2008 Control Head

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:	

Table of Contents

1 INTRODUCTION

1.1 CONTACT

Kobelt Manufacturing Co. Ltd.
8238 129th Street
Surrey, British Columbia
Canada, V3W 0A6

Sales Tel: +1-604-572-3935
Fax: +1-604-590-8313
Email: sales@kobelt.com
Website: www.kobelt.com

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	**Equipment Starts Automatically:** Vessel propulsion may activate suddenly while servicing this product, causing bodily harm. Ensure that all power sources are locked out prior to performing work.

⚠WARNING	**Pinch Points:** The 2008 control head contains pinch points, which can cause bodily harm. Ensure that hands and fingers remain clear of the pinch points when performing work.

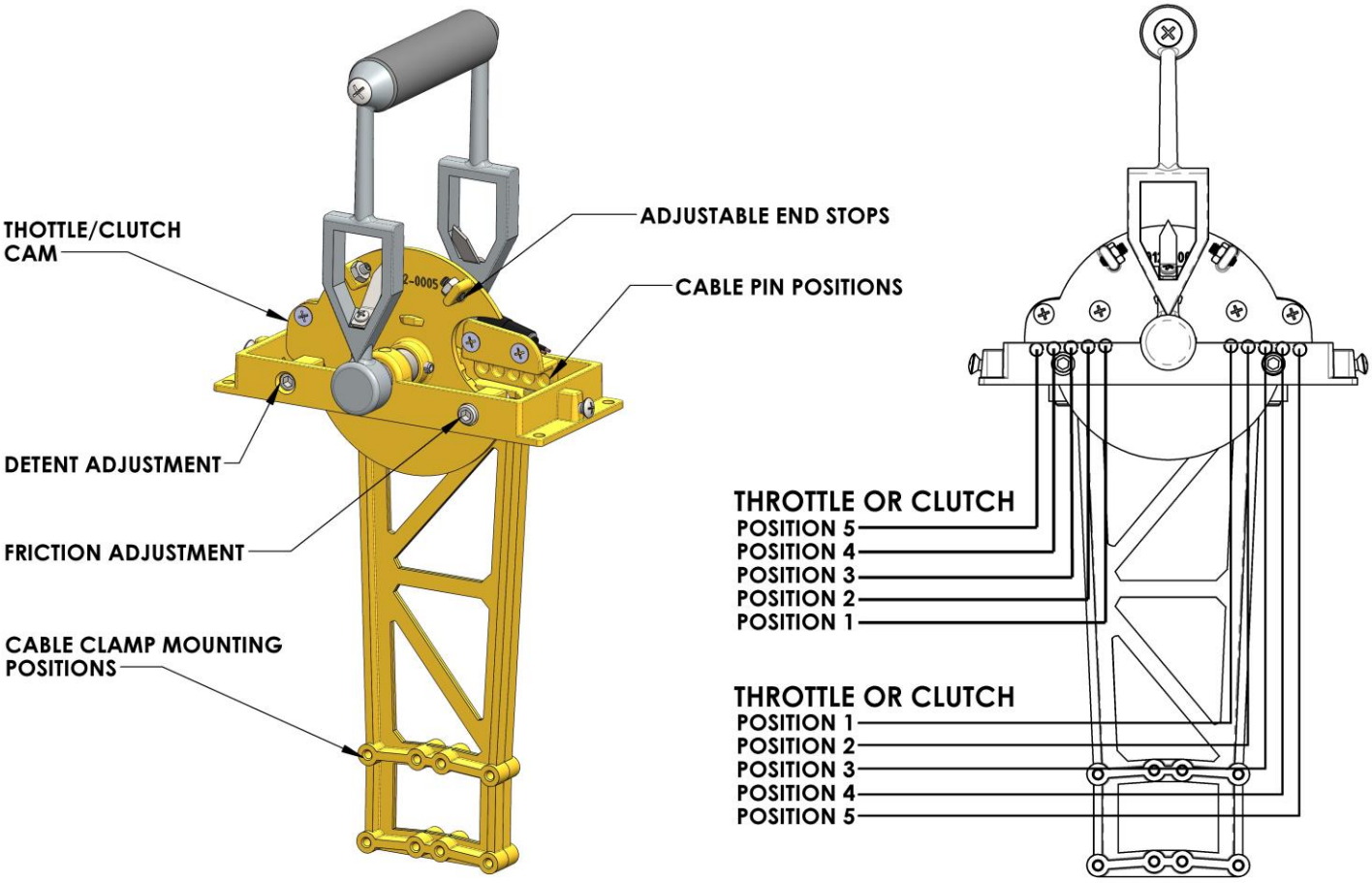
2 PRODUCT DESCRIPTION

2.1 OVERVIEW

The Kobelt model 2008 is a single function, single engine push pull control head. It comes with an illuminated scale and indicating needle, ideal for dusk or night time operations. The control head has up to 4 inches of stroke, which makes it ideal for the control of small C.P. propellers, small mechanical clutches and small water jets. The 2008 may be configured for clutch or throttle control with the following options available:

a) Neutral detent position
b) Friction hold
c) Neutral safety switch

The 2008 is available in a combination of black and chrome, all black, or all polished chrome to suit your appearance preference.



2.2 TECHNICAL DATA

Handle Travel:

- Neutral: 0° Detented
- Clutch engage: +/- 30° Detented
- Full throttle: +/- 60° -

Pin position:	1	2	3	4	5
Cable stroke[1]:	1.90 in [48 mm]	2.46 in [63 mm]	2.80 in [71 mm]	3.38 in [86 mm]	3.98 in [101 mm]
Max Output Force[2]:					
Short handle:	143 lbf [630 N]	111 lbf [495 N]	100 lbf [440 N]	84 lbf [372 N]	72 lbf [320 N]
Long handle:	200 lbf [890 N]	156 lbf [700 N]	140 lbf [620 N]	117 lbf [520 N]	101 lbf [450 N]
Lever ratio:					
Short handle:	4.9:1	3.8:1	3.4:1	2.9:1	2.5:1
Long handle:	6.9:1	5.4:1	4.8:1	4.1:1	3.5:1

1) Stroke from TDC is half of value shown.
2) Estimated maximum output force based on an input force of 29 lbf applied to the handle. Output force must not exceed rated cable force.

Electrical:

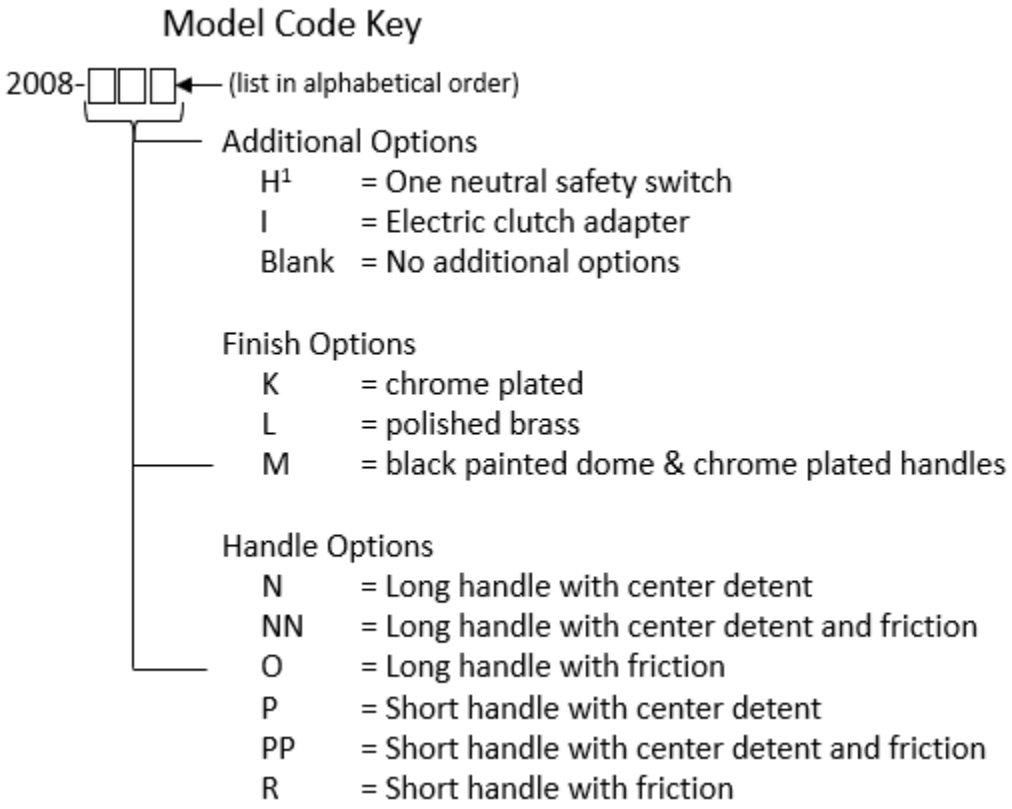
Interior light bulbs:

- Number of bulbs: 2
- Connection: Wire leads
- Voltage 14.4 VDC
- Current: 0.10A (per bulb)

Ambient Temperature: -40°F…+140°F [-40 °C… + 60 °C]
Weight: 6.8 lbs [3.0 kg]

2.3 Model Code Key

The 2008 control head can be configured in several different ways. Below is a key defining the letter code options:



1) Neutral safety switch must have a detented handle.

3 INSTALLATION

3.1 MECHANICAL

The control head must be mounted on a flat surface strong and stiff enough to withstand the cable forces listed in the technical section without excessive flexing. Choose a location that has sufficient room for the handles in both extreme positions.

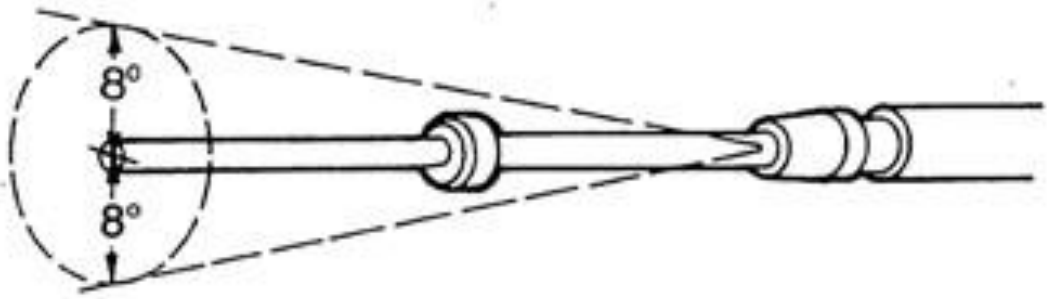
The control head is equipped with (4) four clearance holes for #10 (M5) screws or bolts inserted from underneath for direct mounting to the dash. Ensure the unit is securely fastened, preferable with an anaerobic thread locker such as Loctite 243. Before securing the screws, ensure the detent roller mechanism is in the forward position.

3.2 CONTROL CABLE

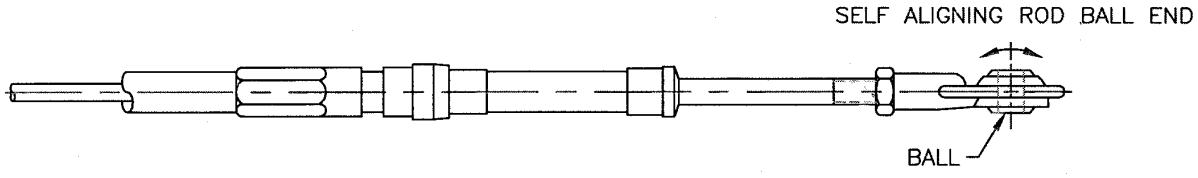
3.2.1 Hardware

The 2008 control head can be used with either 30 series or 40 series control cable. Kobelt Manufacturing does not recommend solid core cables. A solid core cable would consist of a single wire that is too stiff. Multi-stranded cores are more flexible and therefore generates less friction during operation.

The cable ends must also be able to articulate approximately 8 degrees in either direction.

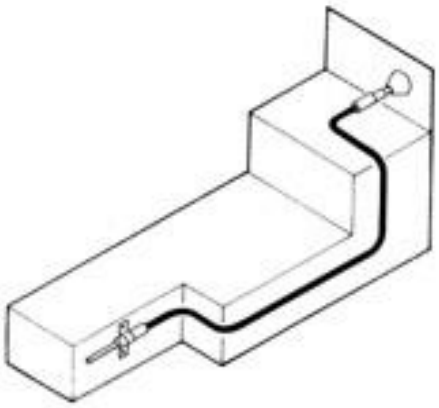


For terminating the cables Kobelt recommends a ball rod end. Rod ends are self-aligning and therefore minimize friction and binding.



When installing hardware to the cable end, do not twist the core. If required, use a pair of pliers to hold the cable core from turning while installing the terminating hardware. When gripping the cable end, apply the pliers immediately under the threads and take care not to score the cable rod. A scored cable rod will damage the cable seal allowing moisture and dirt to enter the casing.

3.2.2 Cable Routing



Measure the cable along the path it will take from where the cable hubs will be anchored at each end. Follow the actual cable path as closely as possible, allowing for the largest practical bend radii.

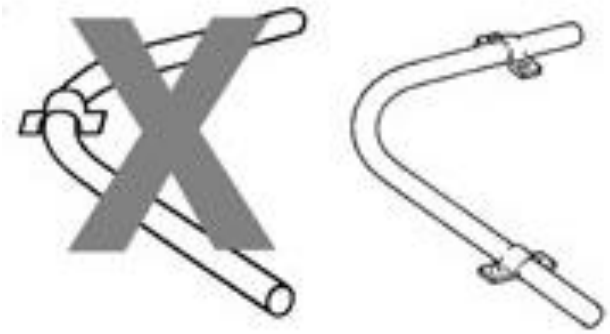
Do not force the cable into tighter bends than what is listed in the table at below:

Optimum Life Bend Radii	
Cable Size	***Operating Life Minimum***
30 series	3 inches[1] [76 mm]
40 series	4 inches [127 mm]

1) Solid core cables will require 6 in [152 mm] minimum bend radius.

It is important to securely anchor the cable hubs. Any free-play in the cable clamp or mounting bracket will be perceived as lost motion or “sponginess” and will reduce the detent feel.

When securing the cable with clamps, it is recommended practice to position two clamps at the ends of the bend rather than one in the middle.



When installing a push-pull cable, do not kink the cable since this will permanently damage the core and casing, rendering the cable stiff and inoperable. Even minor kinks will result in premature failure.

It should also be noted to avoid routing the cable near sources of heat, such as exhaust pipes or cold, such as refrigerated fish holds.

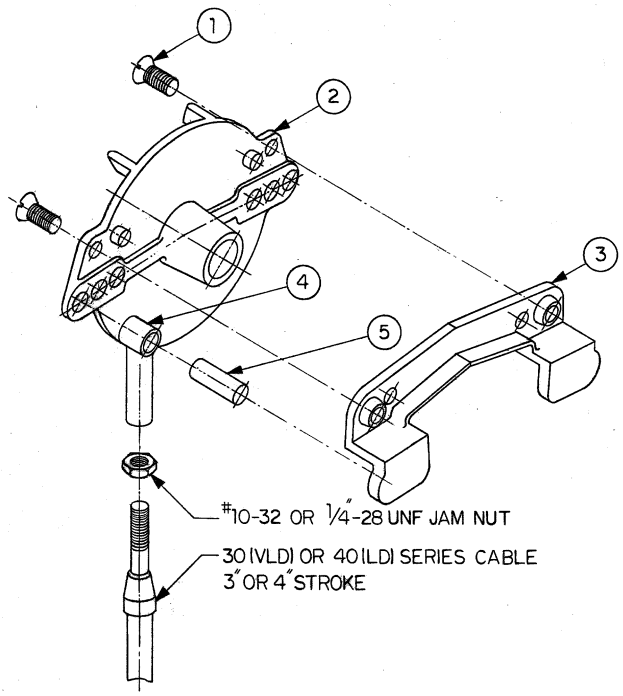
3.2.3 Control Head Connection

The 2008 control head has a cam mechanism for actuating the clutch or throttle that permits the cable to be installed in either push or pull configuration.

The clutch valve mechanism on most marine transmission requires approximately 2¾” (70 mm) to 3” (76 mm) of travel. Reference the diagram in section 2.1 and the technical data in section 2.2 to determine the appropriate cable position for your application.

To correctly install the clutch control cables, follow the steps below:

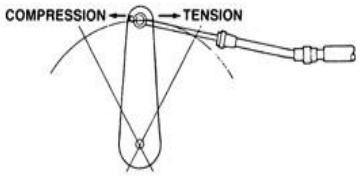
1. Secure the cables to the support bracket with the appropriate cable clamps.
2. Move the control handles to the extreme forward position.
3. Ensure that the cable end extends slightly past the clutch cam attachment point.
4. Move the control handles to the extreme aft position.
5. Ensure that the cable end, when in push mode, extends beyond the cable attachment point.
6. If the cable end points from one extreme to the other are unequal, then the cable end fitting must be threaded out or in to correct.
7. Repeat steps 2 to 6
8. After the proper position is found, the cable end is attached to the clutch actuating pivot plate and the jam nut tightened.
9. The final step is to test that the clutch control valve goes from neutral to both forward and then reverse gear engaged positions without bottoming. A slight amount of end play is essential.

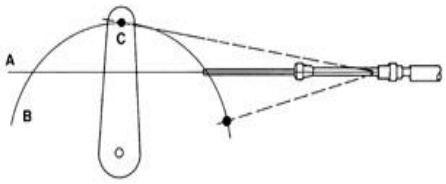


The throttle cable is installed in the same manner. In order to obtain full handle travel in the speed range, it is important to select the appropriate connection point for the adaptor kit on the throttle pivot plate.

3.2.4 Actuator End Connection

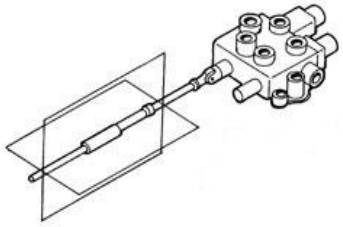
When connecting the actuating end of the cable to the throttle or clutch lever, install the cable so that the greatest loads are in tension (pulling) rather than compression (pushing), if possible.





Where the cable is connected to a lever, the cable must be mounted so that it lies on a plane (A) midway on the arc (B) described by the movement of the connection point on the lever (C).

When connecting the actuating end of the cable to a spool valve such as the Kobelt 4605 servo cylinder, maximum cable life and efficiency is achieved when the cable is aligned with the lever in two planes. Reference the figure at right:



3.3 ELECTRICAL

3.3.1 Interior bulbs

The 2008 control head comes with two light bulbs that provide illumination to the handle position scales. The light bulb holders come with 6 inch [152 mm] wire leads and must be connected per Table 1. The power requirements of the light bulbs are given in section 2.2.

Table 1: Light bulb wiring

2008 Light bulb				
Wire #	**Wire Name**	**Colour**	**Gauge**	**Function**
1	+VDC	Black	22AWG	Light bulb power.
2	COM	Black	22AWG	Light bulb common.

The wires should be fastened to the control head support and connected to the power supply wires in accordance with local governing electrical standards. Route the wires as shown in Figure 1.

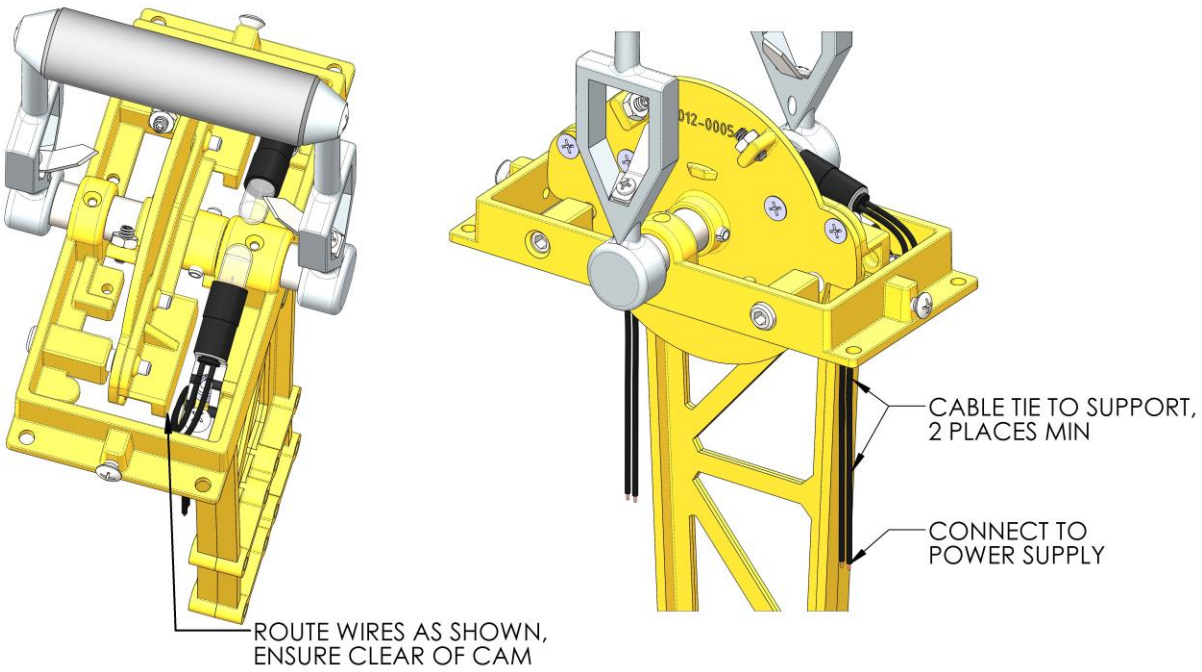


Figure 1: Light bulb wire routing

3.3.2 Neutral safety kit

The 2008 control head is available with an optional neutral safety switch. The switch attaches to mounting holes on the control head frame.

Ensure the microswitch firmly 'clicks' when the handle is in the neutral position. Adjust the bracket position as needed before final screw tightening. It is recommended to apply loctite 243 to the backet screw threads when installing.

The switch is prewired with a 1 foot [305 mm] long 18 AWG wire for external connection. Connect it to an electrical junction box and the propulsion system interface.

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

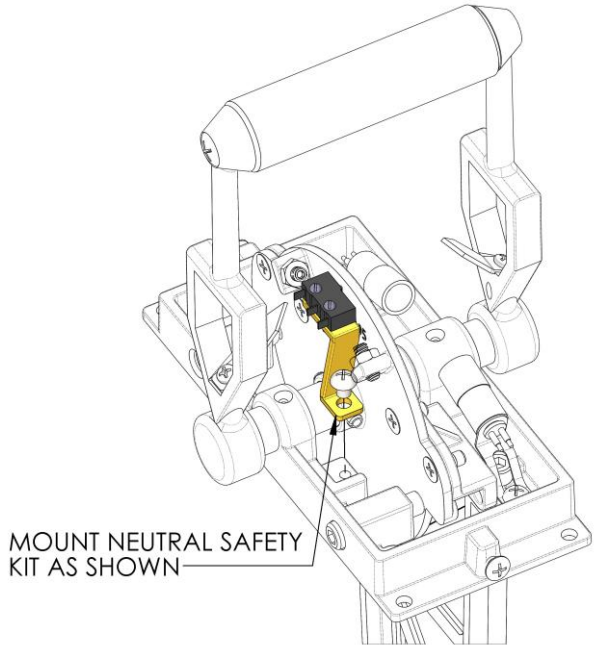


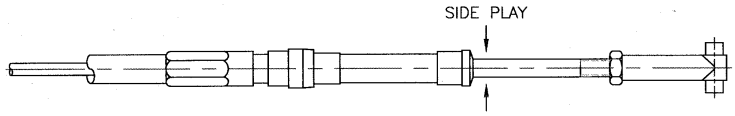
Table 2: 2008 Wire Connections

2009-0903 Neutral safety kit				
Wire #	**Wire Name**	**Colour**	**Gauge**	**Function**
1	N.O.	RED	18AWG	Connects to COM when Switch is activated to signal neutral position.
2	COM	Black	18AWG	COM connection.

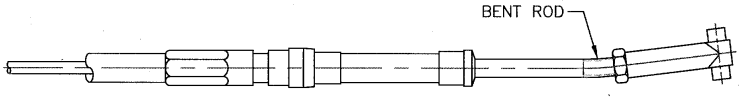
4 COMMISSIONING

4.1 INSPECTION

Before putting the control head into operation, check the cable connections at each end to ensure that there is side clearance between the sleeve and the core rod and no misalignment at either the clamp or the control head which will make the cable stiff.



It is possible that a cable end may become bent either in transit or during installation. If this has occurred the cable must be replaced as it will bind between the core rod and the sleeve.



4.2 FUNCTIONAL TEST

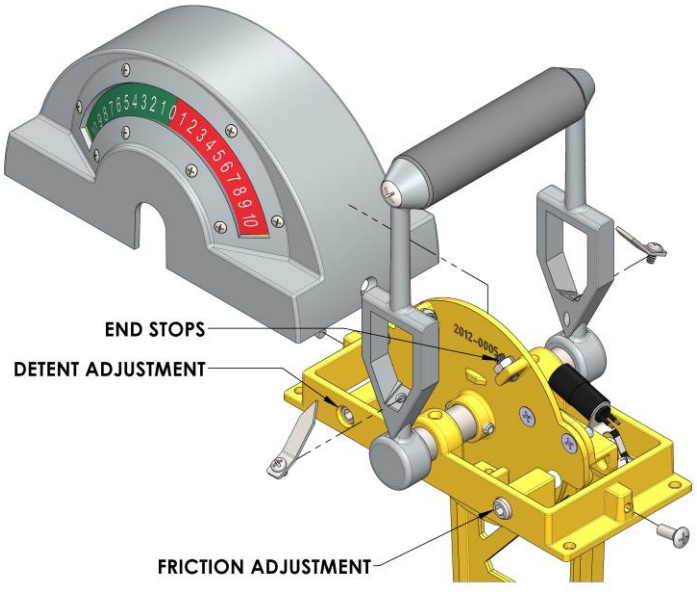
⚠ CAUTION	Do not put the vessel into service until the control head has been tested. The Functional Test should be carried out while the vessel is still at dock.

4.2.1 Clutch Applications

After installation, test that the clutch control valve goes from neutral to both forward and then reverse gear engaged positions without bottoming. A slight amount of end play is essential.

The internal ends stops can be adjusted to fine tune forward and reverse clutch travels.

The detent should be adjusted so it is adequate to firmly hold the clutch in the neutral position.



4.2.2 Throttle Applications

Ensure that full speed range is obtained with full handle travel. Adjust the end stops as required to fine tune full/idle throttle RPM.

Ensure that the throttle friction adjustment is adequate to hold the throttle position. Adjust if necessary.

5 MAINTENANCE

5.1 PREVENTATIVE MAINTENANCE

- Quarterly (4 times per year)
  - Ensure that the throttle friction adjustment is adequate.
- Every 2 years
  - Inspect cable for wear
  - Lubricate pins & handle shafts
  - Inspect throttle & clutch cams for wear

5.1.1 Lubrication instructions

Follow Figure 2 to access and lubricate the bearing journals and detent tracks (when applicable). Refer to Table 3 for recommended lubricants.

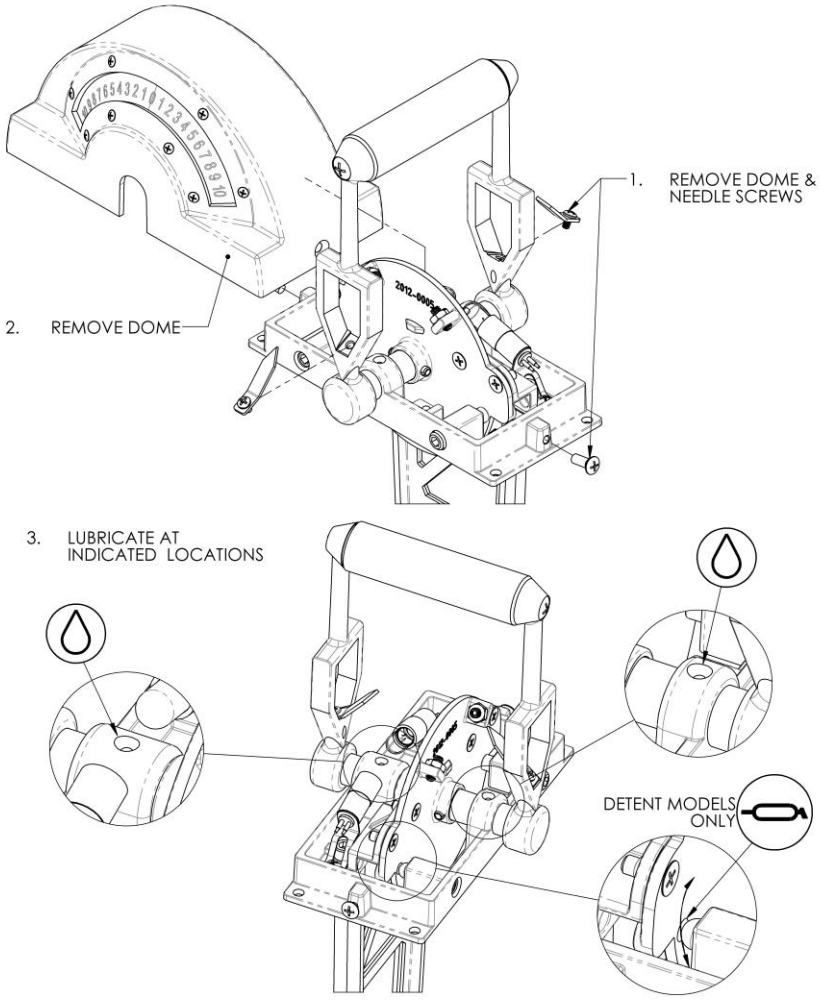


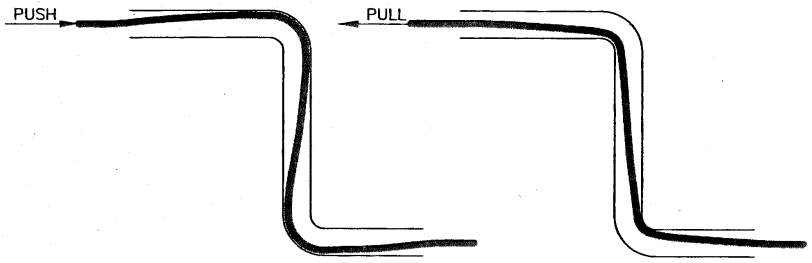
Figure 2: Lubrication instructions

Table 3: Recommended Lubricants

Lubricant	Description	Grade
Oil 	Valvoline gear oil	75w80 HD GL-4
	Motul Transmission oil	80w-90 GL-4/GL-5
Grease 	Phillips 66 Megaplex XD3 (Grease)	NLGI-2
	Straplex HD 2 M5 (Grease)	NLGI-2

5.2 Inspection

When a cable core is pushed, it will take the longest route and, conversely, when pulled, it will take the shortest route. This appears as 'lost motion' at the actuation end. The cable stroke must be measured periodically to confirm adequate stroke.



5.3 Recommended Spare Parts and Kits

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.

When purchasing spare parts refer to Appendix B: Parts List 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.

5.3.1 Accessories

2004-0901	Connector kit, 30 series cable
2004-0902	Connector kit, 40 series cable
2009-0903	Switch kit, neutral safety
2008-0910	Adaptor kit, electric clutch

Note: Cable kits must be ordered separately

5.4 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 4: Common Solutions

Problem (Issue encountered)	Cause (What it means)	Corrective Action (What to do)
Full throttle not achieved	Lost motion in the cable – cable worn Lost motion in the cable – cable not clamped	1. Replace cable. 2. Clamp cable per manufacturer's recommended practice.
Controls stiff to operate	1. Wrong cable installed. 2. Cable has been kinked. 3. Cable operating below minimum allowable temperature.	1. Replace cable with flexible core type cable. 2. Replace cable. 3. Ensure cable does not run through a fish hold.

6 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.

7 APPENDIX A: INSTALLATION DIMENSIONS

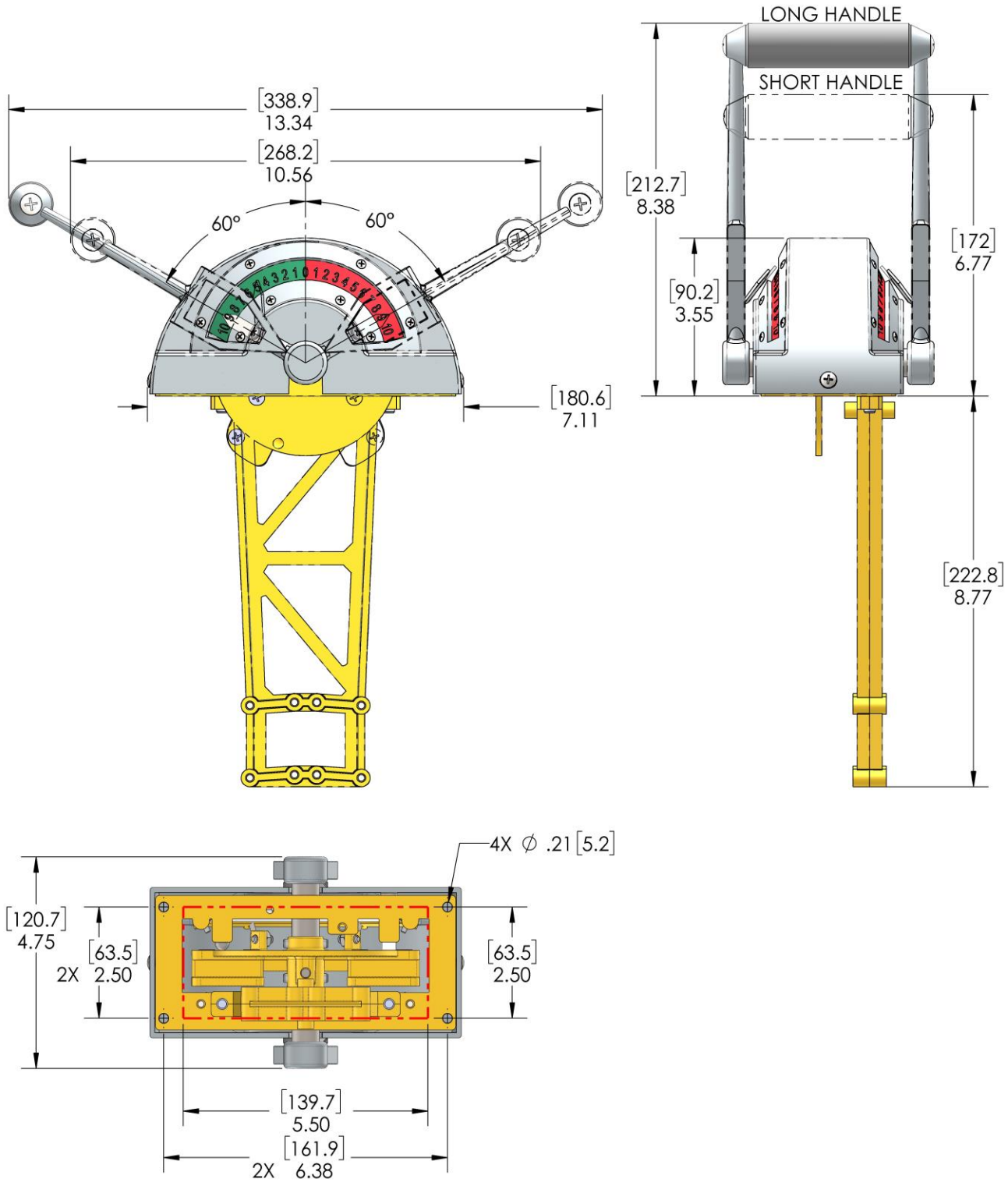
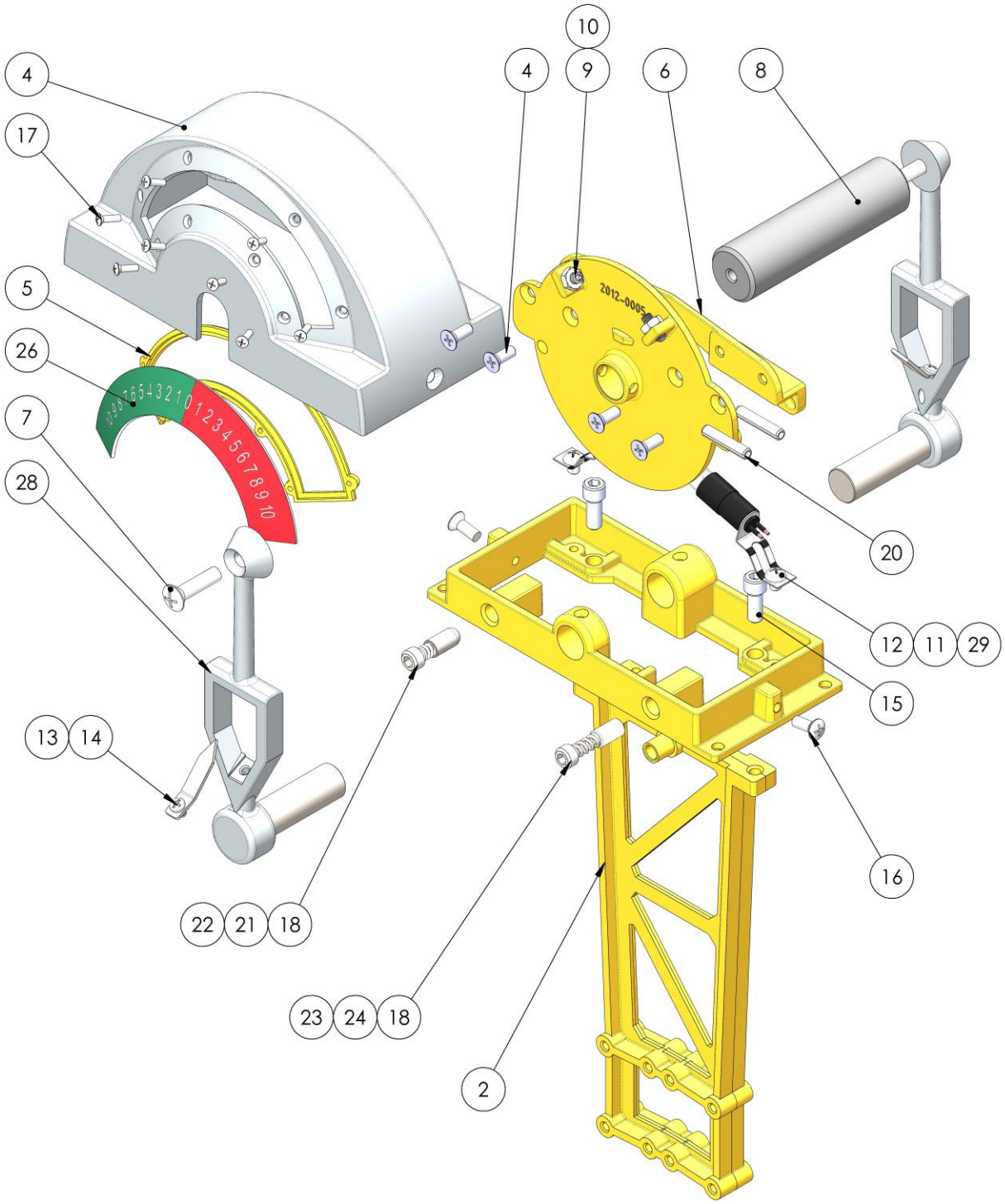


Figure 18: 2008 Installation Dimensions

8 APPENDIX B: PARTS LIST

2008-KPP



ITEM	QTY.	PART NUMBER	DESCRIPTION
1	1	2006-0001	FRAME
2	1	2011-0008	SUPPORT
3	1	2012-0005	PIVOT PLATE
4	1	2553-0001-H	DOME; NARROW ILLUMINATED; CHROME FINISH
5	2	2553-0006	SCALE RETAINER
6	1	2012-0006	RETAINER
7	2	1011-1016	SCREW, OVAL HD, PHILLIPS, 1/4-20 X 1
8	1	2553-0020	HANDLE GRIP; 2074 / 2553 / 2554
9	2	1016-0808	SET SCREW - CP PT; #10-24 x 1/2, 18-8
10	2	1022-0108	NUT, HEX, #10-24, 18-8 SS
11	2	6001-0206	LAMP HOLDER, MINIATURE BAYONET
12	2	1010-0804	RND HD PHILIPS MS, 10-24 X 1/4, 18-8
13	2	2553-0018-H	POINTER - BRIGHT FINISH
14	2	1012-0604	MACHINE SCREW - PAN HD PHIL;, 6-32 X 1/4, 18-8
15	2	1002-1010	SCREW, SKT HD CAP, 1/4-20 X 5/8, 18-8 SS
16	2	1011-0808	MACHINE SCREW - OVAL HD PHL; #10-24 X 1/2 / 18-8
17	16	1011-0406	SCREW- OVAL HD, PHL; #4 UNC X 3/8 18-8
18	2	1016-1204	SET SCREW - SKT; CP PT, 3/8 UNC X 1/4, 18-8
19	1	1016-1004	SCREW, SET, SKT, 1/4-20 x 1/4, 18-8 SS
20	2	1024-0816	PIN; SLOTTED SPRING; 3/16 DIA X 1LG; AISI 304
21	1	1201-0062	COMPRESSION SPRING; .25OD X .05W X .75 FL
22	1	2545-0012	DETENT PIN
23	1	2545-0021	FRICTION BUTTON
24	1	1201-0003	SPRING, COMPRESSION, 0.25 DIA X .50 LG
25	4	1009-0808	SCREW, FLAT HD, PHILLIPS, 10-24 X 1/2, 18-8
26	1	2553-0016	SCALE, 10-0-10, L.H
27	1	2553-0017	SCALE, 10-0-10, R.H
28	2	2074-0001-K	HANDLE; SHORT VEE; CHROME FINISH
29	2	6001-3646	LIGHT BULB, 1813 TYPE, 14V, T3-1/4, BA9S BASE

9 APPENDIX C: INSTALLATION CUT-OUT TEMPLATE

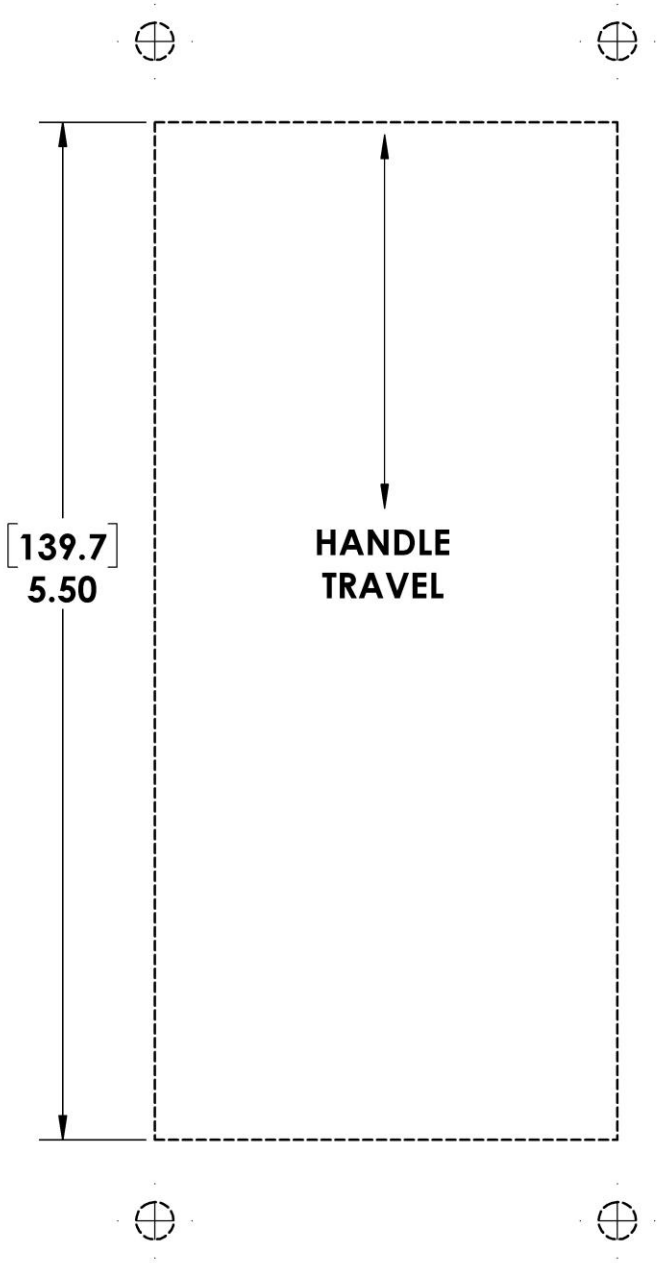


Figure 22: Installation Cut-out Template

NOTICE	Scale may not be exactly 1:1 due to PDF and printer scaling. Verify primary dimension with a ruler after printing and before using to cut.

Reference Appendix A: Installation Dimensions , for the cut-out dimensions.

Kobelt Manufacturing Co. Ltd.
8238 129th Street
Surrey, British Columbia,
Canada, V3W 0A6

Sales Tel: +1-604-572-3935
Fax: +1-604-590-8313
Email: sales@kobelt.com
Website: www.kobelt.com

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