6506 Side Mounted Propulsion Control Lever

Owner's Operation, Installation & Maintenance Manual

Kobelt Manufacturing Co. Ltd.

NOTES:

RECORD DATA BEFORE INSTALLATION FOR FUTURE REFERENCE	
Model #:	
Serial #:	
Date of Purchase:	
Date of Installation:	

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1 INTRODUCTION

1.1 CONTACT

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This document is intended to clearly present comprehensive product data and provide technical information to assist the end user in design applications. Kobelt reserves the right, without notice, to change the design, or construction, of any products and to discontinue or limit distribution of any products. Kobelt also reserves the right to change, or update, without notice, any technical information contained within this document.

Kobelt recommends that customers visit our website to check for updates to this Manual. Once a product has been selected for use, it should be tested by the user to ensure proper function in all possible applications. For further instructions, please contact our distributors or visit our website.

1.2 SAFETY

1.2.1 Safety Alerts

Throughout this manual, the following symbols, and their accompanying explanation, are used to alert the user to special instructions concerning a service or operation that may be hazardous if performed incorrectly or carelessly. The associated risk levels are stated below.

⚠ DANGER	This symbol indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
⚠ WARNING	This symbol indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠ CAUTION	This symbol indicates a hazardous situation, which if not avoided, could result in minor or moderate injury.
NOTICE	This symbol informs the reader of events not related to personal injury but which there is a risk of damage to property or equipment.
SAFETY INSTRUCTIONS	This symbol informs the reader of safety-related instructions or procedures.

1.2.2 Notice to Installer

Disregarding the following safety measures can result in an accident causing severe injury to personnel and damage to material assets.

- Only use the product as directed in this manual.
- Never put the product into service if there is evidence of visible damage.
- Never put the product into service before fully completing installation and commissioning.
- Do not carry out any modifications to the product.
- Only use authentic Kobelt spare parts.
- Observe all local regulations, directives and laws during the installation of this product.
- All installation, commissioning, and maintenance work must only be conducted by qualified personnel. (For the purpose of this manual, qualified personnel are persons who are familiar with the assembly, installation, commissioning, and operation of the product and who have the qualifications necessary for their occupation.)
- Observe all specifications in this manual. If these guidelines are not followed and damage occurs, the warranty will be voided.

1.2.3 Product Hazards

⚠WARNING	**Disconnect Power:** Turn off power at distribution panel before beginning installation to protect installer from electrical hazards.

⚠CAUTION	**Voltage and Current Compatibility:** Confirm that the power source is compatible with the maximum voltage and current ratings of is product variant. Failure to do so could result in damage or fire.

⚠CAUTION	**Pinch Points:** The internal mechanism contains gearing which may pinch fingers when operated with the cover off.

2 PRODUCT DESCRIPTION

2.1 OVERVIEW

The Kobelt 6506 side mounted control Lever provides 5 kohm potentiometer output that is proportional to the lever position. This output is used by Kobelt's Mighty Mariner or 6525 controller to control engine throttle, clutch engagement or propellor pitch. The handle has three detent positions; one at neutral plus another two to correspond with clutch activation points in both ahead and astern. The detents and handle friction are user adjustable.

The 6506 is supplied with a gasket for either indoor or outdoor installations and the handle is splined to permit user selectable handle orientation.

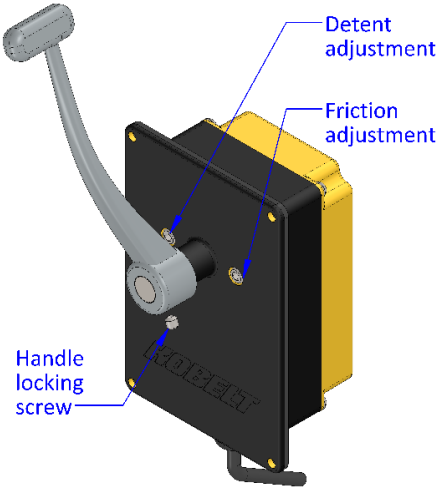


Figure 1: 6506 Overview Diagram

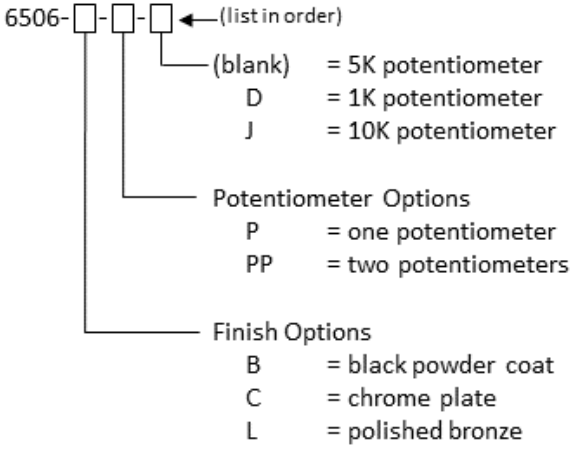
2.2 TECHNICAL DATA

Table 1: 6506 Technical Data

MODEL	6506 SERIES
Handle Travel: ○ Neutral ○ Clutch engage ○ Full throttle	 0° Detented +/-20° Detented +/-74°
Output:	5kΩ/1 W potentiometer
Connection:	40 in [1m] pigtail, 18 AWG [0.75 mm²]
EMC immunity:	per IEC 60945
Environmental category:	ENV5 / Class C / Exposed
IP Rating[1]:	IP56 (above console)
Operating Temperature:	-13°F … 158°F [-25°C … 70°C]
Vibration Resistance:	0.7 g
Finish:	Polyester powder coat Textured black
Product Weight:	5.7 lbs [2.6 kg]

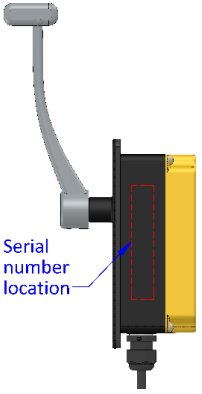
1) **Requirements to achieve IP56:** Minimum 3/16" [5mm] thick steel dash, or equivalent. Requires 4x installation screws to be sealed. IP rating only applies to units manufactured after March 2022

2.3 MODEL CONFIGURATION KEY



3 INSTALLATION

3.1 RECEIPT



Kobelt offers the 6506 control lever is supplied in several configurations (reference section 2.3). Upon receipt of the device ensure that the model number and serial number are noted on the table in page 2 of this manual. The serial number can be found in the location noted at right. This model number will determine what spare parts are applicable.

3.2 MECHANICAL

The 6506 Control Lever should be mounted:

- In a central location at each station on-board the vessel
- With sufficient room for the handle to swing fully to both extreme conditions
- Within 3 feet [0.9 m] of the remote selector panel
- With the external electrical cables protected from potential damage

The lever must be mounted on a flat surface with a maximum roughness of ra = 125 micro-inches [500 μm]. The mounting surface must have the following minimum thickness to prevent excessive flexing:

Steel consoles:	0.19 inches [4.8 mm]
Aluminum consoles:	0.27 inches [6.8 mm]

The Lever is equipped with (4) four mounting holes for #10 [M5]. Use #10 or M5 sealing screws or bonded sealing washers to prevent water ingress below the dash. Tighten the fasteners to 23 in-lbs [4 Nm] with an anaerobic thread locker such as Loctite 243.

3.3 ELECTRICAL

The Control Lever has 4 foot [1.0 m] long 3C/18 cables for external connections. Connect them to a 6505-2000 or 6505-3000 remote panel as required.

The product's 3C/18 electrical cables contains the following wires and related functions:

Table 2: 6506 Wire Connections – Potentiometer 1

6506 - Potentiometer 1				
Wire #	**Wire Name**	**Colour**	**Gauge**	**Function**
1	VREF	White	18AWG	power supply connection.
2	SIGNAL	Red	18AWG	signal connection.
3	COM	Black	18AWG	1 ground connection.

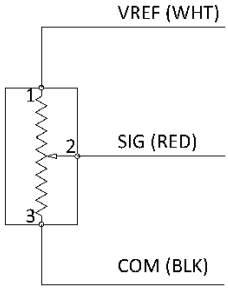


Figure 2: 6506 Internal Wiring Diagram

The operating direction of the Control Lever handle is CW rotation for ahead throttle command.

4 COMMISSIONING

4.1 ELECTRICAL CHECK

⚠CAUTION	Ensure that the rear cover is installed and secured before powering up the 6506.

Confirm that the electrical connections to the 6506 have been made correctly and correspond to the requirements of your system installation.

4.2 FUNCTIONAL TEST

⚠CAUTION	The Functional Test should be carried out while the vessel is still at dock and before it is taken out to sea after installation has been completed.

A complete functional test should be performed on the system that the Control Lever has been installed within before entering operational use.

5 OPERATION

The Kobelt 6506 Control Lever contains one or two potentiometers. Operating the Control Lever causes the vessel to engage in the ahead direction when rotated CW. When the lever is released, it stays at the set position and does not spring back to centre.

The operation of the lever can be reversed by swapping the black and white wires at the remote panel.

6 MAINTENANCE

6.1 PREVENTATIVE MAINTENANCE

- Quarterly (4 times per year)
  - Lubricate the detent track (reference section 6.3)
  - Ensure that the friction drag is adequate.
- Every 2 years
  - Inspect detent plate. Replace if necessary.
  - Replace shaft seal.
- Every 5 years
  - Replace potentiometers.

6.2 CALIBRATION

When replacing the potentiometer or if the setting has become disturbed, follow these steps to center the output:

1. Position the handle in the center (neutral) position.
2. Remove the control head back cover.
3. Locate the potentiometer in need of centering.
4. Connect a multimeter to the Pot – (white wire) and the Pot Wiper (green wire). Set the meter to read resistance.
5. Loosen the two locking set screws on the pinion gear with a 1/16-inch Allen key.
6. Using a short flat head screwdriver, rotate the potentiometer shaft until the meter reads half of the rated output (2500 ohms for a 5K potentiometer).
   a. Note: compare the output between the wiper and Vref+ to wiper and Vref-. Adjust the shaft to balance.
7. Tighten the two locking set screws and replace the cover.

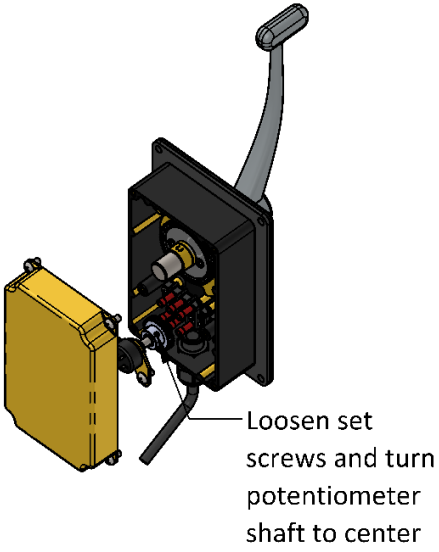


Figure 3: Potentiometer centering

6.3 LUBRICATION

The track the detent runs along on the detent plate must be lubricated to prevent premature wear. Use a grease with MoS_2 additives for best results. The following greases are approved:

Table 3: Approved Lubricants

EP Grease Brand
CHEVRON DELO MOLY 5% EP2
MOBIL XHP-322
SHELL S3 V460

6.4 RECOMMENDED SPARE PARTS

The spare parts kept on hand will depend on the severity of the service. The User should monitor the condition of their control head to predict necessary spare parts and ensure they are on hand when needed. As a minimum Kobelt recommends keeping the following parts for each control head in service:

Table 4: Recommended Spare Parts

Part Number	Description	Qty
2009-0011	Detent Plunger	1
2542-0008	Friction Button	1
POT-5	Potentiometer	1
YPB-3232	Pinion Gear	1

When purchasing spare parts refer to Appendix B at the back of this manual for Kobelt component Part Numbers.

NOTICE	It is recommended that any required service work on a Kobelt unit be performed by a factory authorized service representative. Please contact the nearest Kobelt authorized distributor for assistance.

The table below itemizes which spare part numbers change with the various configuration options. Please reference this table to ensure you receive the correct parts.

Table 5: Configuration Part Numbers

Configuration Part Numbers		
Potentiometer Code	**Potentiometer**	**Resistance**
(blank)	POT-1	1 kohm
-H	POT-5	5 kohm
-J	POT-10	10 kohm

7 TROUBLESHOOTING

If you encounter problems with the operation of your product, please refer to the trouble-shooting suggestions before contacting Kobelt for assistance. If the steps below do not resolve your issue, please reach out either Kobelt directly or our Dealers in your area.

Table 6: Common Solutions

Problem (Issue encountered)	Cause (What it means)	Corrective Action (What to do)
Control Lever action is reversed.	Wiring is backwards.	Swap the POT+ and POT- output wires to their respective potentiometer and system connections.
Control Lever does not influence vessel propulsion.	The rest of the system isn't hooked up correctly.	Check system wiring. Confirm wiring to Control Lever.
	Broken potentiometer or contact.	Use a multi-meter to monitor the resistance of the wiring between potentiometer contacts. Check for normal operation of the potentiometer by measuring the connection while moving the Control Lever. Check potentiometer directions. Replace any damaged potentiometers.
	Wiring is wrong.	Check wiring. Refer to system design drawing for proper wiring.

8 WARRANTY

Kobelt Manufacturing Co. Ltd. (“Kobelt”) warrants the Products and Parts manufactured by Kobelt to be free from defects in workmanship or material and that said products are designed mechanically and functionally to perform to specifications.

This warranty is effective providing:

- The equipment is used within the intended operating conditions and in accordance with Kobelt recommendations
- The equipment is installed according to equipment diagrams, specifications and recommendations which Kobelt has provided.

This warranty becomes invalid if the factory supplied serial number has been removed or altered on the product. This warranty does not cover cosmetic damage or damage caused by an act of God, accident, misuse, abuse, negligence or modification of any part of the product. This warranty does not cover damage due to improper operation or maintenance, connection to inappropriate equipment or attempted repair by anyone other than an authorized Kobelt representative.

Upon identification of a potential issue or defect with a Kobelt Product or Part, the Warranty Applicant (“Applicant”) must immediately contact Kobelt and describe the issue in writing, by letter, fax, email or other electronic conveyance. Kobelt will then assess the cause of the defect and determine warranty applicability and appropriate remediation.

If any part is found to be defective, Kobelt will replace said part FOB the Kobelt factory provided that any such defective part is returned by the Buyer with freight and applicable forwarding charges prepaid by the Buyer. Kobelt’s sole obligation to the Applicant will be to repair or replace the defective part with same or similar product, to a maximum value of the list price of the product or part. The Kobelt warranty does not cover labour charges, travel or any other associated expenses.

All Products and Parts manufactured by Kobelt, are subject to a warranty against manufacturer’s defects in materials or workmanship for a period of two (2) years from the date of purchase.

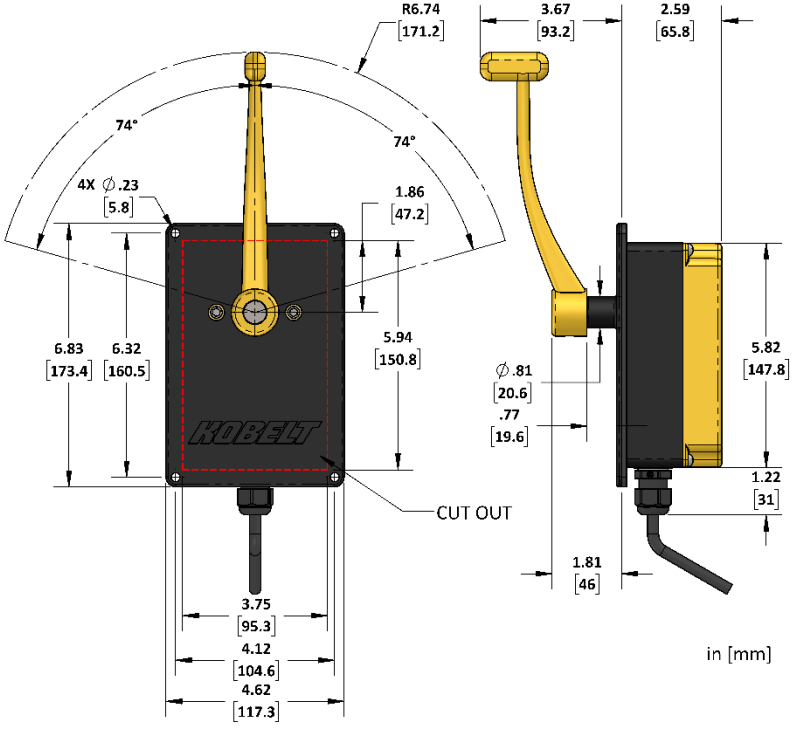
Kobelt will be responsible for all Products or Parts sold by Kobelt but manufactured by 3rd party manufacturing companies. However, these products and parts are subject to applicable 3rd party warranties and may not be the same as the Kobelt warranty.

9 MANUAL REVISIONS HISTORY

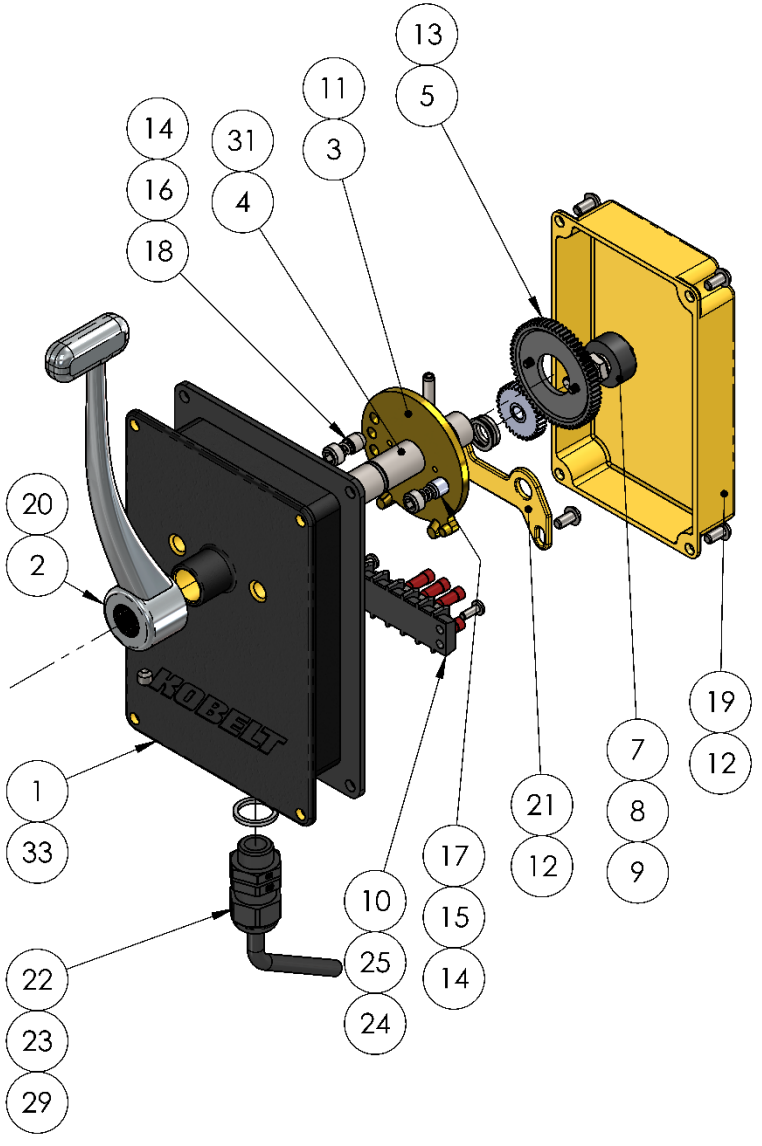
Table 7: Table of revision changes

Document Revision	Release Date	Author	Revision Summary
B	2023-12-27	SV	• Changed the wire in potentiometer to shielded type (from Green to Red) P9, Cable part number changed from (6014-0001 to 6525W-CT-RL) P18

10 APPENDIX A: INSTALLATION DIMENSIONS



11 APPENDIX B: PARTS LIST



ITEM	QTY.	PART NUMBER	DESCRIPTION
1	1	6506-0001-BT	FRONT HOUSING, TEXTURE BLACK
2	1	6506-0003-K	HANDLE; CHROME FINISH
3	1	6506-0005	CAM
4	1	6506-0006	SHAFT; FFU LEVER HANDLE
5	1	YP-3264-3	SPUR GEAR - DELRIN; 32DP/64T - STYLE A / .79 BORE
6	1	YPB-3232	SPUR GEAR - DELRIN, 32T, 32DP, 1/4IN ID, B-STYLE
7	1	POT-5	POTENTIOMETER; 22MM, 5K, 1 TURN
8	1	6639-0001	SHIM WASHER, 10MM X 2MM, AISI 304
9	1	1023-0214	WASHER, .622 X .445 X .030 IN, STEEL
10	1	6009-0006	TERMINAL BLOCK, 140 SERIES, 6 POS, 15A, 250V
11	1	1024-0812	SLOTTED SPRING PIN, 3/16IN DIAX 7/8IN
12	6	1010-0806	SCREW, RND HD PHL, 10-24 X 3/8, 18-8 SS
13	2	1012-0604	MACHINE SCREW - PAN HD PHIL;, 6-32 X 1/4, 18-8
14	2	1016-1204	SET SCREW - SKT; CP PT, 3/8 UNC X 1/4, 18-8
15	1	1201-0002	COMPRESSION SPRING; 1/4 DIA X 3/8 LG
16	1	1201-0003	SPRING, COMPRESSION, 0.25 DIA X .50 LG
17	1	2542-0008	FRICTION PLUG
18	1	2009-0011	DETENT PLUNGER
19	1	6506-0002	COVER - 6506 SIDE MOUNT CONTROL
20	1	1016-1004	SCREW, SET, SKT, 1/4-20 x 1/4, 18-8 SS
21	1	6506-0004	BRACKET - 6506 SIDE MOUNT CONTROL
22	1	6001-0247	CABLE GLAND WITH NUT, M16, 5-10 MM, POLYAMIDE
23	1	6001-0248-W-M16	WASHER, SEALING, M16, POLYETHYLENE
24	6	6009-6451	FORK TERMINAL, 22-18 AWG, #6 STUD
25	2	1012-0606	SCREW, PAN HD, PHL DRIVE, 6-32 x 3/8IN, 18-8 SS
26	3	6014-0022B	WIRE, STRANDED, TYPE MW, 22 AWG, BLK
27	3	6014-0022G	WIRE, STRANDED, TYPE MW, 22 AWG, GRN
28	3	6014-0022W	WIRE, STRANDED, TYPE MW, 22 AWG, WHT
29	1	6525W-CT-RL	CABLE; 3C/18AWG / SHLD / 600V / 105C / GRY
30	4	6009-6230	CABLE TIE 0.1IN X 4IN 18LB BLACK
31	1	1101-0014	O-RING, 2-014, 1/2IN X 1/16IN, NBR70
32	2	6009-7465	HEAT SHRINK 2:1 1/8IN 120C BLK
33	1	6506-0010	GASKET

(Intentionally Blank)

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