

Thank you for purchasing a National Cycle product. Read these instructions carefully and thoroughly before beginning work. Dealers, if installing this windshield for a customer, please give them this manual upon completion. It contains information needed to properly maintain and use this product.

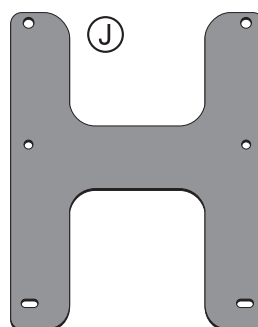
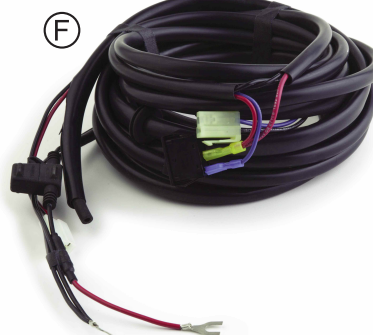
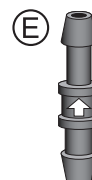
Description:	Wash'n'Wipe Kit for N30213 Full Size WIndshield	Model:	Polaris® Ranger Mid Size, Round Frame Tube, Various Models
Part Number:	N30213-WK	Installation Time:	60-90 min.

**N30216-WK PARTS LIST**

ITEM	PART NO.	DESCRIPTION	QUANTITY	TOOLS REQUIRED FOR ASSEMBLY
A	80-875150-000	Wiper Motor Assembly with Switch	1	Flat Blade Screwdriver
B	80-875153-000	Wiper Assembly Arm, 350mm (14.00")	1	#2 or #3 Phillips Screwdriver or Phillips Bit for Drill
C	80-875155-000	Wiper Assembly Blade, 400mm (15.75")	1	T-27 Torx Wrench
D	44-447167-000	Rubber Grommet	1	10mm Wrench (or Adjustable Wrench)
E	44-441927-000	Inline Check Valve for Washer Tubing	1	3/8" Wrench or Socket
F	80-830326-000	Wire Harness and Switch	1	7/16" Wrench or Socket
				1/4" Hex Wrench
G	80-875156-000	Spindle Hardware Kit	1	Metal Scribe or Marker
H	80-875157-000	M8 Stud Hardware Kit	1	X-Acto® Knife, or similar
				Wire Cutters
I	44-442523-000	Reservoir & Pump Assembly	1	Power Drill with 3/4" (19mm) hole saw or step drill bit
J	37-373686-000	Reservoir Mounting Bracket	1	Small Drill Bits (1/16" or 3/32", 1/8") for pilot holes
				Torque Wrench

**BAG#1185**

K	55-562600-000	Machine Screw, Panhead, Slotted, 10-32 x 5/8	2
L	49-490543-000	Flat Washer, .253 x .875 x .05	2
M	42-450024-000	Nylok Hex Nut, 10-32	2
N	55-550260-000	Machine Screw, Phillips, 12 x .75	2
O	44-448710-000	Wire Tie, 11.00"	12



## PREPARATION

Carefully unpack your Wash'n'Wipe™ Kit, sort the parts, and make sure you have everything required to complete the assembly.



**ATTENTION:** Special notes and cautionary measures which can prevent damage to the accessory or vehicle.



**NOTE:** Tips for facilitation of operation, control and adjustment, as well as maintenance work.

### WIRE HARNESS REFERENCE POINTS

(I) Motor Connector and Fluid Hose  
Installs to Motor

(II) Grommet  
Seals 3/4" Hole

(III) Pump Switch for Washer  
Mounts to Dash Inside Cab

(V) Battery Connections:  
Black-Negative  
Red-Positive

(IV) Pump Connector and Fluid Hose  
Install to Fluid Reservoir and Pump

Illustration A

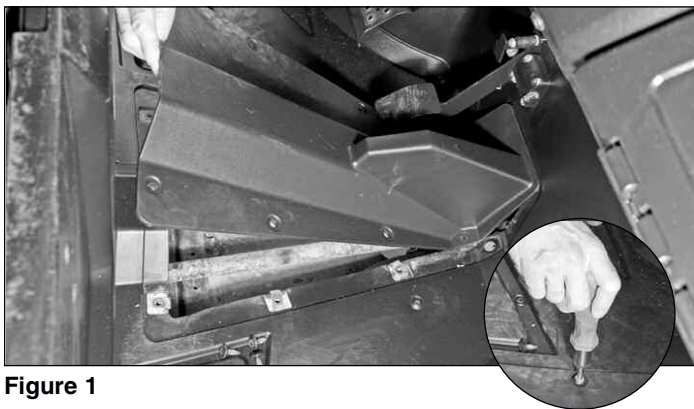


Figure 1

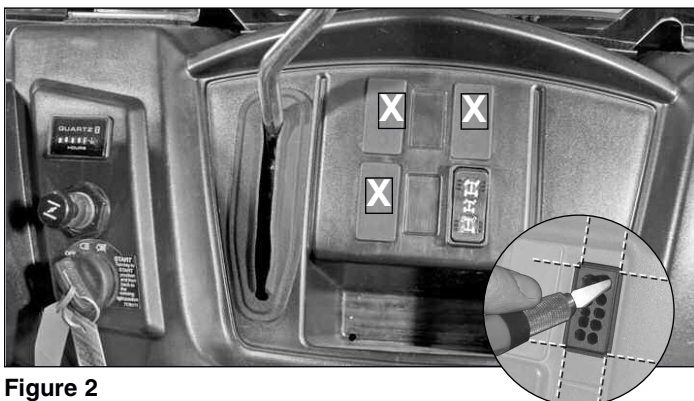


Figure 2

### PREPARE THE VEHICLE FOR WIRING SEATS AND CENTER CONSOLE

Remove seats.

#### Figure 1

Using a t-27 Torx Wrench, remove the center console.



Note that one of the seven screws holding the center console is different from the rest.

### CUTTING THE PUMP SWITCH HOLE



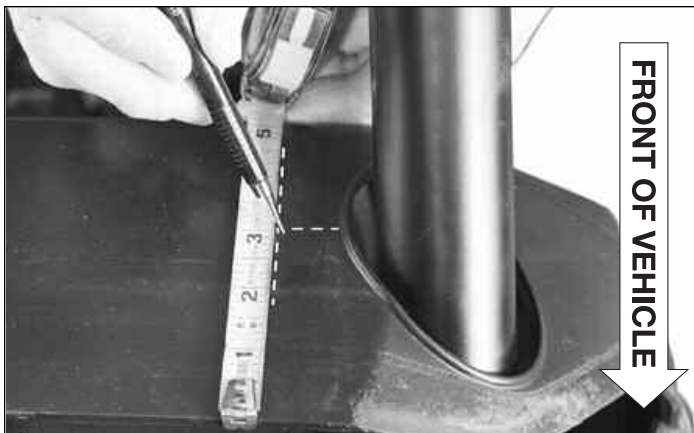
The installation of the Pump Switch on this vehicle is in the recessed area of dash panel indicated by the "X". Select your preferred location for the switch. Use care when cutting the hole and avoid over-cutting.

#### Illustration A

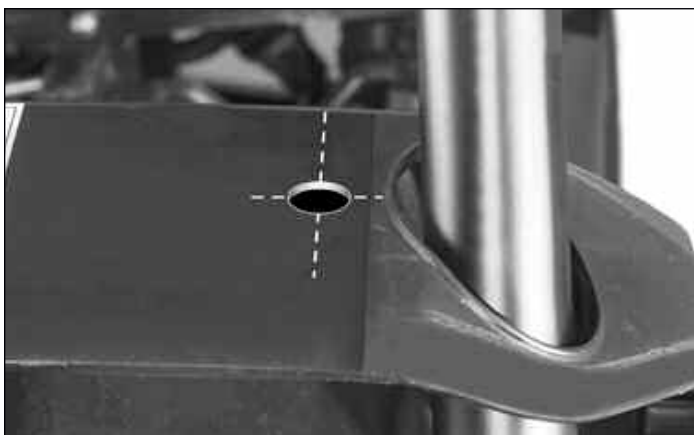
Disconnect the Washer Pump Switch (III) from the main Wire Harness (F). Check the size of Pump Switch against the locator bay. Scribe or draw a 17/32" x 1 1/8" (14mm x 29mm) guide in the desired location.

#### Figure 2

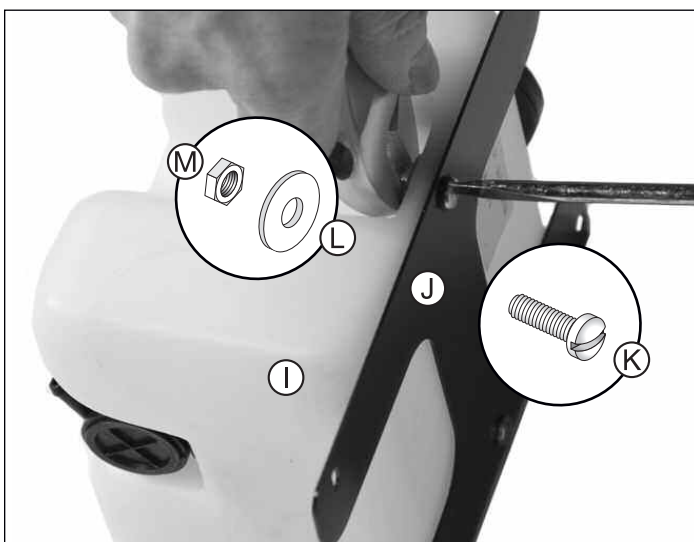
Using a Power Drill, drill a pattern of holes in the plastic cover to serve as starting holes for cutting. Then use your X-Acto® knife to cut out the cover's face to the edges shown.



**Figure 3**



**Figure 4**



**Figure 5**

## **PREPARE THE VEHICLE FOR WIRING; CONT'D**

### ***CUTTING THE 3/4" PASSWAY HOLE***

Open the front hood.

#### **Figure 3**

On the hood of the vehicle behind the engine cover on the driver's side, measure a point 3.0" (7.6cm) from the front of the body and 1.0" (25mm) from the frame cutout on driver's (left) side of vehicle.

Mark that location. This hole should be located near the left frame bar.

#### **Figure 4**

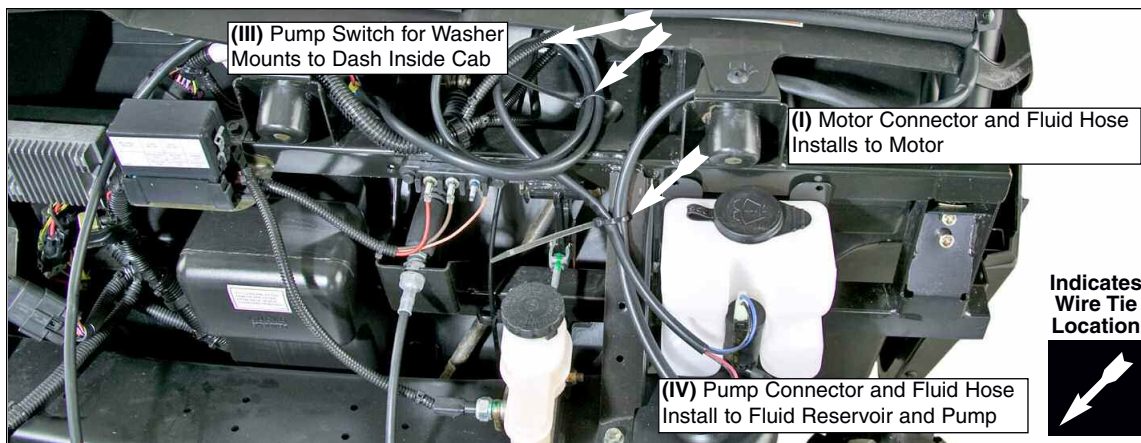
Insert a step drill bit or 3/4" hole saw into your Power Drill and drill a hole in the body cover at the location marked in Figure 3.

### ***MOUNT RESERVOIR/PUMP ASSEMBLY TO BRACKET***

#### **Figure 5**

Using a two Slotted Screws (K), two Washers (L) and two Nuts (M) from Bag #1185, install the Reservoir/Pump Assembly (I) to the Reservoir Mounting Bracket (J) with a Flat Blade Screwdriver and a 3/8" Box Wrench.



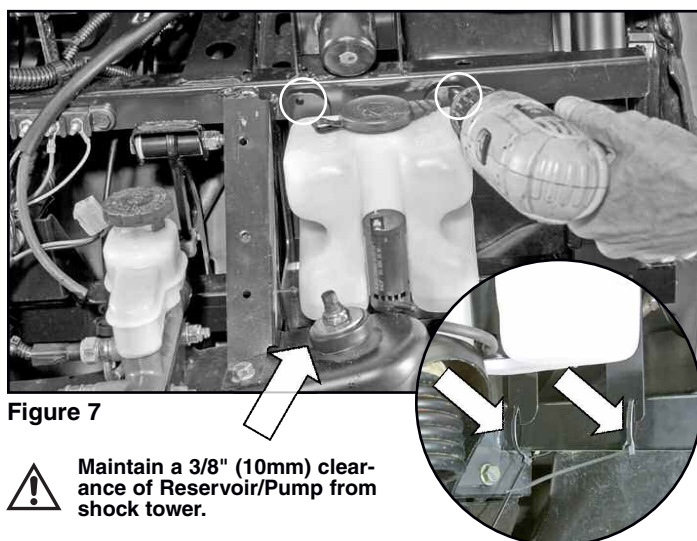


(I) Motor Connector and Fluid Hose Installs to Motor



(II) Grommet Seals 3/4" Hole

Illustration B



## MOUNT RESERVOIR/PUMP ASSEMBLY

### Illustration B

Move to under the hood. Find the Pump Connector/Fluid Hose section (IV) of the Wire Harness and route it behind the bracket that secures the dash to the frame. Thread it through the 3/4" hole cut into the vehicle's body.

Follow the Frame Tube, pulling enough length through the 3/4" (19mm) hole so Pump Connector/Fluid Hose section (IV) reaches 4-5" (10-12cm) past the half-way point of the upper frame tube. This is where the Wash'n'Wipe Motor will be located.

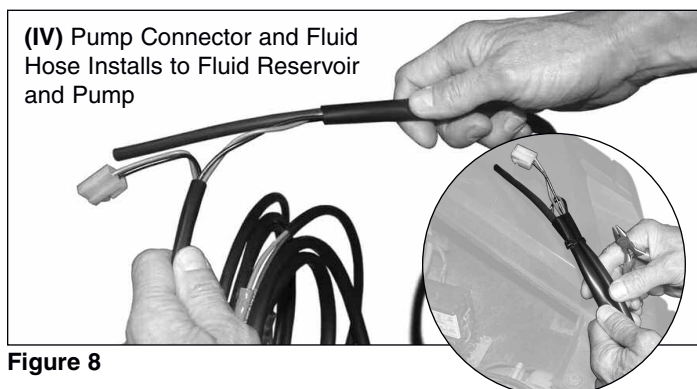
Use the Rubber Grommet (II) on section IV of the wire harness to seal the hole.

### Figure 7

Use a 1/4" Hex Drive or #3 Phillips and two Machine Screws (N) to mount the Reservoir/Pump Assembly to the horizontal bar under hood. Maintain a 3/8" (10mm) clearance between Reservoir/Pump and vehicle's shock tower.

### Figure 7 Inset

Using two Wire Ties (O), secure the lower section of the Mounting Bracket (J) to the horizontal bar as shown.



## WIRE HARNESS INSTALLATION

### PUMP CONNECTOR AND FLUID HOSE

### Figure 8

Take Pump Connector/Fluid Hose end section (IV) of the Wire Harness and locate the end of the Rubber Hose and the Nylon 2-Pin Pump Connector with red and black wires.

### Figure 8 Inset

Take the Pump Connector section and fold it against the Rubber Hose section. Secure the two sheaths with a Wire Tie (O) and trim the excess with Wire Cutters.

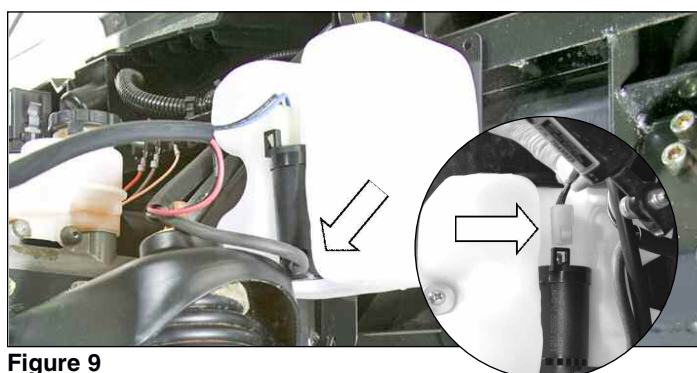
### Figure 9

Keep pushing the wire-tied Pump Connector/Fluid Hose section (IV) until it emerges under the dash above the cab's floorboards.

Move inside the cab and pull the wire-tied Wiring Harness components until you can connect the Rubber Hose to the bottom of the Reservoir's Electrical Pump.

### Figure 9 Inset

Push the Nylon 2-Pin Pump Connector onto the two pins on top of the Reservoir's Electrical Pump.





**Figure 10**

## **WIRE HARNESS INSTALLATION**

### ***ROCKER SWITCH TO DASH***

#### **Figure 10**

Locate the section of Wire Harness (F) that terminates in the Washer Pump Switch (III). Temporarily remove the Rocker Switch and thread the wiring under the hood toward the hole you cut in the dash panel's accessory bay in Figure 2. Thread the Wire End through the hole.

#### **Figure 11**

Move inside the vehicle and reattach the Washer Pump Switch to the two Nylon Pin Connectors (polarity doesn't matter) and then push the Rocker Switch into the cutout.

#### **Figure 12**

Completed dash panel Rocker Switch should appear as shown.

## **WIRE HARNESS INSTALLATION**

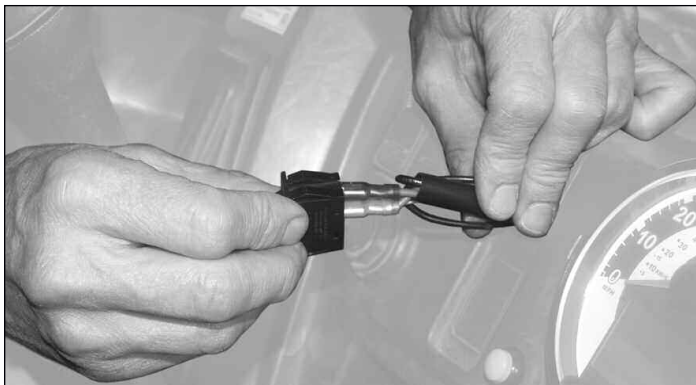
### ***BATTERY CONNECTION***



To prevent ends from snagging while routing Battery Connection terminal (V), tape the positive and negative connector cables together

#### **Figure 13**

Route the Battery Connection terminal (V) toward the console tunnel following the vehicle's main wiring harness.



**Figure 11**



**Figure 12**



**Figure 13**





Figure 14

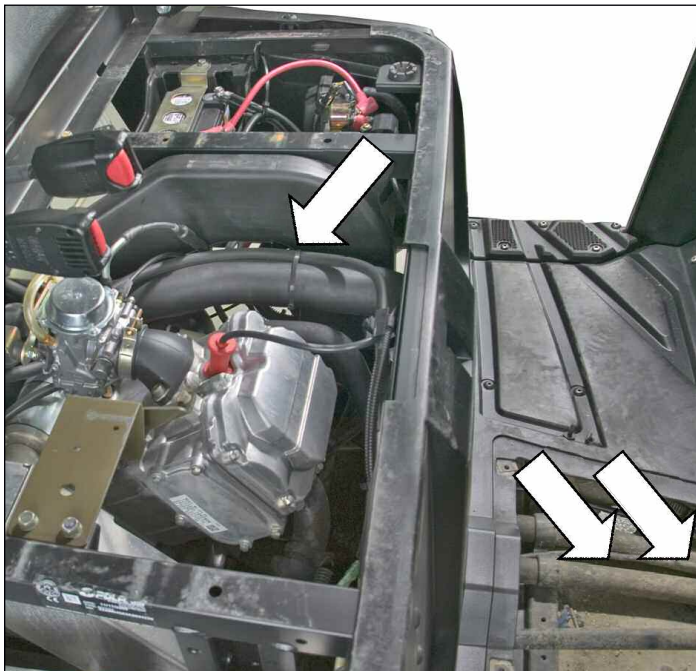


Figure 15

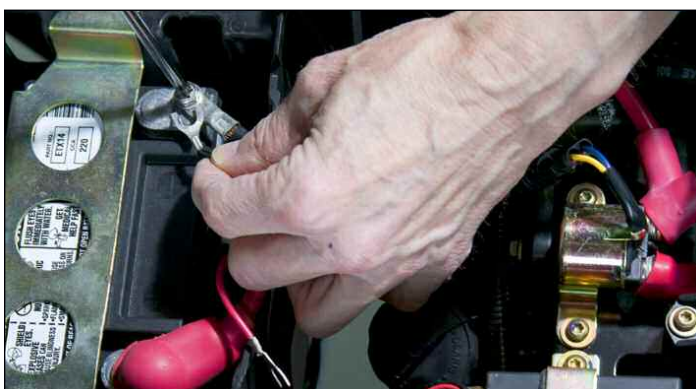


Figure 16A

## WIRE HARNESS INSTALLATION; CONT'D

### BATTERY CONNECTION

#### Figure 14-15

Continue to pull the Battery Connection terminal (V) of the Wire Harness along the vehicle's main wiring harness to the battery compartment.

#### Figure 16A

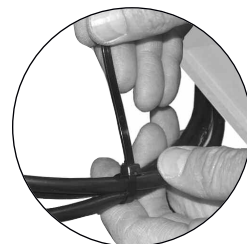
Loosen the negative terminal nut of the vehicle's battery with a Phillips screwdriver or a 10mm wrench. Slip the brass connector of the Battery Connection terminal (V) *Black Wire* under the negative (Black) terminal nut and tighten securely.

Repeat for the positive (Red) terminal connection with the brass connector of the Battery Connection terminal (V) *Red Wire*.

### SECURE WIRE HARNESS THROUGHOUT VEHICLE

Use the Wire Ties (O) to coil and secure the Wire Harness properly within the vehicle.

Do not leave loose Harness cables anywhere in the vehicle. Once Wire Ties are tight, clip excess Ties off at the ends.



#### Illustration B

SECURE a minimum of three locations inside front compartment.

#### Figure 15

SECURE at three locations to vehicle's wire group along center floor of vehicle. Stay away from the drive shaft.

#### Figure 16

SECURE excess inside battery compartment.

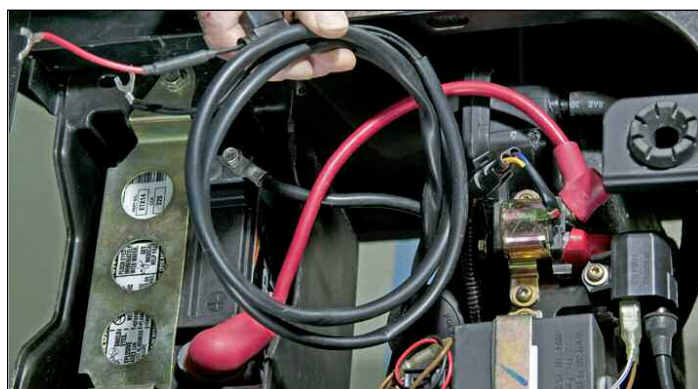
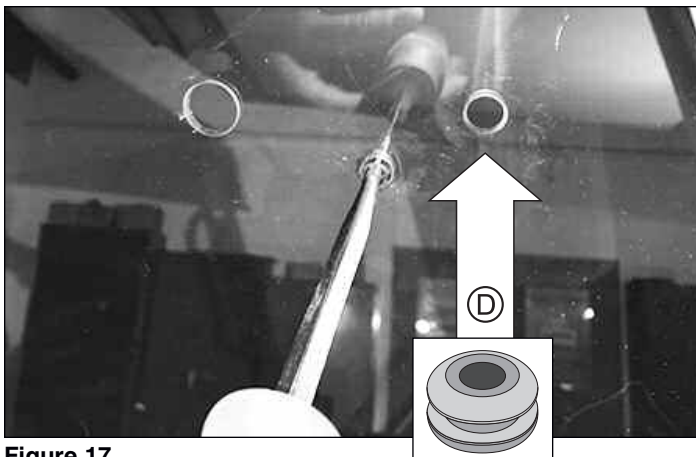
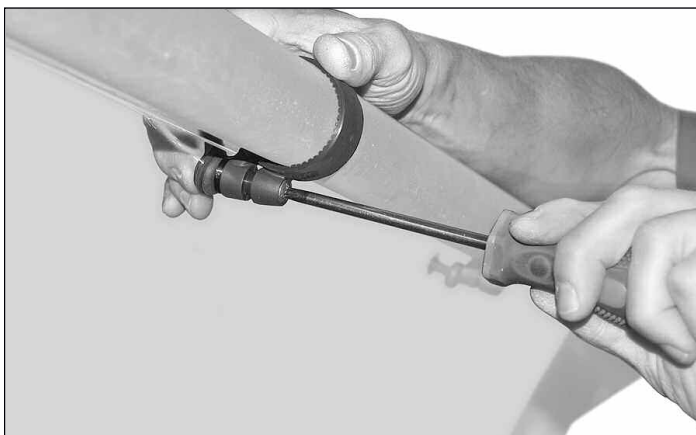


Figure 16B



**Figure 17**



**Figure 18**

## INSTALL THE WIPER MOTOR



It is recommended that you begin by removing the existing Windshield prior to installing the Wiper Motor.

Alternately, if your vehicle has no roof, or has a roof that can be easily detached, you can install the Wiper Motor (A) by standing up in the cab and installing the motor from the inside while reaching across the top rail to attach the securing hardware.

### Figure 17

From the *inside* of the Windshield, push out the three Plugs in the top center of Windshield. (*Any Conveniently Pointed Tool*)

Install Grommet (D) into the far right hole as shown.

### Figure 18

If removing the Windshield, loosen and remove the Panhead Philip Screws from the Wraparound Clamps securing Windshield to the vehicle frame.

Loosen the Velcro® on the bottom section and carefully remove the Windshield, making sure you don't lose the the Retaining Pins, Spacing Washers or the cable guides. Place the Windshield on the floor away from the vehicle.

### Illustration C

Open the Spindle Hardware Kit (G) and M8 Stud Hardware Kit (H) and lay out the parts in order.

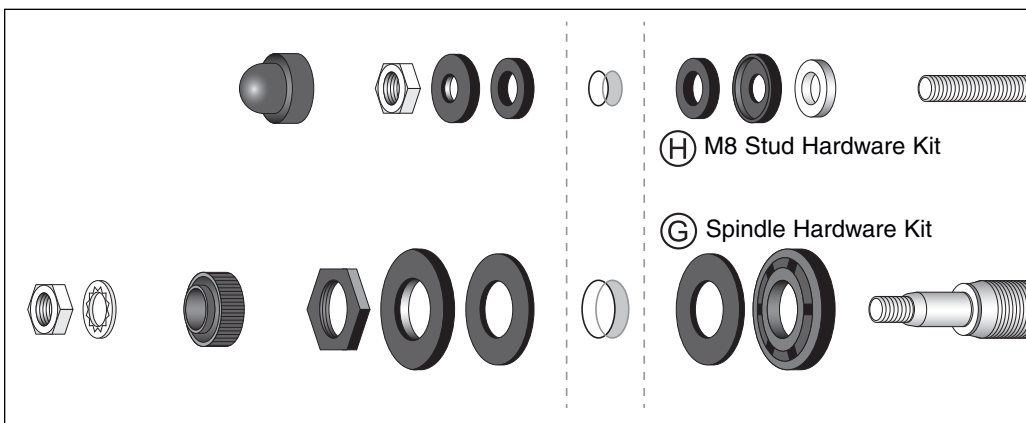


Note: The rubber washers will go against both inside and outside of the Windshield.

Onto the Stud and Spindle of the Wiper Motor, assemble the parts that go to the inside of the Windshield as shown between the motor and the silkscreened motor outline.

### Illustration D (next page)

Hold the Wiper Motor up to the inside of the Windshield and insert the wiper motor Stud and Spindle through the holes in the Windshield per the diagram, and assemble the remaining kit hardware located outside of the Windshield.



**Illustration C**

The nut on the stud (smaller) shaft needs to be torqued to 3 ft-lbs. (4 N-m). (*Torque Wrench*)

The nut on the spindle (larger) shaft needs to be torqued to 4.5 ft-lbs. (6 N-m). (*Torque Wrench*)

## WIPER MOTOR ASSEMBLY DIAGRAM

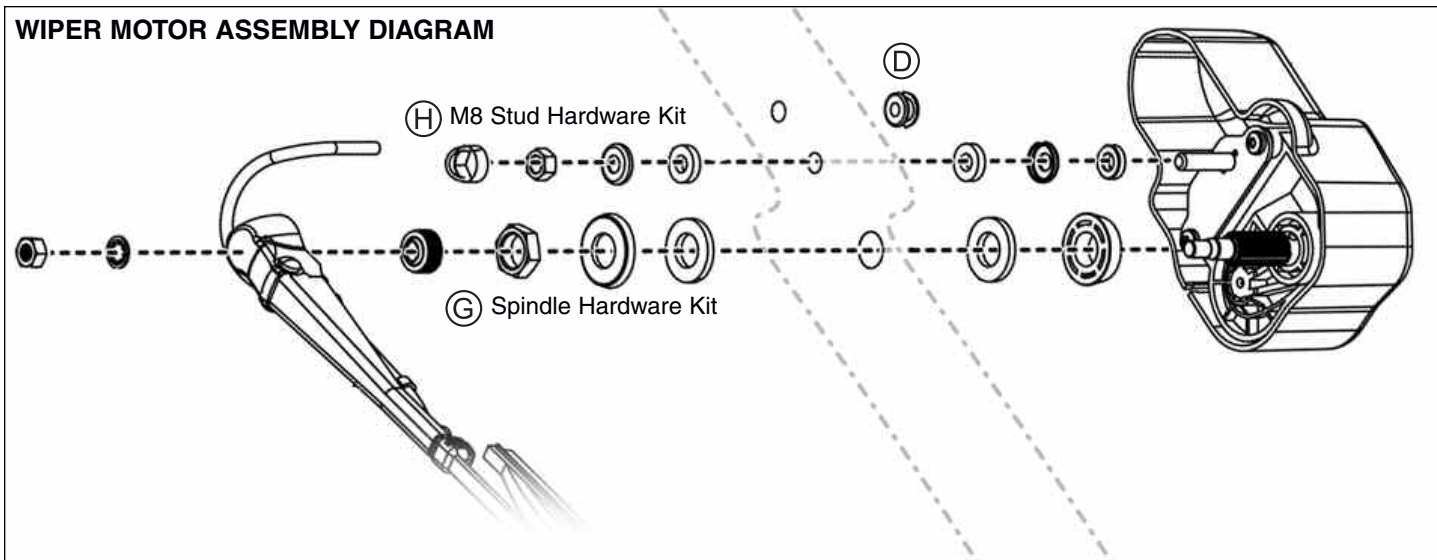


Illustration D

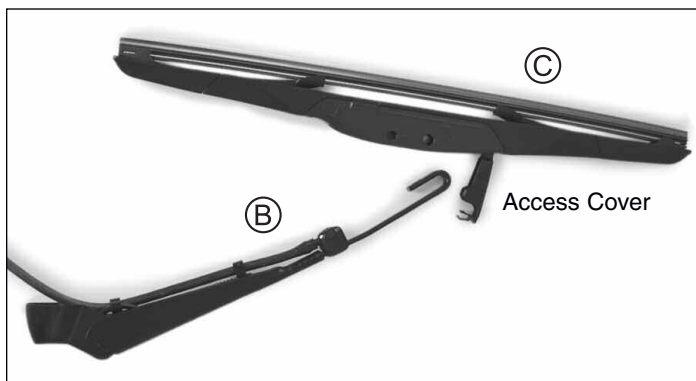


Figure 19

## INSTALL THE WIPER ARM

### Figure 19

Open the small access cover on the Wiper Blade (C). Place the J-hook of the Wiper Arm (B) over the Blade's plastic mounting clip until it clicks and locks into place. Close the small access cover.

### Figure 20

Open the access cover of the Wiper Arm as shown.

Assemble the Wiper Arm onto the Wiper Motor Spindle so that it is horizontal on the driver's side, then install its lock washer and nut as shown in Illustration B.



Hold the Wiper Arm horizontal while tightening the nut. Torque to 16 ft-lbs. (22 N-m). (*Torque Wrench*)

Close the Wiper Arm cover over the nut.



Figure 20





Figure 21



Figure 22



Figure 23

## REINSTALL THE VEHICLE WINDSHIELD



Follow the installation guide in **Windshield Installation Instruction Sheet 10-118622-000**.

Need the instructions? Go to [www.nationalcycle.com](http://www.nationalcycle.com) and insert **N30213** into the search box on the top right of the home page. Click the product listing, then click on the *N30213 Installation Instructions PDF link*.

### Figure 21

Pull enough harness length through passage hole so that Motor Hose/Fluid Connector terminal (I) follows the vehicle's frame to the top center where Wiper Motor will be located.

### Figure 22

On the driver's side, route harness wiring/fluid hose underneath Windshield (inside of cab) but over the two side Wraparound Clamps as shown.

At the top of the vehicle frame, route the harness wiring/fluid hose through the two Cable Clamps attached to the back of the top driver-side and top center Wraparound Clamps.

## WIRE HARNESS INSTALLATION

### TERMINAL CONNECTIONS TO WIPER MOTOR

### Figure 23

Check that the Wiper Arm Fluid Hose is threaded through the Grommet in the Windshield to the inside of the cabin. If it is not, do this now.

### Figure 24

Connect the Wiper Arm Fluid Hose to the fluid hose from Motor Hose/Fluid Connector terminal (I) with the Inline Check Valve (E). A little moisture on the Check Valve ends will make the hoses join easier.



The arrow on the Inline Check Valve (E) must point towards the Wiper Motor, not towards the Fluid Reservoir.

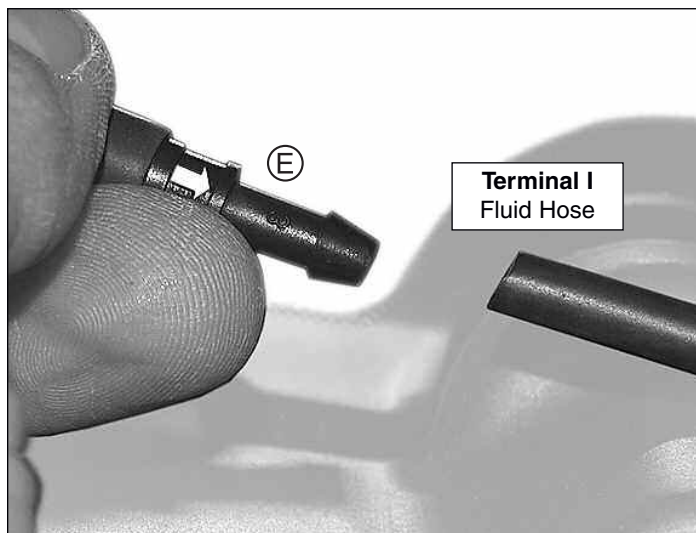


Figure 24



**Figure 25**



**Figure 26**

## **WIRE HARNESS INSTALLATION**

### ***TERMINAL CONNECTIONS TO WIPER MOTOR; CONT'D.***

#### **Figure 25**

Join the power connectors from the Wiper Motor and from Motor Connector/Fluid Hose terminal (I).

Tuck excess wiring behind the Wiper Motor assembly.

#### **Figure 26**

The completed Wiper Motor installation should appear as shown.

## **FILL THE FLUID RESERVOIR**

Fill the Reservoir (I) with plain water during warm weather, and glycol-based automotive windshield washer fluid in freezing weather.



DO NOT run the pump dry. Minimum amount of fluid to maintain in the Reservoir is 12 oz. (.35L) or to a depth of 1-1/2" (38mm).



*Minimum Depth: 1-1/2"* -----

## **FINAL TIGHTENING AND REINSTALLATION OF PARTS REMOVED FROM VEHICLE**

Check that the Wire Harness is coiled and secured. Check that all parts removed and reinstalled are tight and secure.

Reinstall the center console and the seats.

**Please refer to Pages 11-12 for operation, replacement parts and warranty.**

**Enjoy Your New Wash'n'Wipe™ Windshield!**

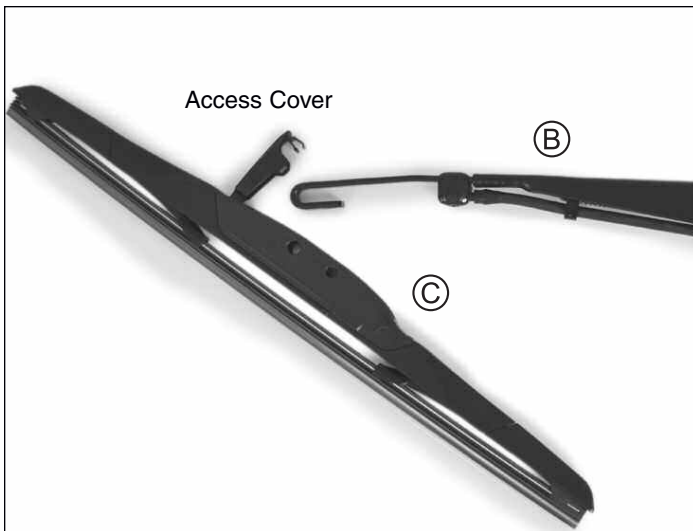


Figure 27



Figure 28



Figure 29

## WINDSHIELD WIPER OPERATION



The Wiper is intended for use with the wash cycle or during rain. DO NOT use the Wiper on a dry windshield. DO NOT run the Pump without fluid.

The Wiper Motor has an on/off Rocker Switch. Turn the switch on and verify that the Wiper works as expected

The newly installed dash panel Rocker Switch controls the fluid spray. Momentarily hold the Switch in the on position to spray water from the Wiper Arm. It should spray in four separate directions.

The four spray jets can be manually (but carefully) redirected.

## WIPER ARM AND BLADE

Your Wash'n'Wipe Windshield is equipped with a quality silicone Wiper Blade. Replacement Wiper Blades are available from your local dealer or by contacting National Cycle.

**Replacement Wiper Blade Part Number is N30900.**

**Replacement Wiper Arm Part Number is N30910.**

## REPLACING THE WIPER ARM AND WIPER BLADE

### Figure 27

Open the small access cover on the Wiper Blade (C) and pull the blade towards the motor end of Wiper Arm to loosen blade.

To install a new Wiper Blade, join the end of the Wiper Arm (B) to the Wiper Blade. Place the J-hook of the Arm over the Blade's plastic mounting clip until it clicks and locks into place. Close the small access cover.

### Figure 28

To remove the Wiper Arm (B), open the Wiper Arm cover and remove the Internal Tooth Lock Washer and Small Mounting Nut (M8 Stud Hardware Kit H). Then remove the Wiper Arm from the Wiper Motor (A) Spindle.

To replace the Wiper Arm back on the Spindle, reinstall the Internal Tooth Lock Washer and Small Mounting Nut.

### Figure 29

Use a torque wrench to tighten the Small Mounting Nut to 16 ft-lbs. (22 N-m). Then swivel the mount cover of the Wiper Arm back to its closed position. (*Torque Wrench with 13mm Socket*)





Ask for Shield Wash™ and RainZip® at your local dealer or visit [www.nationalcycle.com](http://www.nationalcycle.com).

## CLEANING AND MAINTENANCE

To clean your windshield, wash with a clean soft cloth and plenty of warm water and, if necessary, a non-abrasive soap such as dishwashing liquid. Flannel or soft chambrais make good cleaning cloths. **Paint, glue residue or grease removal:** Moisten cotton wad with naphtha or turpentine followed by a wash as above.

National Cycle **Shield Wash™** (N1401-01) makes a good daily cleaner and comes with a handy travel-size bottle. Shield Wash is safe for all windshields and helmet visors.

Do not clean polycarbonate in hot sun or high temperatures. Do not clean the screen with household glass cleaners.

Do not allow brake fluid, alcohol, or strong solvents to contact the windshield.

## RAIN REPELLENT

Do not use rain protective products made for glass. We recommend National Cycle's **RainZip®** (N1410-01) to keep your windshield clear in rainy weather.



## National Cycle 3-Year Limited Warranty

Register Your Windshield Online at [www.nationalcycle.com](http://www.nationalcycle.com)

National Cycle hereby warrants to the original registered owner of a National Cycle polycarbonate windshield for a period of three years from the date of purchase against breakage. This limited warranty is expressly limited to the replacement of the polycarbonate windscreen. This limited warranty does not include scratches, coating failure, cosmetic wear and tear, replacement of hardware, or any consequential damages or expenses including labor cost of installation, removal and/or replacement, inconvenience, inbound freight expenses or damage to any other component of the vehicle or any other accessories. Certain chemicals, generally known as acidic hydrocarbons, are known to cause polycarbonate damage and will not be covered under this limited warranty. Please refer to the cleaning instructions supplied with all National Cycle windshields. Visit [www.nationalcycle.com](http://www.nationalcycle.com) for further details or call or write National Cycle Inc.

## ⚠ WARNING

Never operate your vehicle with loose accessory mounting hardware. Check the hardware for tightness regularly.

UTVs are built with enough frame rigidity to withstand the moderate loads imposed on them by the foreseeable addition of an accessory(ies). If an accessory(ies) adversely affects your vehicle's stability, immediately remove the accessory(ies). Do not operate a vehicle that exhibits unsafe handling traits.

Have experienced service personnel correct any problem before driving with the accessory(ies) installed. For further questions concerning handling problems associated with an accessory(ies), contact your dealer, UTV manufacturer, or accessory manufacturer.

**Caution:** Do not clean polycarbonate in hot sun or high temperatures. Do not clean the screen with glass cleaners. Certain chemicals, generally known as acidic hydrocarbons, are known to cause polycarbonate damage. Do not allow brake fluid, alcohol, or strong solvents to contact the screen.

**Caution:** Do not use rain protective products made for glass. We recommend National Cycle's rainZip® (N1410-01) to help shed water in rainy weather.

**Caution:** Always face windshield forward (in direction of travel) while carrying on truck or trailer.