REFERENCE MANUAL

RIPCORD®
Super RIPCORD®
Ventilator/Stringer

Reference Manual and
User’s Guide
Welcome

Thank you for purchasing Hurco’s Ripcord Ventilator / Stringer. The Ripcord has been part of Hurco’s product line since the early 1980’s. The Ripcord was invented to offer a quick and efficient way to get a tagline through a sewer line to retrieve cables for sewer cameras and pipe re-rounding equipment. As this product evolved, it was discovered that it made a very efficient sewer manhole ventilator. The Ripcord actually removes dangerous gases from the manhole rather than diluting them! This method of “cross-ventilation” creates a safe, comfortable and unobstructed workspace.

Ripcord will:

• Pull a String-line 400 feet in approximately 15 seconds.
• Powerful enough to pull a deflection testing mandrel through a sewer pipe in 17 seconds
• Creates a safe work place in seconds.
• Solid Cast Aluminum impeller for maximum performance. Tested in accordance with AMCA (Air Movement and Control Association) standards.

Hurco Technologies, Inc. would like to take this opportunity to welcome you as a new customer and user of the Ripcord Ventilator/Stinger. You have just purchased the best ventilation and line stringing system available. The Ripcord is simple to use and will provide you with years of service.

This manual will take you through the step by step procedures for using the Ripcord. We use simple to understand instructions and photos to assist you in learning how to get the best results from your Ripcord. Please follow each step completely to insure maximum performance from your Ripcord.

Your Ripcord will give you many years of service if you take care of it as you would any expensive piece of equipment. The Ripcord is rugged and built to last. It will withstand the demands of your jobsite; however, is not abuse proof! Be sure to assign the use of your Ripcord to a competent worker who will take care of it.

In this manual, we will be giving you suggestions on basic line stringing and ventilation activities. As a general rule, these suggestions are based on testing that was done on the Ripcord and OSHA’s 1910.146 confined space regulation. It will be your responsibility to read and understand this OSHA regulation and to always use safe manhole entry procedures. Hurco Technologies, Inc. will not be responsible for the incorrect use of the Ripcord or for the failure to follow safe manhole procedures. Assign a competent worker with knowledge on proper confined space procedures. You can find a copy of the OSHA regulations on the OSHA website at [http://www.osha.gov](http://www.osha.gov) or do a Google search on “OSHA 1910.146”. To watch a video on safe confined space ventilation, go to Hurco’s website at [www.gethurco.com](http://www.gethurco.com).

WARNING: The Ripcord is not explosion proof. Do not start the Ripcord in the presence of volatile gases. Explosion Proof Ripcord configurations are available. Call 1-800-888-1436 for more information. If you have any questions regarding this manual or line stringing and ventilation in general, please call and ask for customer support at 1-800-888-1436.

Sincerely,

Lyndon J. Hurley
President, Hurco Technologies, Inc.

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Important Safety Information

WARNING!
READ ALL OPERATING MANUALS
BEFORE OPERATION OF EQUIPMENT

GENERAL SAFETY INFORMATION

Machine Operation
- Always wear protective clothing and safety glasses when operating machinery.
- Never service or repair the Ripcord while running. Allow engine to cool.
- Whenever fueling the Ripcord, shut off engine and do not smoke.
- Periodically inspect system components. Perform routine maintenance as required.
- Do not operate a gasoline engine in an enclosed area. Be sure the area is well ventilated.

SAFETY FIRST!
Simply opening manholes to air them out will not insure a safe work environment. ALWAYS ventilate and test your work area before entering any confined space. Refer to these NIOSH recommendations for confined space entry:

- Always test confined spaces for oxygen content and the presence of toxic or flammable gases or vapors before entry. This would mean an oxygen supply of at least 19.5%, flammable range less than 10% of the lower explosive limit, and an absence of toxic air pollutants.

- Test the air quality of the confined space. Ventilate with the proper ventilation equipment, and then test again before entry.

- No one should ever enter a confined space without an observer posted outside with the appropriate rescue equipment (safety belt/harness, lifeline, respirators, etc.).

- Contractors should also ensure that all subcontractors they employ have a safety program which addresses the hazards to which they will be exposed. All employees at the worksite should be trained.

For more information concerning confined space entry, go to the Center for Disease Control / NIOSH at http://www.cdc.gov/NIOSH/ then type “confined space” in the search box.
Setting up your Ripcord for Cross Ventilation will draw dangerous gases away from your work space. This method of ventilation will help create a safe and unobstructed work space. However, before you ever enter a confined space, such as a manhole, you must follow safe confined space entry techniques. Refer to OSHA's 1910.146 regulation and never enter a manhole until it has been thoroughly tested using high quality, calibrated gas detection equipment. Always keep a gas monitor with you at all times. The environment in a manhole can change rapidly.

Testing the Manhole for Dangerous Gases

There are many gases that can be found in a manhole, and the type and quantity of gases will vary greatly from one area to another. Gases cannot be properly ventilated in a confined space by simply opening manhole covers. You must use forced air ventilation whenever you work in a manhole.

Three of the most common gases found in a manhole are Hydrogen Sulfide (heavier than air), Methane (lighter than air) and Carbon Monoxide (same weight as air). However, the lack of oxygen in a manhole is the number one killer. Never trust your sense of smell to determine if a manhole is safe. Some of the most dangerous gases will not have an odor. Follow these steps:

1. Read and understand the OSHA 1910.146 regulation.
2. Use a high quality and calibrated gas detection instrument to test the manhole prior to entry.
   a. Test the top area of the manhole for lighter than air gases.
   b. Test the middle area of the manhole for gases that are the same weight as air.
   c. Test the bottom area of the manhole for gases that are heavier than air.
3. Always keep a properly working and calibrated gas monitor with you at all times.
4. Have a properly trained person watching you at all times.
5. Use a certified and man-rated tripod when entering or leaving a manhole.
6. Use continuous ventilation when working in the manhole.

It is important to understand that ventilation times will vary depending on the type of gases that are in the manhole. Some gases, like hydrogen sulfide, are heavier than air and will take longer to ventilate. Give the Ripcord ventilator plenty of time to ventilate the manhole, and then re-test it for gases. Other causes for additional ventilation time can be due to variations in atmospheric conditions, plugged or partially plugged pipelines, and manhole depths and diameters.

When you are using the Ripcord set up in the cross ventilation configuration, never allow a worker in the same manhole where the Ripcord is located. Doing so can cause serious harm or even death.

In areas where controlling the gases in a manhole are difficult, two Ripcords can be used; one on the uphill manhole and one on the downhill manhole, with the worker entering the middle manhole.

Setting up the Ripcord for Cross Ventilation

1. Read all warnings displayed on the Ripcord before operation!
2. Check oil and gas before starting Ripcord.
3. Place Ripcord on first manhole above or below the manhole to be worked in. You cannot skip a manhole between the worker and the Ripcord. Only the manhole to be worked in and the manhole where the Ripcord is located should be open. All other manholes in the vicinity of the work manhole should be kept closed.
4. Start the Ripcord and operate at full throttle.

Note: It should not be necessary to block pipes entering either the manhole where the Ripcord is located or the manhole where the worker is located. However, because every manhole configuration can be different, never trust your senses. Always test the manhole prior to entry and continually monitor the manhole while working in it. If it is determined that you cannot control the gases migrating into the manhole, blocking or partially blocking incoming pipes may be necessary.

As the Ripcord pulls dangerous gases away from the work manhole, it pulls in fresh air. This air enters the manhole at a very high pressure and will actually create an “air dam” effect, holding back gases from migrating in to the work manhole. This affect is similar to the air curtains often found in supermarket entry ways. These air curtains allow the store to keep their doors open while keeping the temperature in the store constant and holding out the cold or warm outdoor air. That blast of air you feel when you enter the store is the air curtain. It should be noted, however, that there can be situations where this effect may not work. Always use your gas monitors to determine if the area in the manhole is safe.

Hurco offers a video on confined space ventilation on our website at www.getthurco.com.
Typical set-up for cross ventilation

**WARNING:** The Ripcord is not explosion proof. Do not start the Ripcord in the presence of volatile gases. Explosion Proof Ripcord configurations are available. Call 1-800-888-1436 for more information.
Ripcord for Blow-In Ventilation

When cross ventilation is impossible, you can use the Ripcord with an optional blow-in ventilation kit. Setting up your Ripcord for blow-in ventilation will dilute dangerous gases in your work space. This method of ventilation will help create a safe work space but will require more ventilation time. However, before you ever enter a confined space, such as a manhole, you must follow safe confined space entry techniques. Refer to OSHA's 1910.146 regulation and never enter a manhole until it has been thoroughly tested using high quality, calibrated gas detection equipment. Always keep a gas monitor with you at all times. The environment in a manhole can change rapidly.

Testing the Manhole for Dangerous Gases

There are many gases that can be found in a manhole and the type and quantity of gases will vary greatly from one area to another. Gases cannot be properly ventilated in a confined space by simply opening manhole covers. You must use forced air ventilation whenever you work in a manhole.

Three of the most common gases found in a manhole are Hydrogen Sulfide (heavier than air), Methane (lighter than air) and Carbon Monoxide (same weight as air). However, the lack of oxygen in a manhole is the number one killer. Never trust your sense of smell to determine if a manhole is safe. Some of the most dangerous situations will not have an odor. Follow these steps:

1. Read and understand the OSHA 1910.146 regulation.
2. Use a high quality and calibrated gas detection instrument to test the manhole prior to entry.
   a. Test the top area of the manhole for lighter than air gases.
   b. Test the middle area of the manhole for gases that are the same weight as air.
   c. Test the bottom area of the manhole for gases that are heavier than air.
3. Always keep a properly working and calibrated gas monitor with you at all times.
4. Have a properly trained person watching you at all times.
5. Use a certified and man rated tripod when entering or leaving a manhole.
6. Use continuous ventilation when working in the manhole.

It is important to understand that ventilation times will vary depending on the type of gases that are in the manhole. Some gases, such as hydrogen sulfide, are heavier than air and will take longer to ventilate. Give the Ripcord ventilator plenty of time to ventilate the manhole, and then re-test it for gases. Other causes for additional ventilation time can be due to variations in atmospheric conditions, plugged or partially plugged pipelines and manhole depths and diameters.

When you are using the Ripcord set up in the blow-in ventilation configuration, the hose must be dropped to within one (1) foot of the bottom of the manhole. This is the only possible way to dilute heavier than air gases. Not following this procedure can cause serious harm or even death.

Setting up the Ripcord for Blow-In Ventilation

1. Read all warnings displayed on the Ripcord before operation!
2. Check oil and gas before starting Ripcord.
3. Install the optional Blow-In Ventilation Kit on to the Ripcord (see page 9). Set Ripcord on stand that is included with the Blow-In Ventilation Kit and attach the flexible ducting.
4. Drop flexible ducting to within one (1) foot of the bottom of the manhole.
5. Start the Ripcord and operate at full throttle.

Note: Blow-in ventilation will vary in the time it takes to dilute the gases in the workspace to a safe level. These times can be from a few short minutes to several minutes. Never assume that the workspace is safe just because the Ripcord is blowing air into the manhole. You must test the manhole prior to entry. Remember, you are adding oxygen to the manhole and potentially making some gases more volatile. Allow plenty of time to ventilate the workspace and follow the instructions for testing the manhole for dangerous gases and oxygen content.

Remember that the ventilation duct must be within one (1) foot of the bottom of the manhole. Always use your gas monitor to determine if the area in the manhole is safe.

Hurco offers a video on confined space ventilation on our website at www.gethurco.com.

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Installing Ripcord Ventilation Kit

Operating Instructions

TOP VIEW

- Bolt cowl bracket here
- Align so tab connects with lip on fiberglass cowl

RIPCORD:
- It is necessary to cut foam on underside of base away from bolt hole.

SUPER RIPCORD:
- Remove existing handle bolt and replace with new bolt.

SIDE VIEW

- Nut goes on top
- 30° Powder coated base
- Cowl bracket
- Wing nut
- Fiberglass cowl

Install Cowl Bracket

Tighten red knob to hold Cowl
Operating Instructions

Ripcord for Stringing a Pipeline

Using the Ripcord for pulling a rope through a pipeline is quick and easy. You can also use the Ripcord to pull Hurco’s Whistle Gauge through a pipe in about 17 seconds! You should not have to enter a manhole to do pipe stringing or deflection testing; however, if you do need to enter the manhole, you must follow safe confined space entry techniques. Refer to OSHA’s 1910.146 regulation and never enter a manhole until it has been thoroughly tested using high quality, calibrated gas detection equipment. Always keep a gas monitor with you at all times. The environment in a manhole can change rapidly.

Testing the Manhole for Dangerous Gases

There are many gases that can be found in a manhole and the type and quantity of gases will vary greatly from one area to another. Gases cannot be properly ventilated in a confined space by simply opening manhole covers. You must use forced air ventilation whenever you work in a manhole.

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   c. Test the bottom area of the manhole for gases that are heavier than air.
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4. Have a properly trained person watching you at all times.
5. Use a certified and man rated tripod when entering or leaving a manhole.
6. Use continuous ventilation when working in the manhole.

It is important to understand that ventilation times will vary depending on the type of gases that are in the manhole. Some gases, such as hydrogen sulfide, are heavier than air and will take longer to ventilate. Give the Ripcord ventilator plenty of time to ventilate the manhole, and then re-test it for gases. Other causes for additional ventilation time can be due to variations in atmospheric conditions, plugged or partially plugged pipelines, and manhole depths and diameters.

When you are using the Ripcord set up for line stringing, you can actually ventilate the manhole prior to stringing. But again, if you must enter the manhole, you are required to follow safe manhole entry techniques. Refer to the OSHA 1910.146 regulation. Not following this procedure can cause serious harm or even death.

Setting up the Ripcord for stringing a pipeline

1. Read all warnings displayed on the Ripcord before operation!
2. Check oil and gas before starting Ripcord.
3. Install the Ripcord on a manhole adjacent to the manhole you are stringing from. You cannot skip manholes.
4. Start the Ripcord and operate at full throttle.
5. Lower the parachute into the manhole close to the pipe you are drawing air through. The suction will inflate the parachute and it will take off down the line.
6. Once the parachute has reached the manhole where the Ripcord is, turn Ripcord off, remove from manhole and use a rope with a hook on the end to retrieve the parachute and string.

Note: The time it takes to pull a string through a pipeline can vary on a number of conditions. The number of laterals, the size of the pipe, the size of the adjacent pipes and the size of the manhole can all have an effect on how quickly the string travels through the pipe. In rare cases, it may be necessary to plug or partially plug the adjacent pipes coming into the manhole where the Ripcord is.

Hurco offers a full line of rope reels and parachutes for your pipeline stringing activities.

Typical set-up for stringing a pipeline
**WARNING:** The Ripcord is not explosion proof. Do not start the Ripcord in the presence of volatile gases. Explosion Proof Ripcord configurations are available. Call 1-800-888-1436 for more information.

### Setting up the Ripcord for pulling a Whistle Gauge

1. **Read all warnings displayed on the Ripcord before operation!**
2. Check oil and gas before starting Ripcord.
3. Install the Ripcord on a manhole adjacent to the manhole you are pulling the Whistle Gauge from. You cannot skip manholes. It does not matter if you are upstream or downstream; however, it is preferred to pull a deflection gauge downstream.
4. Start the Ripcord and operate at full throttle.
5. Lower the Whistle Gauge, with the parachute attached, into the manhole close to the pipe you are drawing air through. The suction will inflate the parachute and it will take off down the line.
6. Once the parachute and Whistle Gauge have reached the manhole where the Ripcord is, turn Ripcord off, remove from manhole and use a rope with a hook on the end to retrieve the Whistle Gauge.

Note: The time it takes to pull a Whistle Gauge through a pipeline can vary on a number of conditions. The number of laterals, the size of the pipe, the size of the adjacent pipes and the size of the manhole can all have an effect on how quickly the string travels through the pipe. In rare cases, it may be necessary to plug or partially plug the adjacent pipes coming into the manhole where the Ripcord is.

Hurco offers a full line of rope reels, parachutes and Whistle Gauges for your deflection testing activities.

Typical set-up for pulling a Whistle Gauge through a pipeline

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This parts breakdown is to help you identify any parts that may need to be replaced or repaired. You should never remove or install the cast aluminum impeller without following the instructions found on page 15 of this manual. For help repairing your Ripcord or ordering parts, call our office at 1-800-888-1436.

### Parts Breakdown

<table>
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<th>PART DESCRIPTION</th>
<th>NO.</th>
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80 LBS. DRY WEIGHT
Super Ripcord Parts Breakdown

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<td>7/16-14 X 1.5 HCS</td>
<td>1</td>
<td>904-104</td>
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<td>18</td>
<td>24&quot; BOTTOM PROTECTION SCREEN</td>
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<tr>
<td>19</td>
<td>1/4&quot; FENDER WASHER</td>
<td>4</td>
<td>901-024</td>
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<td>20</td>
<td>1/4-20 X 3/4&quot; TCS</td>
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<td>901-202</td>
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Installing Ripcord Impeller

Installing the impeller on your Ripcord is not difficult but must be done as outlined below. A cracked impeller is not covered under our warranty so it is important to follow each step carefully. For help repairing your Ripcord or ordering parts, call our office at 1-800-888-1436.

Follow these steps to remove an impeller:

1. Drain all gas and oil from the Ripcord.
2. Turn Ripcord upside down and remove the expanded metal guard.
3. Remove the center bolt from the impeller.
4. Remove the three securing bolts from the taper lock bushing.
5. Reinstall two of the bolts into the threaded holes in the taper lock bushing.
6. Slowly and evenly tighten bolts until taper lock bushing separates from the impeller.
7. Remove Impeller and taper lock bushing.

Note: The Ripcord impeller was installed using Loc-Tite 609 adhesive. It may be necessary to warm the taper lock bushing to help release this adhesive. Do not apply too much heat.

Follow these steps to install an impeller:

1. Make sure engine shaft is clean and the bore on the taper lock bushing is clean. Using a quality brake parts cleaner will make this much easier. Remove any burrs or nicks from all metal parts.
2. Align holes of taper lock bushing with the threaded holes in the impeller. The taper lock bushing is tapered and must align into the impeller so the taper in the impeller matches the taper of the taper lock bushing.
3. Be sure to align the keyway on the motor shaft with the black line on the impeller. This black line is a balance mark and it is critical to have it in line with the keyway to prevent vibration.
4. Use Loc-Tite 609 on engine shaft, the inside and outside of the taper lock bushing and on all bolts. Loc-Tite 609 is the only acceptable adhesive. Using another adhesive may cause a failure of the impeller.
5. When the impeller and bushing are properly placed on the engine shaft, the shaft should be approximately 1/8” to 1/4” inside the bushing. You can use a thick piece of cardboard as a gauge on the distance to hold the impeller away from the engine mounting support brackets.
6. Gradually and evenly tighten the three taper lock bushing bolts by turning 1/4 turn at a time and rotating to the next bolt. Note: The taper lock bushing must be installed evenly or it could damage the impeller. DO NOT USE AN IMPACT WRENCH! All tightening must be done by hand. Special bolts were shipped with your impeller. Do not attempt to use bolts other than those supplied because they could cause damage to the impeller. Damage caused during installation is not covered under warranty.
7. Do not use torque instructions on the box provided with the taper lock bushing. These instructions are for installing a cast iron pulley on an engine shaft. This is too much torque for the Ripcord impeller. Recommended torque for the taper lock bushing when used with the Ripcord impeller is 10 ft lbs of torque. This is a situation where tighter is not better. Over tightening of the taper lock bushing will break the impeller which is not covered under warranty.
8. CAUTION: Do not attempt to tighten the collar of the taper lock bushing tight against the impeller. This will break the impeller which is not covered under warranty. There should be about 1/8” to 1/4” space between the collar of the taper lock bushing and the impeller when installed correctly.
9. Install center washers into the taper lock bushing to fill gap from the end of the engine shaft to the face of the taper lock bushing. Install center bolt. Remember, you must use the Loc-Tite 609 adhesive on all contact surfaces and on all bolts.
10. Install protective expanded metal screen.
11. Let Ripcord sit for 24 hours before using to allow the Loc-Tite 609 to cure.
Specifications

**Power Smoker Specifications**

**CFM Rating**

The Hurco Ripcord impellers were tested in accordance with AMCA (Air Movement and Control Association) standards.

Ripcord – 6211 CFM @ 0.001 static pressure *(free air)*
Super Ripcord – 12,987 CFM @ 0.001 static pressure *(free air)*

Ripcord – 5632 CFM @ 1.000 static pressure
Super Ripcord – 12,101 CFM @ 1.000 static pressure

Ripcord – 4130 CFM @ 3.000 static pressure
Super Ripcord – 8761 CFM @ 3.000 static pressure

**CFM with Blow-In Kit**

Ripcord – Up to 2100 CFM
Super Ripcord – Up to 4200 CFM

**Engine options**

Briggs & Stratton 5.5 HP
Honda 5.5 HP

*Note: Refer to engine manufactures manual for warranty information and maintenance instructions.*

**Optional Accessories**

Stinger Kit – Includes rope reel and parachute for line stringing.

Vent Kit with 20 ft. vent duct – Attachment that allows the Ripcord to be used as a blow-in ventilator.

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**Limited Warranty**

When used in accordance with instructions, HURCO Technologies, Inc. will replace to the original purchasers, free of charge, any part or parts of the Ripcord unit, excluding the engine, found to be defective in material or workmanship or both; this is the exclusive remedy. All transportation charges on parts submitted for replacement under this Warranty must be borne by the purchaser. The engine is warranted as outlined by the engine manufacturer’s separate, limited warranty only. This warranty does not cover damage or loss to the Ripcord unit from operating negligence, or due to accident or other casualty. **THERE IS NO OTHER EXPRESS WARRANTY OR IMPLIED WARRANTIES. THIS WARRANTY IS LIMITED TO A PERIOD OF ONE YEAR FROM THE DATE OF PURCHASE AND TO THE EXTENT PERMITTED BY APPLICABLE LAW, ANY AND ALL IMPLIED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY EXCLUDED, TO THE EXTENT PERMITTED BY LAW. IN NO EVENT SHALL WARRANTOR BE LIABLE FOR DIRECT, INDIRECT, INCIDENTAL AND CONSEQUENTIAL DAMAGES RESULTING FROM ANY DEFECT IN THE GOODS, TO THE EXTENT SUCH AVOIDANCE IS PERMITTED BY APPLICABLE LAW.**