
 - Wipers run slow
 - Wipers run initially but stop unexpectedly mid-cycle and then restart
 - Wipers blow vehicle fuse
 - Wipers inoperative on low, high or both speeds
 - Wipers inoperative on intermittent setting only
- Park problems
 - Wipers park consistently too high or too low
 - Wipers park immediately when switched off
 - Wipers park in random positions
 - Wipers do not park at reversal point
- Wipe quality
 - Blade chatters across windshield
 - Blade leaves unwiped areas or streaks
 - Blade smears
 - Blade squeaks
- Noise
 - Audible clunk at one or both reversal points
 - Continuous grinding, rubbing or growling noise

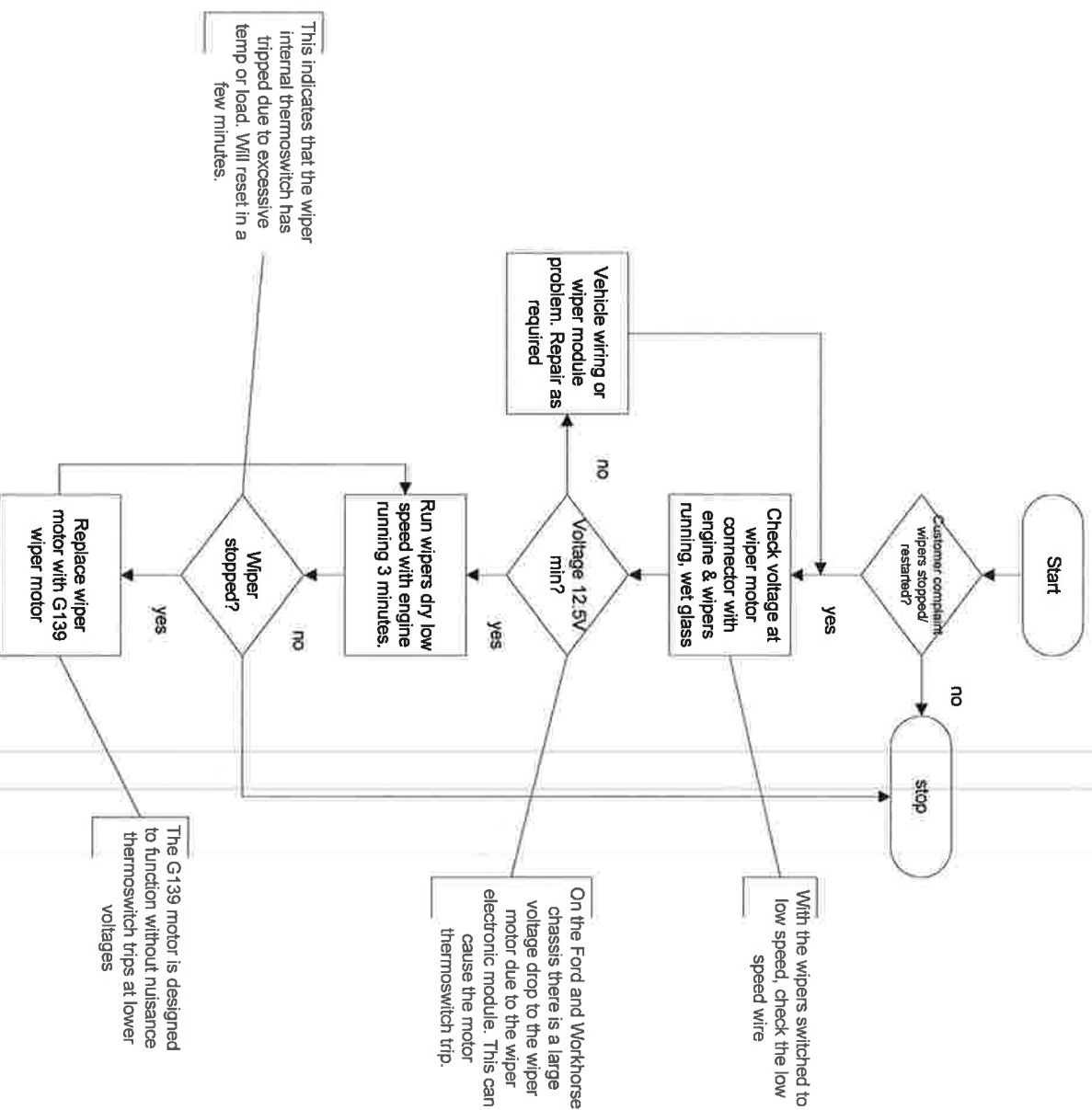
Wipers over-sweep into window molding



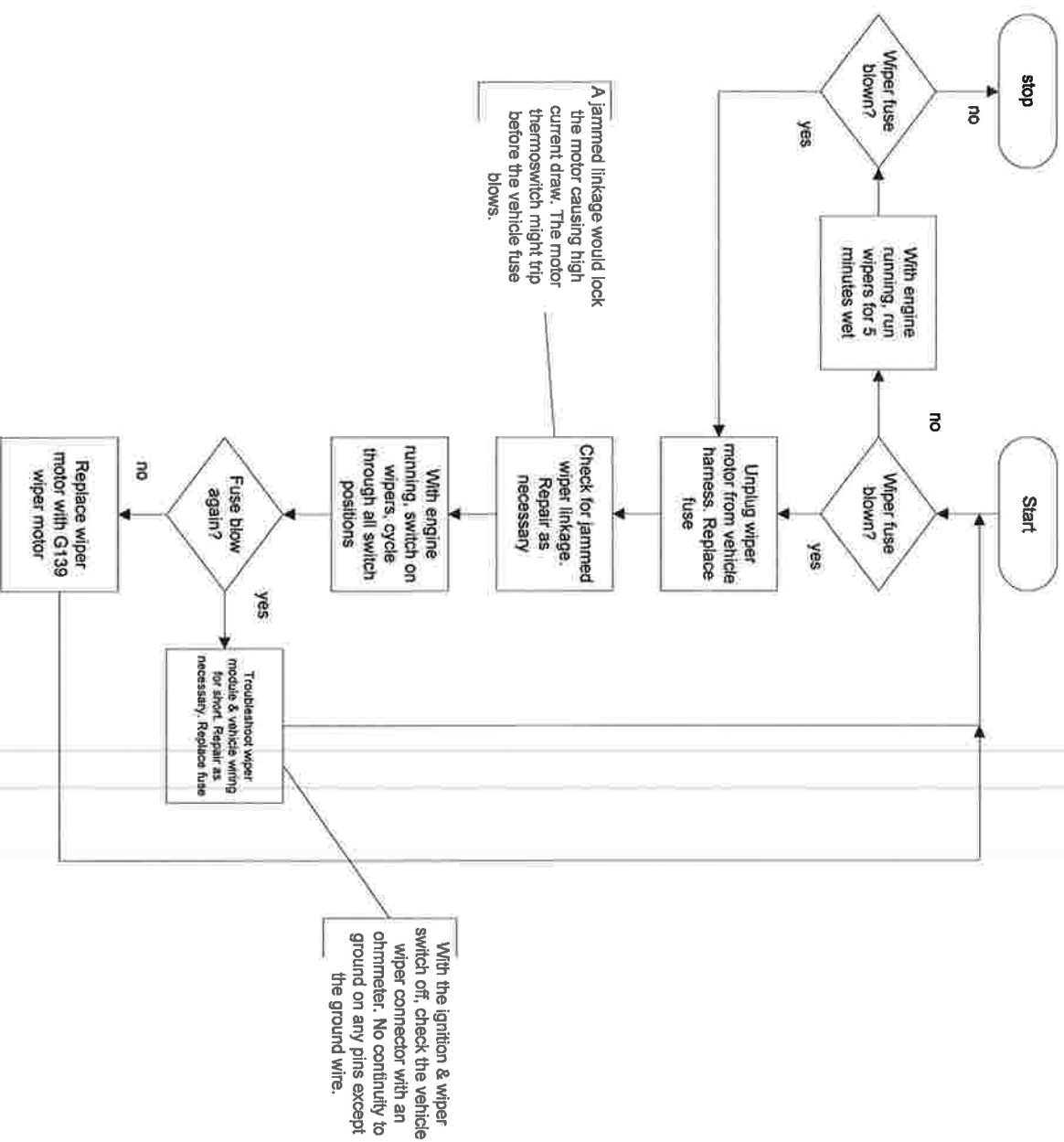
Wiper runs slow



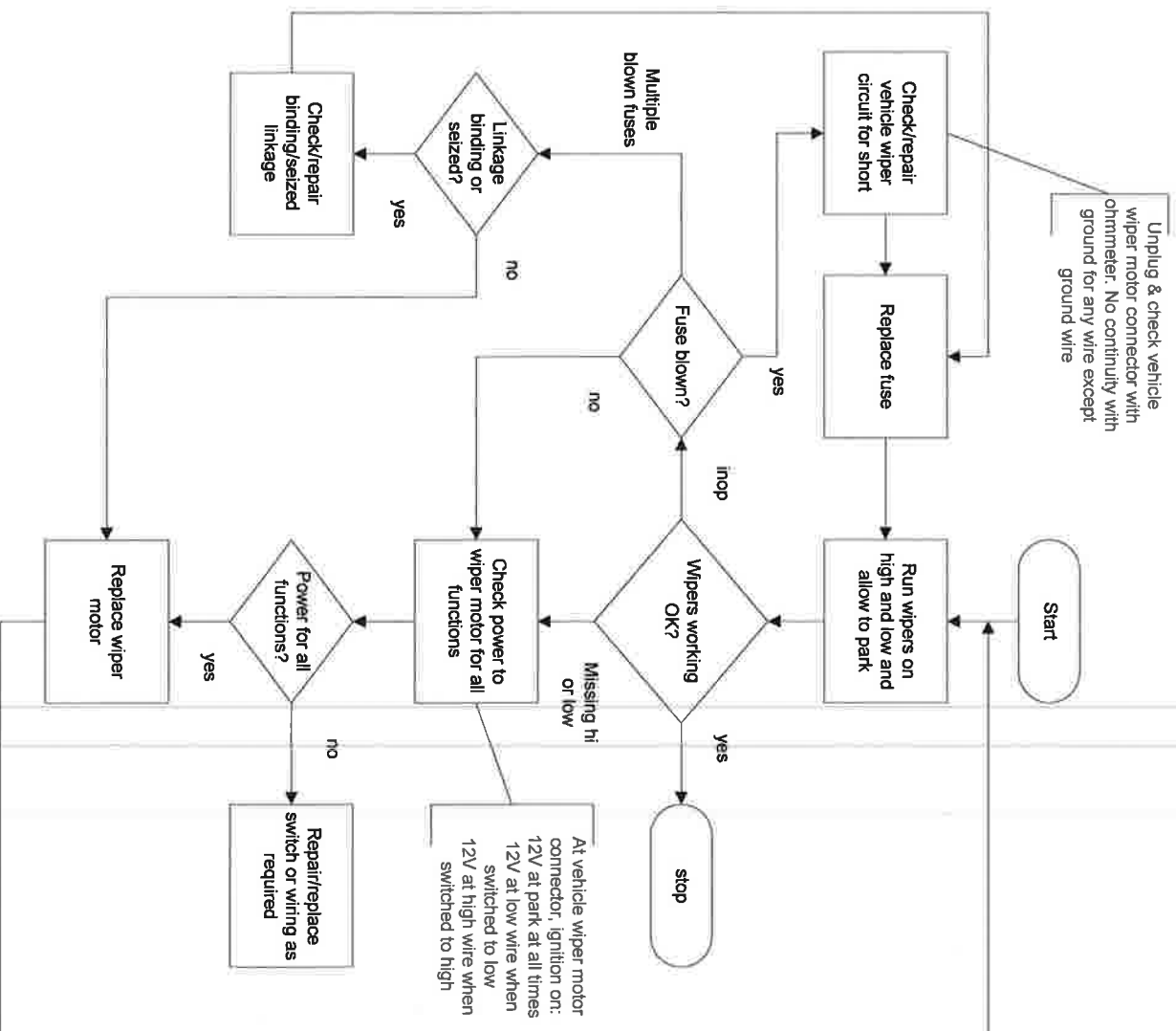
Wiper stops unexpectedly and restarts



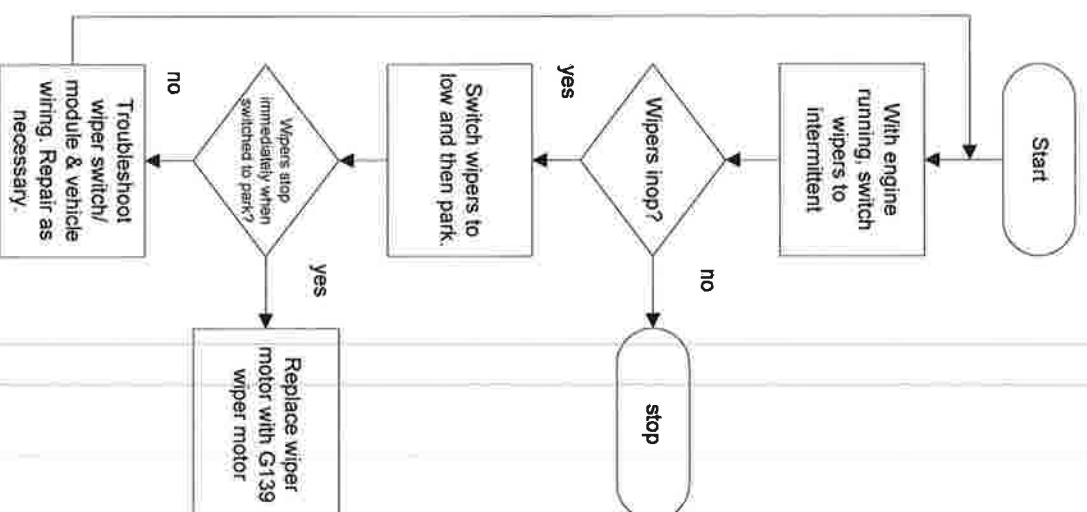
Wipers blow vehicle fuse



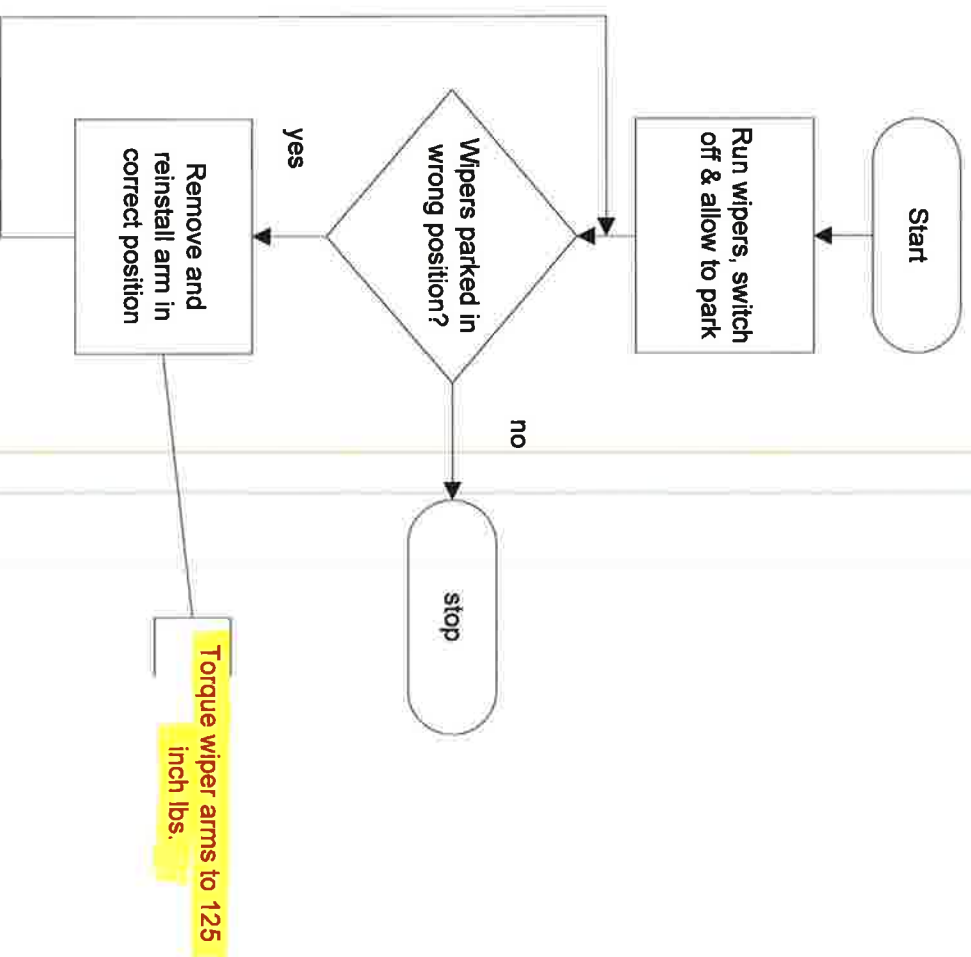
Wipers inoperative or missing a speed



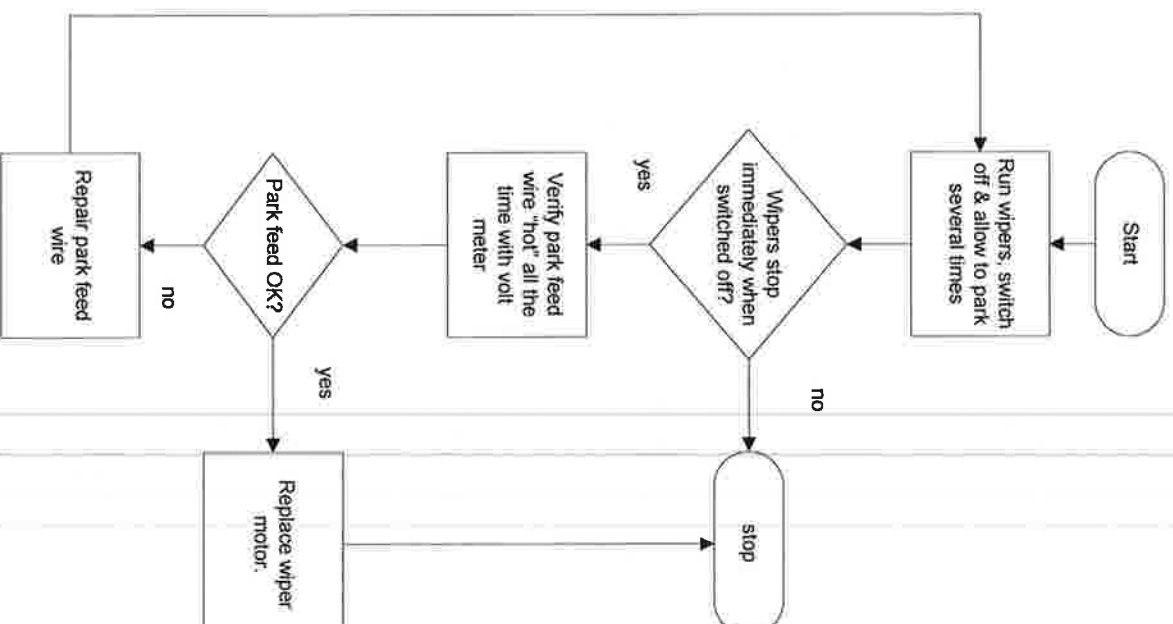
Wipers inop intermittent setting only



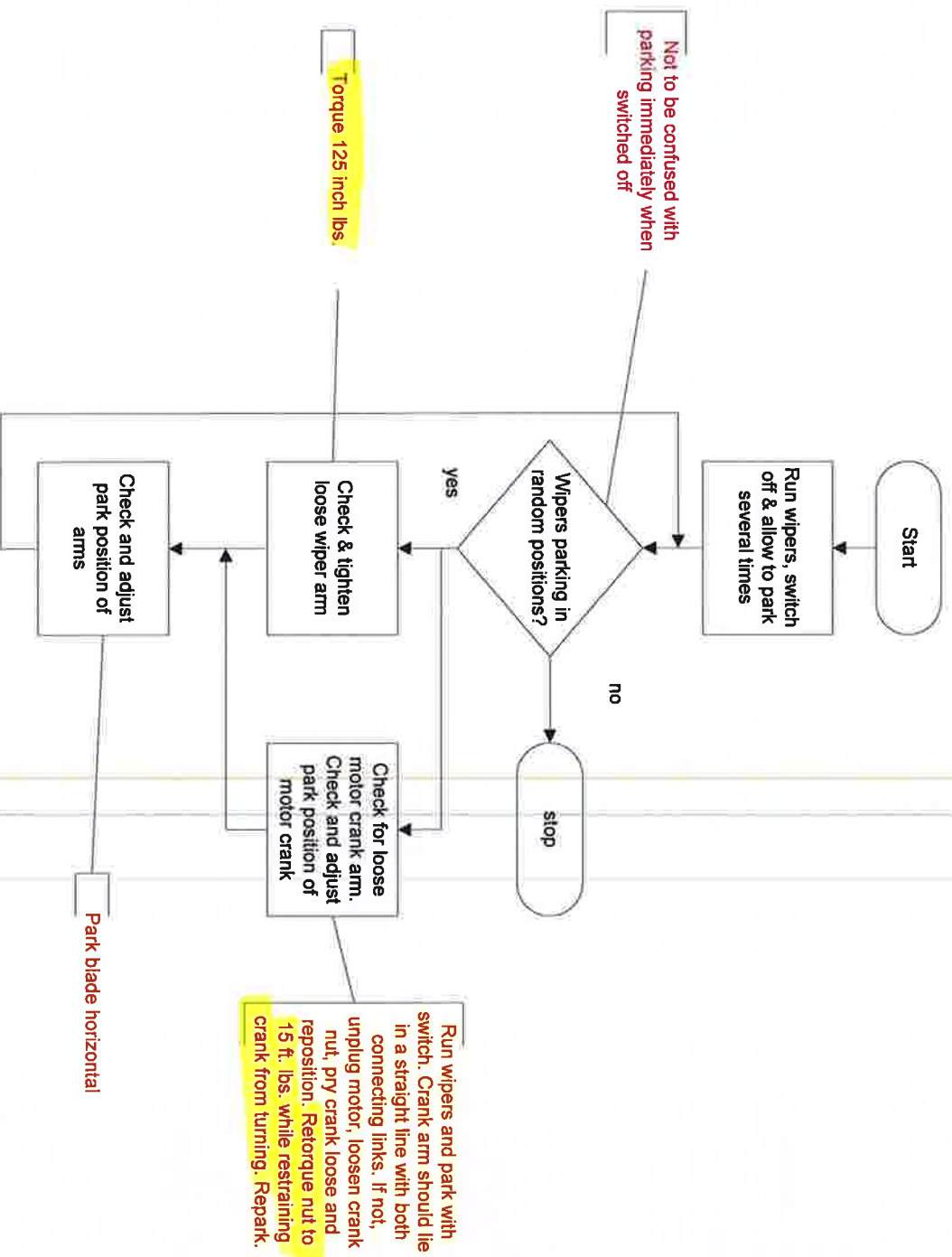
Wipers park consistently in wrong position



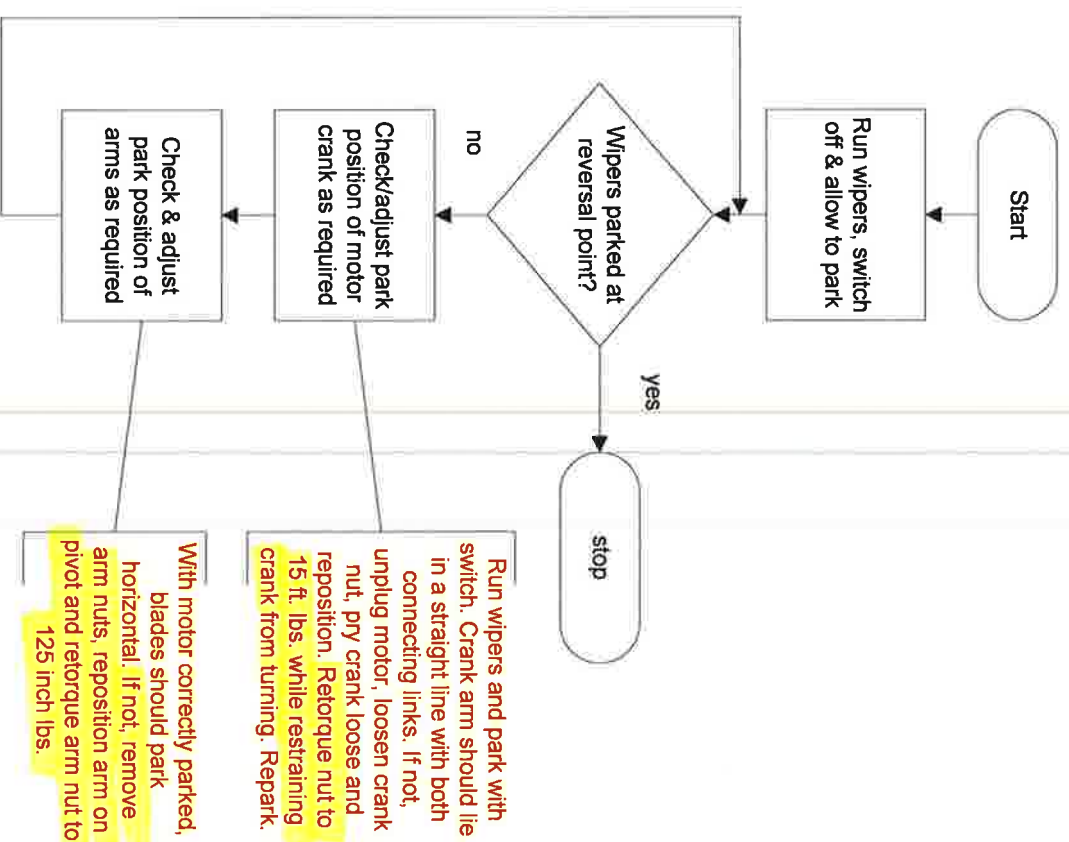
Wipers stop immediately when switched off



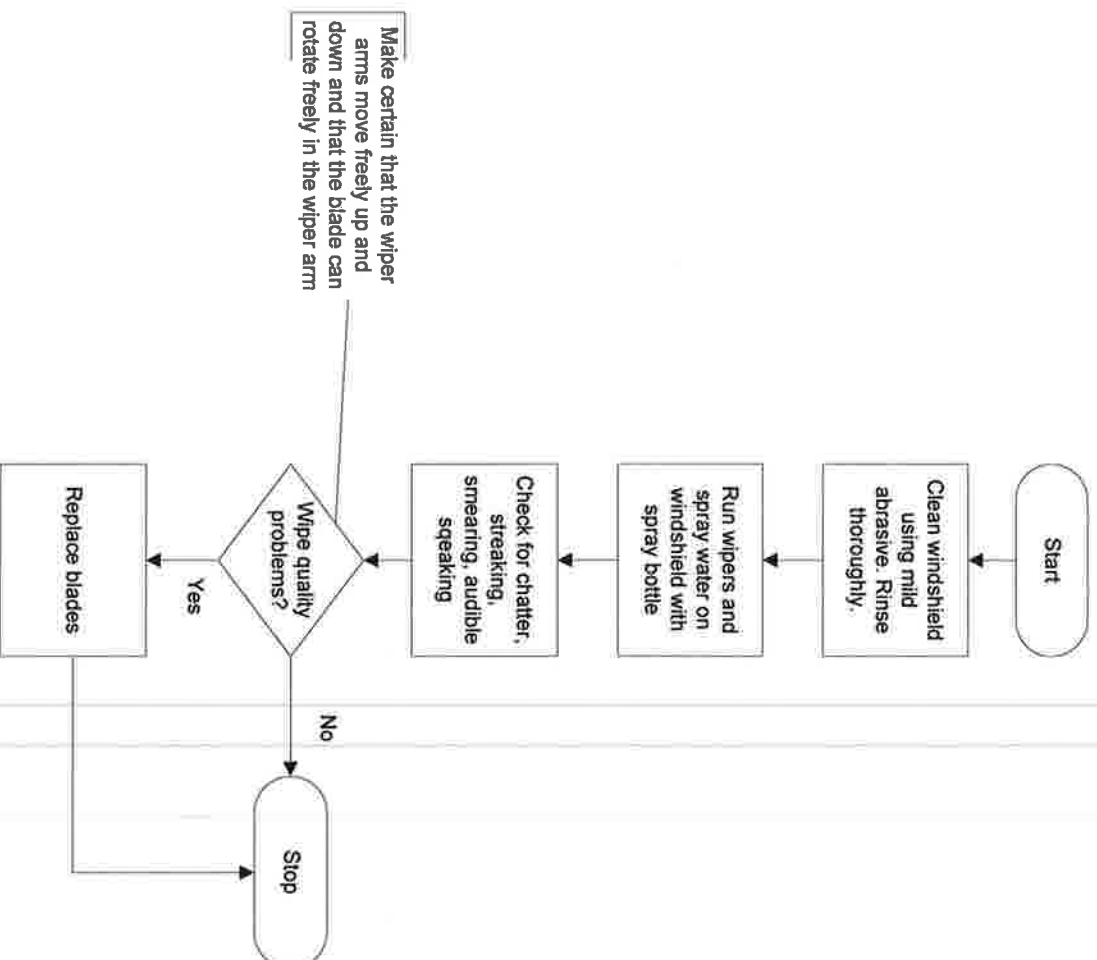
Wipers park in random positions



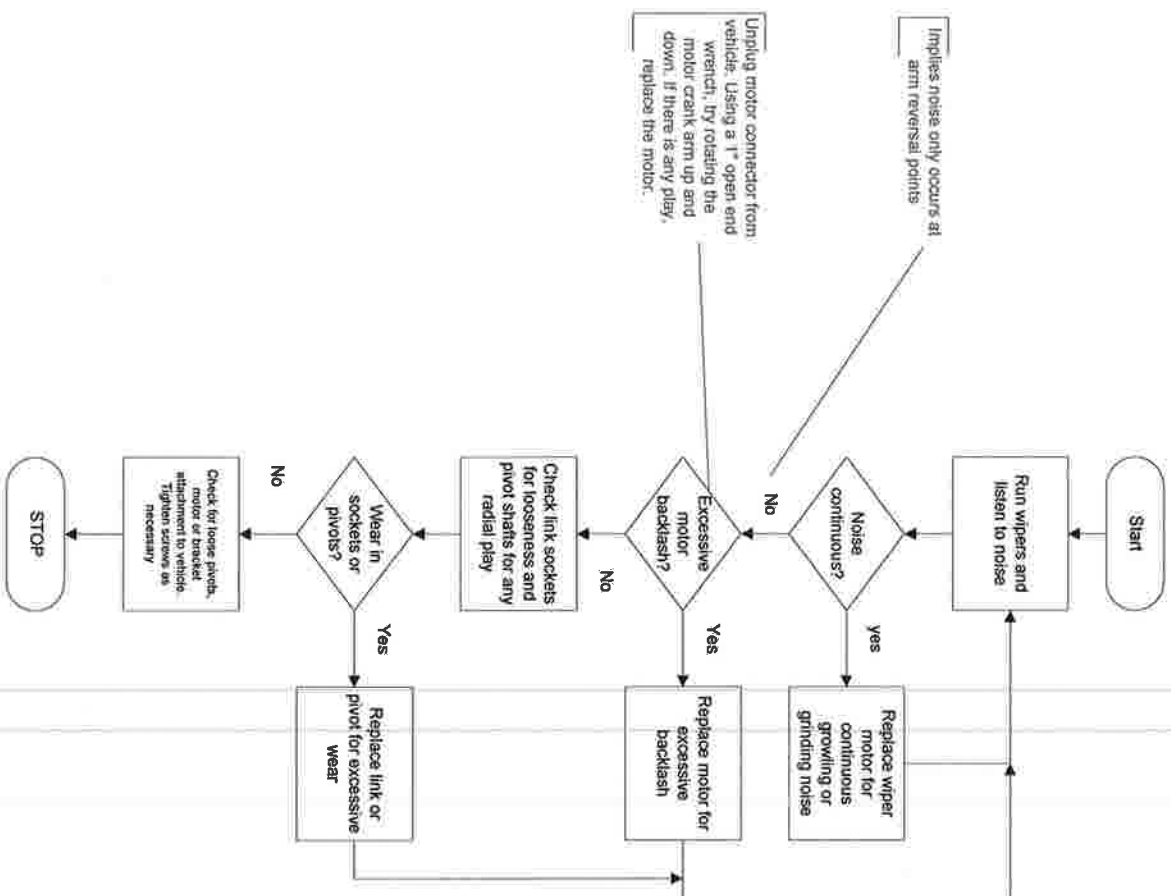
Wipers do not park at reversal point



Wipe quality complaints



Noise



Recommended torque values

fastener	size	Torque
Wiper arm nut	3/8" - 24	125 in. lbs. max
Pivot nut	11/16" - 24	13 – 17 ft. lbs.
Motor crank arm nut	M8 x 1.25	15 ft. lbs.
Motor screws	M6 x 1	7 – 9 ft. lbs.
Crank arm ball stud	3/8" - 24	10-13 ft. lbs
Pivot screws	10-24	25 – 35 in. lbs

Wiper motor polarity

