

# **MAXTEERING Power Kit (DC12V)**



**Manual for Owner, Installer**

Seafirst Engineering Co

# CONTENTS

General .....	3
1. Introduction	
Operating Instruction .....	4
1. Main components and its role	
2. How it works	
Selection Guide .....	5
Installation .....	6
1. Power pack	
1) Specification	
2) Selecting location for the power pack	
3) Installation	
2. Power Helm	
1) Specification	
2) Power Helm identification (Standard, Dual )	
3) Mounting the power helm	
3. Switch Panel	
1) Specification	
2) Mounting the panel	
4. Hydraulic Hose circuit	
1) Single station	
2) Dual stations	
3) Hose protection	
5. Wiring Harness	
1) Single engine	
2) Twin engines	
3) Triple engines	
4) Quad engines	
5) For Dual Switch Panel	
6. Oil Filling and Bleeding	
Test Procedure .....	22
Maintenance & Cleaning .....	23
How to clean filter .....	24
Template.....	25

## 1. Introduction

On board the boat, correct operation and handling according to this manual is essential at any time to assure the safety and the proper function. Incorrect operation and /or handling without fully understanding the contents of the manual can cause irreparable damage or fatal accident in the worst case. Read this manual carefully to have good understanding on the contents before setting out to sea.

- Read this manual carefully to have good understanding on the contents
- Always bring this manual with you to the boat, and keep it where it is readily available.
- Pay attention that the manual will not be lost or contaminated while not in use.
- In case of resale or transfer of the system, be sure to give this manual to the new owner.
- Please note that the illustration and/or contents of this manual may partly differ from the actual product due to the specification change. Etc.

### • Notice to Customers :

Thank you for purchasing Seafirst Hydraulic Power steering.

This manual provides the information for correct installation, operation, maintenance and inspection of the system with cautionary remarks. Please read this manual carefully before starting operation to ensure the correct use of the system.

This system is intended for the installation by a person who has basic understanding and skill in the servicing of hydraulic power steering. Without such knowledge and skill, attempted installation could cause failures or mechanical damages to the system. Please have your system installed by your dealer, if you are not a specialized mechanic.

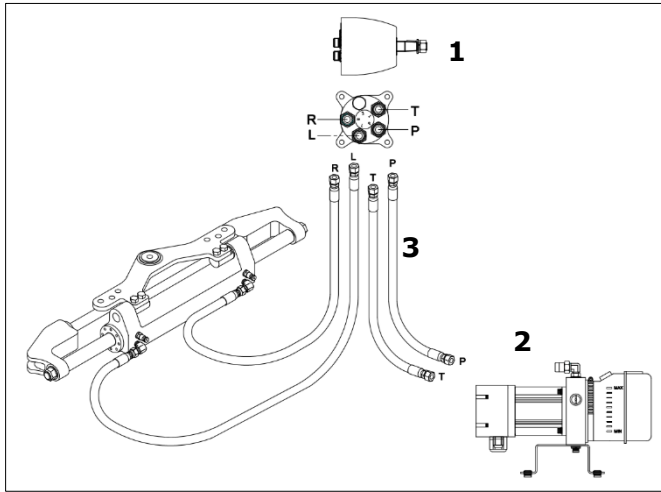
In the course of boat operation, always keep this manual on board where it would not be lost or get wet. If you transfer or resell this hydraulic power steering, be sure to give this manual to the new owner.

### • Notice to Dealers :

Please explain the product and address any cautionary remark to the customer. Make sure that this manual and part of it removed during the installation work be handed over to the customers.

## 1. Main components and its role

Our hydraulic Power Steering is consist of as drawing, but supply scope of this power kit does not include cylinder



Component	Description
1. Power Helm	The Power Helm is designed for hydraulic Power steering. Manual backup in case of power failure
2. Power Pack	Generate the oil & pressure continuously
3. Hose	It is path for the oil to flow from the Power Pack to the Power Helm, and from Power Helm to Cylinder

Note : Cylinder is not included in the supply scope of the package

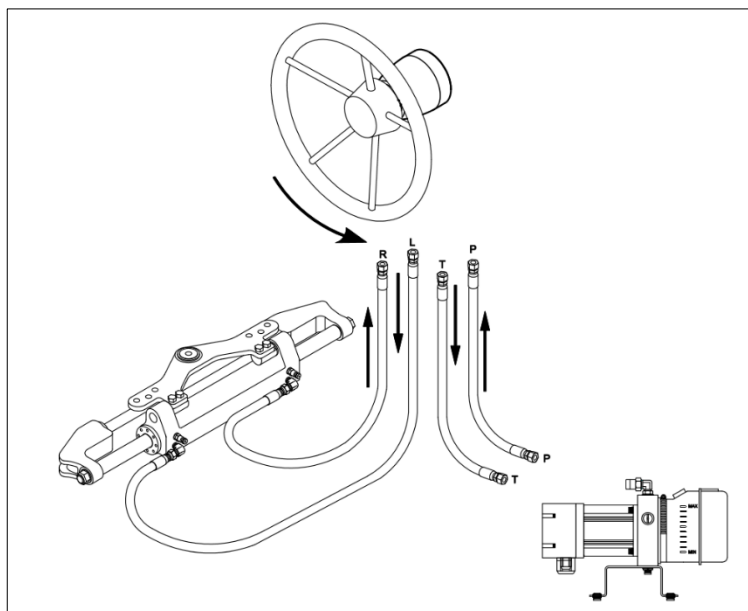
## 2. How it works

If the power pack is switched on, the oil with a certain pressure is generated and goes to the P port on Power Helm. If Steering wheel is rotated in anti-clock wise, oil comes out from the L port on Power Helm and goes into the left port on cylinder ( Starboard port side ).

This cause the cylinder tube to move to the Starboard side, which move the boat to left side ( port side).

Oil displaced from the opposite end of the cylinder flows back to the Power Helm.

For steering in the opposite direction, simply turn Power helm the other way.



## 1. MAXTEERING Kit



Package Number	Components
MAXTEERING 12-40	Power helm SMP-40 ( 40cc )
	Power pack BLP-1216, DC12V
	Start switch PSP-200
	Oil SF-OIL-15 x 6bottle ( 6liter )
	Hose x 4pcs, select length below
	Hose protector 2M x 2pcs

### Hose selection

Part Number	Description
NH06-SS-007	0.7 meter, PF 3/8(G3/8), Dia 3/8"
NH06-SS-008	0.8 meter, PF 3/8(G3/8), Dia 3/8"
NH06-SS-009	0.9 meter, PF 3/8(G3/8), Dia 3/8"
NH06-SS-01	1 meter, PF 3/8(G3/8), Dia 3/8"
NH06-SS-012	1.2 meter, PF 3/8(G3/8), Dia 3/8"
NH06-SS-015	1.5 meter, PF 3/8(G3/8), Dia 3/8"
NH06-SS-02	2 meter, PF 3/8(G3/8), Dia 3/8"
NH06-SS-03	3 meter, PF 3/8(G3/8), Dia 3/8"
NH06-SS-04	4 meter, PF 3/8(G3/8), Dia 3/8"
NH06-SS-05	5 meter, PF 3/8(G3/8), Dia 3/8"
NH06-SS-06	6 meter, PF 3/8(G3/8), Dia 3/8"
NH06-SS-07	7 meter, PF 3/8(G3/8), Dia 3/8"
NH06-SS-08	8 meter, PF 3/8(G3/8), Dia 3/8"
NH06-SS-09	9 meter, PF 3/8(G3/8), Dia 3/8"
NH06-SS-10	10 meter, PF 3/8(G3/8), Dia 3/8"

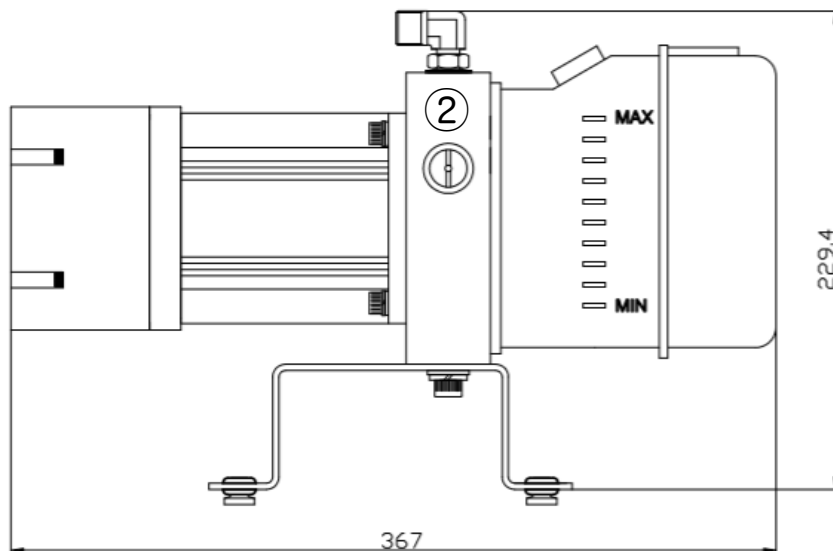
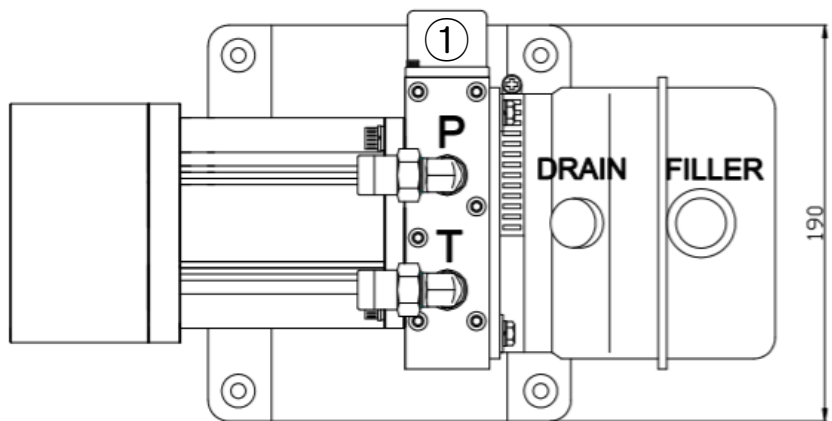
Special length is available on request

## 1. Power Pack

### 1) Specification

- Model : BLP1216
- DC12V motor
- Semitransparent 1 liter oil tank
- Suitable for mount on floor
- Black galvanized motor housing.
- 5meter harness included
- Waterproof

Measurement : mm



- ① RELIEF VALVE : Set at factory. Do not adjust.  
② Pressure Check port : Do not open it. It is for engineer check.  
P : This P port is for the hose coming from the P port on Power Helm.  
T : This T port is for the hose coming from the T port on Power Helm.

## 2) Selecting location for the power pack



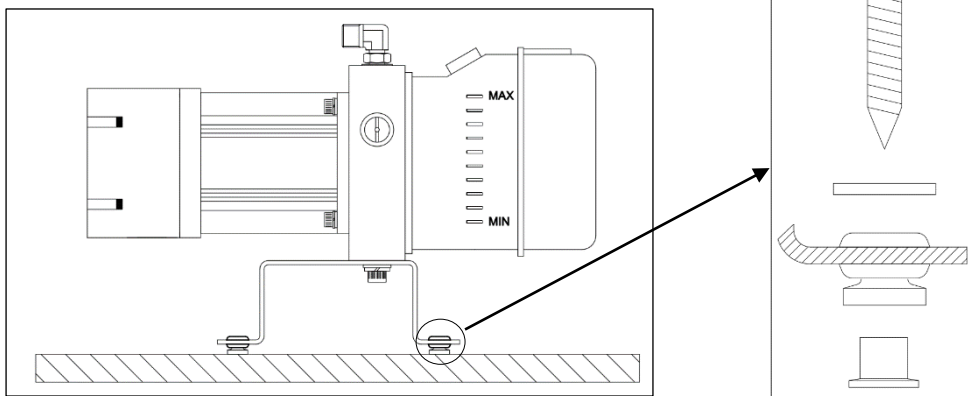
Select a mounting location that meeting following requirement

- Do not mount the power pack on an angle greater than 15 degree from horizontal position
- Power pack electrical wiring must be within reach of the auxiliary battery
- Power pack **SHOULD** be mounted in an area that allows sound enclosure, and easy access to the fill cap.
- Power pack SHOULD be installed in an area where bilge water (seawater, rain) will not contaminate the pump.
- Power pack should be installed in an area with no direct sunray, and avoid installing it in hot room for natural pump cooling.
- To reduce a noise, mount the power pack on wood or fiberglass surface. Avoid mounting pump on aluminum or steel surfaces

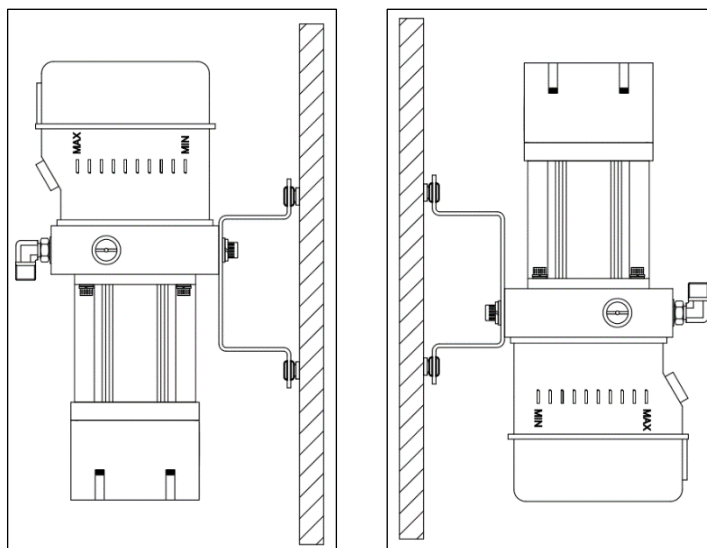
## 3) Installing the power pack

Mount the power pack at the selected location, using appropriate faster hardware suitable for the type of material and thickness of the mounting surface.

Horizontally (O)



Vertically (X)



## 2. Power Helm

### 1) Specification

Model	Description	Displacement		Shaft Spec	Key Spec
		cc / rev	cu.in / rev		
SMP-040	Standard Power Helm	40	4.88	3/4" Dia	19.8x4.75
SMP-040D	Dual station Power Helm	40	4.88		

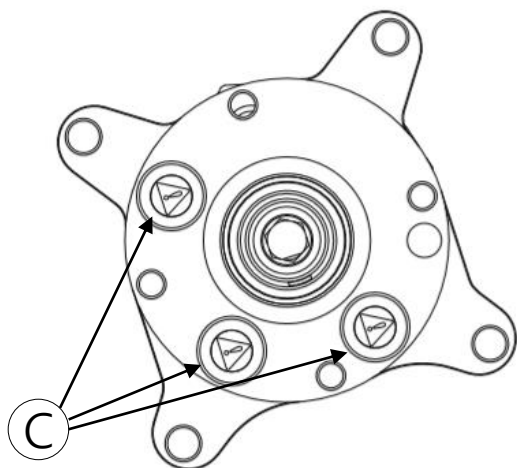
- Provides instant manual back-up in case of power failure
- Taper on 3/4" diameter shaft with woodruff key
- Heavy Duty design, suitable steering wheel size : diameter 20"
- Anodized on front cover

### 2) Power Helm Identification



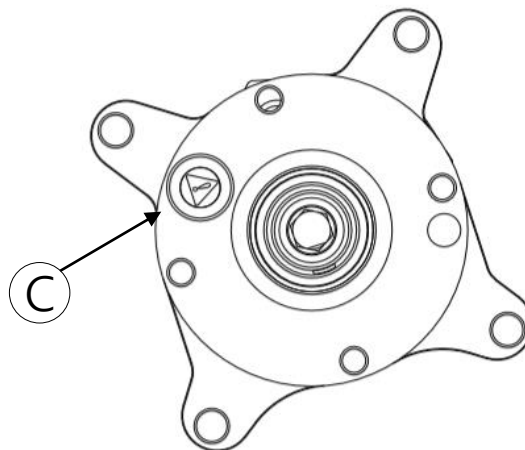
The dual station Power helm must be the first power helm in-line from power pack. Refer to hose connection page .

**a** SMP40



a: Standard steering helm (910213646)

**b** SMP40D



b: Dual station steering helm (910813646)

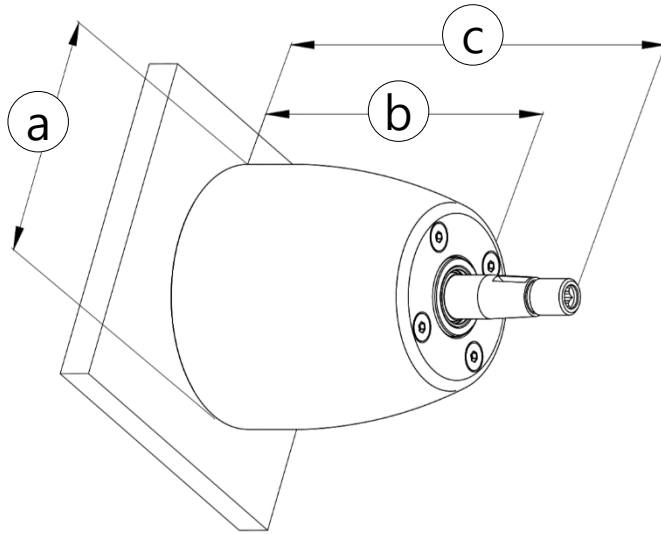
**c: Plugs**

- SMP40: Plugs X 3
- SMP40D: Plugs x1



## 3) Mounting the Power Helm

### Power Helm Mounting Clearance



a - 114.5 mm (4.5in.) DIAMETER

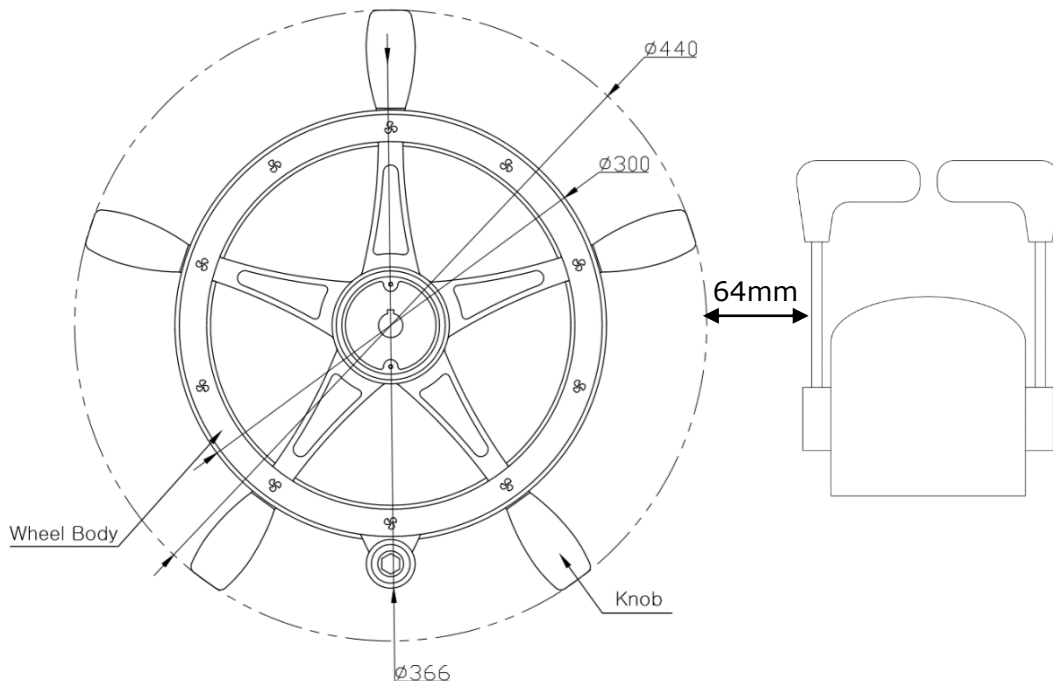
b - 111 mm(4.4in.)

c - 171 mm(6.7in.)

### Clearance for Hose and steering wheel

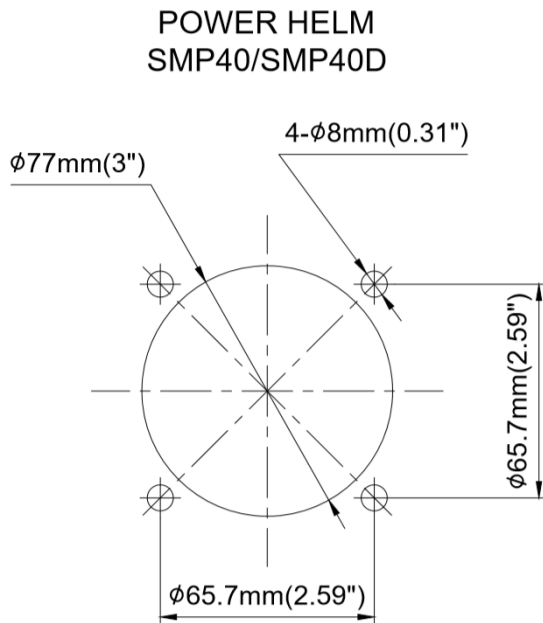


- Check for enough space behind of power helm for hose connection.
- Be sure that the steering wheel will not interface with other functional equipment.
- We recommend at least 64mm clearance between the steering wheel and remote control lever



Max diameter : 440mm

Drill the mounting holes

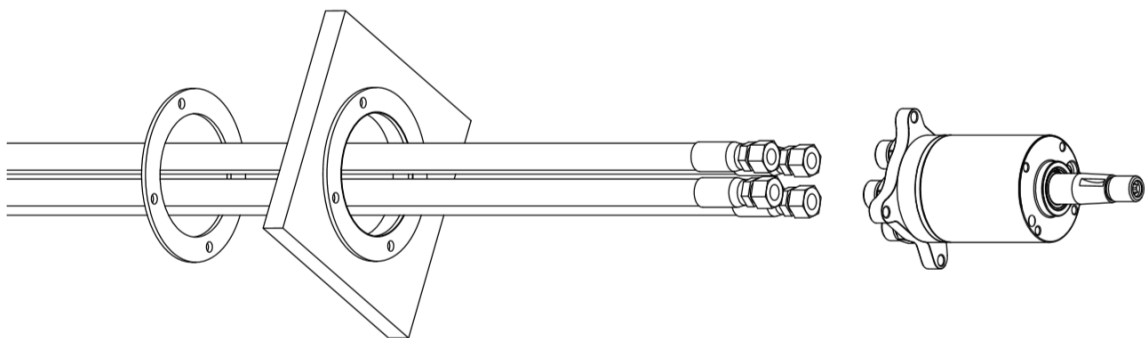


Hose connection to the Power Helm

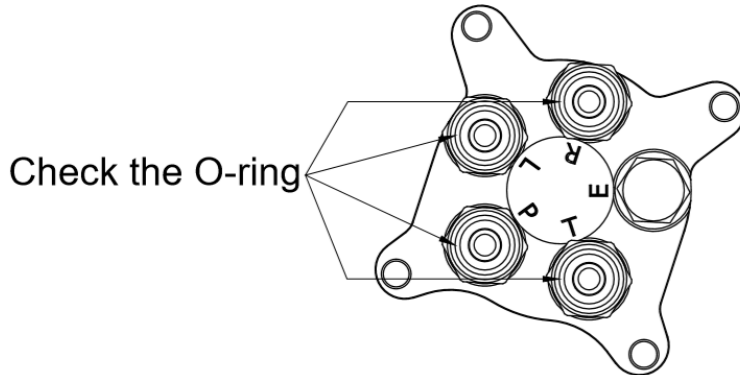


- Hoses are maybe connected to Power Helm prior to mounting Power Helm

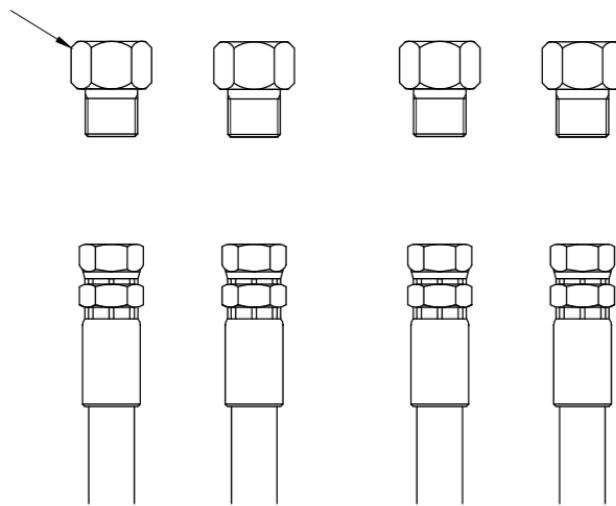
Put the hoses through the back plates and drilled hose.



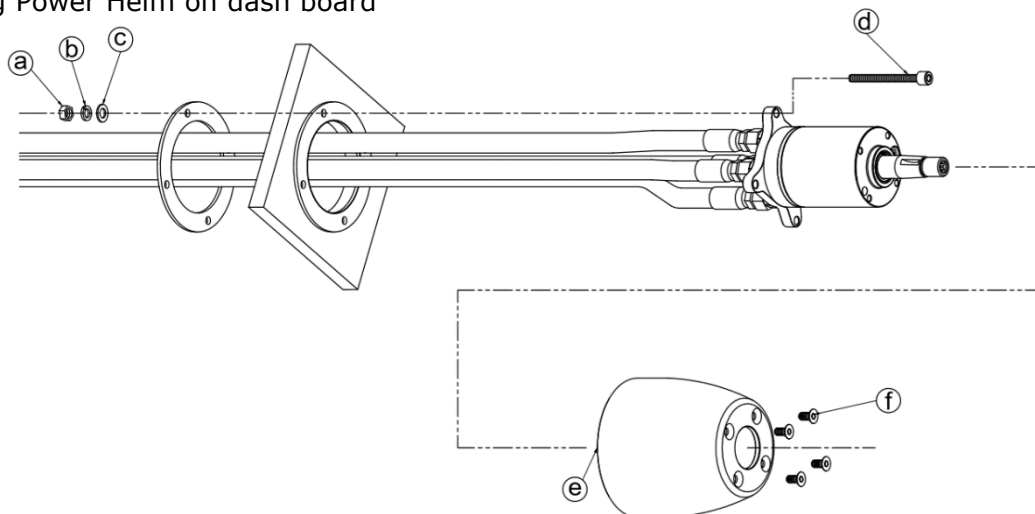
Connect the provided fittings (4pcs) to the power helm fitting.  
 Ensure O-ring are in place on the Power Helm fittings.  
 Make sure the hose connections to the power helm as shown



Connection fitting  
 PF 3/8 - 4EA



Mounting Power Helm on dash board



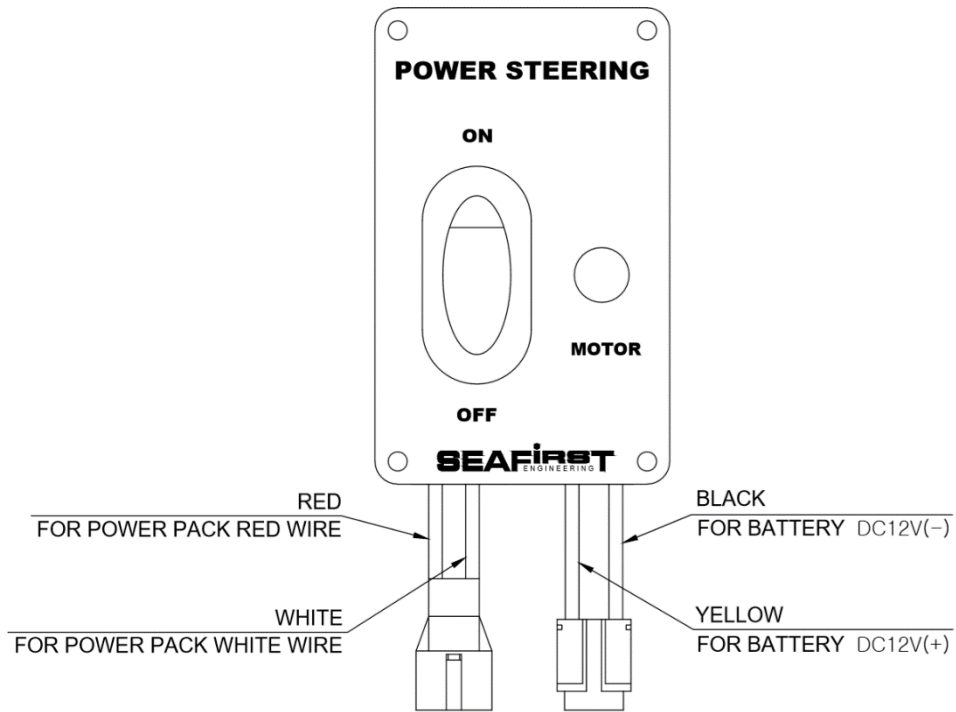
- a: Locknuts(4)-M6x1
- b: Spring washer(4)
- c: Plain washer(4)

- d: Socket head screws(4)-M6X1
- e: Helm cover
- f: Socket plate screws(4)-M6x1

## 3. Switch Panel

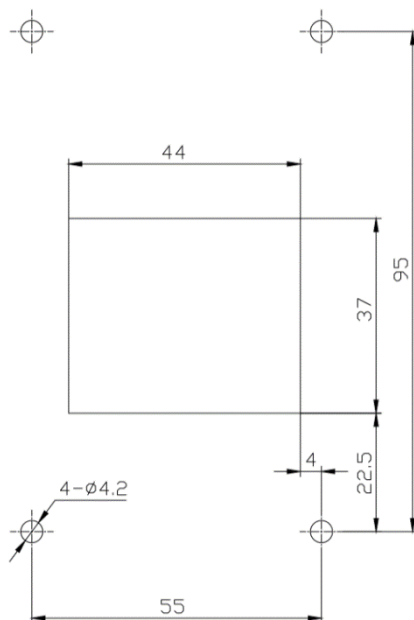
### 1) Specification

(Front View)



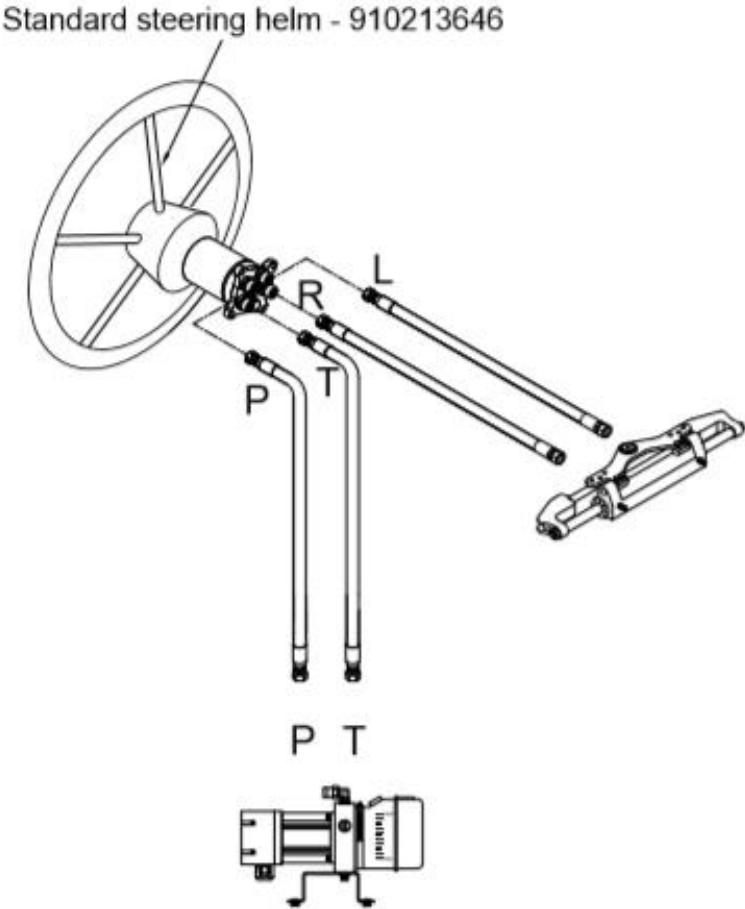
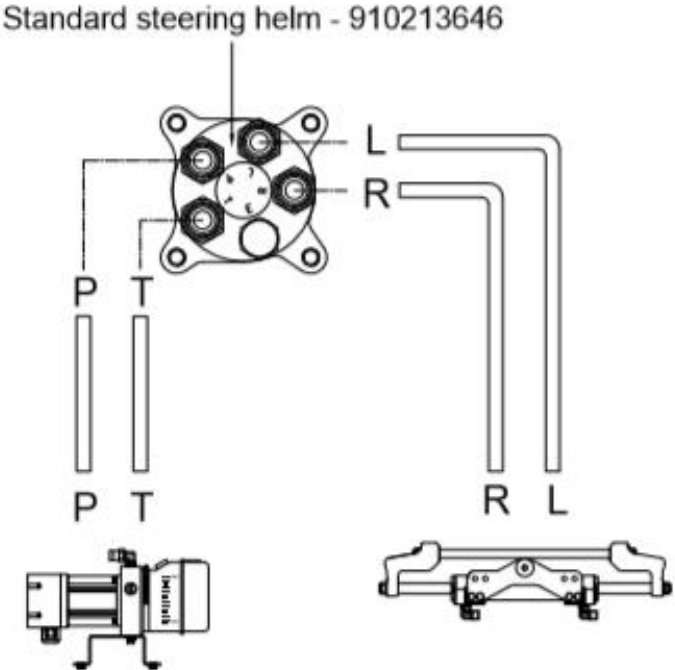
### 2) Mounting panel

#### Dashboard Mounting Template



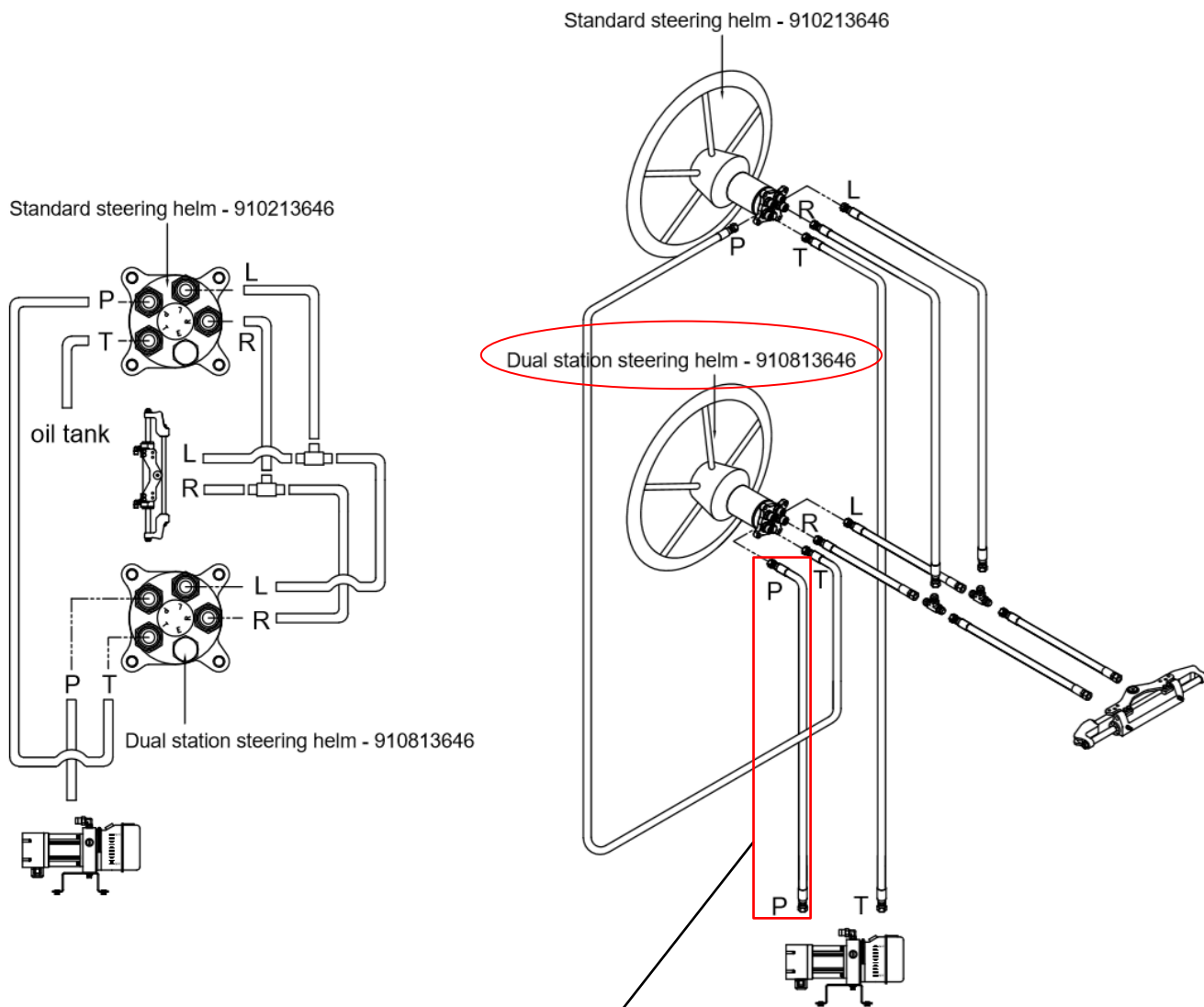
4. Hydraulic Hose circuit

1) Single Station



# INSTALLATION – HYDRAULIC HOSE CIRCUIT

## 2) Dual Station

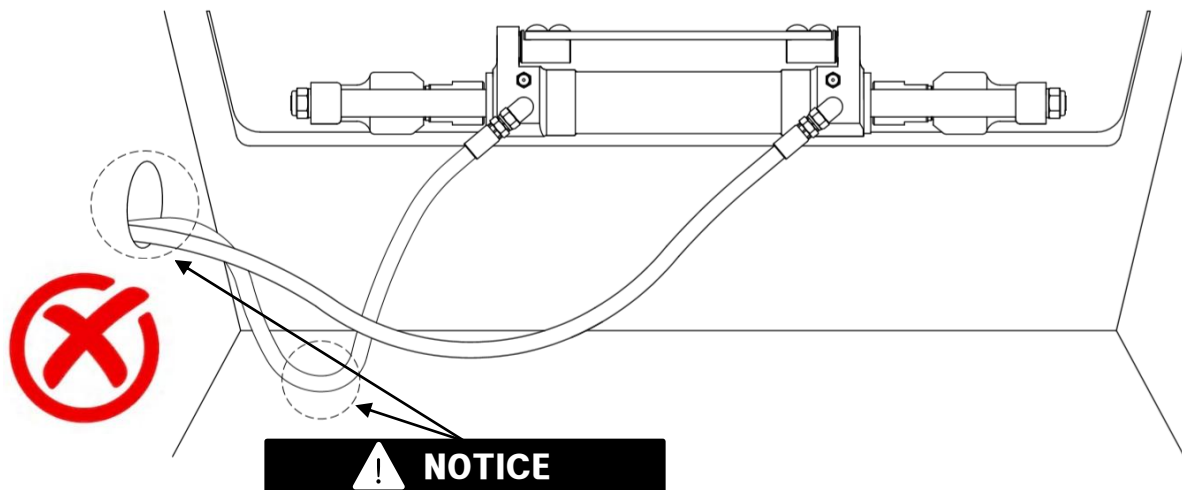


**NOTICE**

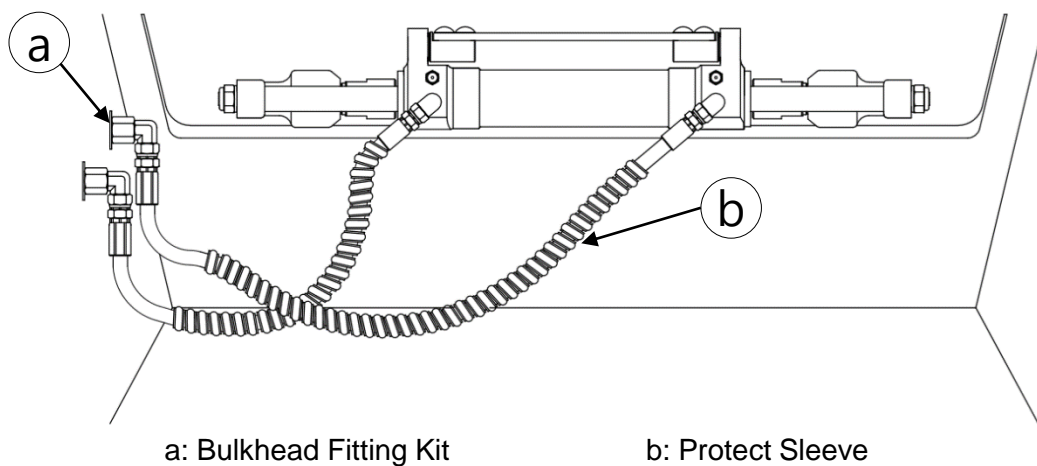
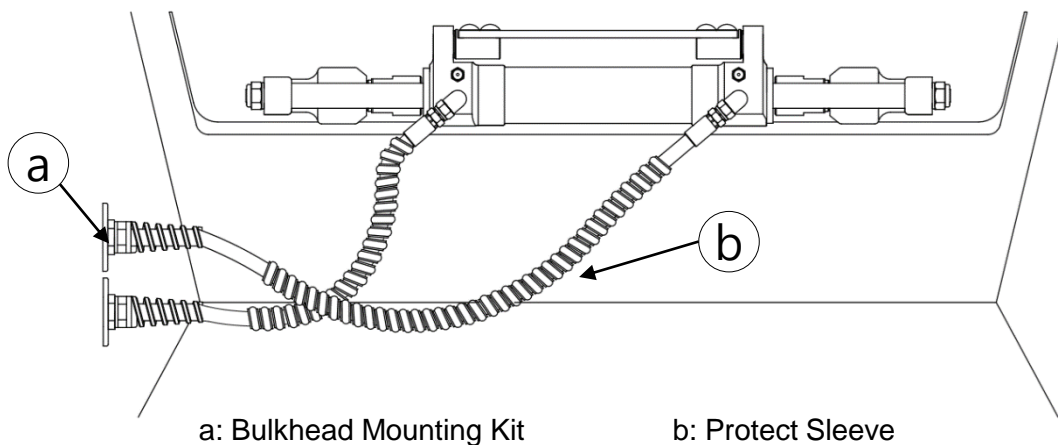
The dual station Power helm must be the first power helm in-line from power pack.

# INSTALLATION – HYDRAULIC HOSE CIRCUIT

## 3) Hose protection

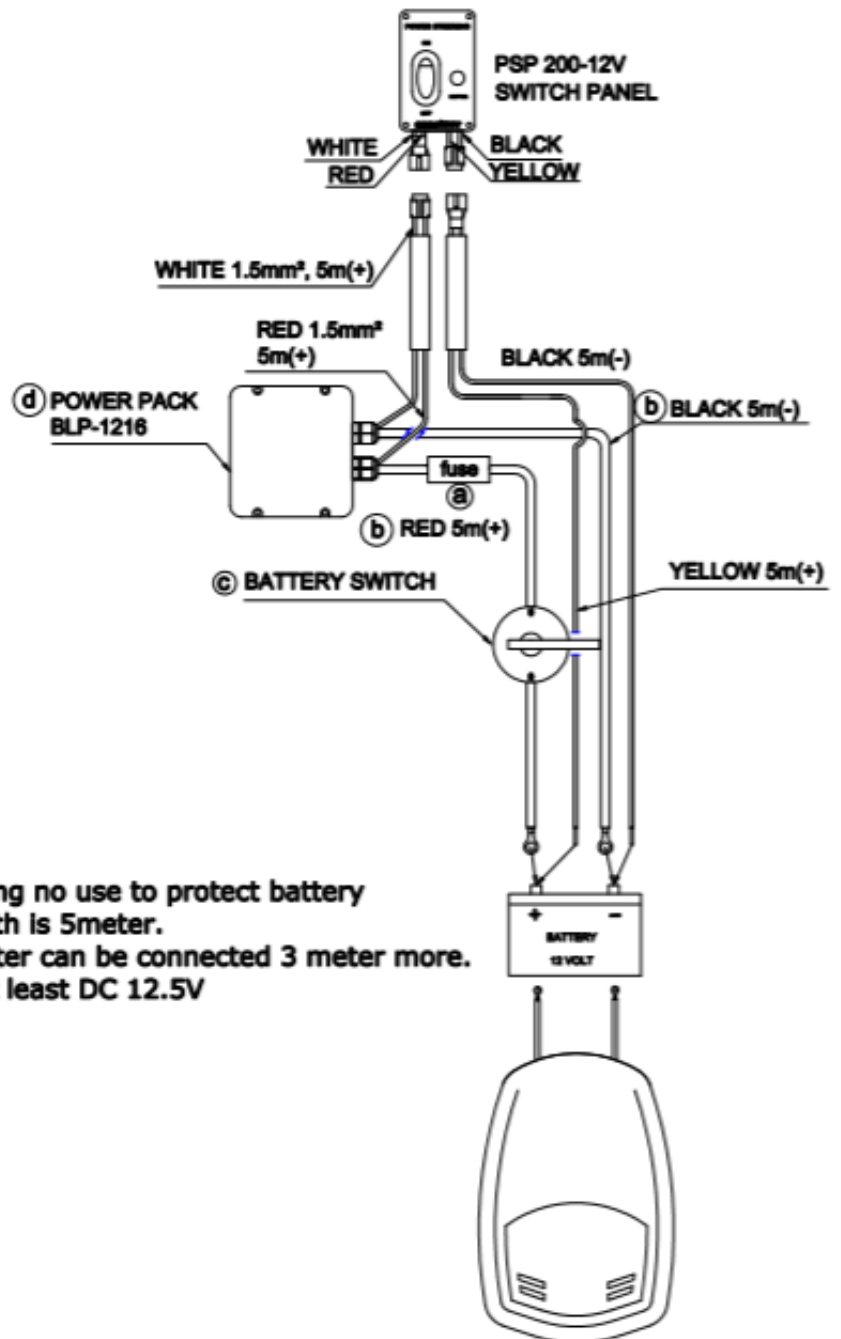


Protect hoses from shaft edge ( bulkhead hole ) and from floor. Wear the hose protection sleeve on the each hoses



## 5. Wiring Harness

### 1) Single Engine



- (a) Fuse
- (b) Main +,- cable
- (c) BATTERY SWITCH
- (d) POWER PACK BLP-1216

### ⚠ NOTICE

1. Battery Switch (c): Switch off during no use to protect battery
2. Main +, - cable (b): standard length is 5meter.
3. Main +, - cable : The length 5meter can be connected 3 meter more.  
In this case, battery should be at least DC 12.5V

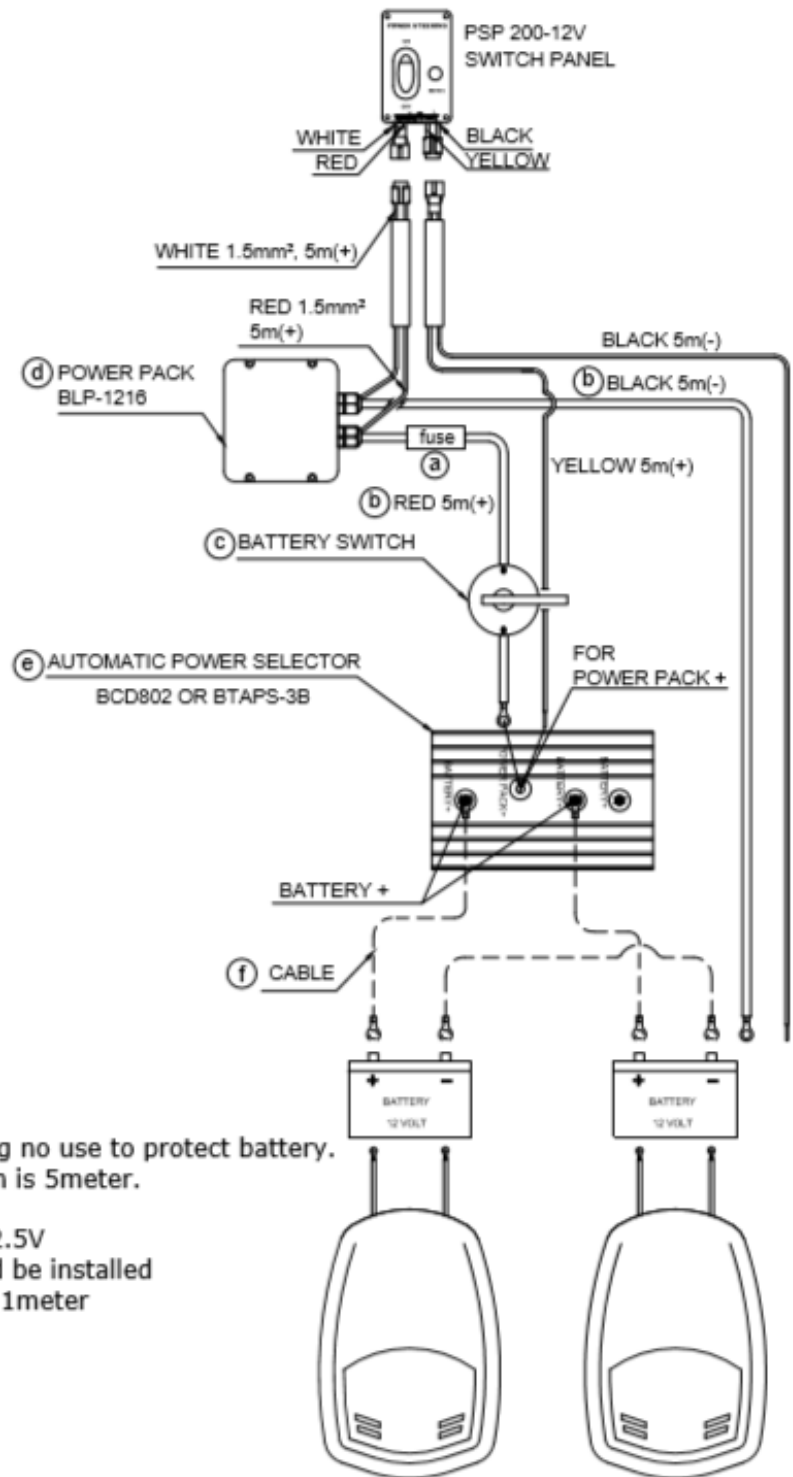
### ⚠ NOTICE

Do not route the harness near sharp edges, hot surfaces, or moving parts.  
Fasten cables away from any sharp edges.



## 5. Wiring Harness

### 2) Twin Engine



- (a) Fuse
- (b) Main +, - cable
- (c) BATTERY SWITCH
- (d) POWER PACK BLP-1216
- (e) AUTOMATIC POWER SELECTOR
- (f) CABLE (Non-supply)

### NOTICE

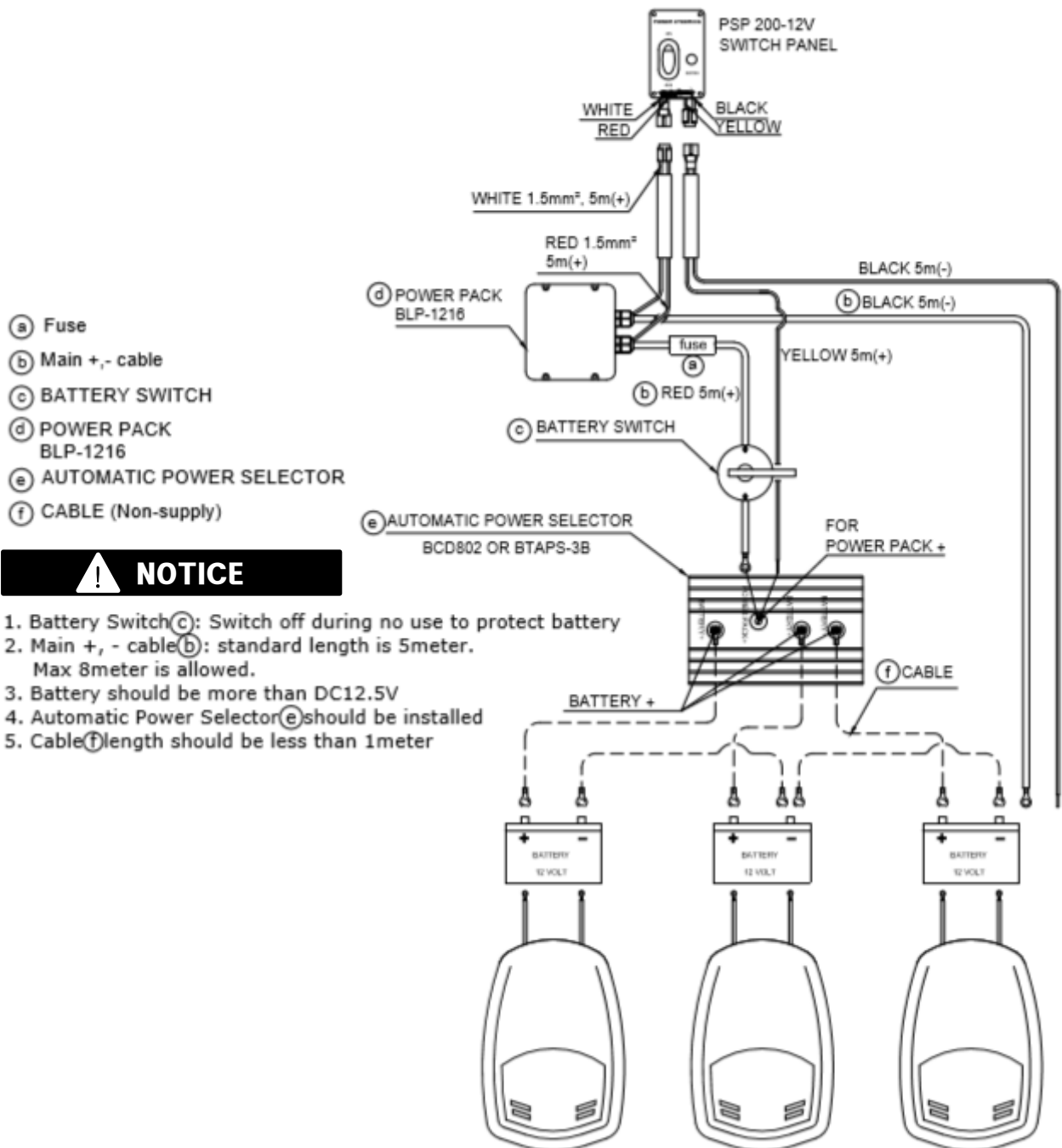
1. Battery Switch (c): Switch off during no use to protect battery.
2. Main +, - cable (b): standard length is 5meter. Max 8meter is allowed.
3. Battery should be more than DC12.5V
4. Automatic Power Selector (e) should be installed
5. Cable (f) length should be less than 1meter

### NOTICE

Do not route the harness near sharp edges, hot surfaces, or moving parts.  
Fasten cables away from any sharp edges.

## 5. Wiring Harness

### 3) Triple Engines

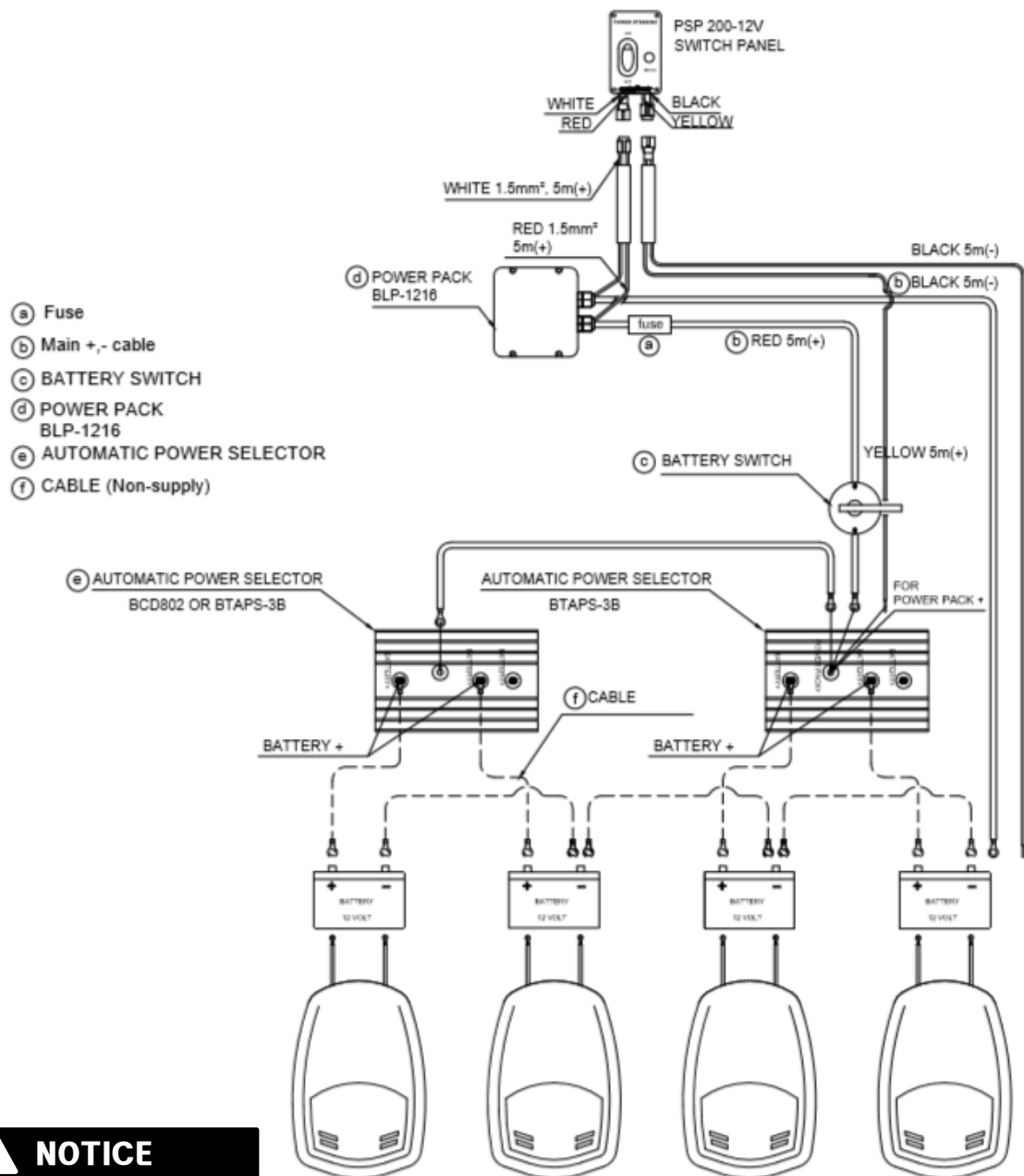


**NOTICE**

Do not route the harness near sharp edges, hot surfaces, or moving parts.  
 Fasten cables away from any sharp edges.

## 5. Wiring Harness

### 4) Quad Engines



### ⚠ NOTICE

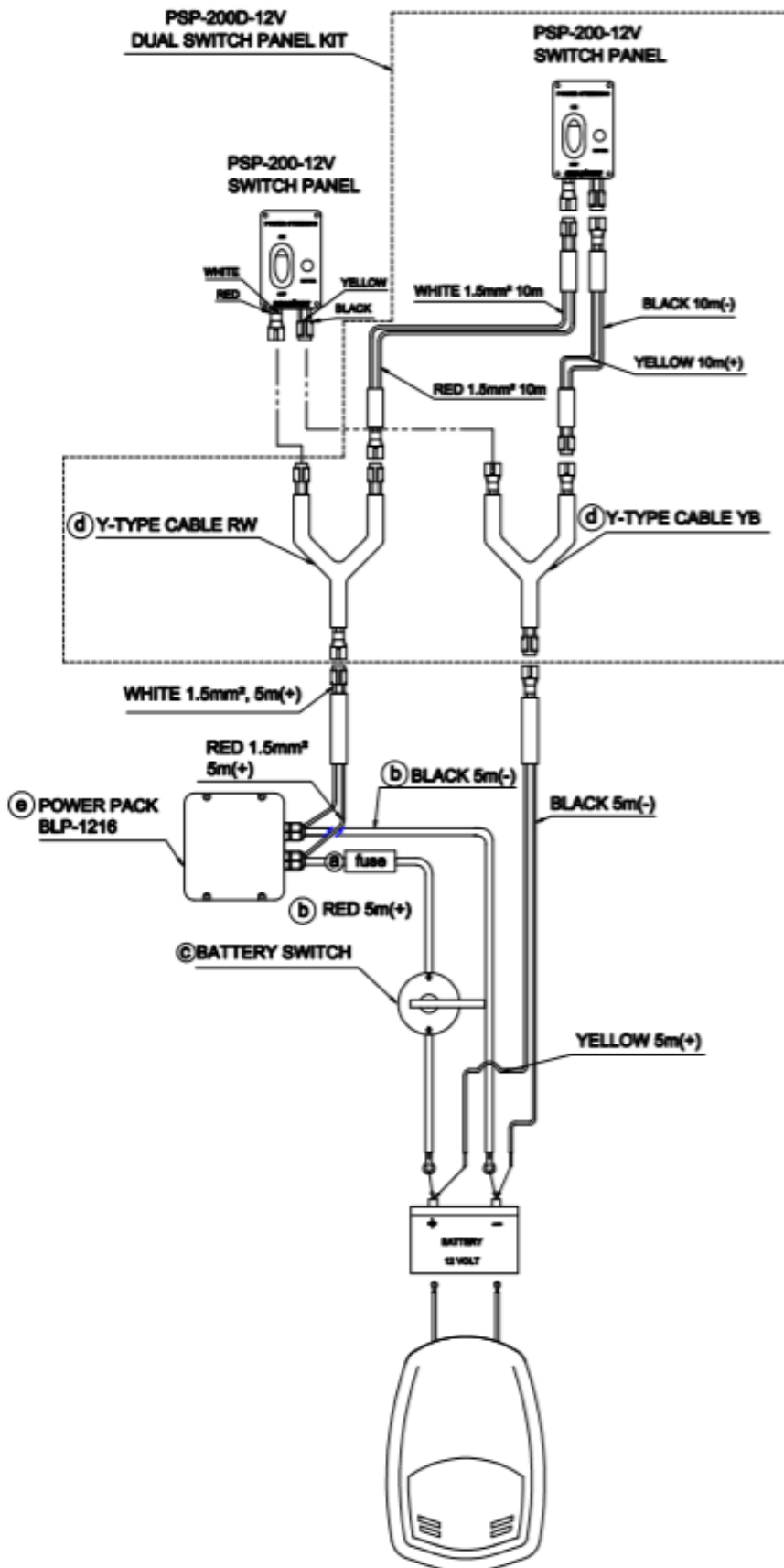
1. Battery Switch(c) : Switch off during no use to protect battery
2. Main +, - cable(b): standard length is 5meter. Max 8meter is allowed.
3. Battery should be more than DC12.5V
4. Automatic Power Selector(d) should be installed
5. Cable(e) length should be less than 1meter

### ⚠ NOTICE

Do not route the harness near sharp edges, hot surfaces, or moving parts.  
Fasten cables away from any sharp edges.

## 5. Wiring Harness

4) For Dual Switch Panel

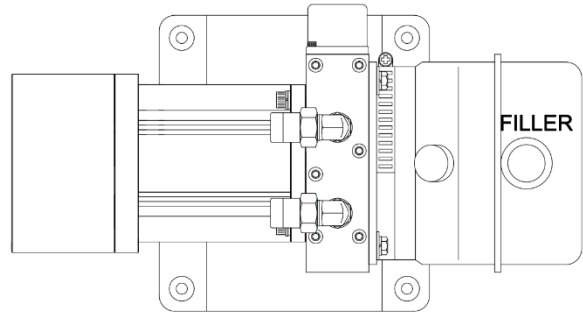


# INSTALLATION – OIL FILLING AND BLEEDING

## 6. Oil Filling and bleeding

6-1) Remove the filler from the power pack

6-2) Fill the pump tank with recommended oil.  
( SEAFIRST SF-OIL-15 or SAE NO 15 FLUID)



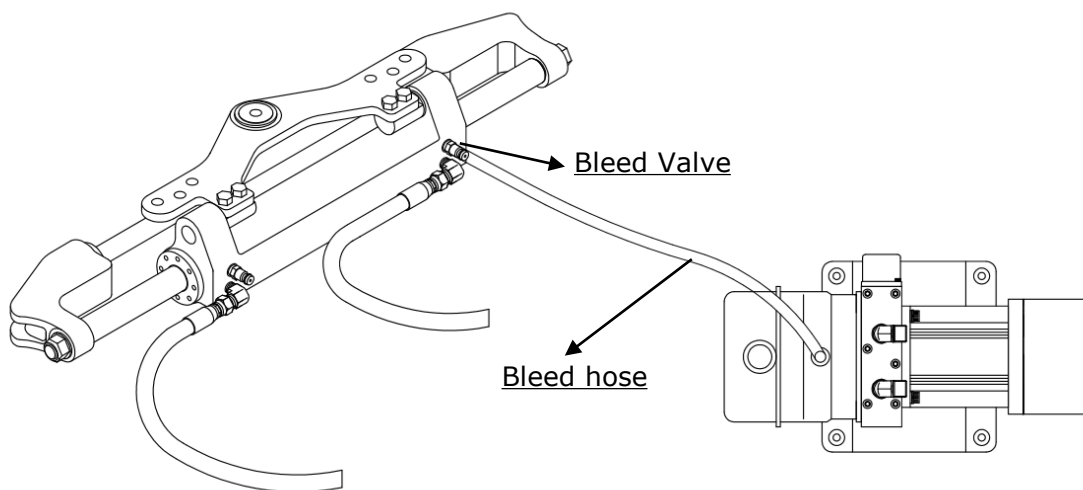
6-3) Switch on the Power pack until the oil drops halfway. Turn off and refill the Power pack. Continue to do this operation until Power pack stays full of oil.

6-4) Switch on while slowly turning the steering wheel towards the full lock position in one direction. Carefully check the oil level until oil drops half. Stop turning wheel, turn off, and refill the pump tank. Continue to do this operation turning the steering wheel to lock to lock until pump tank stays full

6-5) For bleeding an air from left in the steering system, Start the Power pack, and turn the steering wheel in one direction until the full lock position. Turn off the switch.

6-6) Attach an 8mm I.D. transparent bleed hose to the bleed valve on the end of the steering cylinder. Put the other end of bleed hose into pump tank

6-7) Switch on the power pack and open bleed valve to let any remaining air go out in the power steering system. If no air comes out. tighten bleed valve securely and remove bleed hose.



6-8) Turn the steering wheel to opposite full lock position, and repeat procedure for bleeding steering system.

6-9) Replace the filler on the power pack after checking oil level on the power pack.

**Test Procedures**

Procedure	Test	Check Point
1. Leakage Test	For the test, run the power pack and apply a pressure on the cylinder, Hose, Power Helm and Power pack by rotating steering wheel further at the end of steering.	<ul style="list-style-type: none"> <li>•Power Helm: 4 ports &amp; shaft</li> <li>•Hose : Hose couplings</li> <li>•Cylinder : Two ports which oil come out/in</li> </ul>
2. Wheel turn	<p>For the test, rotate steering wheel from left to right and count the wheel turn.</p> <p>Also count the wheel turn from right to left</p>	Ideal wheel turn to achieve is depends on cylinder capacity and power helm cc.
3. Hose kinked	For the test, check the entire hose from helm pump to cylinder	

## ! NOTICE

Poor installation and maintenance may result in loss of steering and cause property damage and/or personal injury. Maintenance requirement change according to climate, frequency and the use.

- Inspections are necessary at least every year and must carry out by specialized marine mechanics.
- Check the cylinder fittings and the seals, the Power helm seals , Hose to prevent leaks. Replace them if necessary.
- Supply a new oil every 6months in the system and try to keep a suitable oil level in the power pack, fill and bleed the system as described in the manual.
- Clean the oil filter in the oil tank of power pack every 6months.
- Check the hose and entire system wear, the nut and bolt tightening every six months and make sure that they are not damaged.
- Always turn off battery switch while no use to protect battery

### Trouble Shooting

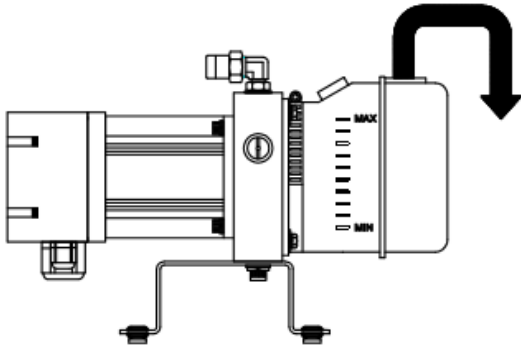
Description of failure	Cause of failure	Corrective action
There is some instability when the steering wheel is turned	Air remain	Repeat the air bleeding procedure
	Low oil level in the power pack	Add the hydraulic oil
	Oil leak	Repair
Steering is hard to turn	The cylinder is not connected properly to the outboard engine	Check and correct the connecting area on the cylinder
	Interference or breakage of hoses and/or fittings	Check for any sharp bent of the hose, or interference and/or breakage on the hose fittings.
	Application of unauthorized hydraulic oil having higher viscosity	Replace the oil with SEAFIRST OIL SF-OIL-15 or alternatively ISO # 15
	Power pack motor / pump failure	Contact your dealer for system inspection
	Failure of steering pivot shaft on the outboard engine	Contact your dealer for system inspection

### Cleaning

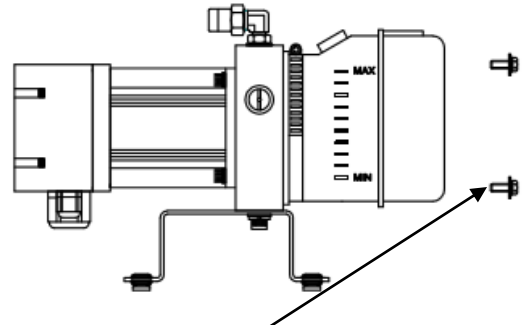
Clean the system using a dry towel

## How to clean filter

① Oil removal

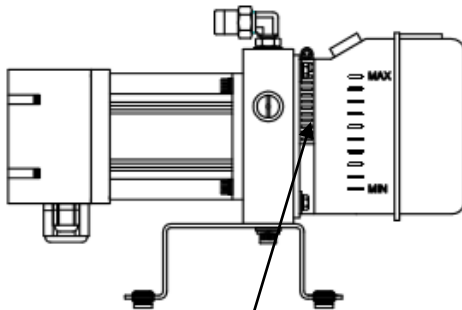


② Disassemble the left and right m6(x4) bolts.



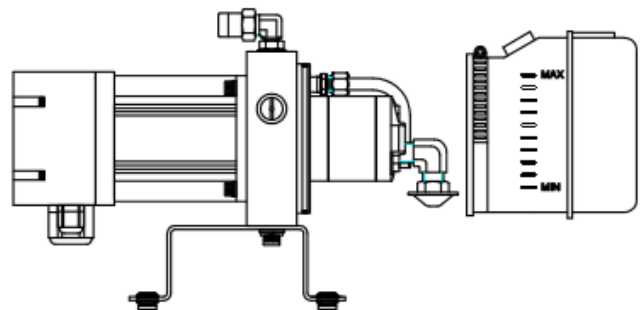
Disassembly using a 10mm spanner.

③ Clamp disassembly

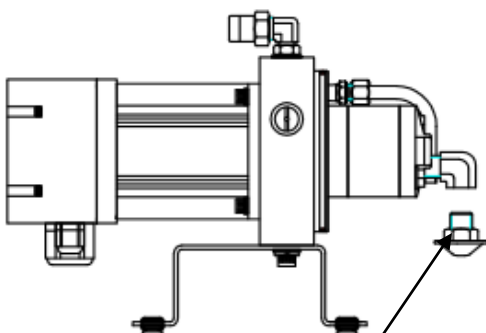


Loosen with a screwdriver

④ Oil box disassembly

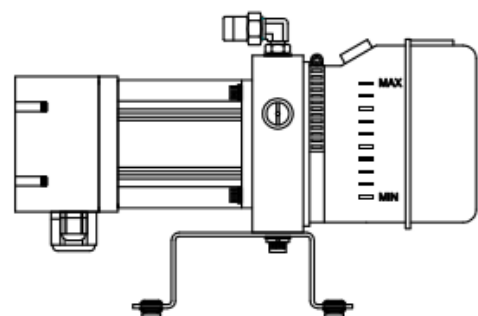


⑤ Filter disassembly and washing



Disassemble using a 24mm spanner.

⑥ Reassembly

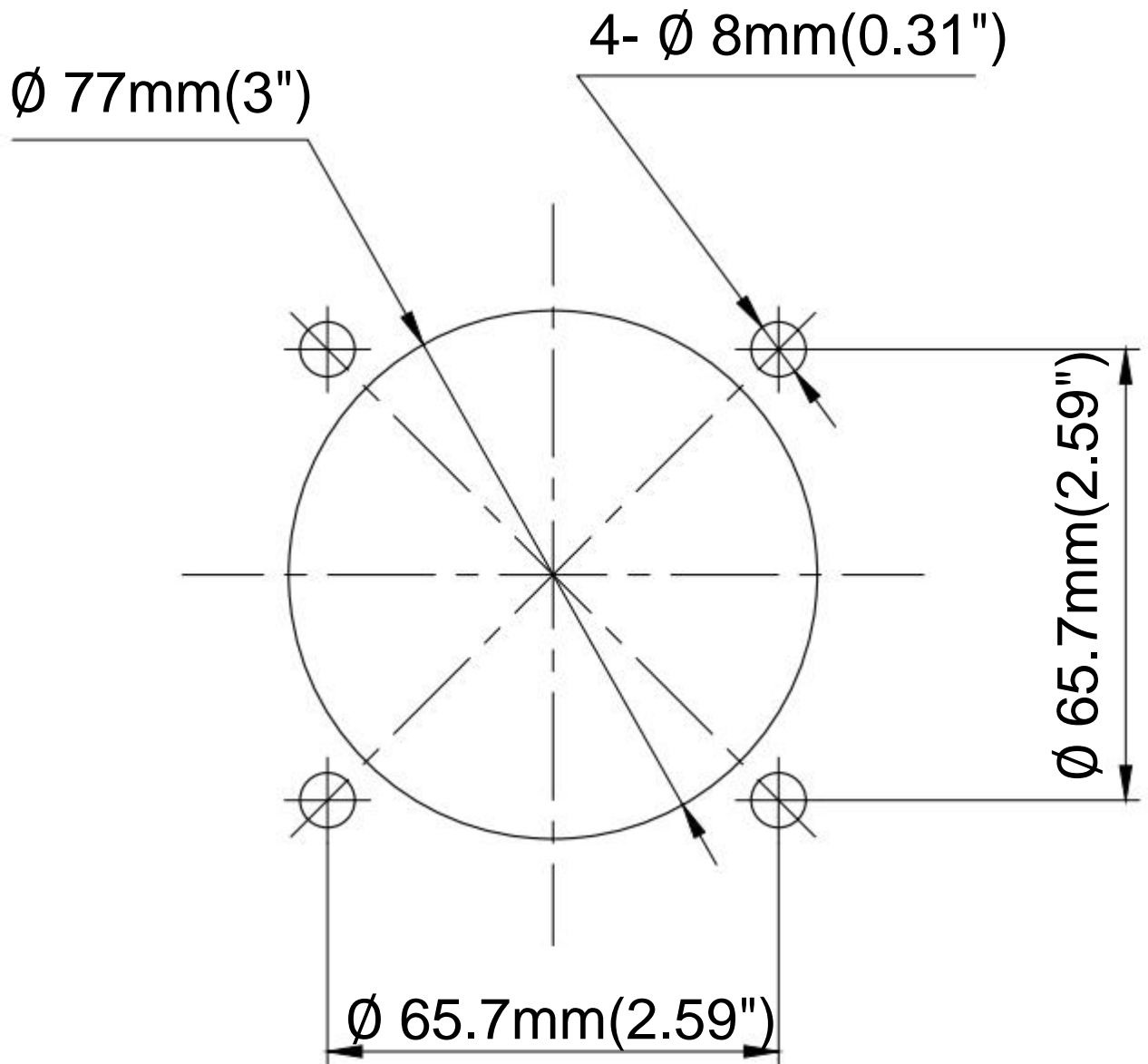


Assemble in reverse order of disassembly.



POWER HELM  
SMP40

SIZE 1:1



8 mm hole cutting after hose orientation  
Dashboard Mounting Template

Dashboard Mounting Template  
SIZE 1:1

