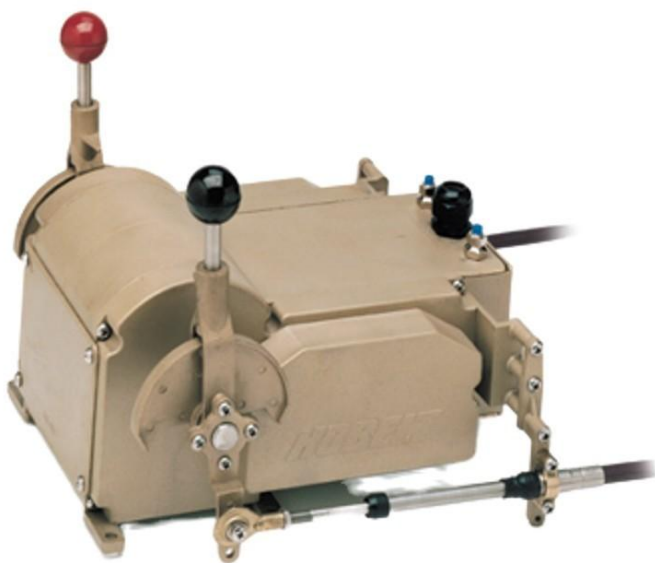




6524 Electronic Actuator

Owner's Operation, Installation & Maintenance Manual



NOTES:

[illegible]

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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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

**Disconnect Power:**

Turn off power at distribution panel before beginning installation to protect installer from electrical hazards.

**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.

**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.

**Pinch Points:**

The 6524 actuator 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 6524 actuator is an electro-mechanical actuator that converts rotary motion from a DC motor to produce linear motion on a push/pull cable via the output lever.

The Model 6524 comes with manual override and one trim pot per side for stroke adjustment. The stroke must be precisely adjusted to suit the device being controlled.

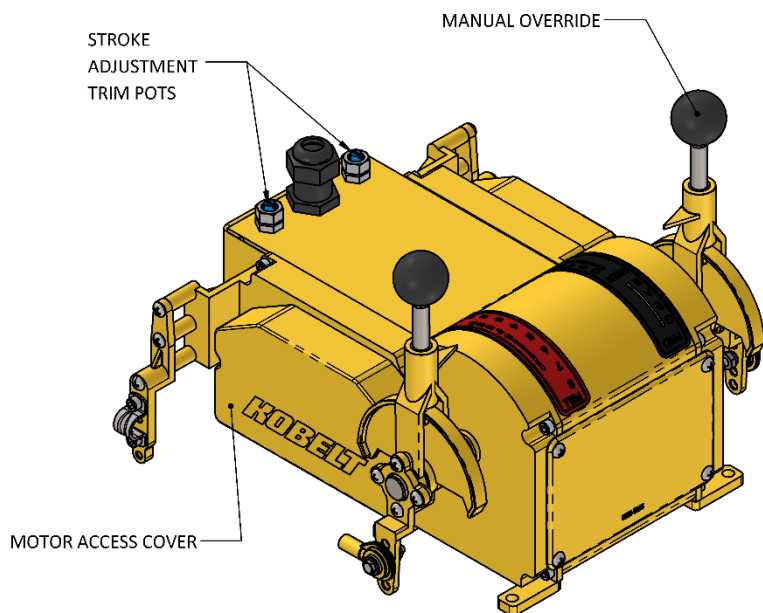


Figure 1: Actuator Overview

2.2 TECHNICAL DATA

Table 1: 6524 Technical Data

MODEL	6524				
KOBELT PART #	6524				
Output	No load	Cont. ²	Rated	Max	
Torque	0	76 [8.6]	201 [22.7]	328 [37]	(in-lbs) [Nm]
Speed	120	104	78	51	(deg/sec)
Current	.24	2.0	5.0	8.0	(A)
Max ON time¹	∞	256	39	21	(secs)
Duty¹	100%	24.0%	9.7%	6.1%	(% on)
Stroke	80°				
Supply voltage	24 (+/-25%) VDC				
Terminals	22-16 AWG, screw clamp				
Environmental category	ENV2 / Protected				
Operating temperature	41°F ... 131°F [5°C ... 55°C]				
Product weight	28.8 lbs [13.1 kg]				
Finish	Uncoated Bronze				

Notes:

1. Specified at maximum ambient temperature (55°C)
2. At 25°C ambient temperature

2.3 MODEL CONFIGURATION KEY

6524 With positioning motors and feedback potentiometers only

3 INSTALLATION

3.1 MECHANICAL

The location of the 6524 Electronic Actuator must satisfy the following conditions:

- Ambient temperatures not to exceed rated temperature (see [table 1](#))
- Do not install in areas exposed to moisture
- Do not install near high-power devices
- Ensure that the mounting surface flat within .01" [.25 mm]

When installing the unit;

1. Set the unit on the mounting surface and orient to desired operating position.
2. Probe under the feet with a feeler gauge to determine shimming requirement.
3. Insert the shims determined from step 6. Use ANSI shims that straddle the mounting bolts.
4. Insert 1/4in [6 mm] bolts. It is recommended to use a thread locking product such as Loctite® to ensure a vibration resistant and secure joint.
5. Tighten the mounting bolts to 64 in-lbs [7.2 Nm]



WARNING

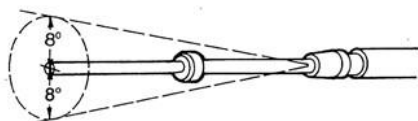
Mounting:

Failure to comply with the mounting instructions above may result in failure of the actuator and loss of control over the engine.

3.2 CONTROL CABLE

3.2.1 Hardware

The 6524 actuator can be used with either 30 series or 40 series control cable. Kobelt Manufacturing does not recommend solid core cables if bends are present in the cable routing. 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.

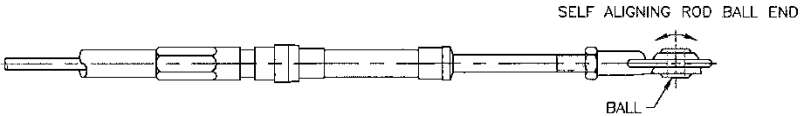


The cable ends must also be able to articulate approximately 8 degrees in either direction.

NOTICE

Accurate Positioning:

For applications that require accurate positioning, a tie rod with rod ends is recommended over a push/pull cable.



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.

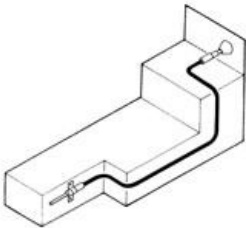
To install the 6524 actuator, the appropriate connection kit must be purchased. Consult the table below for the correct kit:

Table 2: Connection Kits

Use Case	Kit Number
30 series cable	6527-0901
40 series cable	6527-0902

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.



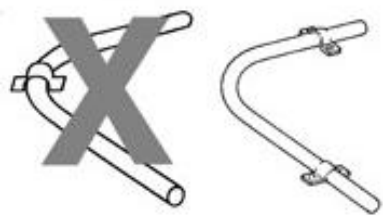
Do not force the cable into tighter bends than what is listed in the table below:

Optimum Life Bend Radii	
Cable Size	Min Bend Radius
30 series	3 inches ¹ [76 mm]
40 series	4 inches [127 mm]
Solid core	6 inches [152 mm]

It is important to securely anchor the cable hubs. Any free play in the cable clamp or mounting bracket will result in lost motion.

6524 Actuator

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When securing the cable with clamps near bends, 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.

Avoid routing the cable near sources of heat, such as exhaust pipes.

3.2.3 Cable Connection

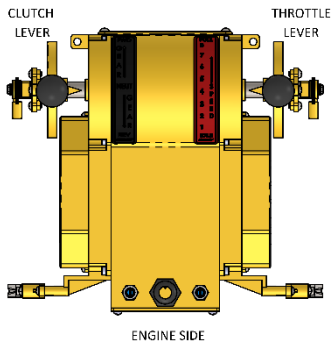


Figure 2: Lever Assignment

to provide the required stroke and force. Consult the Table below:

Table 3: Actuator Output

Pin	Stroke in [mm]	Force lbs [N]
1	1.76 [45]	146 [650]
2	2.25 [57]	115 [511]
3	2.73 [69]	95 [421]
4	3.21 [81]	80 [358]

The 6524 actuator has a lever mechanism for actuating the clutch and the throttle. Consult the figure at left to select the correct function.

Select the appropriate pin position

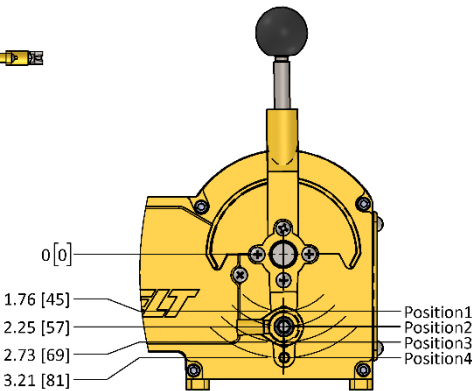


Figure 3: Cable Pin Positions

The clutch valve mechanism on most marine transmissions requires approximately 2¼" [70 mm] to 3" [76 mm] of travel. Consequently, the cable must be attached at pin position 4 of the output lever.



WARNING

Reversing Actuator Movement:

To reverse the actuator movement, rotate the levers 180 degrees. Do not reverse the actuator electrically.

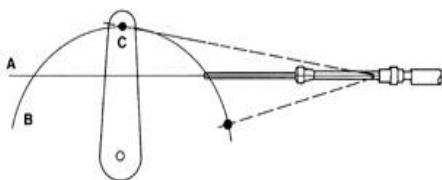
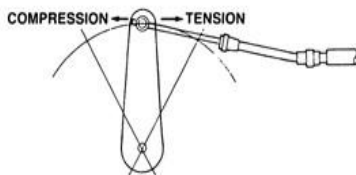
In some marine applications with twin engines, both engines are turning in the same direction and therefore one gear box is running in the reverse to drive the propeller ahead. In this installation the actuators must rotate in opposite directions to provide the proper push and pull mode for either gear.

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

1. Secure the cables to the support bracket with the appropriate cable clamps.
2. Move the output lever to the extreme forward position.
3. Ensure that the cable end extends slightly past the desired pin position.
4. Move the output lever to the extreme aft position.
5. Ensure that the cable end, when in push mode, extends beyond the same desired pin position.
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 balance the range of motion.
7. After the proper position is found, the cable end is attached to the output lever and the jam nut tightened.
8. The final step is to test that the actuator goes from neutral to both forward and then reverse gear engaged positions without bottoming.

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.

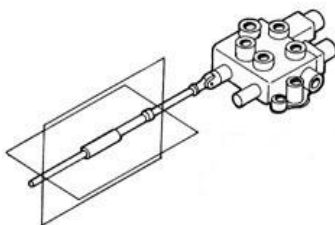


Where the cable is connected to a lever, the cable must be mounted so that it lies on a plane (A) midway on the arc (B) described by the movement of the connection point on the lever (C).

6524 Actuator

Kobel Manufacturing Co. Ltd.

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 6525 System

The 6524 actuator, when used with the 6525 system, shall be connected as shown in the diagram below.

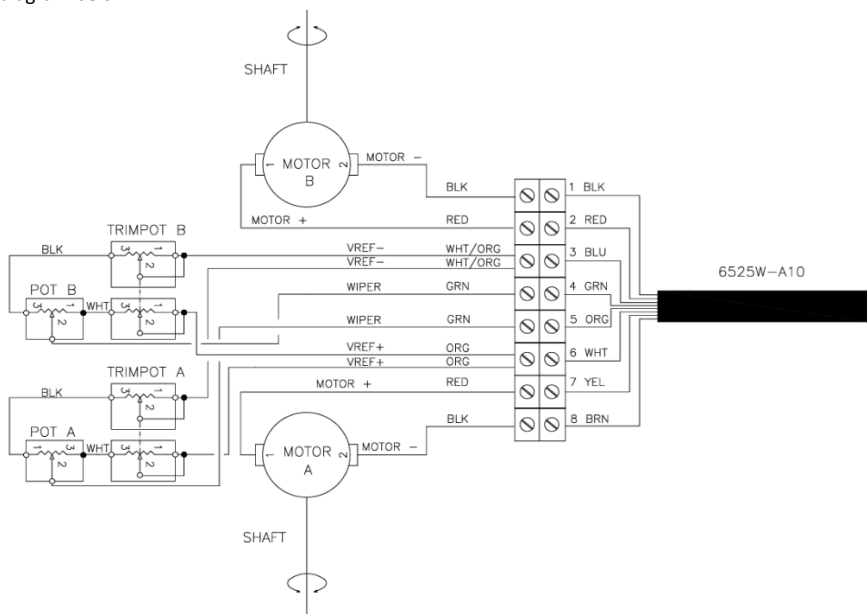


Table 4: 6524 Actuator Terminations

Throttle Lever			
Terminal #	Signal	Wire	Function
1	Motor	BLK	Motor A common
2	Motor	RED	Motor A power
3	Vref+	BLK	Throttle Pot Positive Reference
4	POTA	GRN	Throttle Pot Wiper Input
5	Vref-	WHT	Throttle Pot Negative Reference
Clutch Lever			
1	Motor	BLK	Motor B common
2	Motor	RED	Motor B power
3	Vref+	BLK	Clutch Pot Positive Reference
4	POTB	GRN	Clutch Pot Wiper Input
5	Vref-	WHT	Clutch Pot Negative Reference

Notes:

- 1. The potentiometers are wired mirror image to synchronize the outputs.

NOTICE

Actuator Cable Shield:

Leave the actuator cable shield unconnected. Do not connect the shield to the actuator or ground.

4 COMMISSIONING

4.1 ELECTRICAL CHECK



CAUTION

Ensure that the cover is installed and secured before powering on the 6524.

- Confirm that the electrical connections to the 6524 have been made.
- Confirm that a breaker has been installed correctly and is turned ON.

4.2 CALIBRATION AND ADJUSTMENT



CAUTION

These adjustments should only be performed by qualified personnel, and only while the vessel is at dock.

1. Turn OFF the power to the 6524 prior to adjusting the trimpots.
1. Remove the enclosure cover
2. Use a **non-conductive** flathead screwdriver to adjust the trimpots.
3. Rotate the trimpots to set the desired system response.
4. Turn ON power.
5. Operate system to verify desired response.
1. Repeat as necessary, until the unit functions as desired.
2. Replace the enclosure cover.



CAUTION

To reduce the potential for electrical shock and to avoid damaging the electronics, use a **non-conductive** screwdriver, or other equivalent tool, to adjust the trimpots and DIP switches.

4.2.1 Stroke Adjustment

The 6524 actuator is equipped with manual overrides and one trim pot per side to adjust the stroke. The actuator does not have an internal resilient link. The stroke must, therefore, be adjusted precisely to suit the device being controlled.

NOTICE

Set the clutch actuator stroke accurately; otherwise, the throttle actuator will not respond. The clutch motor must stop running when the correct stroke is obtained. Re-adjust stroke if motor is still trying to rotate.

NOTICE

To increase actuator stroke, turn trimpot CCW and vice versa. Lock trimpot when desired position obtained. Do not adjust actuator near its max stroke. Adjust the stroke accurately to prevent the actuator from alarming.

Fine adjustments to the throttle or clutch levers stroke can be made using trimpots on the actuator (See [Figure 1](#)). Trimpot A adjusts the clutch lever stroke while trimpot B adjusts the throttle lever stroke.

Table 5: Stroke Trimpot Adjustment

Trimpot Adjustment	Stroke Effect
	Decrease actuator stroke.
	Increase actuator stroke.

4.3 FUNCTIONAL TEST

After installation, test that the clutches go from neutral to both forward and then reverse gear engaged positions without the actuator motor tripping on over current.

Also ensure that the full speed range is obtained with full actuator travel.

Ensure that the actuator travel directions are correct, adjust if necessary.



CAUTION

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

5 OPERATION

5.1 MANUAL OVERRIDE

The 6524 has a provision to permit manual control over the actuator functions should a power failure or actuator failure occur. Reference the diagram at right:

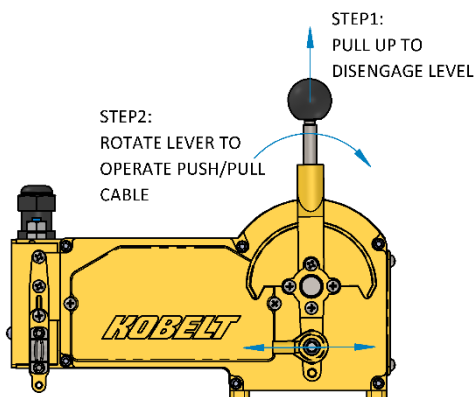


Figure 4: Manual Override

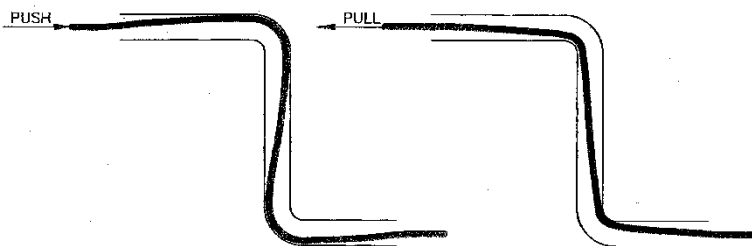
6 MAINTENANCE

6.1 PREVENTATIVE MAINTENANCE

- Quarterly (4 times per year)
 - Visually inspect wire and cable insulation for splits or damage.
 - Ensure there is no visible corrosion on the unit.
- Every 2 years
 - Lubricate gears
 - Inspect push/pull cable
 - Confirm cable glands are secured to cables.
 - Replace seals.
- Every 5 years
 - Replace potentiometers
 - Replace motor brushes

6.2 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.

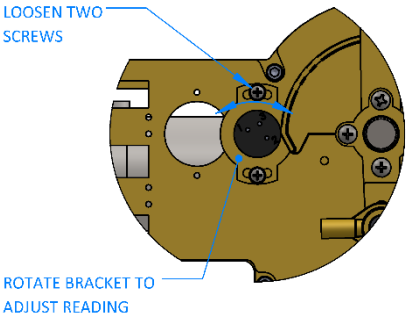


6.3 CALIBRATION

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

1. Position the output lever in the center (neutral) position.
2. Remove the motor access cover.
3. Connect a multimeter to the Pot – (white wire) and the Pot Wiper (green wire). Set the meter to read resistance.
4. Loosen the two locking set screws on the pinion gear with a Phillip's screwdriver.

- 5. Rotate the potentiometer bracket until the meter reads half of the rated output (~2500 ohms for a 5K potentiometer)¹.
- 6. Tighten the two locking screws and replace the cover.



Notes:

- 1. Due to variations in potentiometer ranges, compare the output between the wiper and Vref+ to wiper and Vref-. Adjust the bracket to balance.
- 2. For large adjustments it will be necessary to remove the bracket to disengage the gear teeth and center the output before making fine adjustments with the bracket.

Figure 5: Potentiometer Calibration

6.4 POTENTIOMETER CONNECTION

The actuator potentiometers are wired to the two Motor Connectors. When replacing these devices ensure that they are connected as per the table below:

Table 6: Potentiometer Connector Termination

Throttle Lever			
Signal	Wire	Pot terminal	Function
Vref+	WHT	Pot B, terminal 1	Throttle Pot Positive Reference
POT B	GRN	Pot B, terminal 2	Throttle Pot Wiper Input
Vref-	BLK	Pot B, terminal 3	Throttle Pot Negative Reference
Clutch Lever			
Vref-	BLK	Pot A, terminal 1 ¹	Clutch Pot Negative Reference
POT A	GRN	Pot A, terminal 2	Clutch Pot Wiper Input
Vref+	WHT	Pot A, terminal 3 ¹	Clutch Pot Positive Reference

- 1. The potentiometers are wired mirror image to synchronize the outputs.

6.5 LUBRICATION

The actuator drive train must be lubricated to prevent premature wear. Use a grease with MoS₂ additives for best results. The following greases are approved:

Table 7: Approved Lubricants

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

6.6 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 actuator to predict necessary spare parts and ensure they are on hand when needed. As a minimum Kobelt recommends keeping the following parts for each actuator in service:

Table 8: Recommended Spare Parts

Part Number	Description	Qty
6531-BK	Motor brush kit	2
6524-1028	Motor assembly	2
POT-6	Potentiometer	2
YPB-3236	Spur Gear	2
TRIMPOT-3	Trimming potentiometer	2
2144-3	Rod end	2

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.

7 TROUBLESHOOTING

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

Table 9: Alarm Codes

Symptom	Possible Causes	Corrective Actions
One beep	Actuator fault – jammed or motor failed	Reset the Actuator by pressing station select from the selected station Check the wiring Check the potentiometer
Actuators are moving erratically	There is a ground loop The potentiometer is damaged	Check and make sure the cable shields are isolated Check the potentiometer and replace it if necessary

8 WARRANTY

Kobel Manufacturing Co. Ltd. ("Kobel") warrants the Products and Parts manufactured by Kobel 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 Kobel recommendations
- The equipment is installed according to equipment diagrams, specifications and recommendations which Kobel 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 Kobel representative.

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

If any part is found to be defective, Kobel will replace said part FOB the Kobel factory provided that any such defective part is returned by the Buyer with freight and applicable forwarding charges prepaid by the Buyer. Kobel'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 Kobel warranty does not cover labour charges, travel or any other associated expenses.

All Products and Parts manufactured by Kobel, 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.

Kobel will be responsible for all Products or Parts sold by Kobel 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 Kobel warranty.

9 REVISION HISTORY

Table 10: Table of revision changes

Document Revision	Release Date	Author	Revision Summary
A	2026-09-09	MW	Initial release

10 APPENDIX A: INSTALLATION DIMENSIONS

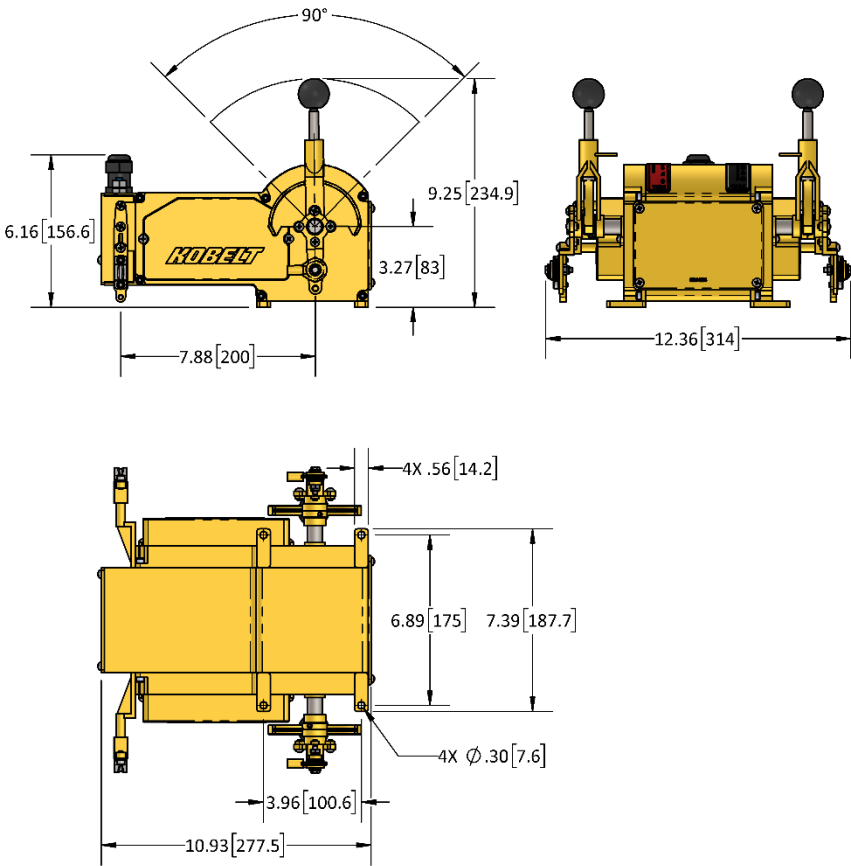


Figure 6: 6524 Installation Dimensions

11 APPENDIX B: PARTS LIST

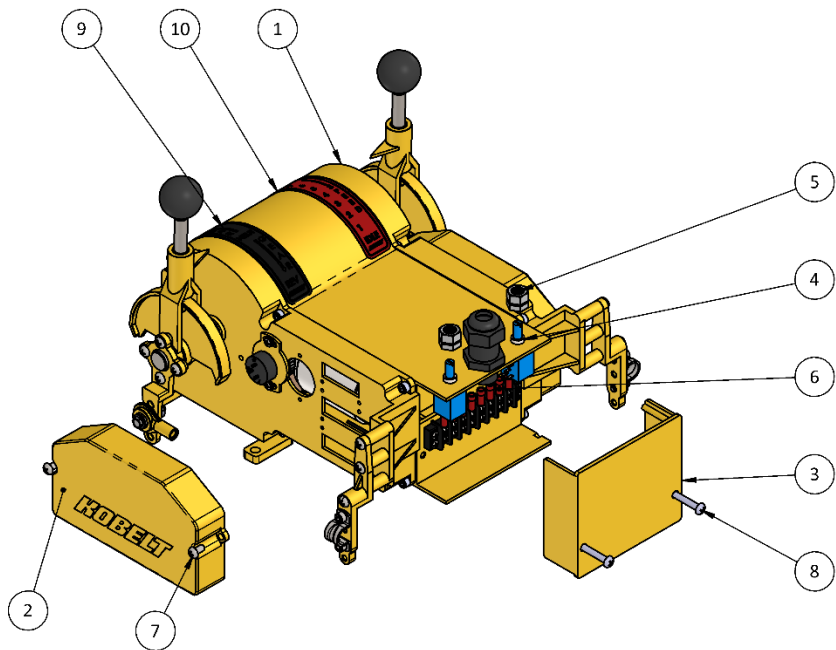


Figure 7: 6524 Parts List

Table 11: 6524 Bill of Materials

ITEM	QTY.	PART NUMBER	DESCRIPTION
1	1	6524-SUB	ACTUATOR, SUB ASSEMBLY 6524
2	2	6524-0004	COVER, SIDE
3	1	6524-0024	COVER
4	2	TRIMPOT-3	TRIMPOT, 1K
5	2	6002-4001	SHAFT LOCK FOR TRIM POT
6	8	6009-6451	FORK TERMINAL, 22-18 AWG, #6 STUD
7	4	1010-0806	SCREW, RND HD PHL, 10-24 X 3/8, 18-8 SS
8	2	1010-0828	SCREW, RND HD, PHL, 10-24 X 1 3/4, 18-8
9	1	LABEL-GEAR	LABEL GEAR BLACK (STICKER), FWD-N-REV
10	1	LABEL-SPEED	LABEL SPEED RED (PLASTIC), FULL - IDLE
11	1	LABEL-AD-MINI	LABEL, ADDRESS, 1.75IN X 0.5IN
12	1	LABEL-CE	LABEL, CE MARK 13/16IN X 13/16IN
13	1	6014-0022W	WIRE, STRANDED, TYPE MW, 22 AWG, WHT
14	1	6014-0022G	WIRE; 22 AWG / 7 STRAND / 300V / TYPE MW / GRN
15	1	6014-0022B	WIRE, STRANDED, TYPE MW, 22 AWG, BLK
16	6	6009-6230	CABLE TIE 0.1IN X 4IN 18LB BLACK

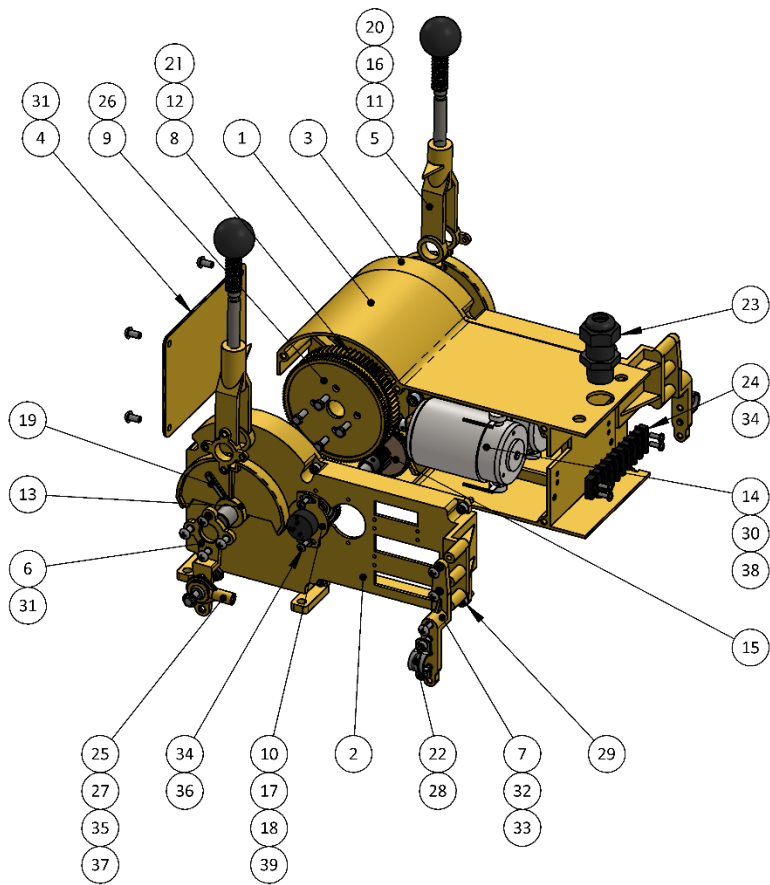


Figure 8: 6524-SUB Parts List

Table 12: 6524-SUB Bill of Materials

ITEM	QTY.	PART NUMBER	DESCRIPTION
1	1	6524-0001	HOUSING - CENTER; ELECTRIC ACTUATOR
2	1	6524-0002	SIDE HOUSING, LEFT
3	1	6524-0003	SIDE HOUSING, RIGHT
4	1	6524-0005	FRONT COVER
5	2	6524-0007	DISCONNECT ARM
6	2	6524-0008	SWING ARM
7	2	6524-0009	STATIONERY ARM
8	2	6524-0010-R	SPUR GEAR - RIGHT; 70T/20DP/20DEG
9	2	6524-0011	SPUR GEAR; 112T/20DP/20DEG
10	2	6524-0013	POTENTIOMETER BRAKET
11	2	6524-0015	SHAFT, HANDLE
12	4	6524-0018	SPRING RETAINER
13	2	6524-1006	CAM SUBASSEMBLY
14	2	6524-1028	Motor With Gear Mounted 24VDC
15	2	6524-1021	SUB ASSEMBLY; PINION GEAR
16	2	2030-0001	HANDLE KNOB, SPHERICAL, BLACK
17	2	YPB-3236	SPUR GEAR - DELRIN; 36T / 32DP / 20DEG / B STYLE - 1/4 BRASS INSERT
18	2	POT-6	POTENTIOMETER; 5K / 340DEG / 22 MM / .25IN SHAFT
19	2	1024-0816	PIN; SLOTTED SPRING; 3/16 DIA X 1LG; AISI 304
20	2	1201-0140	SPRING, COMP, .49 OD X 1.5 LG, AISI 302
21	2	1201-0196	SPRING, COMPRESSION, 0.5 OD X 9.75 LG
22	2	2108-0040	CABLE CLAMP, 40 SERIES
23	1	6009-7840	CABLE GLAND, 1/2 NPT, .27 - .48 CORD, NYLON
24	1	6009-0008	TERMINAL PANEL BLOCK, 8 POS, 15A, 250V
25	2	2144-3	ROD BALL END, 1/4 UNF X 3/16 PIN
26	8	1001-0808	SCREW - HX HD MACH; #10-24 X 1/2IN, 18-8
27	2	1001-0816	SCREW, HEX HD, #10-24 X 1", 18-8 SS
28	4	1002-0806	SCREW, SKT HEAD, 10-24 X 3/8, 18-8 SS, ASTM F837

29	12	1002-0808	SCREW, SKT HEAD, 10-24 X 1/2, 18-8 SS, ASTM F837
30	4	1002-1010	SCREW, SKT HD CAP, 1/4-20 X 5/8, 18-8 SS
31	10	1010-0806	SCREW, RND HD PHL, 10-24 X 3/8, 18-8 SS
32	6	1010-0808	SCREW, RND HD PHIL, #10-24 X 1/2, 18-8 SS
33	2	1010-0820	MACHINE SCREW - RND HD PHL; #10-24 X 1-1/4, 18-8
34	8	1012-0606	SCREW, PAN HD, PHL DRIVE, 6-32 x 3/8IN, 18-8 SS
35	2	1022-0308	LOCKNUT, NYLON, #10-24, ASME B18.16.6, 18-8 SS
36	4	1023-0106	WASHER, FLAT, #6, ANSI B18.22.1 TYPE A, 18-8 SS
37	2	1023-0108	WASHER, FLAT, #10, 7/16 OD, 18-8 SS
38	4	1023-0216	FLAT WASHER, 1/4, TYPE B, NARROW, 18-8 SS
39	2	6639-0001	SHIM WASHER, 10MM X 2MM, AISI 304

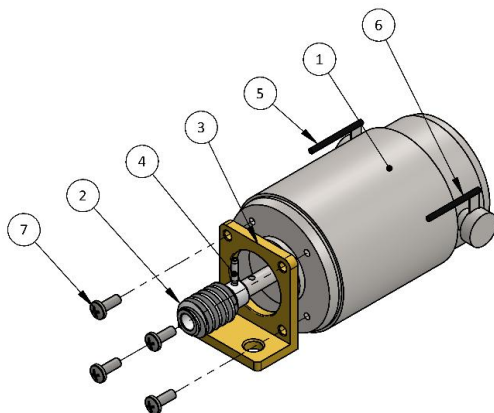


Figure 9: 6524-1028

Table 13: 6524-1028 Bill of Materials

ITEM	QTY.	PART NUMBER	DESCRIPTION
1	1	MOTOR-14202	MOTOR, 24VDC
2	1	6524-0019	WORM, 0.1307IN PITCH X .576IN OD, AISI C12L14
3	1	6524-0012	MOTOR BRACKET
4	1	1024-0406	PIN, SPRING, SLOTTED, 3/32IN X 3/8IN, AISI 420
5	1	6014-0018R	WIRE, STRANDED, TYPE MW, 18 AWG, RED
6	1	6014-0018B	WIRE, STRANDED, TYPE MW, 18 AWG, BLK
7	4	1012-0606	SCREW, PAN HD, PHL DRIVE, 6-32 x 3/8IN, 18-8 SS

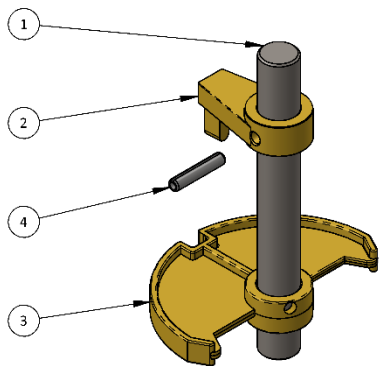


Figure 10: 6524-1006

Table 14: 6524-1006 Bill of Materials

ITEM	QTY.	PART NUMBER	DESCRIPTION
1	1	6524-0016	SHAFT
2	1	6524-0014	TORQUE ARM
3	1	6527-0006	DISCONNECT CAM
4	1	1024-0816	PIN; SLOTTED SPRING; 3/16 DIA X 1LG; AISI 304

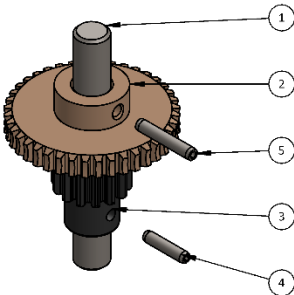


Figure 11: 6524-1021

Table 15: 6524-1021 Bill of Materials

ITEM	QTY.	PART NUMBER	DESCRIPTION
1	1	6524-0017	SHAFT, 3/8IN OD X 2.8IN LG, AISI 303
2	1	6524-0020	WORM WHEEL; 6524 ACTUATOR
3	1	1401-0083	SPUR GEAR, 14T, 20DP, B-STYLE, STEEL
4	1	1024-0509	SPRING PIN, 1/8 X 9/16, AISI 420
5	1	1024-0512	SPRING PIN, 1/8 X 3/4, AISI 420

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