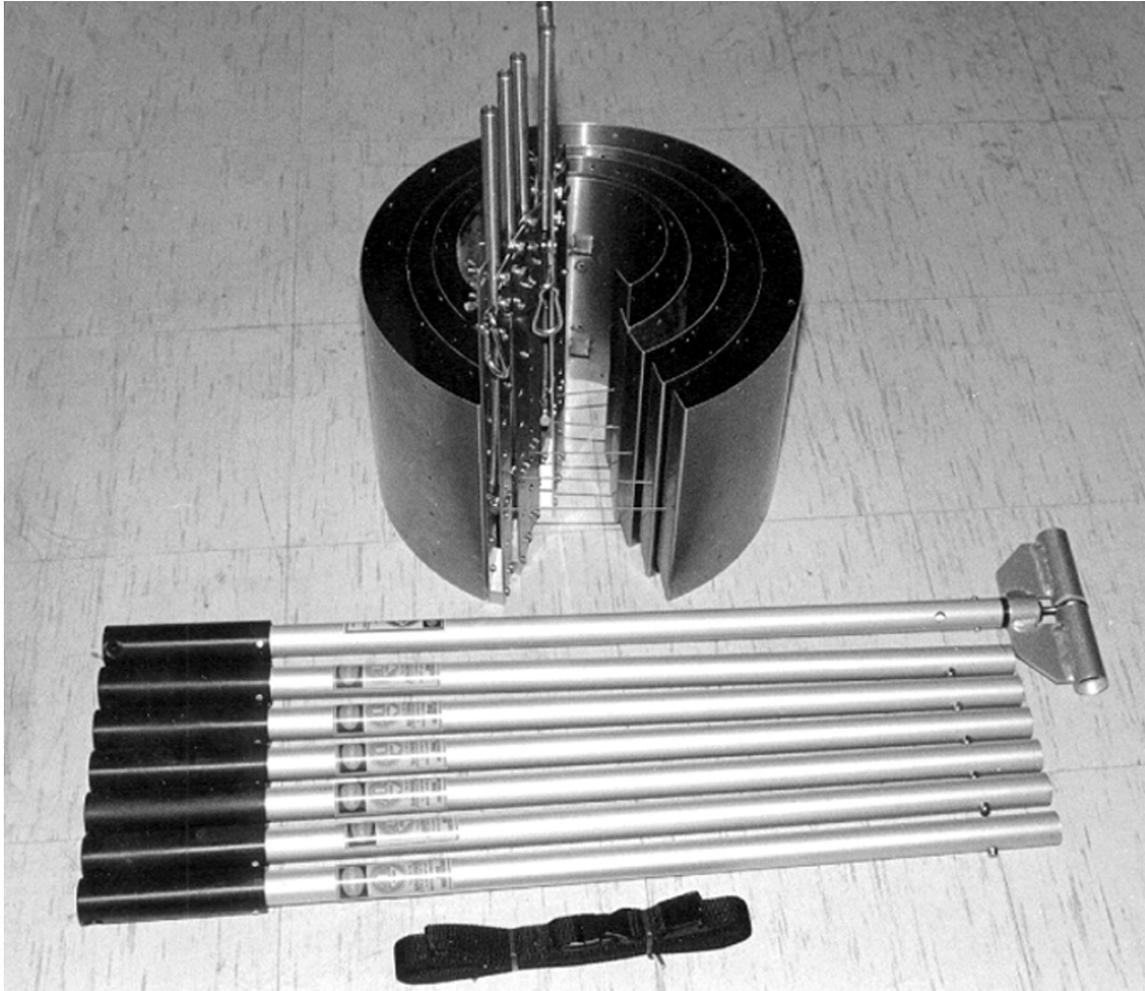


Street Level Installation System

Installation and Operation Guide



Part #60-3203-041
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Revision E, April 18, 2011

Foreword

This instruction manual is designed to help you gain a thorough understanding of the operation of the equipment. Teledyne Isco recommends that you read this manual completely before placing the equipment in service.

Although Teledyne Isco designs reliability into all equipment, there is always the possibility of a malfunction. This manual may help in diagnosing and repairing the malfunction.

If the problem persists, call or e-mail the Teledyne Isco Technical Service Department for assistance. Simple difficulties can often be diagnosed over the phone.

If it is necessary to return the equipment to the factory for service, please follow the shipping instructions provided by the Customer Service Department, including the use of the **Return Authorization Number** specified. **Be sure to include a note describing the malfunction.** This will aid in the prompt repair and return of the equipment.

Teledyne Isco welcomes suggestions that would improve the information presented in this manual or enhance the operation of the equipment itself.

Teledyne Isco is continually improving its products and reserves the right to change product specifications, replacement parts, schematics, and instructions without notice.

Contact Information

Customer Service

Phone: (800) 228-4373 (USA, Canada, Mexico)
(402) 464-0231 (Outside North America)
Fax: (402) 465-3022
Email: IscoCSR@teledyne.com

Technical Support

Phone: (800) 775-2965 (Analytical)
(866) 298-6174 (Samplers and Flow Meters)
Email: IscoService@teledyne.com

Return equipment to: 4700 Superior Street, Lincoln, NE 68504-1398

Other Correspondence

Mail to: P.O. Box 82531, Lincoln, NE 68501-2531
Email: IscoInfo@teledyne.com
Web site: www.isco.com

General Warnings

Before installing, operating, or maintaining this equipment, it is imperative that all hazards and preventive measures are fully understood. While specific hazards may vary according to location and application, take heed of the following general warnings:

 **WARNING**

Avoid hazardous practices! If you use this instrument in any way not specified in this manual, the protection provided by the instrument may be impaired.

 **AVERTISSEMENT**

Éviter les usages périlleux! Si vous utilisez cet instrument d'une manière autre que celles qui sont spécifiées dans ce manuel, la protection fournie de l'instrument peut être affaiblie; cela augmentera votre risque de blessure.

Hazard Severity Levels

This manual applies *Hazard Severity Levels* to the safety alerts. These three levels are described in the sample alerts below.

 **CAUTION**

Cautions identify a potential hazard, which if not avoided, may result in minor or moderate injury. This category can also warn you of unsafe practices, or conditions that may cause property damage.

 **WARNING**

Warnings identify a potentially hazardous condition, which if not avoided, could result in death or serious injury.

 **DANGER**

DANGER – limited to the most extreme situations to identify an imminent hazard, which if not avoided, will result in death or serious injury.

Hazard Symbols

The equipment and this manual use symbols used to warn of hazards. The symbols are explained below.

Hazard Symbols	
Warnings and Cautions	
	The exclamation point within the triangle is a warning sign alerting you of important instructions in the instrument's technical reference manual.
	The lightning flash and arrowhead within the triangle is a warning sign alerting you of "dangerous voltage" inside the product.
Symboles de sécurité	
	Ce symbole signale l'existence d'instructions importantes relatives au produit dans ce manuel.
	Ce symbole signale la présence d'un danger d'électocution.
Warnungen und Vorsichtshinweise	
	Das Ausrufezeichen in Dreieck ist ein Warnzeichen, das Sie darauf aufmerksam macht, daß wichtige Anleitungen zu diesem Handbuch gehören.
	Der gepfeilte Blitz im Dreieck ist ein Warnzeichen, das Sie vor "gefährlichen Spannungen" im Inneren des Produkts warnt.
Advertencias y Precauciones	
	Esta señal le advierte sobre la importancia de las instrucciones del manual que acompañan a este producto.
	Esta señal alerta sobre la presencia de alto voltaje en el interior del producto.

Street Level Installation System

1.1 Introduction

The Street Level Installation System provides a way to install various Isco sensors in round pipe sewers without having to enter the manhole. This system includes an insertion tool with a multi-section pole and five differently-sized expansion rings (6", 8", 10", 12", and 15") with an adjustable strap for each ring. The six pole extensions and the adjustable strap allow installation of the expansion rings in manholes as deep as 15 feet. The difficulty of installation depends on these factors:

- depth of the manhole
- size and slope of the pipe
- depth and velocity of the flow
- condition of the pipe inlet

The outfall from the upstream pipe must be well-finished (round), with no roughness or projections of mortar that could get in the way of the ring or prevent it from entering the pipe.

The insertion tool and poles snap together like the hose and pipes on a vacuum cleaner. The end of the insertion tool slides over a 1/2" diameter stainless steel rod extending from the end of each expansion ring. Turning the insertion tool clockwise after engaging the stainless rod tightens the tool around the rod, securing it. Turning the rod counterclockwise releases the rod from the tool.

Each expansion ring has the necessary slots and holes for mounting a variety of Isco probes and routing the cable out of the stream. There is also the hardware necessary to secure the expansion ring to the stainless steel rod. Note that angling the rod adjusts for the distance in front of you. Attaching the pole to the ring adjusts for the pipe outlet being off-center. Each ring assembly also includes a cable that connects both ends of the ring. This cable ends in a hook near the swivel point of the stainless rod. When the cable is pulled (by the polypropylene strap attached to the cable hook) the expansion ring collapses to a smaller diameter, allowing insertion into the pipe.

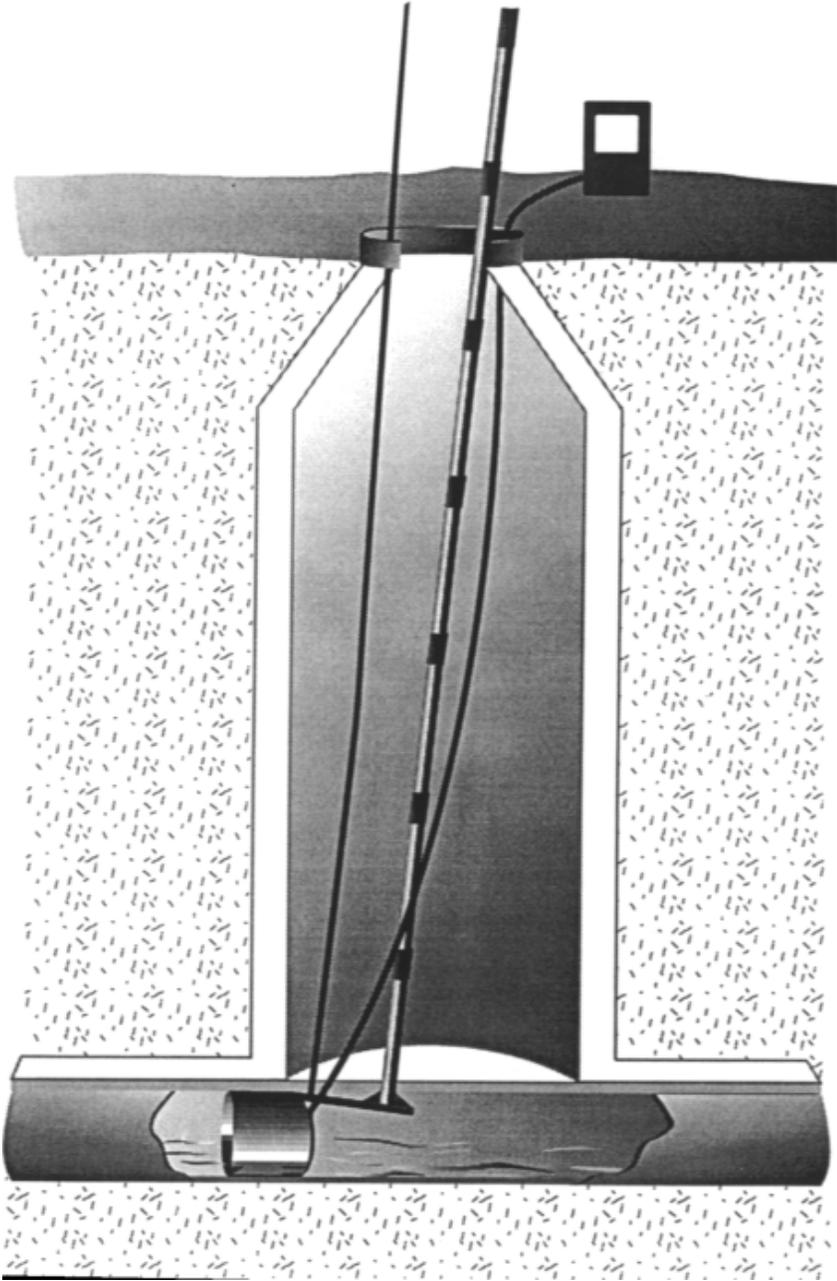


Figure 1-1 The Street Level Installation System in place

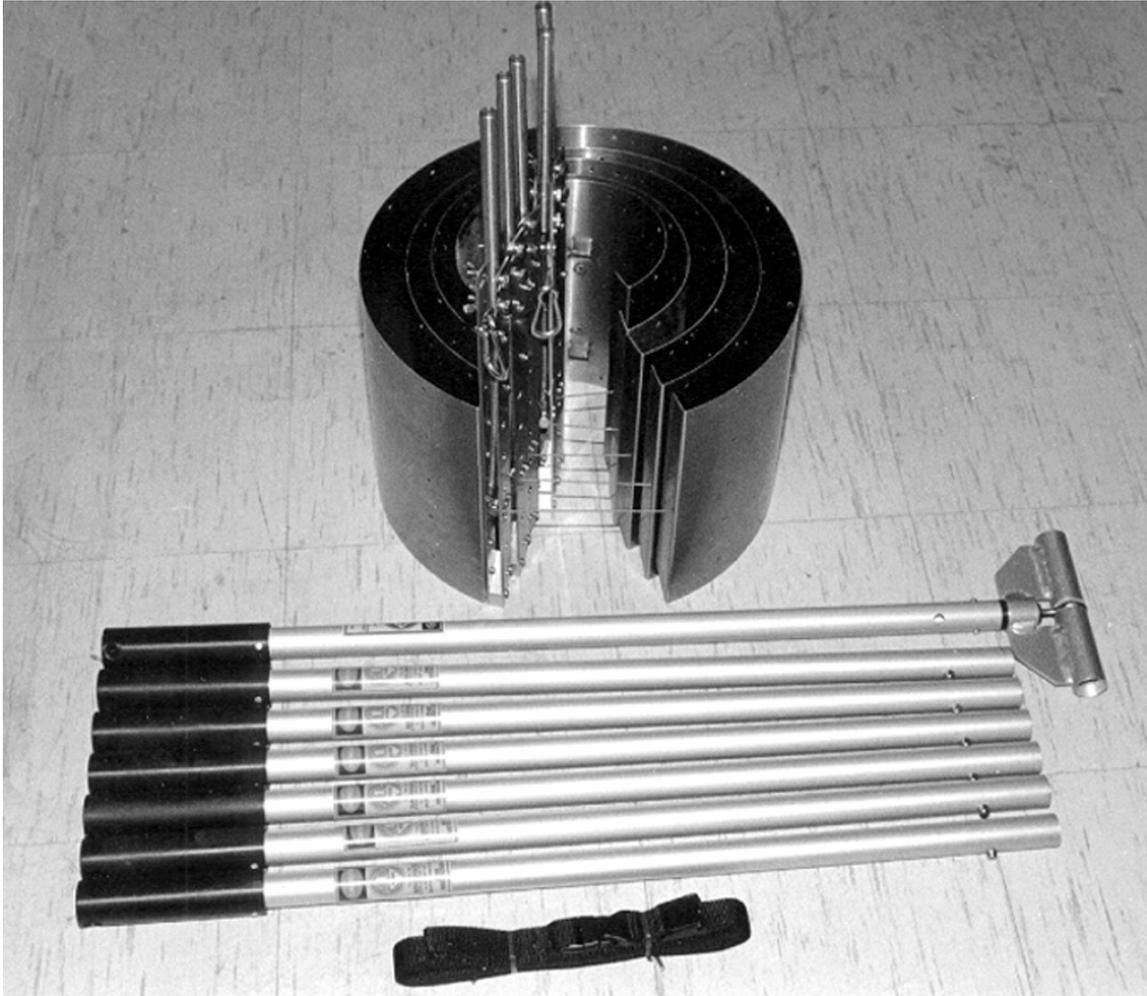


Figure 1-2 Street Level Installation System with all ring sizes and multi-section pole

1.2 Preparation

The system is shipped with the pole shaft collapsed in between the two side rails.

In order to use the system, first remove the screw, wingnut, and washers from the side rails. Fully extend the pole shaft, then reinstall the hardware through the side rails and the hole in the shaft.

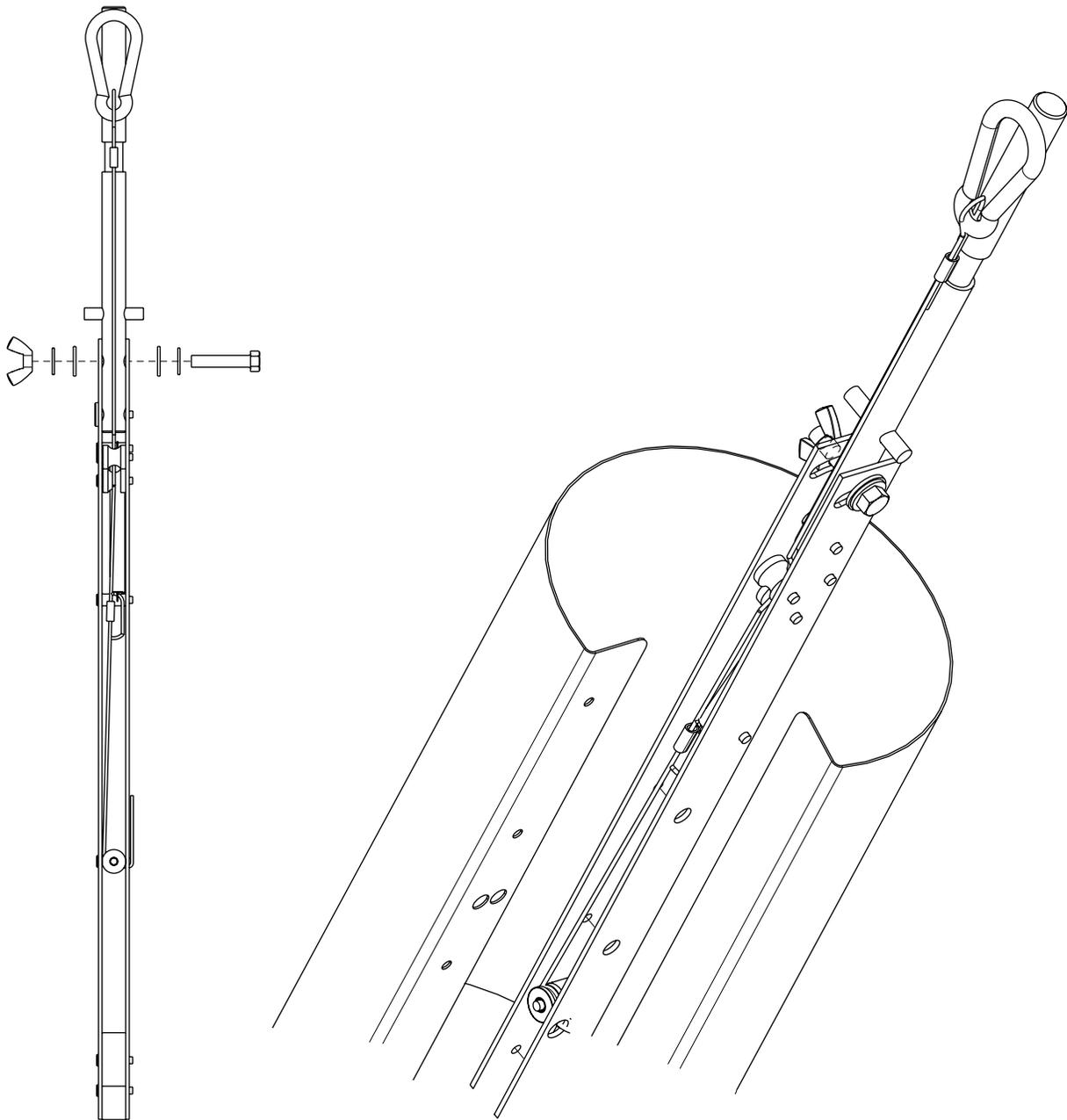


Figure 1-3 Preparing the Street Level System for use

1.3 Installation

To install the system:

1. Connect the non-adjustable end of the strap to the hook on the cable at the ring.
2. Set the ring on the ground so the stainless steel rod and cable are at top center.
3. Slide the insertion tool over the rod. Hold the insertion tool so it is standing upright.
4. Turn the handle clockwise to tighten the insertion tool on the rod. This alignment between the insertion tool and the ring is only suitable if the pipe invert is centered in the manhole or nearly so. If the pipe invert is off-center from the entrance to the manhole, you may have to tighten the handle of the insertion tool at some angle other than vertical so you can lower the ring to the invert.
5. Extend the length of the insertion tool by snapping on the extension poles necessary to make the tool long enough to reach the bottom of the manhole from a standing position above it.



- 1. Do not use this tool in the vicinity of high-voltage power lines. You could be killed if the pole comes in contact with an overhead wire. This hazard is especially great when the weather is wet or the relative humidity is high.**
- 2. Observe all necessary safety precautions for non-entry work around a manhole, such as erecting traffic barriers, checking for hazardous gases, etc.**
- 3. Add enough extensions to the insertion tool to let you hold onto the handle from a comfortable, full-standing position beside the manhole. Too short a pole will force you to lean over the manhole, or crouch over it. Either position is unstable, and you could slip and fall into the manhole, sustaining severe, or possibly even fatal injuries.**
- 4. Be particularly careful installing rings in the 12 and 15-inch pipes when the level is above one half, or flow is moving at a high velocity. The force of the stream striking the ring could jerk the pole from your hands, causing you to lose balance and fall into the hole. Make sure you hold the strap in your hand below your thumb. Be prepared to let the strap slide off your hand if the force of the stream against the ring is too great. Do not slide**

the strap any higher than your thumb; do not wrap it around your hand. Do not secure it to your body in any way that prevents you from letting go quickly. If there is an accident, you could be caught in the strap.

6. Release the camlock on the strap and lengthen the strap to equal the length of the pole. Then close the camlock.
7. Hold the free end of the strap in one hand and lower the pole and ring assembly into the manhole.
8. Set the ring down at the bottom beside the upstream pipe invert.
9. Put your hand inside the loop of the polypropylene strap. *Do not slide the strap beyond your thumb or wrap it around your hand or arm.* Pull up on the strap to tighten the ring to its smallest diameter.
10. With the strap still across your hand, grasp the pole with both hands while still pulling up on the strap. This lets you keep both hands on the pole and minimizes the effort necessary to keep the ring collapsed during the installation process.
11. Lift the ring from beside the invert and carefully guide it into the upstream pipe. *Be prepared for the force of the water against the ring and pole, especially with larger pipes, higher flows, or faster velocities. If necessary, let loose of the pole and strap.* Slide the ring into the invert with the stainless steel rod positioned at the top center of the pipe. Insert the ring fully into the invert so that only the rod is visible.
12. Release the pull on the strap. (Do not drop the strap into the manhole.) This will let the ring expand to the wall of the pipe.
13. Turn the insertion tool counterclockwise to free it from the stainless steel rod.
14. Slide the insertion tool off the stainless steel rod and lift it out of the manhole, being careful to avoid any overhead wires. If there are wires overhead, lift the pole and remove each section, one at a time, as they come into your grasp.
15. Secure the strap by hooking it to a rung inside the manhole. The strap has a buckle in the loop beyond the camlock that you can release and reconnect to secure the loop to the rung. You may want to secure the strap to the rung before removing the insertion tool. This frees both hands for removing the tool.
You can add an additional step to this procedure if you do not wish to measure the depth of the flow stream from outside the manhole.

16. Instead of setting the ring momentarily beside the invert when you begin the installation, set the ring down into the flow stream to allow the sensor (submerged probe or area-velocity sensors only) to reach the same temperature as the water in the flow stream. This will take five to ten minutes.
17. Then lift the ring out of the flow stream and set it beside the invert, as described earlier. Zero the level on the flow meter or flow logger.

Then install the ring as described previously. Note that this method of level measurement is not as accurate as measuring the level after installation.

- First, the installation of the expansion ring and sensor will affect the depth of the stream, particularly at lower levels.
- Second, depth measuring transducers are located near, but not at the bottom of the ring.
- Third, slope, roughness, and other pipe characteristics may have an effect on level.

 CAUTION
--

Hazard of cuts and abrasions from ring hardware.

Sharp edges on the rings are finished, but there is always the possibility of a mishap. If the ring has been in service and is contaminated by sewage, the risk of infection from the cuts increases. To minimize the hazards:

- Wear leather gloves for protection.
- Clean the inserts between installations.

There are two ways to remove the expansion ring. One is to slide the insertion tool extended with pole sections over the stainless steel rod coming from the ring. Turn the pole clockwise until it tightens onto the stainless steel rod. Then untie the polypropylene strap and pull on it to collapse the ring. With the ring collapsed, use the pole to slide it out of the invert. This is essentially the same as the installation procedure in reverse.

The second method is simply to pull on the strap, collapsing the ring. You can then pull the ring out of the invert by alternating pulling on the strap from side to side, “walking” the ring out of the invert. Once the ring is free of the invert, you can lift it out of the manhole with the strap.



This picture shows the correct position of the installer when placing the device in a manhole. He is standing fully upright and off to one side of the manhole. His feet are set apart to help maintain balance and he is not leaning on the pole for support. In this stable position he is unlikely to slip or lose balance even if a strong current in the sewer jerks the pole from his grasp. Because he is not leaning over the manhole, he is in little danger of falling in.

Figure 1-4 Lowering the assembly into the manhole



In this picture, the installer has gripped the pole too far down. This forces him to bend at the waist, and puts his upper body directly over the manhole. In this dangerous position he is actually depending on the pole to help maintain balance. If the force of the flow stream were suddenly to jerk the pole sharply or pull it from his hands, he could easily lose balance and fall into the manhole.

- Never lean over the manhole.
- Never lean on the pole for support.
- Never assemble the pole before insertion if power lines are overhead. Add sections one at a time while lowering the pole into the manhole.
- Always stand back from the manhole edge.
- Never work alone.

Figure 1-5 Incorrect position for installation



Figure 1-6 Inserting ring into upstream channel

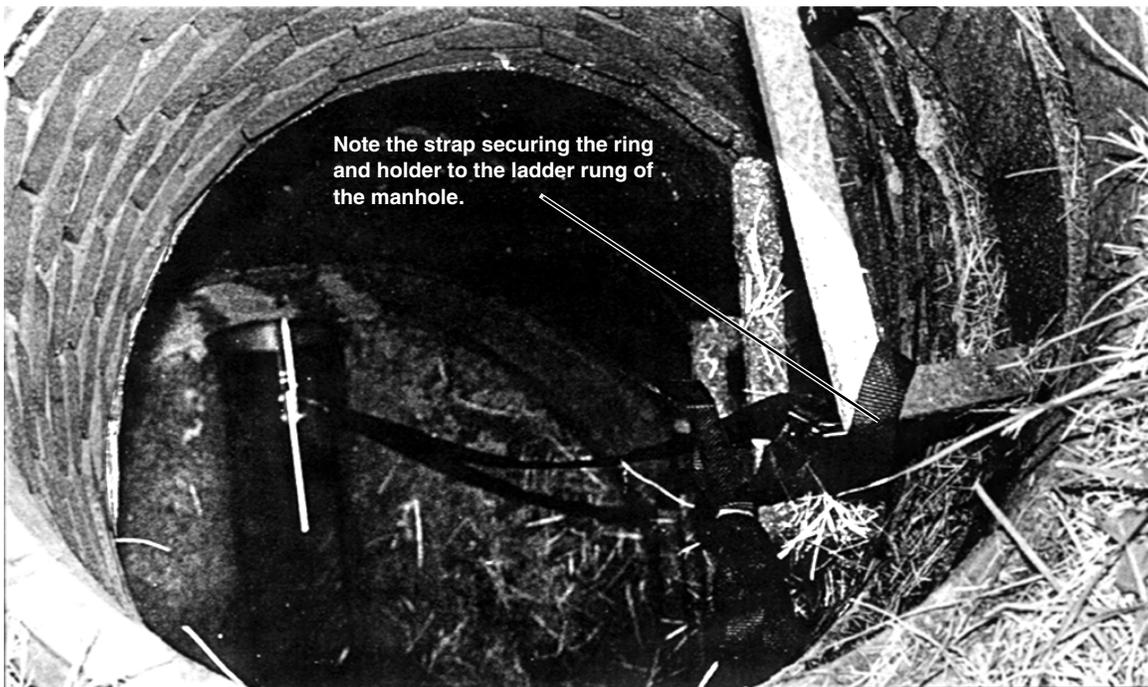


Figure 1-7 Completed installation

1.4 Replacement Parts List

Replacement parts are called out in illustrations in this section. Reference the call-outs in the accompanying tables to determine the part number for the item.

Replacement parts can be purchased by contacting Teledyne Isco's Customer Service Department.

Teledyne Isco, Inc.

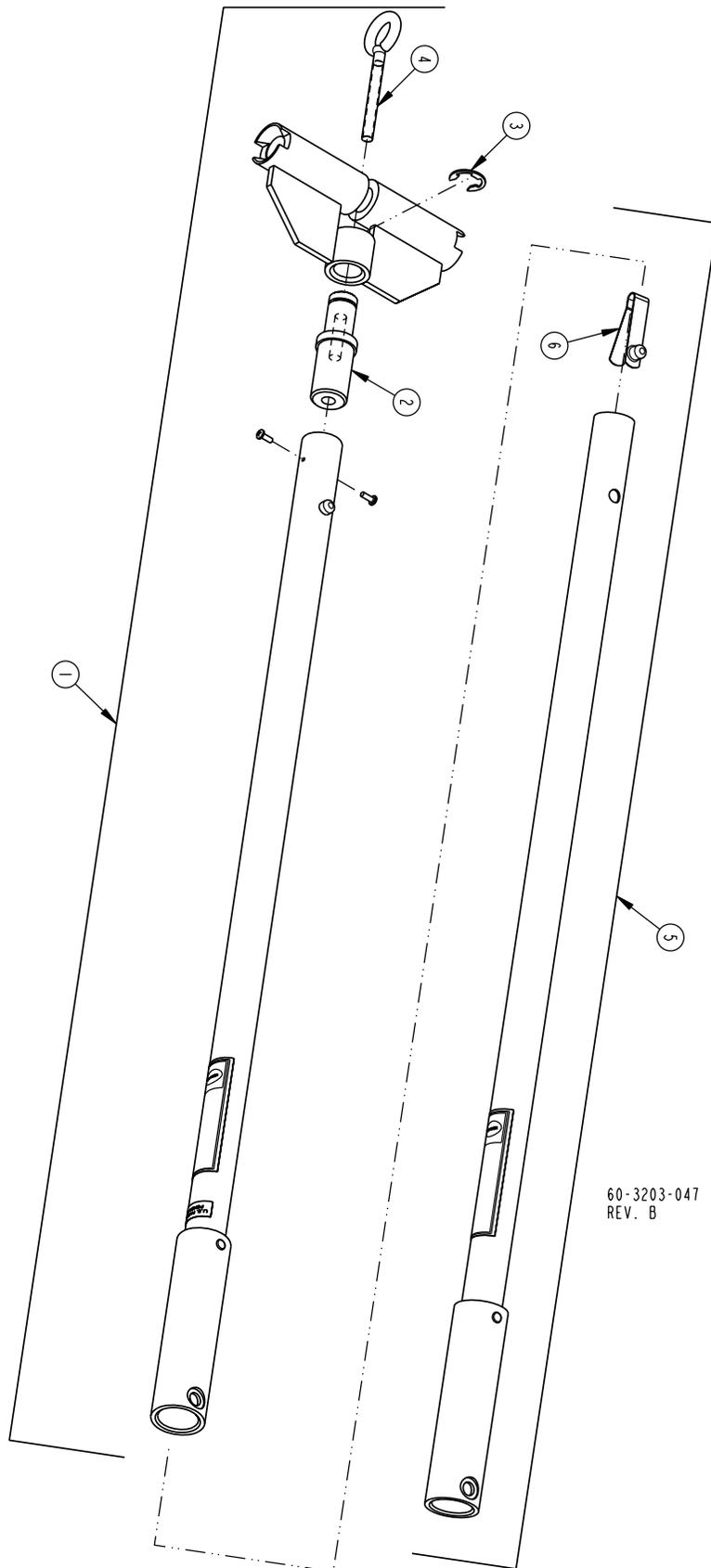
Customer Service Department
P.O. Box 82531
Lincoln, NE 68501 USA

Phone: (800) 228-4373

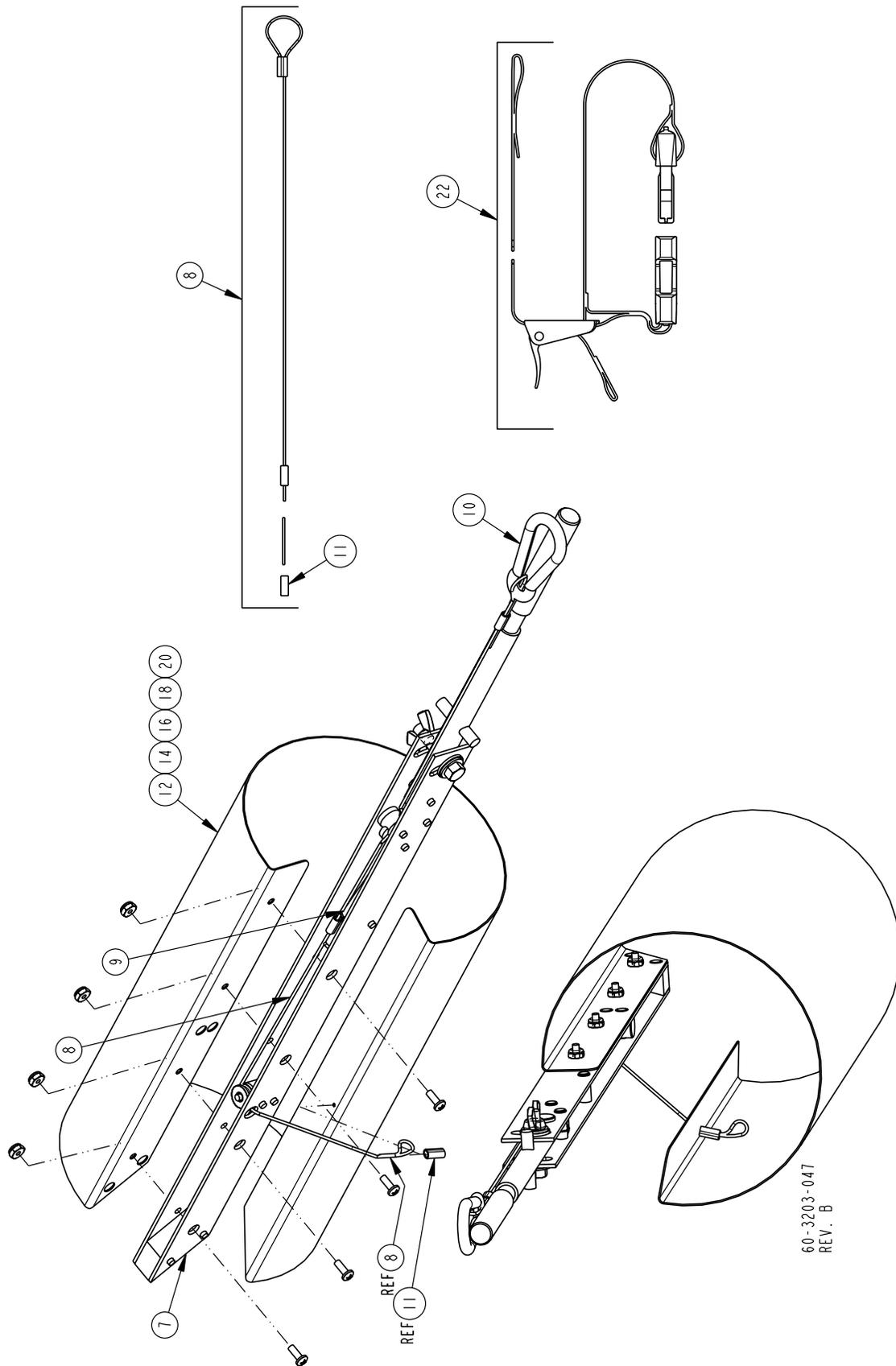
(402) 464-0231

FAX: (402) 465-3022

E-mail: IscoInfo@teledyne.com



60-3203-047
REV. B



60-3203-047
REV. B

REPLACEMENT PARTS LIST		
Isco, Inc.		603203047 SHEET: 3 OF 3 REV: B DATE: 03346
ITEM NO.	PART NUMBER	DESCRIPTION
1	603204020	MOUNTING RING INSERTION TOOL ASSEMBLY INCLUDES ITEMS 2, 3, 4
2	603203038	CLAMP BODY NUT
3	209001075	RETAINING RING, EXTERNAL, .75 SHAFT
4	603203040	EYE BOLT MODIFICATION
5	602814046	POLE SECTION ASSEMBLY INCLUDES ITEM 6
6	603004114	SNAP BUTTON ASSEMBLY
7	603204013	STREET LEVEL SIDE PLATE ASSEMBLY INCLUDES ITEM 11, CABLE, AND INSTRUCTIONS
8	603204022	CABLE KIT INCLUDES ITEM 11, CABLE, AND INSTRUCTIONS
9	203210068	EXTENSION SPRING, .020 DIAMETER WIRE, .312 OD X 2.125 LONG
10	209900300	SPRING HOOK, 1/4", STAINLESS STEEL
11	209900502	SLEEVE, STAINLESS STEEL, OVAL, 1/16"
12	603203031	STREET LEVEL MOUNTING RING, 6"
14	603203032	STREET LEVEL MOUNTING RING, 8"
16	603203033	STREET LEVEL MOUNTING RING, 10"
18	603203034	STREET LEVEL MOUNTING RING, 12"
20	603203035	STREET LEVEL MOUNTING RING, 15"
22	603204011	MOUNTING RING INSERTION STRAP ASSEMBLY
NOTE: 1. For current prices and quotations on parts, contact Isco Service Department. 2. This list is subject to change without notice.		

Teledyne Isco One Year Limited Warranty*

Factory Service for Teledyne Isco Flow Meters, Waste Water Samplers, and Syringe Pumps

This warranty exclusively covers Teledyne Isco instruments, providing a one-year limited warranty covering parts and labor.

Any instrument that fails during the warranty period due to faulty parts or workmanship will be repaired at the factory at no charge to the customer. Teledyne Isco's exclusive liability is limited to repair or replacement of defective instruments. Teledyne Isco is not liable for consequential damages.

Teledyne Isco will pay surface transportation charges both ways within the 48 contiguous United States if the instrument proves to be defective within 30 days of shipment. Throughout the remainder of the warranty period, the customer will pay to return the instrument to Teledyne Isco, and Teledyne Isco will pay surface transportation to return the repaired instrument to the customer. Teledyne Isco will not pay air freight or customer's packing and crating charges. This warranty does not cover loss, damage, or defects resulting from transportation between the customer's facility and the repair facility.

*** This warranty applies to the USA and countries where Teledyne Isco Inc. does not have an authorized dealer. Customers in countries outside the USA, where Teledyne Isco has an authorized dealer, should contact their Teledyne Isco dealer for warranty service.**

The warranty for any instrument is the one in effect on date of shipment. The warranty period begins on the shipping date, unless Teledyne Isco agrees in writing to a different date.

Excluded from this warranty are normal wear; expendable items such as charts, ribbon, lamps, tubing, and glassware; fittings and wetted parts of valves; and damage due to corrosion, misuse, accident, or lack of proper maintenance. This warranty does not cover products not sold under the Teledyne Isco trademark or for which any other warranty is specifically stated.

No item may be returned for warranty service without a return authorization number issued by Teledyne Isco.

This warranty is expressly in lieu of all other warranties and obligations and Teledyne Isco specifically disclaims any warranty of merchantability or fitness for a particular purpose.

The warrantor is Teledyne Isco, Inc. 4700 Superior, Lincoln, NE 68504, U.S.A.

Before returning any instrument for repair, please call, fax, or e-mail the Teledyne Isco Service Department for instructions. Many problems can often be diagnosed and corrected over the phone, or by e-mail, without returning the instrument to the factory.

Instruments needing factory repair should be packed carefully, and shipped to the attention of the service department. Small, non-fragile items can be sent by insured parcel post. **PLEASE BE SURE TO ENCLOSE A NOTE EXPLAINING THE PROBLEM.**

Shipping Address: Teledyne Isco, Inc. - Attention Repair Service
4700 Superior Street
Lincoln, NE 68504 USA

Mailing Address: Teledyne Isco, Inc.
PO Box 82531
Lincoln, NE 68501 USA

Phone: Repair service: (800) 775-2965 (lab instruments)
(866) 298-6174 (samplers & flow meters)
Sales & General Information: (800) 228-4373 (USA & Canada)

Fax: (402) 465-3001

Email: IscoService@teledyne.com



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