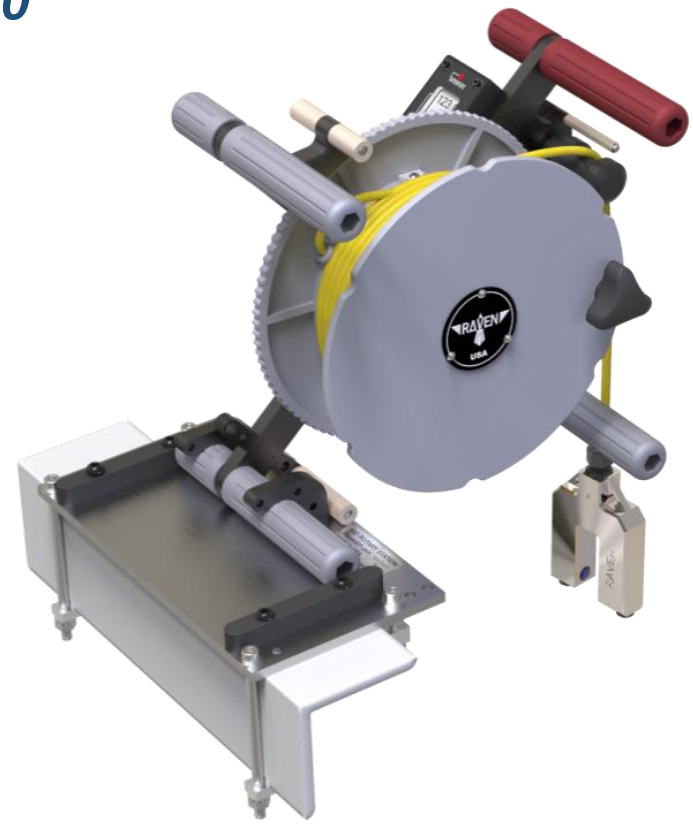
SID Rotary

Sludge Interface Detector

Model: S-40100



Thank you for purchasing a Raven Environmental Products process control instrument. Our Customer Service Department is staffed with product experts to assist you. Please contact Customer Service at 800-545-6953 and visit us at ravenep.com.

RAVEN

MADE IN USA

Rev 200928

TOOL DESCRIPTION

The Raven SID Rotary is a portable field instrument designed specifically to detect the sludge blanket interface and display the interface elevation with digital precision.

A robust protective cage, IP67 sealed IRED electronics, modular components, and a solid stainless steel sensor probe ensures reliability and durability. A Base Station, mounted on the guard railing ensures accurate and repeatable measurements while the operator remains contact free and clear of the fluid medium.

With a single SID Rotary, an operator can service multiple tanks equipped with Base Stations. Base Stations are available in multiple configurations and will mount or adapt to any fixture or guard rail.

Raven designed the SID Rotary with particular attention to operator safety and hygiene. This means the operator never needs to contact any part of the SID Rotary that has been wetted during measurements and transportation between Base Stations. The SID Rotary is equipped with a designated tether point and every Base Station is outfitted with a tethered clip to promote safe responsible operations above tanks and elevated locations.

Raven Environmental Products is a leader in portable instruments for sludge blanket detection and we will always strive to improve our equipment and provide you the best, most efficient and safest equipment.

You have our promise since 1983

Raven Environmental Products, Inc.

MADE IN USA

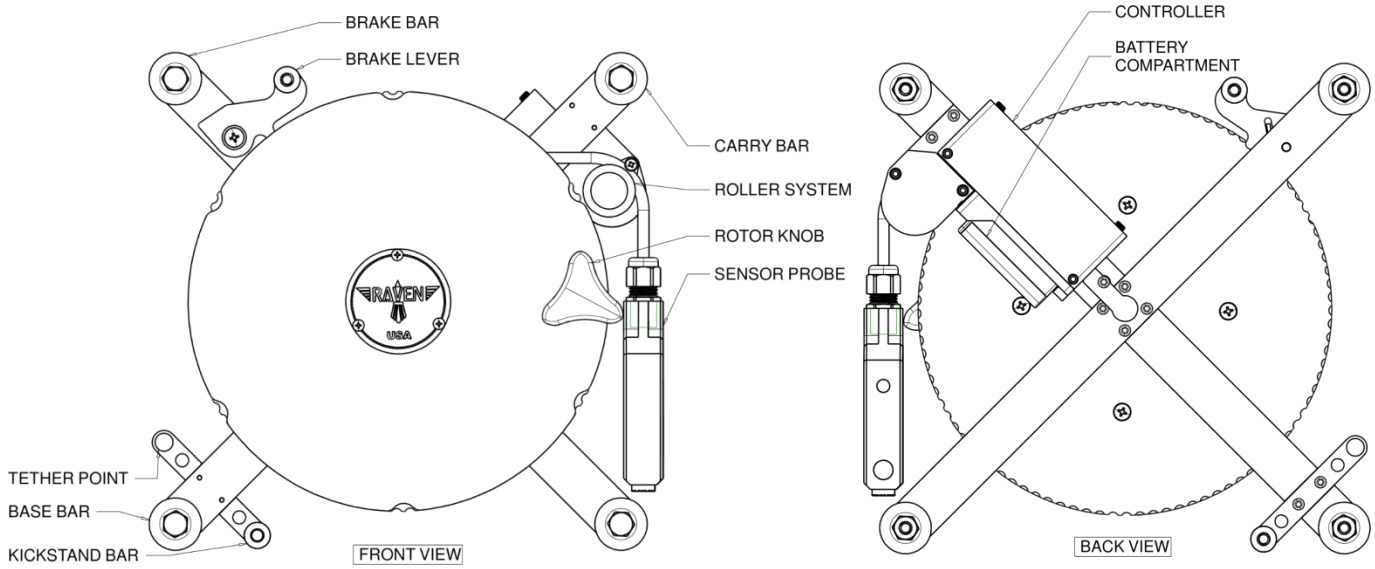
TOOL FAMILIARITY

Before using the *SID Rotary*, take a moment to observe its features:

FEATURES

- Brake Lever: Automatically holds and prevents rotor drum from free rotation
- Carry Bar: Operator holds during transport to support probe
- Brake Bar: Operator holds during brake release
- Rotor Knob: Operator control to deploy and retrieve probe
- Roller System: Electronic feedback for probe travel
- Tether Point: Mount for tether attachment
- Kickstand Bar: Stabilizes and supports SID Rotary on base station
- Base Bar: Positions SID Rotary on Base Station
- Sensor Probe: Weighted probe with embedded sensor
- Controller: Operator controls and feedback display
- Simple to Use: No User Calibration Required
- Base Station: Designated point of measurement
- Safety: Tethered and restrained

BONUS: No Touch Wet Surfaces so operator stays clean and hygienic

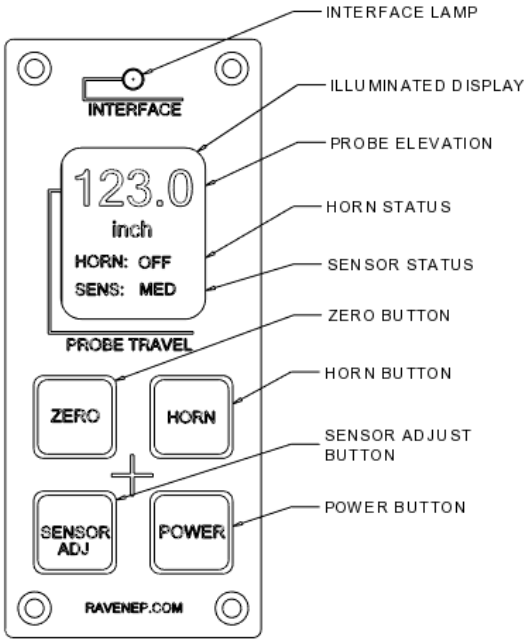


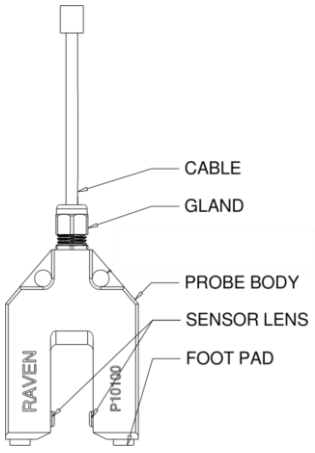
CONTROLLER

- Interface Lamp: Illuminates red when engaged in sludge/solids
- Illuminated Display: Visible in day or night
- Probe Elevation: Displays travel distance in inches or centimeters
- Horn Status: Indicates if horn is ON or OFF
- Sensor Status: Indicates current sensor setting of LOW, MED, HIGH
- ZERO Button: Resets probe travel to zero
- HORN Button: Enable/disables horn when engaged in sludge/solids
- SENSOR ADJ Button: Toggles probe sensor sensitivity Low, Medium and High
- POWER Button: Activates/deactivates electronics
- Low Batt: Appears when batteries need replacement
- Sleep mode: Controller saves current state and sleeps after period of no use
- Power mode: Press and hold button for 1-second to power OFF

SENSOR PROBE

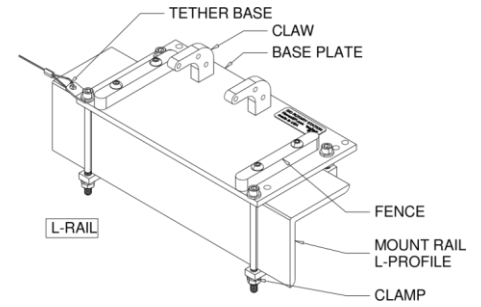
- Probe Body: Solid stainless steel protects sensor
- Probe Sensor: Emits harmless invisible infrared light
- Cable: Supports probe and communication link to controller
- Connector: Automatically disconnects if probe is forced away

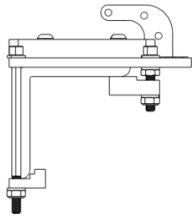


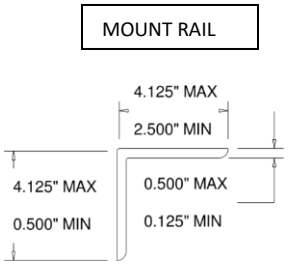


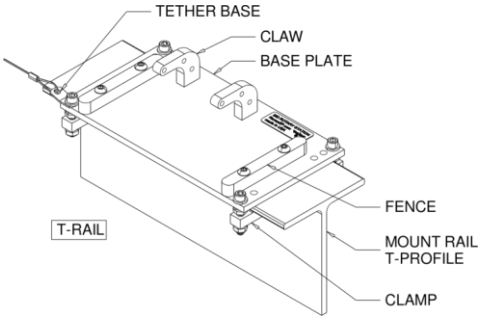
BASE STATIONS

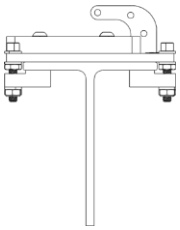
- Base Plate: Adapts and mounts to any guardrail or fixture
- Base Claw: Constrains the SID Rotary cage base bar
- Base Fence: Aligns and guides the SID Rotary base bar for claw constraint
- Tether: Ensures a safe experience

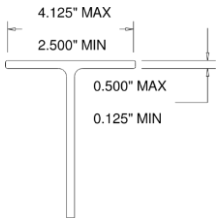


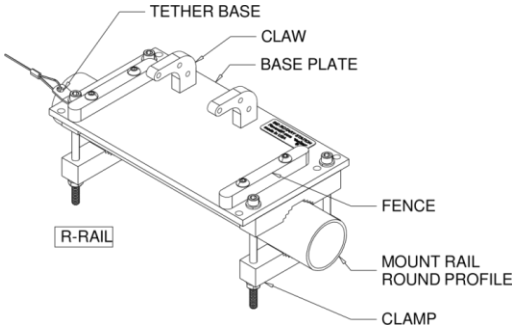


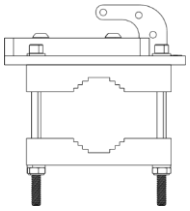


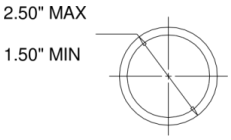


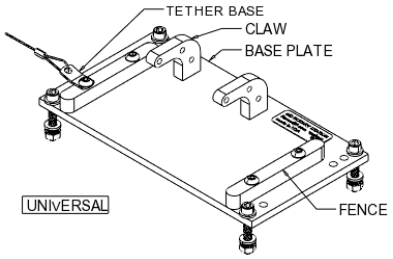


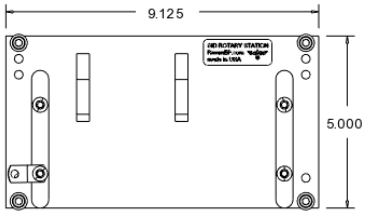












SET UP

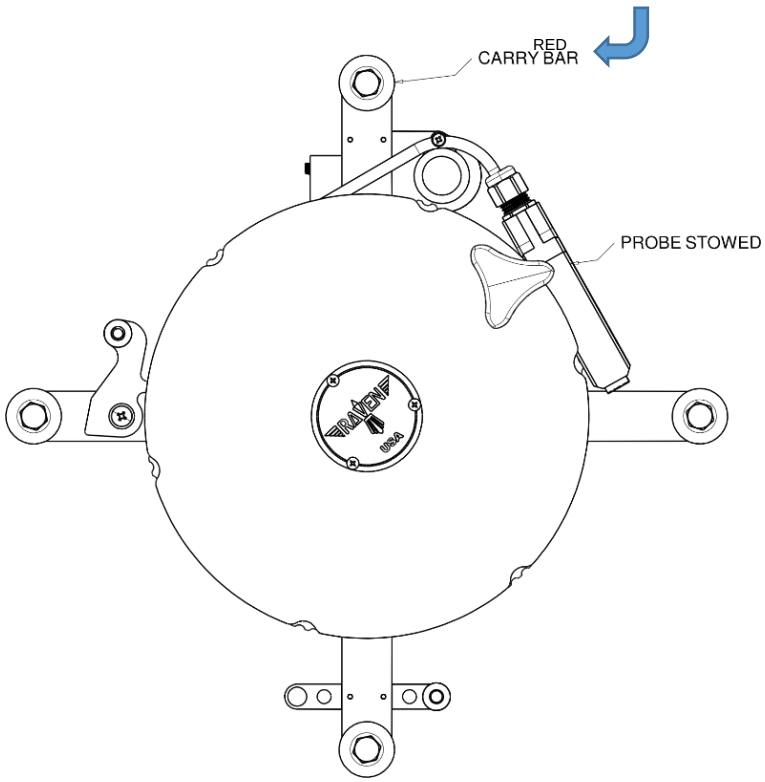
1. Locate the battery cover on back of controller
2. Install 3 AAA batteries (see maintenance section)
3. Press POWER button to activate
4. Interface lamp will briefly illuminate red
5. Press and hold POWER button to deactivate

QUICK CHECK

1. Press POWER button to activate
2. Press/verify HORN is ON
3. Press/toggle SENSOR ADJ button to HIGH
4. Place your finger over one of the sensor lens in the probe gap
5. Verify red Interface Lamp illuminates and the horn sounds
6. The horn can be switched-OFF without affecting the operation of the unit
7. The SID Rotary is ready for service

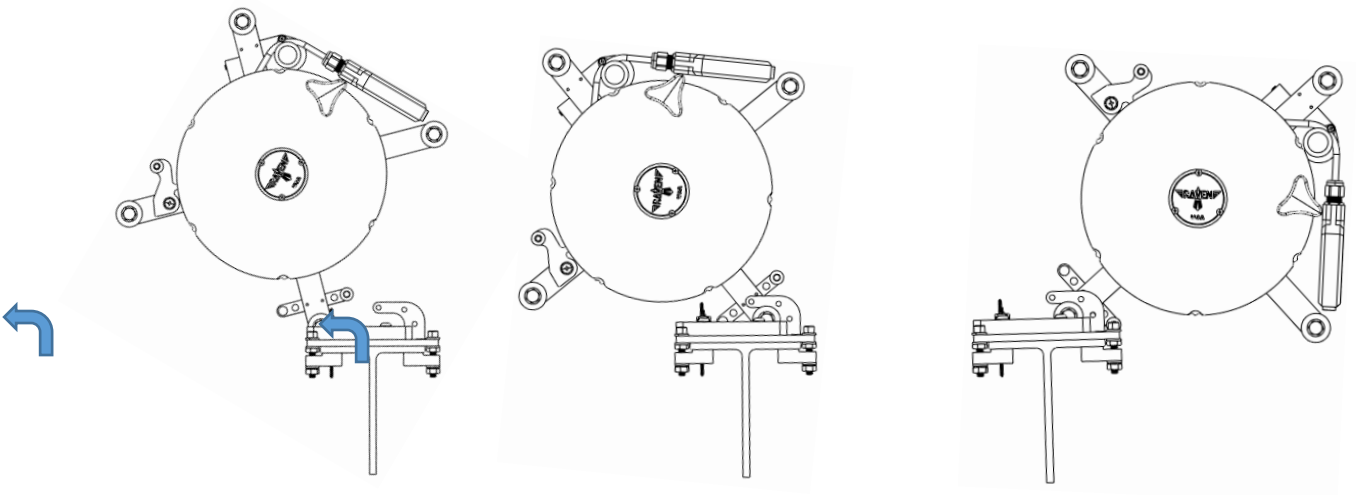
FIELD CARRY - PROLONGS LIFE OF SENSOR AND CABLE

1. Grasp the RED carry bar so that the drum is bearing the weight of the probe
2. Probe will seat and remain within the drum discs



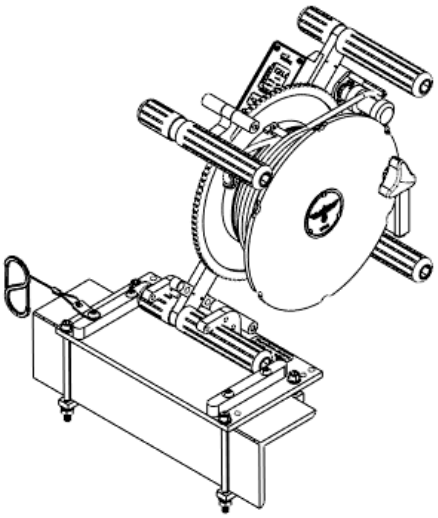
A probe freely swinging, will stress the cable at the probe connection and reduce the life of the probe cable assembly.

FIELD OPERATIONS WITH BASE STATION

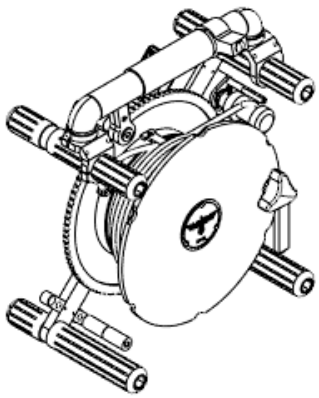


Place on base station | Slide under claws | Rotate to stop

1. Approach Base Station location and attach tether clip on SID Rotary
2. Place SID Rotary on base station plate between fences
3. Slide SID Rotary foot bar under claws
4. Rotate SID Rotary forward until kickstand bar rests on base plate
5. SID Rotary is lock in position and ready to deploy probe
6. Power-ON controller
7. Set sensitivity level for application (see Sensitivity Adjustments)
8. Grasp the rotor knob and brake lever
9. Release brake and manually rotate cable drum to lower probe



Rotary on Base Station



Rotary with Free-Style Handle

SLUDGE INTERFACE DETECTION

Caution

This instrument is intended to be used by professional personnel who are aware of the facility environment and are trained and authorized to use this instrument.
Personnel must always be aware of the tank skimmer location, prior to lowering the sensor probe into the tank and exercise responsibility by using the supplied tether to secure the SID Rotary to a fixed structure.

Do not allow cable drum to rotate freely. Always maintain control with knob on cable drum. Free-wheeling may damage sensor and cable connection.

Each tank has a unique, but consistent sludge density. A sensitivity setting baseline is determined and preset, only once, before tank measurement; this is the (LOW, MED, HIGH) SENS setting and adjusted by the SENSOR ADJ button.

INITIAL TANK USE

1. Use free-style handle or mount SID Rotary on Base Station
2. Press POWER button to activate controller
3. Press SENSOR ADJ button to achieve LOW
4. Grasp rotor knob and retract brake lever
5. Slowly lower sensor probe into the tank
6. Apply brake when probe just contacts tank bottom
7. Change SENS setting until Interface lamp illuminates, if not already
8. This is the sensitivity baseline for this tank

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9. Press ZERO button to set display value to 0.0
10. Retract brake lever and slowly raise the probe
11. When the Interface Lamp extinguishes, stop and set brake
12. The probe is now at the sludge blanket interface

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13. Observe the Probe Travel value on the display
14. The Probe Travel value represents the blanket height from tank bottom
15. Continue to raise the probe to complete operation

SENSITIVITY ADJUSTMENTS

The SENSOR ADJ button cycles the SENS setting to compensate for sludge density.

SENS (sensitivity)	PROBE sensor
LOW	Detects only large solids
MED	Detects only medium and large solids
HIGH	Detects small, medium and large solids

Note: Meter sensitivity is factory set and does not require user calibration.
Sensitivity modification is available upon request.

FINE TUNING

Now that you've established the baseline sensitivity for this tank, you can fine-tune the *SID Rotary detection capability and observe the sludge blanket interface ragged edge.* At the LOW sensitivity setting, the probe is exhibiting an "all or nothing" reading. At sensitivity settings beyond your baseline, you will get a feel for the *SID's* "personality" and how it reacts to the particular influents at your plant.

- By increasing the sensitivity to HIGH and passing the probe thru the interface level several times, you will be able to identify the interface fine "ragged" edge.

- Once located, set the brake and observe any wave or surging of the sludge blanket interface. This is a real-time observation of the sludge blanket movement. The red interface lamp will illuminate when the wave crest passes the probe. And of course, be mindful of any underwater rakes or mechanical interferences.

Sludge blankets rarely have a well-defined interface with the supernatant. Experience with the sensitivity adjustment will allow the keen operator to measure the ragged edge of the sludge blanket. It is not uncommon in a dynamic environment such as a secondary clarifier to identify several feet of gradual density change on top of the sludge blanket.

It is interesting to measure the amount of lift the sludge blanket experiences just after the rake passes under the tank bridge. A steady hand lowering the sensor probe will allow the operator to track the settling of the blanket after the rake passes under the bridge. With experience, you will come to expect a certain rate of settling after the rake passes. Unexpected settling differences may indicate a process problem.

Please feel free to share with Raven any other creative ways that you have found to use this interactive tool in your process. Just logon to Ravenep.com and leave us a note on the Contact Us page.

MAINTENANCE

Battery replacement

- Battery type: AAA alkaline or lithium
- Quantity: 3 each

1. Power-OFF controller
2. Locate battery compartment at back side of controller
3. Slide to remove battery compartment access cover
4. Inspect for evidence of corrosion and clean if required
5. Replace batteries as a group with new AAA alkaline or lithium batteries
6. Install new batteries of same type, brand and manufacturer

Clean probe sensor lens

1. Power-OFF controller
2. Probe lens is made of polycarbonate plastic, but still subject to scratches
3. Place probe under faucet and flush with water for initial cleaning
4. Use soft bristle brush to remove deposits around lens, during rinse
5. Clean lens with mild detergent, water and soft cloth
6. Rinse and inspect for discrepancies, such as cracks and heavy scratches

Clean SID Rotary assembly

1. Power-OFF controller
2. Completely unwind probe cable form rotary drum
3. Use low pressure water source to hose down entire SID Rotary
4. No hard spray, dunking or submerging of Rotary assembly
5. Clean with mild detergent, soft bristle brush and soft cloth
6. Allow SID Rotary to air dry completely
7. Wind probe cable on Rotary assembly after dry

Long term storage

- ✓ Remove batteries from battery pack
- ✓ Rest probe on flat surface (not suspended)
- ✓ Store *SID Rotary* in cool dry place and out of direct sunlight

TROUBLESHOOTING

Contact Raven Environmental Products service department and speak with a product specialist for assistance.

REPLACEMENT PARTS

The SID Rotary is built with modular subassemblies that are readily available and easily replaced in the field with common hand tools.

Visit Raven at **RavenEP.com** for replacement probe cable assemblies.

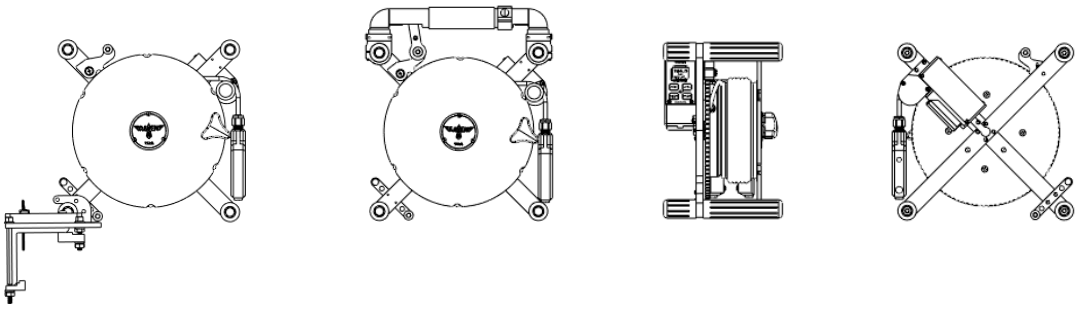
Contact Raven Environmental Products at **800-545-6953** for all other replacement parts.

WARRANTY

Warranty repair is based on normal field use and operated within the design specifications.

Sensor probe and signal cable is warranted for six (6) months from the date of purchase. If this part should fail during this period of time, Raven will replace the part at no charge. Raven reserves the right to request proof of purchase and to examine the failed part at the expense of purchaser to return the failed part to Raven.

SID Rotary unit is warranted for one (1) year from the date of purchase. If this part should fail during this period of time, Raven will replace the part at no charge. Raven reserves the right to request proof of purchase and to examine the failed part at the expense of purchaser to return the failed part to Raven.



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SPECIFICATIONS

SID ROTARY		
model	S-40100	
features		
portable	service multiple locations	
backlit display	day and night visibility	
depth counter	precise probe travel displayed	
robust	cage protects instrument	
light weight	operator comfort and it floats	
probe auto-release	emergency probe disconnect	
weather resistant	rain or shine operation	
operator sanitation	never touch wet surfaces	
construction-		
cage frame	aluminum 6061, anodized	
kickstand	aluminum 6061, anodized	
rotary drum	plastic filament PETG	
hand bars	plastic filament PETG	
base station plate	aluminum 6061, anodized	
base station claw	aluminum 6061, anodized	
dimensions		
width	9.500”	(24.13 cm)
length	9.500”	(24.13 cm)
depth	6.375”	(16.19 cm)
weight w/o probe	3.5 lbs.	(1.587 kg)
weight w/ 30 ft. probe	5.3 lbs.	(2.4 kg)
environment		
moisture	IP67 (NEMA-4x) weatherproof	
temperature	-15°f to +130°f	(-26°c to 54°c)
power supply		
battery standard	3 x AAA cells (no tools req)	
battery life (typical)	6 months	
operator controls		
power button	on/off	
horn button	on/off (70 db/silence)	
sensitivity button	low, medium, high	
zero button	counter reset	
rotary knob	probe deployment / retrieval	
rotary brake	probe hold	
indicators		
LCD backlit display	night time visible	
LED Interface alert	sunlight visible LED	
probe travel counter	distance in inch or centimeter	
sensitivity status	low, medium, high	
horn status	on/off	
battery low	automatic alert	
calibration		
factory	sealed	
user	not required	
OPTIONAL		
free-style handle	S-40-170	
universal base station	S-40-163	
round base station	S-40-162	
T-rail base station	S-40-161	
L-rail base station	S-40-160	
PROBE		
model	P-10100	
construction		
material	stainless steel 304	
technology	IRED emitter/detector	
sensor gap	0.780”	(20mm)
lens	Polycarbonate, clear	
range - min sensitivity	100-2,000 mg/l (varies)	
range - max	100-10,000 mg/l (varies)	
height	3.50”	(88.9mm)
width	2.45”	(62.2mm)
depth	0.75”	(19.0mm)
circular envelope	2.55”	(64.7mm)
weight	17.64 oz.	(500g)
color	metallic	
CABLE		
environmental		
moisture	IP68	
temperature	-15°f to +140°f (-26°c to +60°c)	
length	30 ft. (9.1M) & 50 ft. (15.24M)	
jacket	polyurethane	
color	yellow	
connector		
internal	pin quick-disconnect type	

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