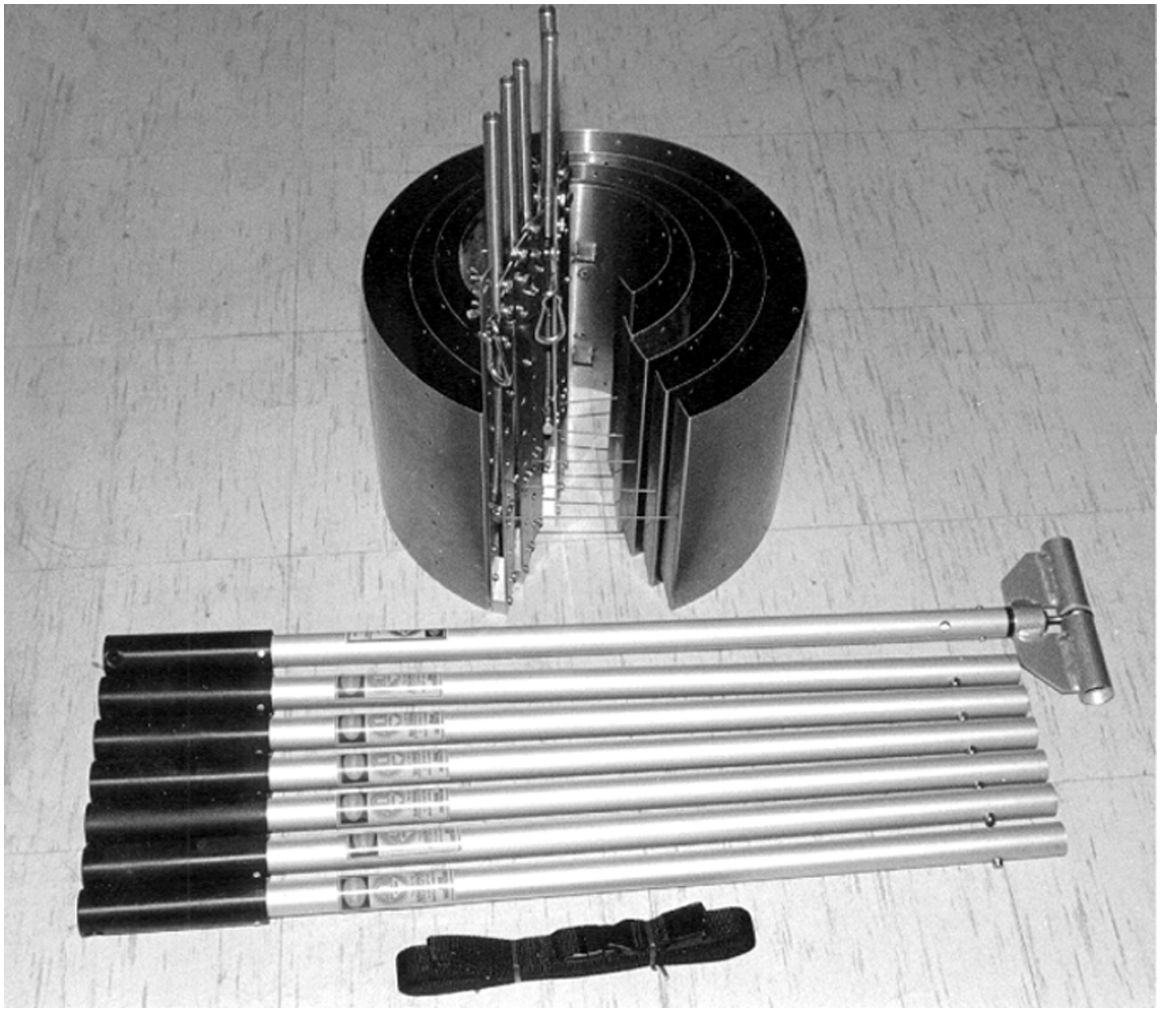
Street Level Installation System

Installation and Operation Guide



Part #60-3203-041

Revision C, January 2004

Isco, Inc.

Foreword

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

Although 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 email the Isco Customer Service Department for assistance. Contact information is provided below. 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.

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

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

Contact Information

Phone:	(800) 228-4373	(USA, Canada, Mexico)
	(402) 464-0231	(Outside North America)
Repair Service:	(800) 775-2965	(Analytical and Process Monitoring Instruments)
	(800) 228-4373	(Samplers and Flow Meters)
Fax:	(402) 465-3022	
Email address:	info@isco.com	
Website:	www.isco.com	

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

Other correspondence: P.O. Box 82531, Lincoln, NE 68501-2531

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 in the following general warnings.

This product is often used in confined spaces. Some examples of confined spaces are manholes, pipelines, digesters, and storage tanks. These spaces may become hazardous environments that can prove fatal for those unprepared. These spaces are governed

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 Sei 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.

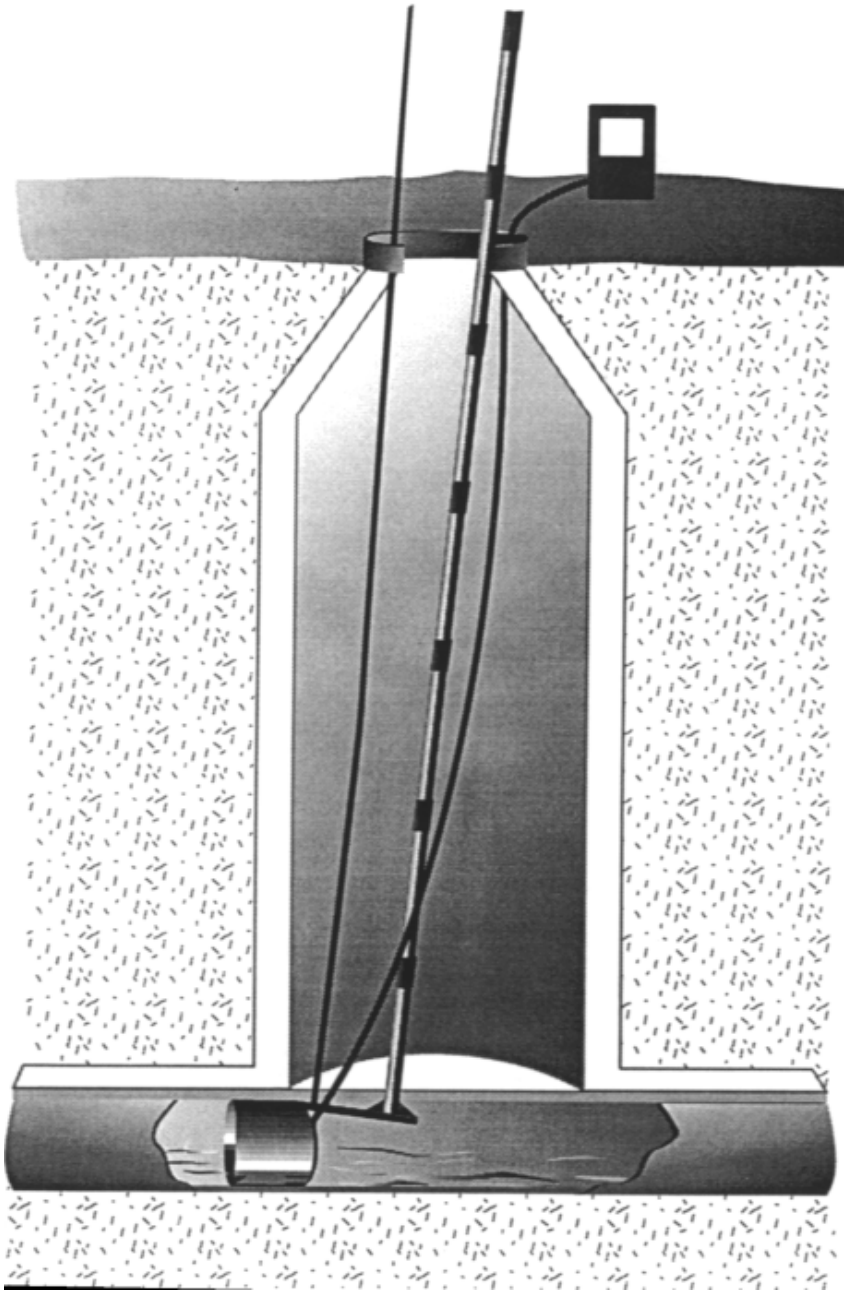


Figure 1-1 The Street Level Installation System in Place

1.2 Installation

Use the following installation procedure:

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.

⚠ DANGER

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 comfort able, 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.

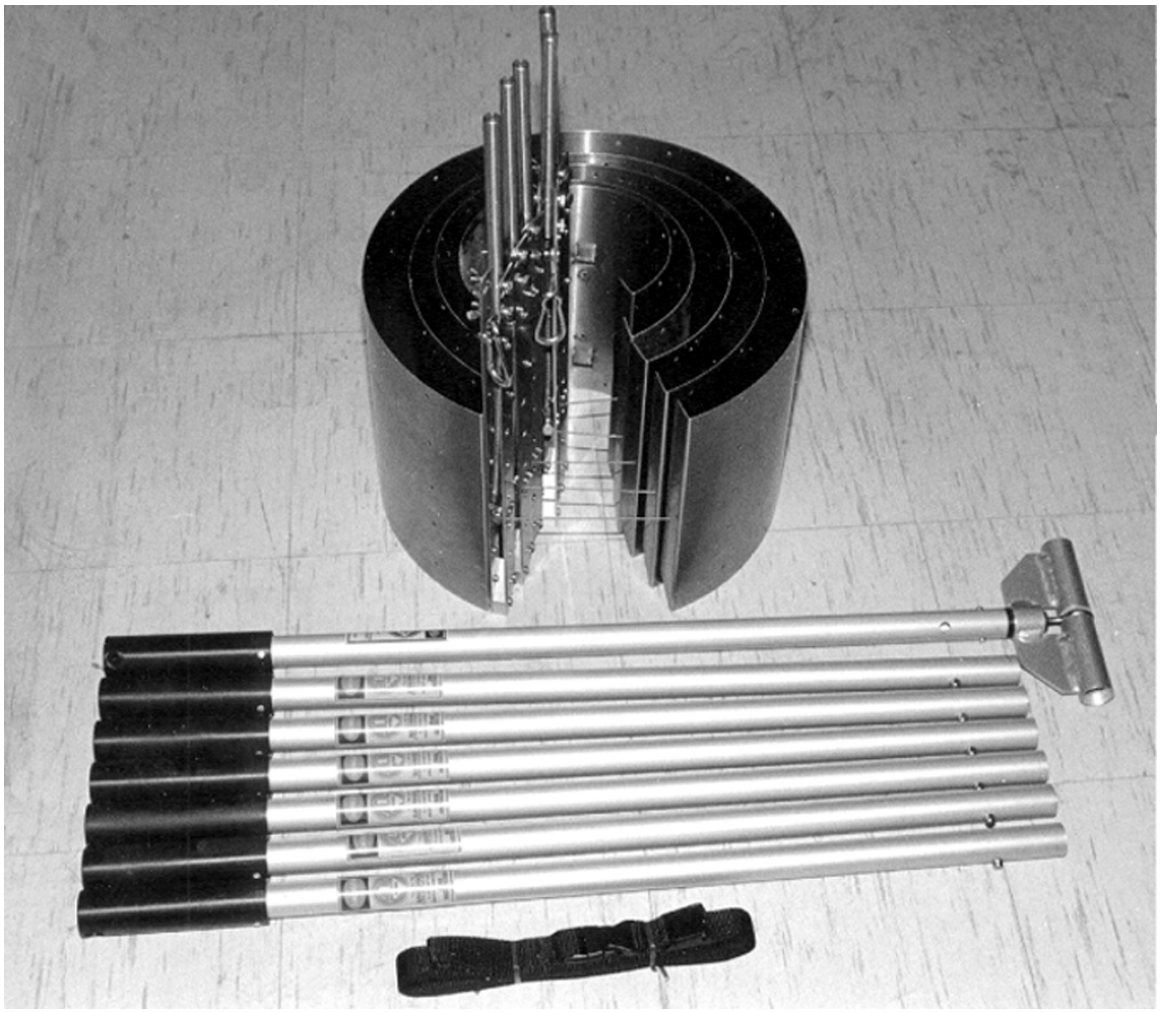


Figure 1-2 The Street Level Installation System, Showing Rings and the Multi-Section Pole

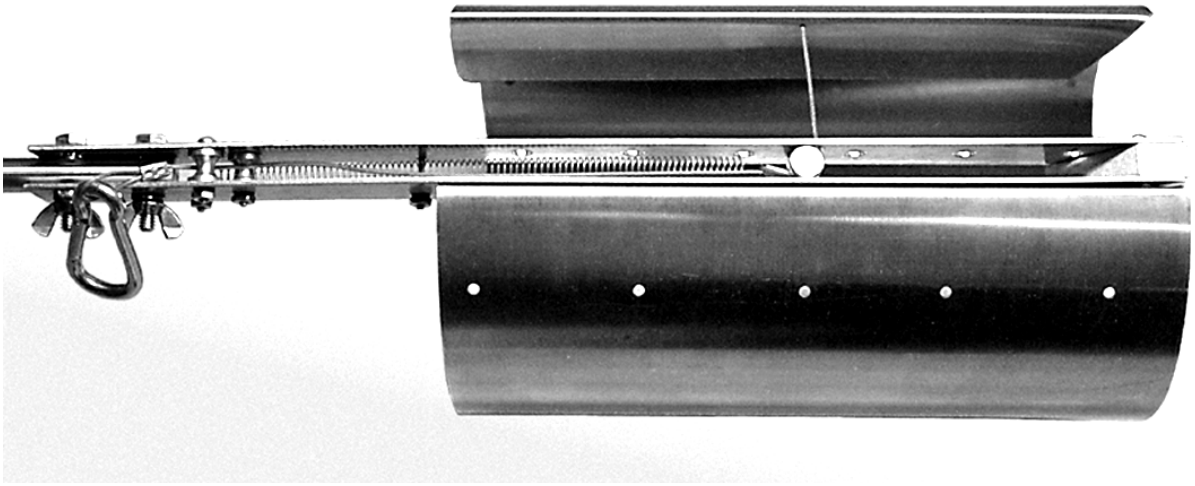


Figure 1-3 Close-Up View of the 6" Ring, Showing Cable and Linkage

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 the Ring in the Upstream Channel

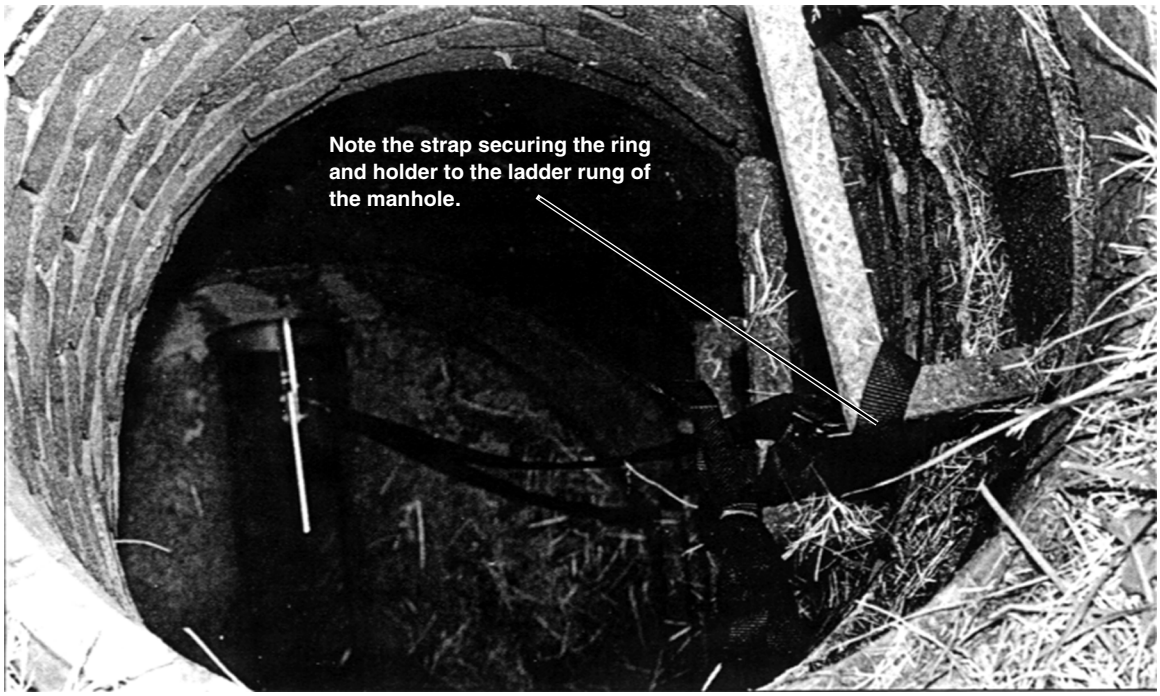


Figure 1-7 The Completed Installation

1.3 Replacement Parts List

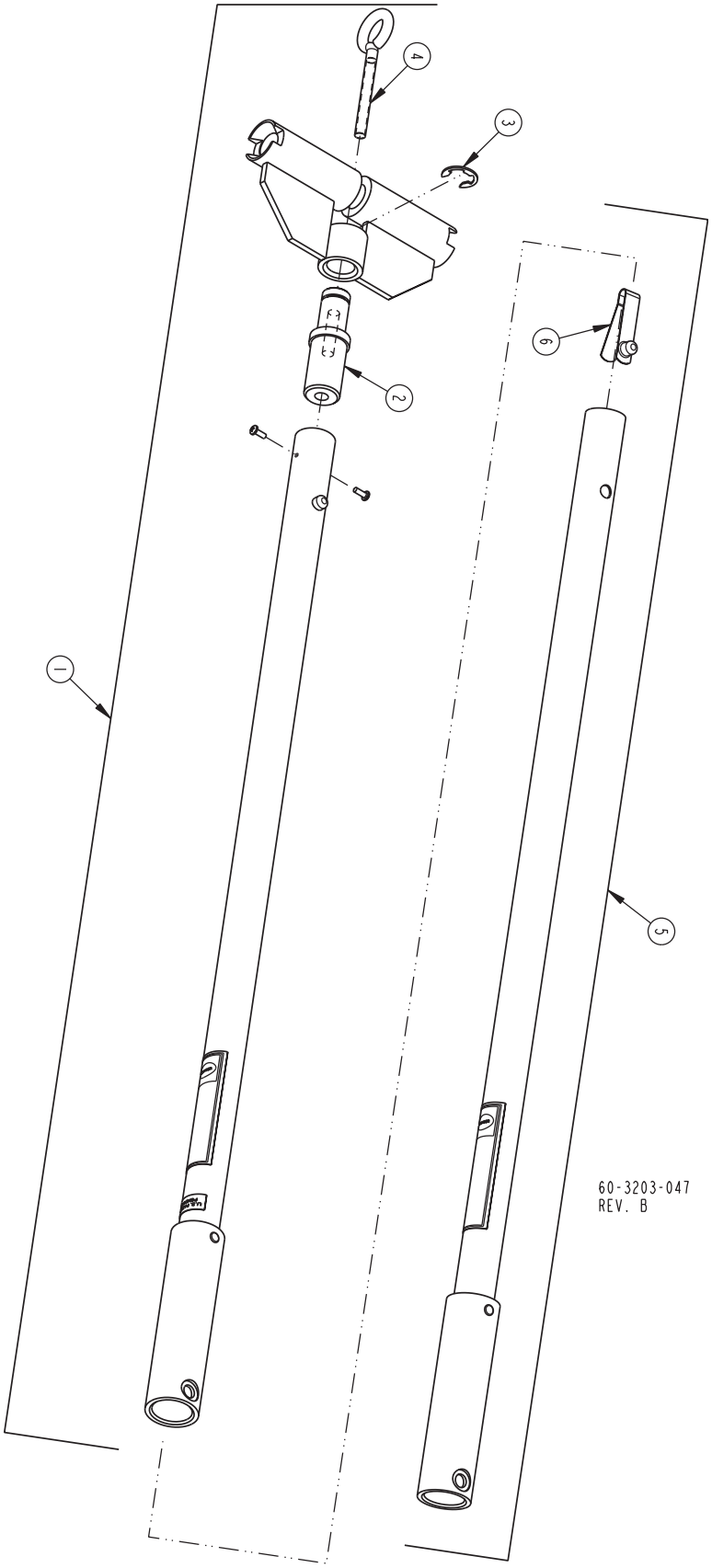
The following pages contain a list of replacement parts for the Isco Street Level Installation System. The illustrations show the location of the numbered parts, which are described in the accompanying table.

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

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: info@isco.com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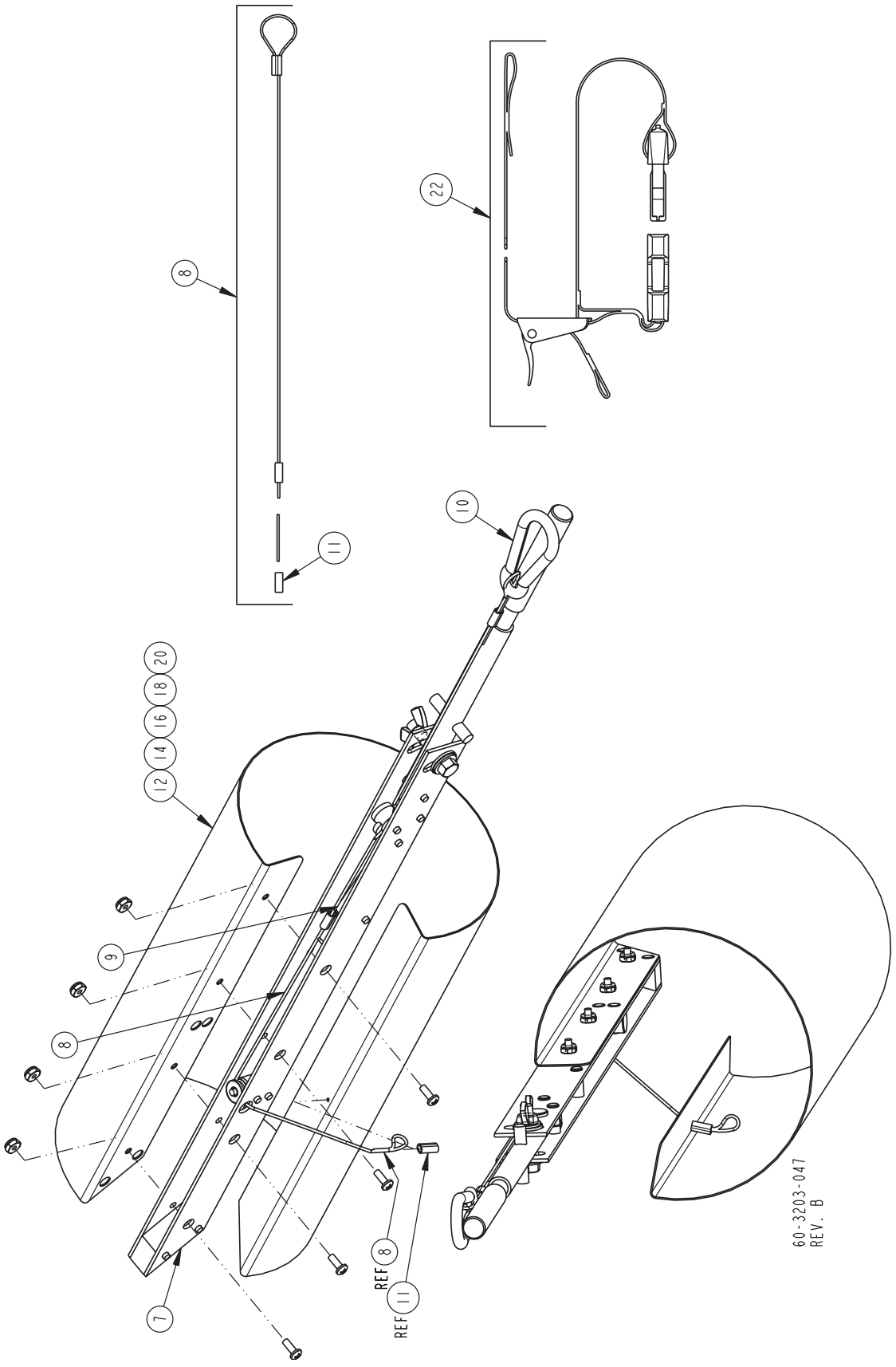
REV. B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REV. B

603203047

REPLACEMENT PARTS LIST

SHEET: 3 OF 3

Isco, Inc.

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.

*Isco One Year Limited Factory Service Warranty **

Isco warrants covered products against failure due to faulty parts or workmanship for a period of one year (365 days) from their shipping date, or from the date of installation by an authorized Isco Service Engineer, as may be appropriate.

During the warranty period, repairs, replacements, and labor shall be provided at no charge. Isco's liability is strictly limited to repair and/or replacement, at Isco's sole discretion.

Failure of expendable items (e.g., charts, ribbon, tubing, glassware, seals and filters), or from normal wear, accident, misuse, corrosion, or lack of proper maintenance, is not covered. Isco assumes no liability for any consequential damages.

Isco specifically disclaims any warranty of merchantability or fitness for a particular purpose.

This warranty applies only to products sold under the Isco trademark and is made in lieu of any other warranty, written or expressed.

No items may be returned for warranty service without a return authorization number issued from Isco.

This warranty does not apply to the following products: Process Analyzers, SFX 3560 SFE Extractor, 6100 VOC Sampler.

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

*** This warranty applies to USA customers. Customers in other countries should contact their Isco dealer for warranty service.**

In the event of instrument problems, always contact the Isco Service Department, as problems can often be diagnosed and corrected without requiring an on-site visit. In the U.S.A., contact Isco Service at the numbers listed below. International customers should contact their local Isco agent or Isco International Customer Service.

Return Authorization

A return authorization number must be issued prior to shipping. Following authorization, Isco will pay for surface transportation (excluding packing/crating) both ways for 30 days from the beginning of the warranty period. After 30 days, expense for warranty shipments will be the responsibility of the customer.

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

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

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

Fax: (402) 465-3001

Email: service@isco.com

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