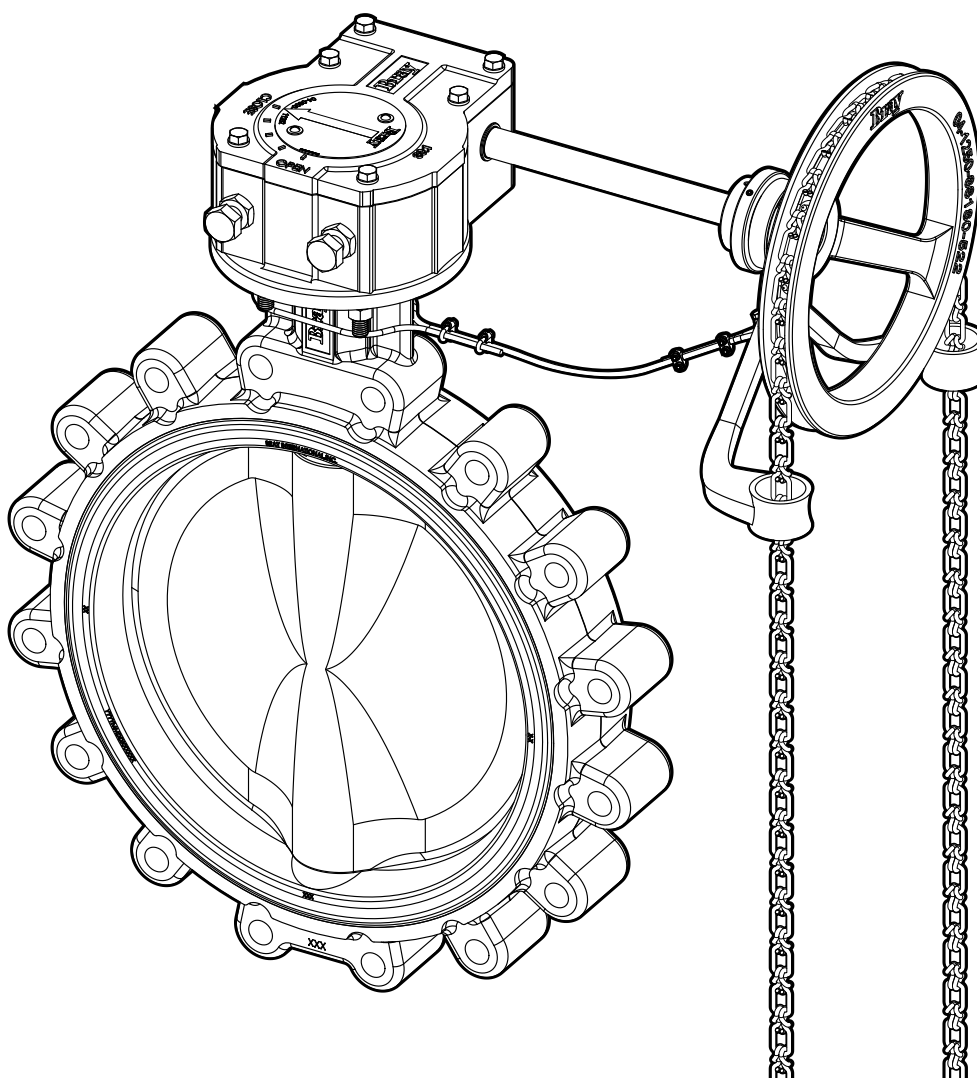

SERIES 04

DIRECT MOUNT SPROCKET CHAINWHEEL

Installation, Operation and Maintenance Manual



Bray®

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**READ AND FOLLOW THESE INSTRUCTIONS CAREFULLY.
SAVE THIS MANUAL FOR FUTURE USE.
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1.0 DEFINITION OF TERMS

All information within this manual is relevant to the safe operation and proper care of your Bray chainwheel. Please understand the following examples of information used throughout this manual.

Specific instructions for non-standard materials of construction, temperature range, etc. should be referred to the factory.

1.1 Safety Statements

To prevent unwanted consequences, standard symbols and classifications are used as shown below:



DANGER

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



WARNING

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



CAUTION

Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.



NOTICE

Used without the safety alert symbol, indicates a potential situation which, if not avoided, may result in an undesirable result or state, including property damage.

NOTE: Provides important information related to a procedure.

2.0 INTRODUCTION

Bray chainwheels are designed to easily attach to Bray S04 gear operators, making them ideal for manual operation of valves positioned in challenging or inaccessible locations. Each chainwheel can be equipped with a safety cable kit, providing an added layer of safety to prevent accidental detachment from the gear operator and its use is strongly recommended to ensure operator safety.

The safety cable kits are available in both galvanized steel and stainless-steel options.

3.0 HAZARD-FREE USE

This device left the factory in proper condition to be safely installed in a hazard-free manner. The notes and warnings in this document must be observed by the user if this safe condition is to be maintained and hazard-free operation of the device assured.

Take all necessary precautions to prevent damage to the retaining safety cable and parts due to rough handling, impact or improper use.

4.0 WARNINGS



1. WARNING

Failure to read, to understand, and to follow warnings and instructions can result in serious injury or fatality.



2. WARNING

Bypassing this safety device may lead to serious injury or fatality.



3. WARNING

Wire cable needs proper care and maintenance for optimal safety and long service life. For a better understanding of wire cable we highly recommend the Wire Rope Users Manual by the Wire Rope Technical Board.



4. WARNING

Inspect wire cable regularly. Use inspection instructions as guidelines only. Check the general condition of the wire cable. Also, look for localized damage and wear, especially at wire cable attachments. Inspect all parts that come in contact with the wire cable. Look for kinks, broken wires, abrasions, lack of lubrication, rust damage, loose threaded fasteners, crushing, and a reduction of diameter, stretch or other obvious damage. If any of these conditions exists or if there is any other apparent damage to the wire cable, dispose of the wire cable. For specific inspection procedures, refer to various OSHA and ANSI publications.



5. WARNING

Attachments must have at least the same Working Load Limit as the wire cable used. Clips, sleeves, shackles, etc. must match in size to provide adequate safety protection. Proper installation of clips to wire, and wire to designated parts of valve is crucial for maximum efficiency and safety.

When applying U-Bolt over dead end of wire cable – live end rests in saddle. Tighten nuts evenly, alternating from one nut to the other. See **Figure 3C** on Page 7.

When creating a loop around specified equipment, the loop must be secure enough so that it will not slip off.

When applying anchor shackle with cotter pin, make sure nut is securely fastened and cotter pin is installed so that the nut cannot come loose from the bolt. See **Figure 4A** on page 7.



6. WARNING

Avoid shock loads. Avoid impacting or jerking of cable. Do not hang from wire cable. Keep out of the line of force of any load. This device is a safety precaution; any unnecessary load placed on the wire cable may reduce its ability to function properly.

5.0 INSTALLATION

5.1 Direct Mount Sprocket Chainwheel Installation

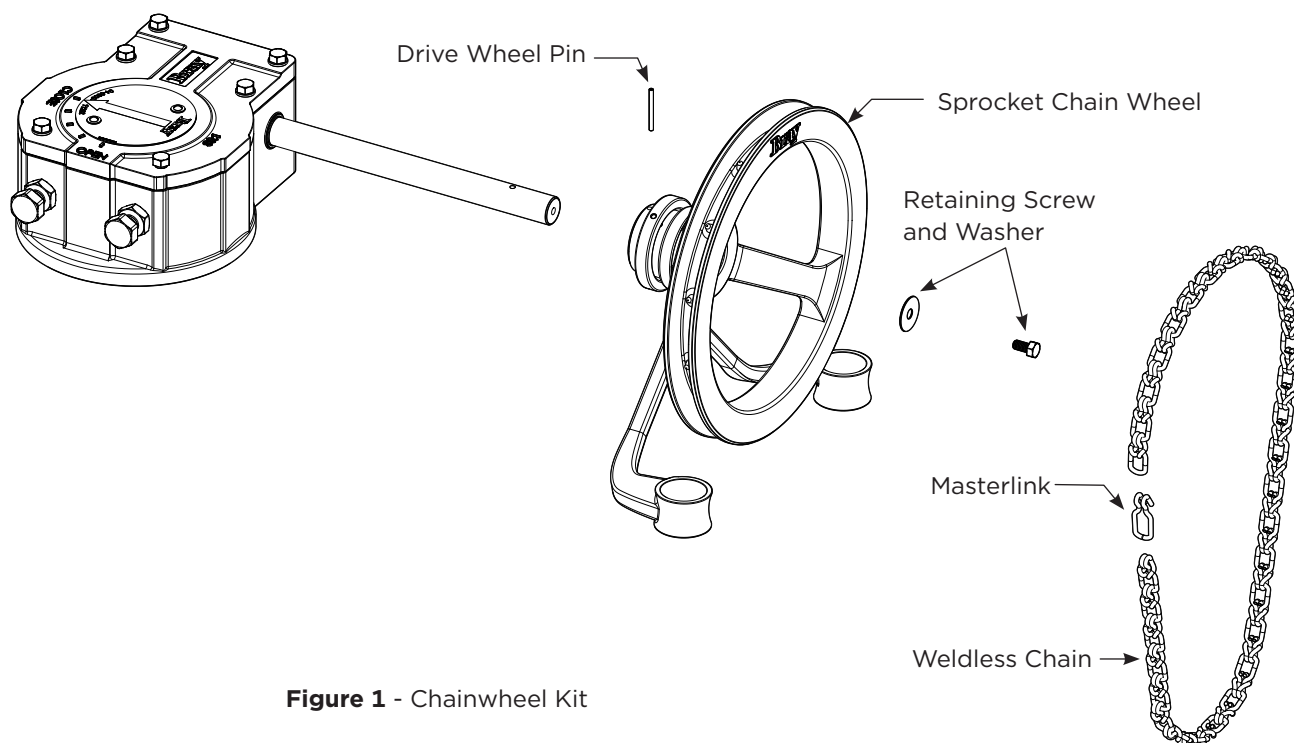


Figure 1 - Chainwheel Kit

Chainwheel Kit

1. If a handwheel is currently attached to the gear operator, carefully remove the drive pin from the handwheel, using a flat punch. Use a 1/8 inch punch for 8 inch and 12 inch handwheels, and a 5/32 inch punch for handwheels 12 inch and larger. If no handwheel is installed, proceed to Step 2.
 - 1.1 Insert the punch into the hole and then carefully advance the punch with a hammer until the slotted pin exits the other side. If done properly, the assembly will not be damaged. See **Figure 2**
 - 1.2 Remove the retaining bolt and washer. See **Figure 3**
 - 1.3 Safely dismount and store the handwheel.
2. Visually inspect the input shaft for any signs of damage or wear.
3. Align the Chainwheel bore with input shaft and slide it onto the shaft.
 - 3.1 Ensure the pin hole on the Chainwheel bore aligns precisely with the pin hole on the input shaft.

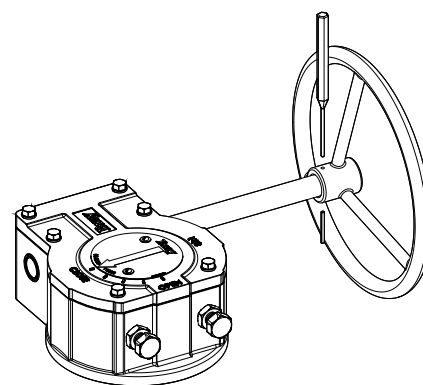


Figure 2

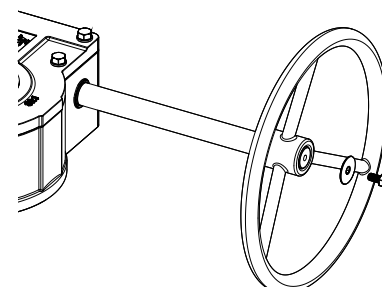


Figure 3

4. Insert the new slotted pin through the aligned pin holes of the chainwheel and input shaft. Ensure the pin is driven straight and it does clear through both holes. See **Figure 4**.
5. Reinstall the washer and retaining bolt to firmly secure the Chainwheel to the gear operator.

5.2 Installing the Single Loop Weldless Chain



CAUTION

Protective gloves must be worn when handling the chain and operating the chainwheel to prevent injury.

Chain Supplied Pre-Installed on Chainwheel

If the chain is already installed on the chainwheel, carefully remove any packaging and unwrap the excess chain that is looped around the chainwheel to expose the full length of the chain.

Chain Supplied Separately from Chainwheel

If the chain is supplied separately, install the chain onto the chainwheel according to the installation steps provided below:

1. Check that the chainwheel is mounted on the gear operator and that the input shaft is parallel to the ground for correct chain alignment and installation.
2. Feed the chain through the entry opening of the chain guide and lay it along the upper circumference of the sprocket wheel, ensuring proper engagement with the sprocket teeth. Verify that the cut sides of the chain links face toward the sprocket wheel.

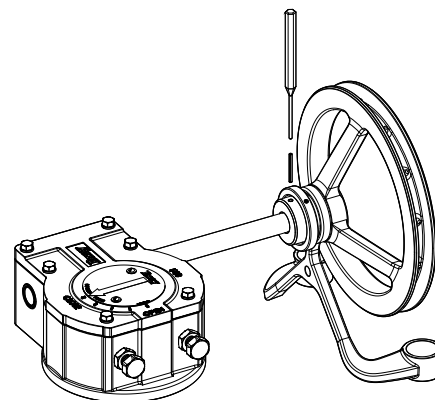


Figure 4

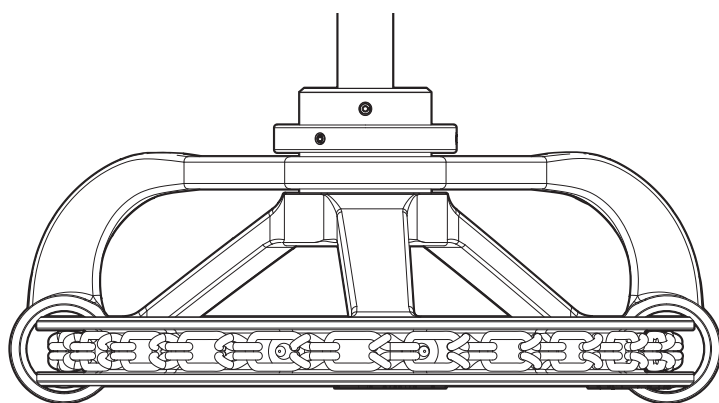


Figure 5

Note: Feed an adequate length of chain through the entry opening so that it can be drawn smoothly through the exit opening of the chain guide. Verify that the chain extends beyond the exit side before continuing assembly.

3. From the opposite side of the sprocket wheel, pull the chain through the exit opening of the chain guide. Draw the remaining chain through the guide while maintaining proper engagement with the sprocket teeth along the top circumference of the sprocket wheel.
4. Locate the chain master link included in the package, which is used to connect the two ends of the chain. See **Figure 6**.
5. Attach the master link to the chain by inserting the looped end of the chain into the open end of the master link. See **Figure 7**

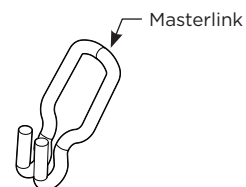


Figure 6

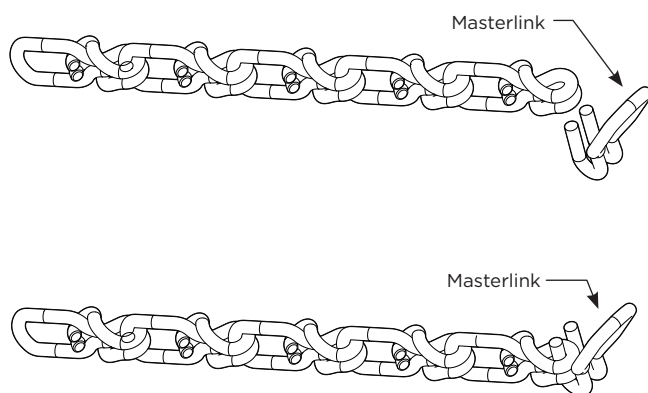


Figure 7

6. Slide the chain fully to the back of the master link as shown in **Figure 8**.

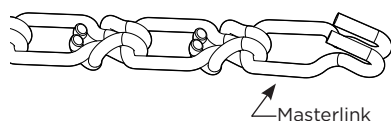


Figure 8

7. Attach the opposite end of the chain to the Masterlink as shown in **Figure 9**.

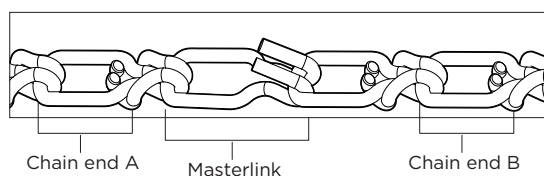


Figure 9

8. Using pliers, firmly grip the master link and crimp its open ends to secure the connection. Ensure the connections

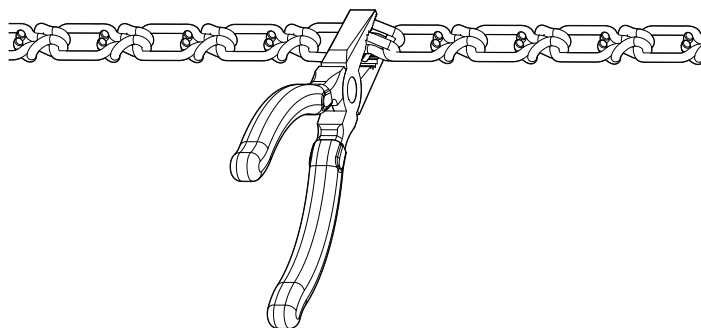


Figure 10

9. Operate the chainwheel to verify the assembly is properly installed.



CAUTION

Ensure chains are securely stored to prevent them from obstructing pathways or creating potential safety hazards.



CAUTION

When hammering near painted surfaces, ensure that the paint is protected to prevent peeling or chipping.

Ensure the chainwheel retaining bolt is properly tightened so it does not loosen during operation. The existing washer helps maintain bolt security, but the bolt must still be fully seated and secure.

All chainwheel installations, regardless of age, must be inspected regularly as part of the user's safety and maintenance procedures.

For added safety, Bray strongly recommends equipping all chain wheels with an appropriately sized retaining cable safety kit.



WARNING

The gear operator chainwheel is attached to the input shaft with a split spring pin that is designed to shear if excessive force is applied, preventing damage to internal gears or housing.

Do not lift the gear operator, with or without the valve, with the chainwheel.

Avoid shock loads, jerking, or impacting the retaining cable.

Never hang from the wire rope and always keep clear of the line of force from any load.

Excessive or unnecessary loads on the wire cable may compromise its ability to function properly and reduce the effectiveness of the safety mechanism.

5.3 Safety Cable Kit Installation - 9" and 12" Chainwheel

Read through and understand all of the instructions before beginning

KIT CONTENTS

Galvanized Steel Kit	Stainless Steel Kit
One 5 ft long $\frac{3}{16}$ in. diameter galvanized wire cable with a stop sleeve on each end.	One 5 ft long $\frac{3}{16}$ in. diameter stainless steel wire cable with a stop sleeve on each end.
Four $\frac{3}{16}$ in. galvanized wire cable clips.	Four $\frac{3}{16}$ in. stainless steel wire cable clips.

1. Dismantle two wire cable clips.
2. Loop wire cable around bracket or neck of valve.
See **Figure 13**.
3. Close the loop by applying a wire cable clip. Secure the loop with the second wire cable clip and firmly tighten all wire cable nuts. See **WARNING Note 5** on page 6 and **Figure 14C**.
4. Dismantle the two remaining wire cable clips.
5. Pass the wire cable through the hole in the chainwheel guide.
6. Close the loop by applying a wire cable clip. Secure the loop with the second wire cable clip as and firmly tighten all wire cable nuts. See **WARNING Note 5** on page 6 and **Figures 14C**.

Figure 13: Valve neck.

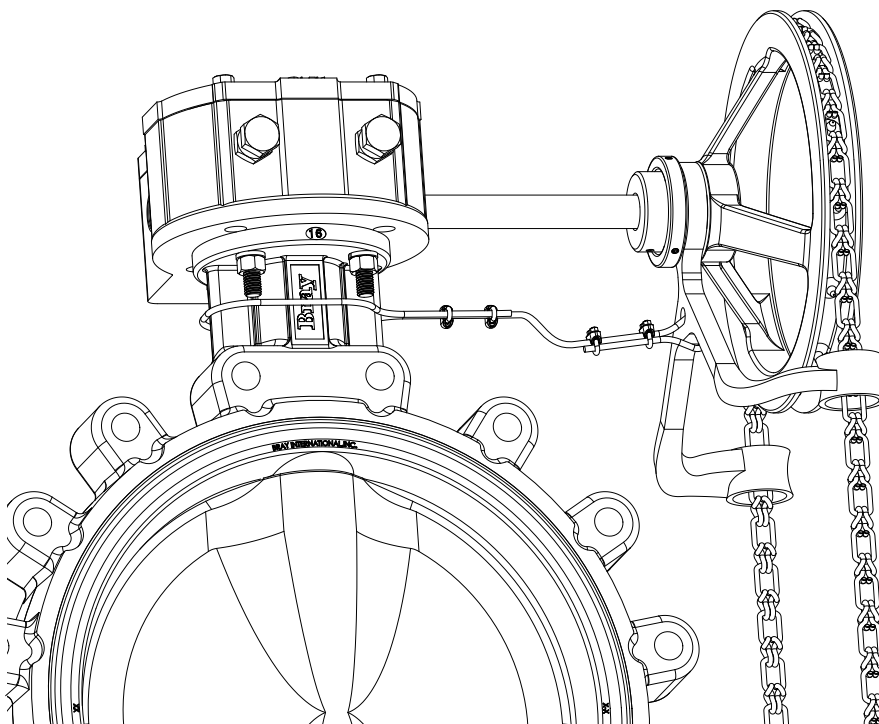


Figure 11: Wire cable and clips.

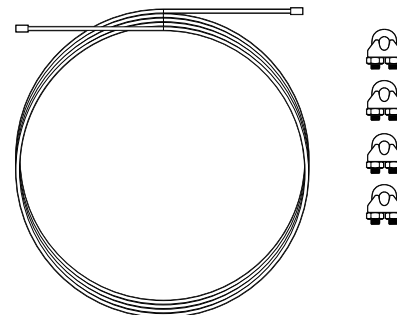
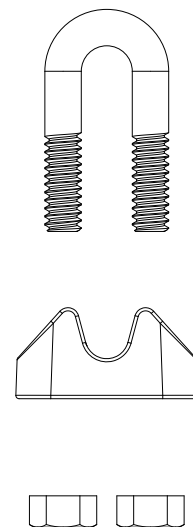
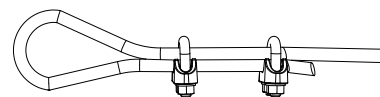


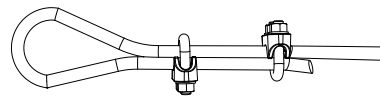
Figure 12: Correct assembly and use of wire cable clips.



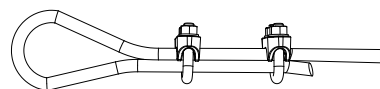
✗ 14A: Incorrect



✗ 14B: Incorrect



✓ 14C: Correct



5.4 Safety Cable Kit Installation - 19" Chainwheel

Read through and understand all of the instructions before beginning

Each Kit Contains:

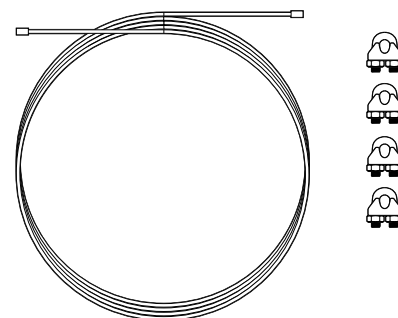
Galvanized Steel Kit	Stainless Steel Kit
One 5 ft long ¼ in. diameter galvanized wire cable with a stop sleeve on each end.	One 5 ft long ¼ in. diameter stainless steel wire cable with a stop sleeve on each end.
Four ¼ in. galvanized wire cable clips.	Four ¼ in. stainless steel wire cable clips.

1. Dismantle the two wire cable clips.
2. Loop wire cable around bracket or neck of valve. See **Figure 17** and **Figure 18**.
3. Close the loop by applying a wire cable clip. Secure the loop with the second wire cable clip and firmly tighten all wire cable nuts. See **WARNING Note 5** on page 6 and **Figure 16C**.
4. Dismantle the two remaining wire cable clips.
5. Pass the wire cable through the hole in the chainwheel guide. See **Figure 17**.

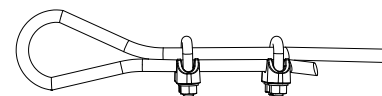
NOTE: Do not use anchor shackle on Direct Mount Chainwheel installation.

6. Close the loop by applying a wire cable clip. Secure the loop with the second wire cable clip and firmly tighten all wire cable nuts. See **WARNING Note 5** on page 6 and **Figure 16C**.

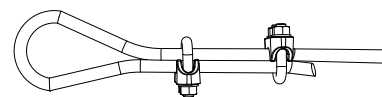
Figure 15: Wire cable and clips.



✗ 16A: Incorrect



✗ 16B: Incorrect



✓ 16C: Correct

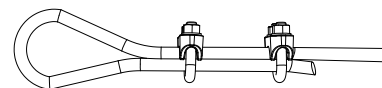


Figure 17: Wire cable secured around the neck of the valve.

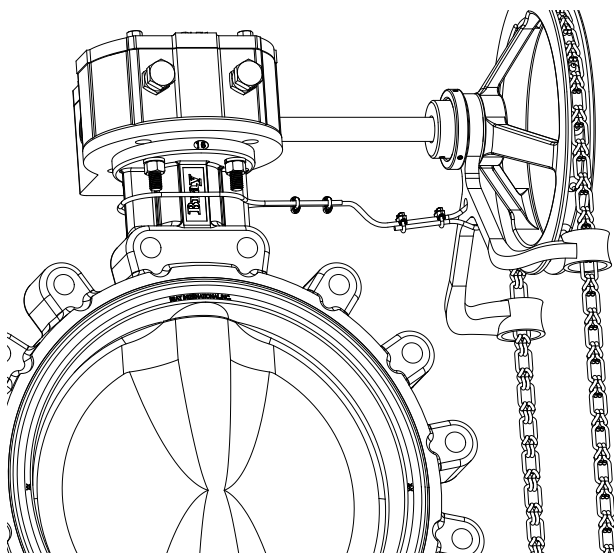
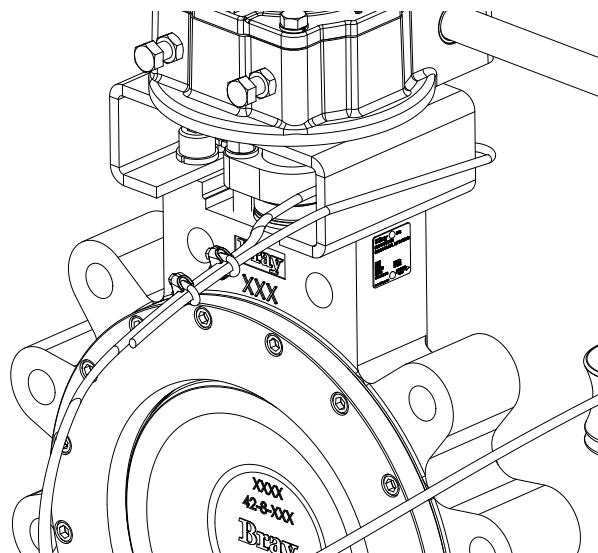


Figure 18: Wire cable secured around the bracket of the valve.



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