

# PWC KIT - Bilge Pump

Product: **Sea-Doo\_watercraft**  
 Project no: **ssi2011-021\_rev1**  
 Instruction Sheet P/N: **487800680**  
 Revision no: **1**  
 Revision date: **May 10 , 2013**  
 Item covered: **Bilge Pump**

The following symbols may be used in this document:

 **WARNING**

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

**CAUTION:** Indicates a hazard situation which, if not avoided, could result in minor or moderate injury.

**NOTICE** Indicates an instruction which, if not followed, could severely damage vehicle components or other property.

 **WARNING**

- For safety reasons, this kit must be installed by an authorized BRP dealer.
- If the installation of the kit requires a template, ensure that template is to scale.
- This kit is designed for specific applicable models only (authorized BRP dealers will confirm model(s)). It is not recommended for units other than the one (those) for which it was sold.
- Should removal of a locking device (e.g. lock tabs, self-locking fasteners, etc.) be required when undergoing disassembly/assembly, always replace with a new one.
- Torque wrench tightening specifications must strictly be adhered to.
- Always wear EYE PROTECTION AND APPROPRIATE GLOVES when using power tools.
- Unless otherwise specified, engine must be OFF when performing any operation on the vehicle.
- Always be aware of parts that can move, such as wheels, transmission components, etc.
- Some components may be HOT. Always wait for engine to cool down before performing work.

| FASTENER SIZE | TORQUE TO BE USED WHEN TORQUES ARE NOT SPECIFIED IN TEXT |                                    |                                     |                                     |
|---------------|--|------------------------------------|-------------------------------------|-------------------------------------|
|               | 5.8 GRADE  | 8.8 GRADE                          | 10.9 GRADE                          | 12.9 GRADE                          |
| M4            | 1.8 ± 0.2 N•m<br>(16 ± 2 lbf•in)                         | 2.8 ± 0.2 N•m<br>(25 ± 2 lbf•in)   | 3.8 ± 0.2 N•m<br>(34 ± 2 lbf•in)    | 4.5 ± 0.5 N•m<br>(40 ± 4 lbf•in)    |
| M5            | 3.3 ± 0.2 N•m<br>(29 ± 2 lbf•in)                         | 5.0 ± 0.5 N•m<br>(44 ± 4 lbf•in)   | 7.8 ± 0.7 N•m<br>(69 ± 6 lbf•in)    | 9.0 ± 1.0 N•m<br>(80 ± 9 lbf•in)    |
| M6            | 7.5 ± 1.0 N•m<br>(66 ± 9 lbf•in)                         | 10.0 ± 2.0 N•m<br>(89 ± 18 lbf•in) | 12.8 ± 2.2 N•m<br>(113 ± 19 lbf•in) | 16.0 ± 2.0 N•m<br>(142 ± 18 lbf•in) |
| M8            | 15.3 ± 1.7 N•m<br>(135 ± 15 lbf•in)                      | 24.5 ± 3.5 N•m<br>(18 ± 3 lbf•ft)  | 31.5 ± 3.5 N•m<br>(23 ± 3 lbf•ft)   | 40.0 ± 5.0 N•m<br>(30 ± 4 lbf•ft)   |
| M10           | 29 ± 3 N•m<br>(21 ± 2 lbf•ft)                            | 48 ± 6 N•m<br>(35 ± 4 lbf•ft)      | 61 ± 9 N•m<br>(45 ± 7 lbf•ft)       | 73 ± 7 N•m<br>(54 ± 5 lbf•ft)       |
| M12           | 52 ± 6 N•m<br>(38 ± 4 lbf•ft)                            | 85 ± 10 N•m<br>(63 ± 7 lbf•ft)     | 105 ± 15 N•m<br>(77 ± 11 lbf•ft)    | 128 ± 17 N•m<br>(94 ± 13 lbf•ft)    |
| M14           | 85 ± 10 N•m<br>(63 ± 7 lbf•ft)                           | 135 ± 15 N•m<br>(100 ± 11 lbf•ft)  | 170 ± 20 N•m<br>(125 ± 15 lbf•ft)   | 200 ± 25 N•m<br>(148 ± 18 lbf•ft)   |

| FASTENER SIZE | TORQUE TO BE USED WHEN TORQUES ARE NOT SPECIFIED IN TEXT |                                   |                                   |                                   |
|---------------|--|-----------------------------------|-----------------------------------|-----------------------------------|
|               | 5.8 GRADE  | 8.8 GRADE                         | 10.9 GRADE                        | 12.9 GRADE                        |
| M16           | 126 ± 14 N•m<br>(93 ± 10 lbf•ft)                         | 205 ± 25 N•m<br>(151 ± 18 lbf•ft) | 255 ± 30 N•m<br>(188 ± 22 lbf•ft) | 305 ± 35 N•m<br>(225 ± 26 lbf•ft) |
| M18           | 170 ± 20 N•m<br>(125 ± 15 lbf•ft)                        | 273 ± 32 N•m<br>(201 ± 24 lbf•ft) | 330 ± 25 N•m<br>(243 ± 18 lbf•ft) | 413 ± 47 N•m<br>(305 ± 35 lbf•ft) |

NOTE: The illustrations in this document show typical construction of the different assemblies and may not reproduce the full detail or exact shape of the parts; however, they represent parts that have the same or similar function.

NOTE: Installation time is approximately 0.8 hour.

Parts to be installed

| ITEM | DESCRIPTION                        | Part number              | QTY |
|------|------------------------------------|--------------------------|-----|
| P1   | Bilge pump                         | 278 002 020              | 1   |
| P2   | Bracket                            | 269 800 021              | 1   |
| P3   | Locking tie<br>(350 mm (13.8 in))  | 293 750 008              | 4   |
| P4   | M5 x 16 Screw                      | 243 041 660              | 2   |
| P5   | Pump hose                          | Not available separately | 1   |
| P6   | Outlet fitting                     | 293 710 015              | 1   |
| P7   | Gasket                             | 292 001 486              | 1   |
| P8   | Screw clamp                        | 293 650 172              | 2   |
| P9   | Electrical harness                 | Not available separately | 1   |
| P10  | Fuse (3 amp)                       | 710 001 008              | 1   |
| P11  | Locking tie<br>(180 mm (7-1/2 in)) | 414 115 200              | 5   |
| P12  | Bus bar                            | 278 002 182              | 1   |
| P13  | Jumper wire                        | Not available separately | 1   |

## INSTRUCTIONS

### Pump Installation

For GTI and GTS platforms

1. Remove seat to access engine compartment.
2. Assemble the bilge pump as follows

Pump assembly - gti/gts

1. Pump unit [P1]
2. Locking tie [P3]
3. Bracket [P2]
4. Pump connector
3. Apply small amount of DIELECTRIC GREASE (P/N 293 550 004) to pump connector.
4. Connect the pump to the harness connector.
5. Locate the pump bracket holes on the bottom of the hull.
  1. Pump bracket holes
6. Install pump assembly to its location with outlet pointing in aft direction.

7. Torque screws [P4] to  $8 \pm 0.5 \text{ N}\cdot\text{m}$  ( $71 \pm 4 \text{ lbf}\cdot\text{in}$ ).

1. Retaining screws.

8. Locate vent hole on bilge pump hose.

1. Vent hole positioned upwards

9. Insert a screw clamp to the bilge pump hose end closest to vent hole.

1. Pump hose [P5]

2. Screw clamp [P8]

10. Connect hose end (closest to vent hole) to the pump outlet.

11. Secure pump harness along main wiring harness up to battery area with locking ties every 35 cm (14 in) approximately as needed.

1. Bilge pump [P1]

2. Harness [P9] connector

3. Locking tie [P11]

12. Route pump hose under vehicle deck over exhaust piping on the starboard side.

13. Secure pump hose to rubber hose and along the way, with locking ties, as needed.

Routing of bilge pump hose - typical gti/gts

1. Pump hose

2. Vent hole

3. Rubber hose

NOTICE Pay attention to the vent hole that must be positioned upwards at the highest possible point of the hose routing for back-flow prevention . Keep wiring and hose away from moving or sharp edge parts

14. torque clamp screw over pump outlet to  $3.7 \pm 0.3 \text{ N}\cdot\text{m}$  ( $33 \pm 3 \text{ lbf}\cdot\text{in}$ ).

15. Locate and cut GTI/GTS hole template on the rear side of the hull.

NOTE: See hole template attached at the end of this instruction sheet. Carefully select template according to model.

Typical - GTI model shown

16. Punch a location mark on the hull surface.

Marking location on hull

17. Using a hole-saw, drill the outlet hole ( $\varnothing = 27 \text{ mm}$  (1-1/16 in)) through the hull wall.

typical - GTX model shown

1. Hole saw ( $\varnothing = 27 \text{ mm}$  (1-1/16 in))

18. Clean the area using a vacuum cleaner.

For GTX and RXT platforms

1. Open and remove the aft re-boarding platform or port side access cover.

1. Re-boarding platform attachments

2. Remove the port side storage bin.

3. Assemble the bilge pump as follows

bilge pump assembly - typical gtx/rxt

1. Pump unit [P1]

2. Locking tie [P3]

3. Bracket [P2]

4. Pump connector

4. Apply small amount of DIELECTRIC GREASE (P/N 293 550 004) to pump connector.

5. Connect the pump to the harness connector.

6. Locate the pump bracket holes in the bottom of the hull.

pump bracket holes location

1. Bracket holes in stiffener

2. Hull stiffener

7. Install pump assembly to its location with outlet pointing in aft direction.

8. Torque screws [P4] to  $8 \pm 0.5 \text{ N}\cdot\text{m}$  ( $71 \pm 4 \text{ lbf}\cdot\text{in}$ ).

1. Screws [P4]

2. Bracket [P2]

9. Locate vent hole on bilge pump hose.

1. Vent hole positioned upwards

10. Insert a screw clamp to the bilge pump hose end closest to vent hole.

1. Pump hose [P5]

2. Screw clamp [P8]

11. Connect hose end (closest to vent hole) to the pump outlet.

1. Harness [P9] connector

2. Locking tie [P11]

12. Route pump hose and electrical harness under vehicle deck over exhaust and intercooler piping (if applicable) to the other side (starboard).

13. Secure pump harness up to battery area along main wiring harness with locking ties every 35 cm (14 in) approximately as needed.

14. Secure pump hose to rubber hose and along the way, with locking ties, as needed.

hose & piping routing (deck removed for clarity)

1. Pump hose [P5]

2. Locking ties [P11] and [P3]

3. Electrical harness [P9]

NOTICE Pay attention to the vent hole that must be positioned upwards at the highest possible point of the hose routing for back-flow prevention. Keep wiring and hose away from moving or sharp edge parts

15. Torque clamp screw over pump outlet to  $3.7 \pm 0.3 \text{ N}\cdot\text{m}$  ( $33 \pm 3 \text{ lbf}\cdot\text{in}$ ).

1. Bilge pump [P1]

2. Hose [P5]

3. Screw clamp [P8]

16. Locate and cut hole template on the hull outer side over iBr guard.

NOTE: See hole template attached at the end of this instruction sheet. Carefully select template according to model.

hole template

17. Punch a location mark on the hull surface.

18. Using a hole-saw, drill the outlet hole ( $\varnothing = 27 \text{ mm}$  (1-1/16 in)) through the hull wall.

1. Hole saw ( $\varnothing = 27 \text{ mm}$  (1-1/16 in))

19. Clean the area using a vacuum cleaner.

For all platforms

1. Prepare pump outlet components.

1. Outlet fitting [P6]

2. Gasket [P7]

3. Outlet fitting nut

2. Install the outlet fitting with the seal ring through the hole.

3. Install nut on the fitting inside the hull while holding the fitting on the exterior side of the hull. On GTI/GTS platforms, have an assistant hold the fitting.

4. Hold the nut in place with channel lock pliers while an assistant uses a washer or a flat tool inserted in the fitting's notches to tighten from the outside.

Tightening of fitting

1. Washer

NOTE: After tightening nut, make sure seal ring (gasket) is compressed all around fitting to provide a tight seal.

1. Outlet fitting [P6]

2. Gasket [P7]

3. Outlet fitting nut

5. Assemble pump hose to the outlet fitting with a screw clamp and torque to  $3.7 \pm 0.3 \text{ N}\cdot\text{m}$  ( $33 \pm 3 \text{ lbf}\cdot\text{in}$ ).

NOTE: To ease installation procedure, tighten clamp to a snug fit on hose prior to installing hose onto fitting, then install hose onto fitting and move the clamp on the hose over the fitting. Orient the clamp upwards to facilitate access for tightening.

1. Outlet fitting [P6]

2. Pump hose [P5]

3. Screw clamp [P8]

Access to battery and fuses

For GTI and GTS platforms

1. Open front storage compartment.
2. Remove battery access panel
  - 2.1 Remove both plastic fasteners and rubber tie.
  - 2.2 Free panel from notches at the bottom by pulling it upwards.
1. Battery access panel
- 2.3 Disassemble and remove both panels halves from compartment.

For GTX and RXT platforms with suspension

1. Open the aft re-boarding platform.
1. Re-boarding platform
2. Remove the starboard storage bin.

1. Starboard storage bin

GTX and RXT platform without suspension

1. Open starboard access cover.

Electrical Connections

1. Disconnect BLACK (-) battery cable then the RED (+) cable.



#### WARNING

Always disconnect battery cables exactly in the specified order.

typical

1. BLACK (-) cable
2. RED (+) cable
2. Lift and push the top of electrical component support to unlock it from battery holder. Move support aside to make room.

typical

1. Electrical component support
3. Detach fuse box from the electrical component support.
4. Move locking tabs aside to unlock the fuse box.
5. Remove fuse box cover.
6. Remove bus bar from D-Row and long bus bar from H-row.

Fuse Box - top view

1. Bus bar on D-row
2. Bus bar on H-row

NOTICE Carefully remove bus bar by simultaneously pulling on both sides of bus bar during removal.

7. Inspect backside of fuse box.
  - 7.1 If D10 location is free, follow default wiring procedure.
  - 7.2 If D10 location is not free, follow alternative wiring procedure.

NOTE: Cavities are identified at the back of the fuse box. Pay careful attention to the cavity numbers as the rows don't all have 12 cavities.

Default wiring procedure

1. Locate free cavities for default wire routing on H8, D10 , E10, and F10 for new wire connection.

Regular routing - top view

1. D10
2. E10
3. F10
4. H8
2. Using a small tool, pull out seal plugs from the related cavities (H8, D10 , E10, and F10) at the back of fuse box.

1. Seal out of its cavity - TYPICAL

3. Insert wire terminals in their proper cavities and lock.

NOTE: Terminal cavities have different orientations depending on their position in the fuse box. When inserting the terminals in their respective cavities, make sure to follow the orientation of the cavity. When the terminals are inserted correctly into their cavities, they will "click-in". Verify that the terminals are properly locked in their cavities by pulling back on the wire to be sure the retaining clips are holding to terminal.

| Action  | Default wiring cavity no | wire identification |
|---------|--------------------------|---------------------|
| Install | H8                       | Black               |
| Install | D10                      | Red/ Purple         |
| Install | E10                      | Red/Purple          |
| Install | F10                      | Brown               |

#### Alternative Wiring Procedure

1. If default wire routing is not possible, use cavities C10, C11, C12, D12, E10, F10 and H8.
2. Remove wire from D12 and install in C12.

#### Alternative Wiring - Top view

1. C10
2. C11
3. C12
4. D12
5. E10
6. F10
7. H8
3. Using a small tool, pull out seal plugs from the related cavities (C10, C11, C12, D12, E10, F10 and H8) at the back of fuse box.

1. Seal out of its cavity - TYPICAL
4. Insert wire terminals in their proper cavities and lock.

NOTE: Terminal cavities have different orientations depending on their position in the fuse box. When inserting the terminals in their respective cavities, make sure to follow the orientation of the cavity. When the terminals are inserted correctly into their cavities, they will "click-in". Verify that the terminals are properly locked in their cavities by pulling back on the wire to be sure the retaining clips are holding to terminal.

| Install | Alternative wiring cavity no | wire identification       |
|---------|------------------------------|---------------------------|
| Remove  | D12                          | - - -                     |
| Install | C12                          | Removed wire from D12     |
| Install | H8                           | Black - Pump Harness      |
| Install | D12                          | Jumper Red/Blue           |
| Install | C11                          | Jumper Red/Blue           |
| Install | C10                          | Red/Purple - Pump Harness |
| Install | E10                          | Red/Purple - Pump Harness |
| Install | F10                          | Brown - Pump Harness      |

5. Install 3 pin bus bar in C-row.

1. 3 pin bus bar in C-row

#### Both wiring procedures

1. Reinstall removed bus bar from H-row and D-row.
2. Insert the new 3A fuse [P10] in fuse box in cavity E10/F10.

1. 3 amp fuse [P10] installation location

3. Install the fuse box and its cover.

4. Reinstall electrical component support.

1. Lower receptacle

2. Upper retaining tab

- 4.1 Insert lower tabs from component support into lower receptacle.

4.2 Push component support onto upper retaining tab.

5. Connect RED (+) battery cable then the BLACK (-) cable.



#### WARNING

Always connect battery cables exactly in the specified order.

typical

1. RED (+) cable

2. BLACK (-) cable

6. Check bilge pump operation.

7. Reinstall all removed components.

NOTE: When watercraft is turned "OFF", the pump will continue to operate for a period of time (up to 3 minutes) to drain bilge.

[2 Templates.pdf](#)