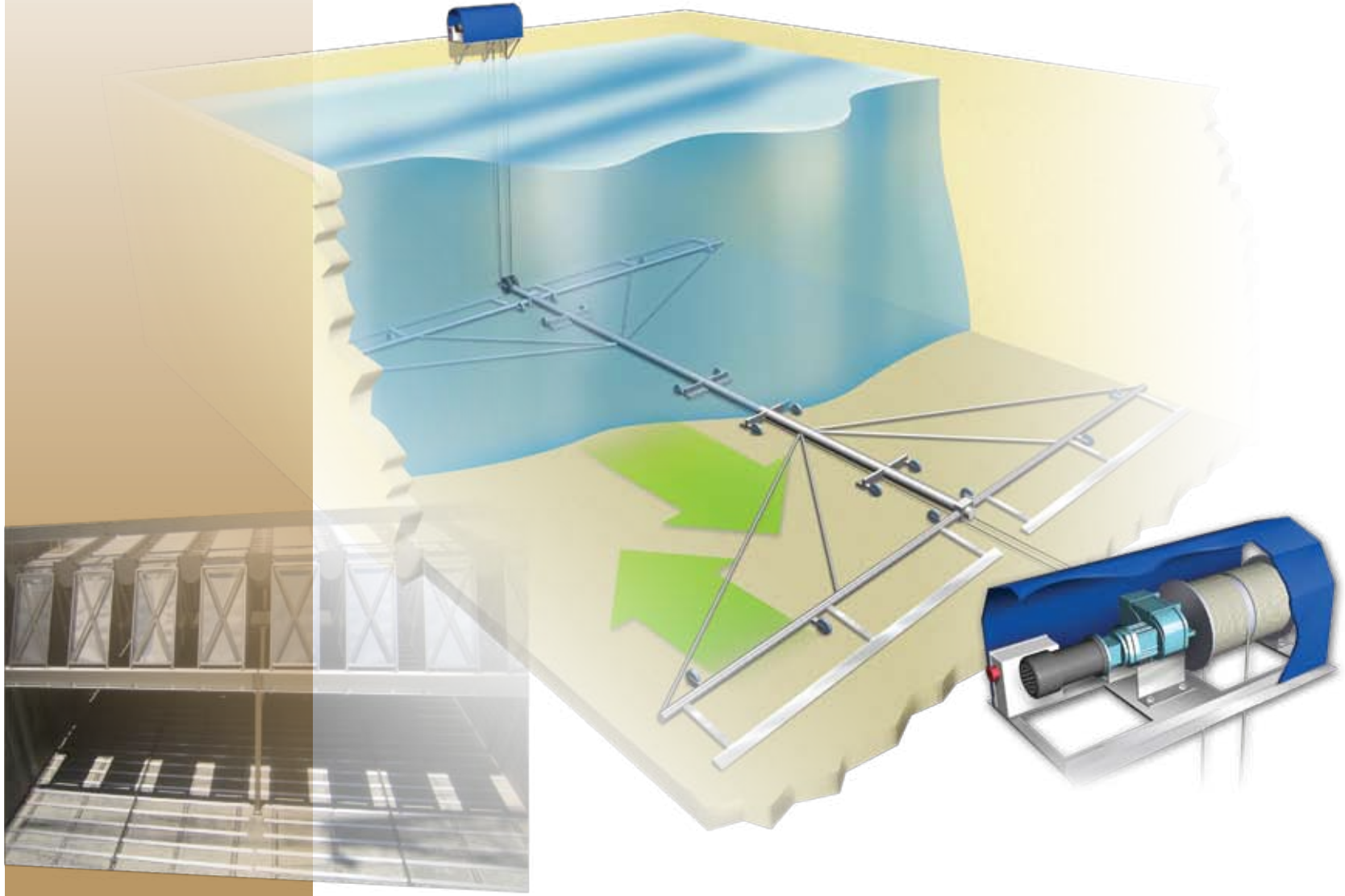
MRI SLUDGE COLLECTORS



The Optimal Choice for Sludge Collection:

MRI Hoseless Cable-Vac

MRI U/S Ultra-Scraper

MRI SLUDGE COLLECTORS

Sludge collection products built on ex

Meurer Research, Inc. began developing high-quality equipment in 1978 to provide water and wastewater treatment facilities with effective, reliable and economical methods of removing sludge from sedimentation basins. Over the years, MRI has built upon these standards by incorporating new ideas and technology into the design and manufacture of its products. The result is three fully engineered devices: one based on suction, the Hoseless Cable-Vac; one based on scraping, the U/S Ultra-Scraper; and one based on tradition, the Retro Cable-Vac.

MRI Hoseless Cable-Vac eliminates the hose.

Only the MRI Hoseless Cable-Vac[tm] sludge collector* delivers all the benefits of suction sludge removal without the need for hoses. Perfect for use in new or existing basins, the patented system has four key components:

- Tandem header pipes with tangential flow nozzles* optimize sludge removal
- Telescoping sludge conduit* eliminates the need for hoses and is self-priming
- Reel-to-Reel Drive* ensures reliable power without tensioning
- MRI's signature control system combines sophisticated operation with communications

MRI U/S Ultra-Scraper doubles performance.

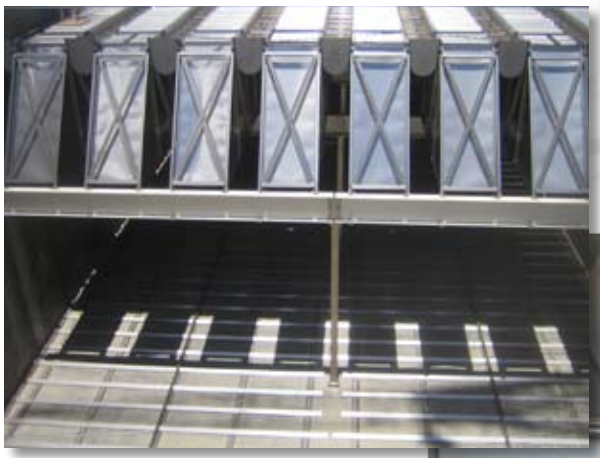
Equipped with double-acting, reciprocating linear blades, the MRI U/S Ultra-Scraper is two times more effective than conventional scrapers. The high-capacity system has four key components:

- Two transport racks with scraper blades are assembled without field welding
- Reliable drive unit uses either hydraulic or electric power
- Cross collector optimizes sludge removal
- MRI's signature control system offers easy adaptability

The El Sobrante water treatment plant in Oakland, CA installed 22 MRI Hoseless Cable-Vac systems.

perience.

At the facility in Brisbane, Australia, MRI U/S Ultra-Scrapers and Plate Settlers optimize tertiary wastewater treatment.



MRI Retro Cable-Vac available as new system or retrofit.

In addition to the Hoseless Cable-Vac and U/S Ultra-Scraper, MRI offers the Retro Cable-Vac with flexible hoses and guide rails. The Retro Cable-Vac is based on the original "Trac-Vac" system created by MRI in 1980. With well over 2,000 Trac-Vac systems sold, many have been refurbished to become like-new Cable-Vac sludge collectors. The Retro Cable-Vac is also available as a new system and consists of five main components:

- A single header pipe mounted on a traveling carriage
- A guide rail which extends the full tank length
- A sludge hose to transport the sludge from the header pipe out of the basin
- A Reel-to-Reel cable drive
- Control system

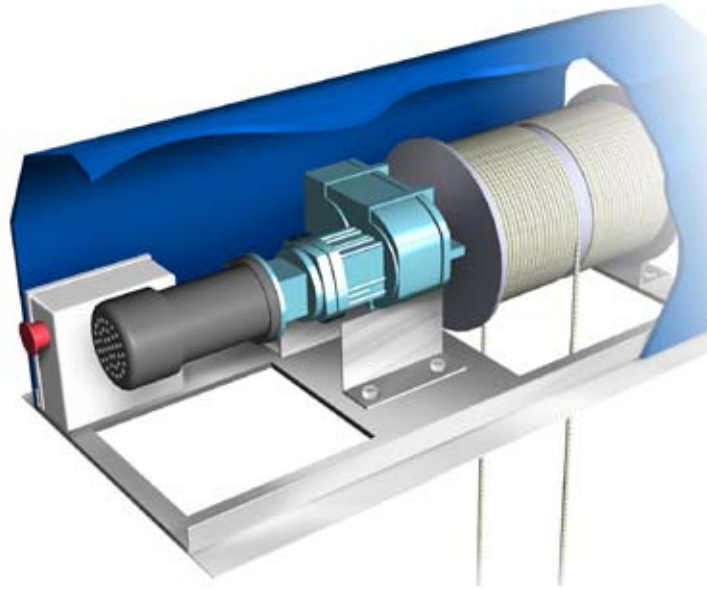
The water treatment plant in Piedmont, AL was completely refurbished with the MRI Retro Cable-Vac. (Top)

The Tobacco Road Water Treatment Plant in Augusta, GA utilizes the MRI Hoseless Cable-Vac under MRI stainless steel plate settlers. (Bottom)

**Patented*

Reel-to-Reel Drive ensures reliable pow

Built for simplicity, MRI's Reel-to-Reel Drive* makes the Hoseless Cable-Vac the ultimate in dependability. The above-water drive combines take-up and pay-out cables on one shared reel saving space and allowing a compact drum with the cable wrapped in a single layer without tensioning. Designed for continuous operation, the robust and energy efficient AC drive with variable frequency control can withstand a stall without sustaining damage.



Easy to operate, MRI's menu-driven, touch screen control system is designed to manage multiple Hoseless Cable-Vac units. Controls can be programmed to fully meet a treatment plant's specific needs.

Adaptable control system enables sophisticated operation.

The operator friendly control system automatically displays and manages all functions of the sludge collector. Through a programmable, menu-driven LCD touch screen, MRI control systems offer sophisticated SCADA and communications options and are powered by Rockwell International/Allen-Bradley. Variables include duration, speed, and frequency of operation which can be triggered by sludge depth, time, or signals from SCADA.

er.

Innovative tandem collectors maximize efficiency.

The key to the Hoseless Cable-Vac's ability to deliver increased solids removal is the innovative design of its tandem collectors.* Unlike conventional equipment, MRI's system has two collectors instead of one, with sludge collection orifices located on the side and facing forward, rather than pointing downward. This allows for enhanced, one-way directional sludge extraction as the assembly moves forward. On the reverse stroke, suction ceases. The orifices direct the sludge into the collection pipe tangentially (see illustration above), organizing the flow to remove more solids with less water and prevent clogging.

Unlike other systems, MRI's Hoseless Cable-Vac operates without guide rails on the basin floor enabling quick, simple installation. It can be used in new or existing basins with flat, sloping or slanted floors. Even in continuous operation, the collector is virtually maintenance free due to all stainless steel construction, long-life wheels and bearings, and a simple cable-winch drive.

Side view of MRI Hoseless Cable-Vac shows the simplicity of the single reel drive system. The low-profile design enables use under plate settlers, tube settlers or in open basins.

Conventional Sludge Collector

In conventional sludge collectors (Figure A), the incoming flow enters at the bottom and continues upward, perpendicular to the internal flow, which is moving laterally toward the center outlet. This causes the two flows to collide at the orifices, disrupting the flow pattern and decreasing sludge removal.

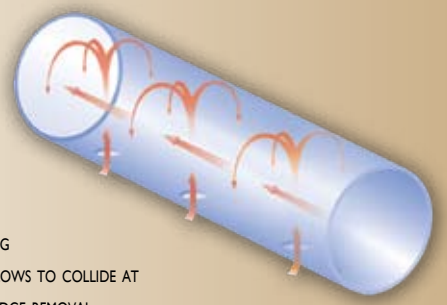


Figure A

MRI's Exclusive Tandem Collectors

With MRI's tandem collection design* (Figure B), the incoming flow enters tangentially to the bottom of each collector, causing the internal flow to travel in a spiral toward the center outlet. As the spiraling flow passes each orifice it is re-energized by the incoming flow. This creates a uniform, organized flow pattern that increases sludge removal and prevents clogging.

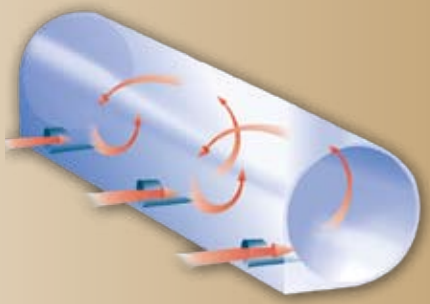
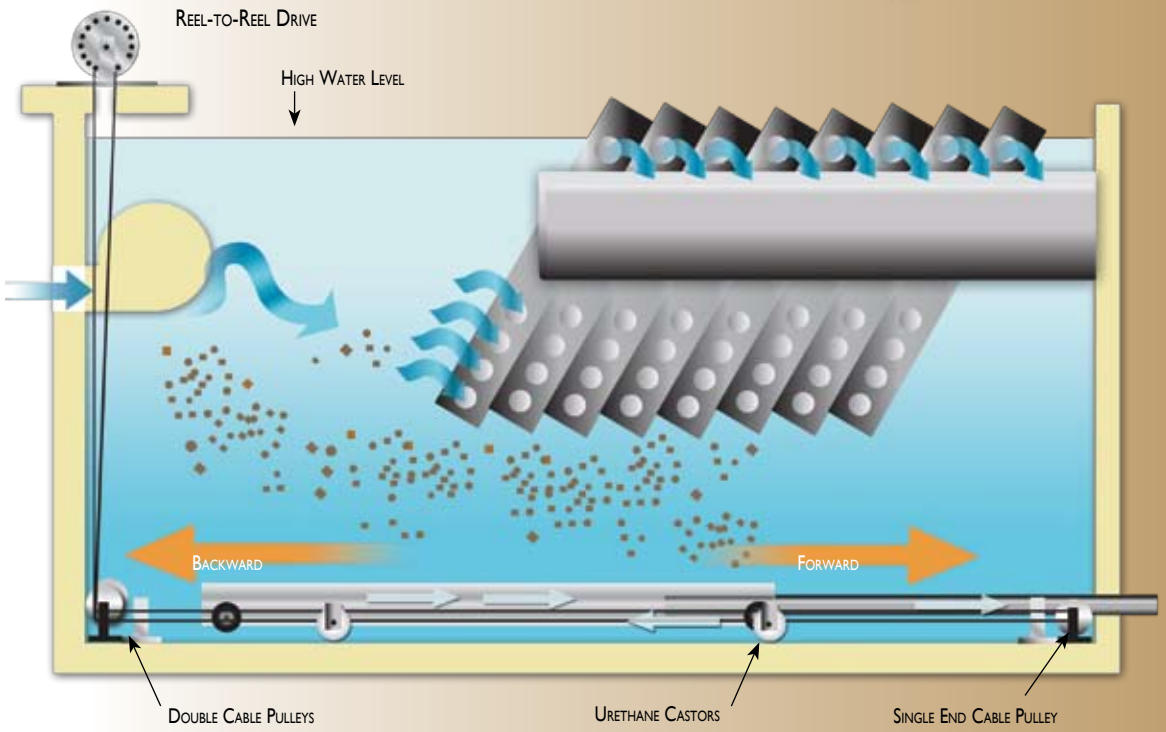


Figure B



*Patented

MRI SLUDGE COLLECTORS

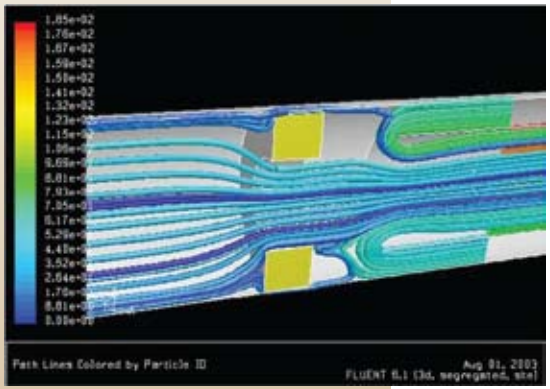
Now there is a an efficient choice

MRI Hoseless Cable-Vac: low profile, floor-hugging and powerful.

MRI's Hoseless Cable-Vac features a floor-hugging, telescoping sludge removal pipe and a simple, powerful cable-winch movement. Durable enough for continuous operation, treatment plants generally run the Hoseless Cable-Vac from one to several times a day. Offering a highly scaleable design, the MRI Hoseless Cable-Vac is available in flow rates from 25 gpm to 2,000 gpm.

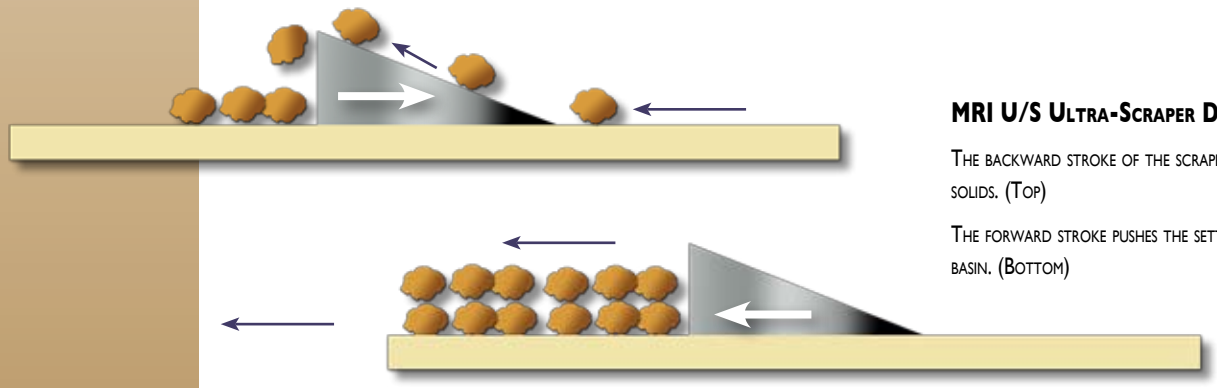
MRI U/S Ultra-Scraper: double-acting blades increase effectiveness.

MRI's U/S Ultra-Scraper's unique design houses a series of scraper blades mounted on two racks. Each rack moves in opposition to the other creating a backward and forward action of approximately 2'. The reciprocating design greatly increases solids removal, delivering unsurpassed effectiveness.



Computer Fluid Dynamic (CFD) Design

The hydraulics are carefully designed using CFD analysis to distribute flows both front-to-back and side-to-side.



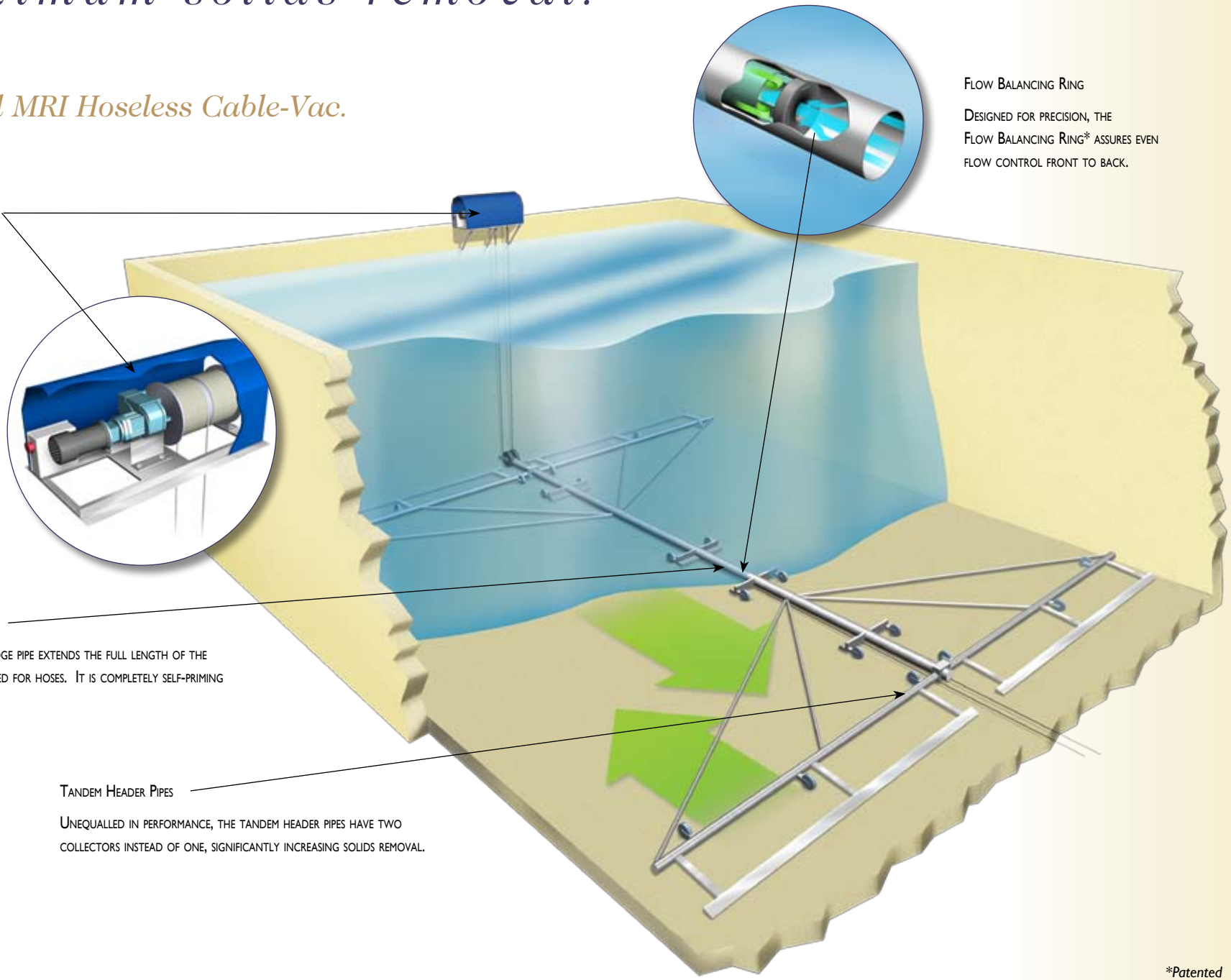
MRI U/S Ultra-Scraper Double-Acting Blades

The backward stroke of the scraper blades slides under the settled solids. (Top)

The forward stroke pushes the settled solids towards the end of the basin. (Bottom)

for maximum solids removal.

Unsurpassed MRI Hoseless Cable-Vac.



Reel-to-Reel Drive

The efficient cable drive design provides strength and durability. By combining the take-up and pay-out cables on one reel, the cable is kept in a single layer without tensioning.

Flow Balancing Ring

Designed for precision, the Flow Balancing Ring* assures even flow control front to back.

Telescoping Sludge Pipe

Floor-hugging, the sludge pipe extends the full length of the basin, eliminating the need for hoses. It is completely self-priming and easy to install.

Tandem Header Pipes

Unequalled in performance, the tandem header pipes have two collectors instead of one, significantly increasing solids removal.

**Patented*

High-performance MRI U/S Ultra-Scraper.

Hydraulic Drive

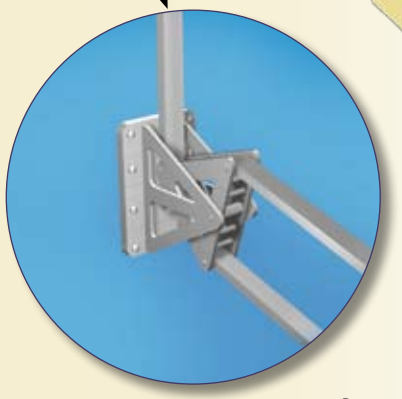
Ensures reliable power and has automated position sensing technology.*

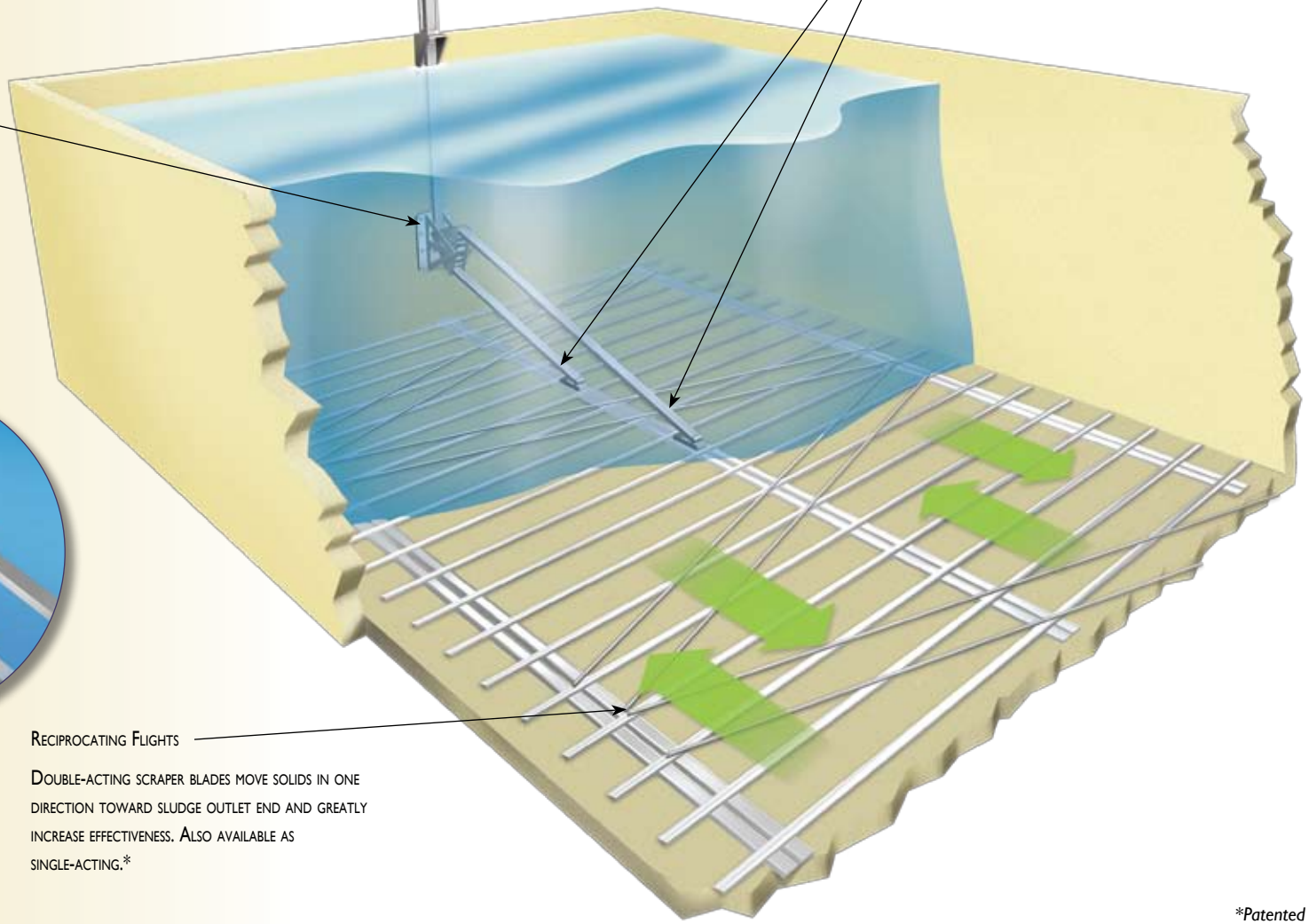
Double Thrust Linkage

Provides force to move scraper racks back and forth and removes twice the sludge.*

Power Pivot

Transmits powerful 20,000 lb. force from Hydraulic Drive to scraper racks, enabling removal of dense sludge.*





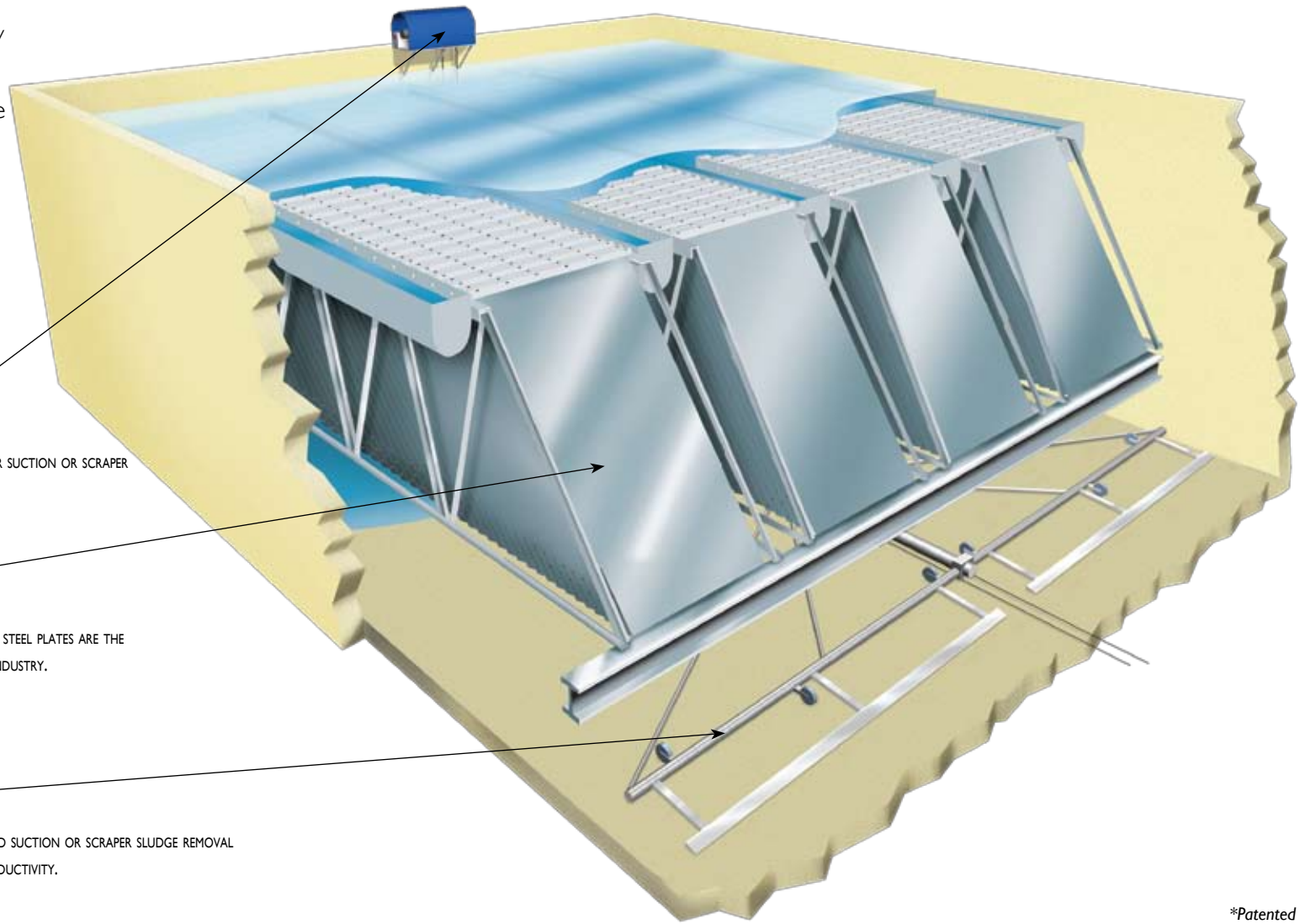
Reciprocating Flights

Double-acting scraper blades move solids in one direction toward sludge outlet end and greatly increase effectiveness. Also available as single-acting.*

**Patented*

for ultimate performance.

Engineered for integration, MRI's Plate Settlers* and Sludge Collectors* provide standard-setting performance—from clarification to solids removal. MRI's Plate Settlers allow increased water flow and settling area, greatly enhancing clarifier effectiveness and productivity, while MRI's sludge collection products maximize solids removal.



Reel-to-Reel Sludge Collector Drive

Compact, powerful, reliable drive for underwater suction or scraper sludge collector.

Inclined Plates

Available in 5' to 10' lengths, the 100% stainless steel plates are the smoothest, flattest and strongest plates in the industry.

MRI Sludge Collector

Low-profile, floor-hugging, computer-controlled suction or scraper sludge removal system maximizes solids removal and enhances productivity.

**Patented*

On-site success: no field cutting or

Installation of the MRI U/S Ultra-Scraper• is quick and simple. Substantially fabricated at the factory, the on-site contractor simply assembles the unit. No measuring, cutting, or welding is required.

Efficient and fast action removes the heaviest solids.

Low profile blades scrape only a thin layer of sludge with each cycle, enabling efficient removal of thick, heavy sludge and even grit and anthracite. This also allows a much higher traveling velocity than Chain & Flight and other higher profile devices. Generally, Chain & Flight moves at about 1 fpm, compared to the MRI U/S Ultra-Scraper's speedy 10 fpm or more. The MRI U/S Ultra-Scraper's speed corresponds to a sludge removal rate of 300 gpm in a 25' wide basin. Alternate blade sets hand sludge off to each other as they move back and forth. The sludge moves either to the end or center of the basin where it is extracted by a cross collector.

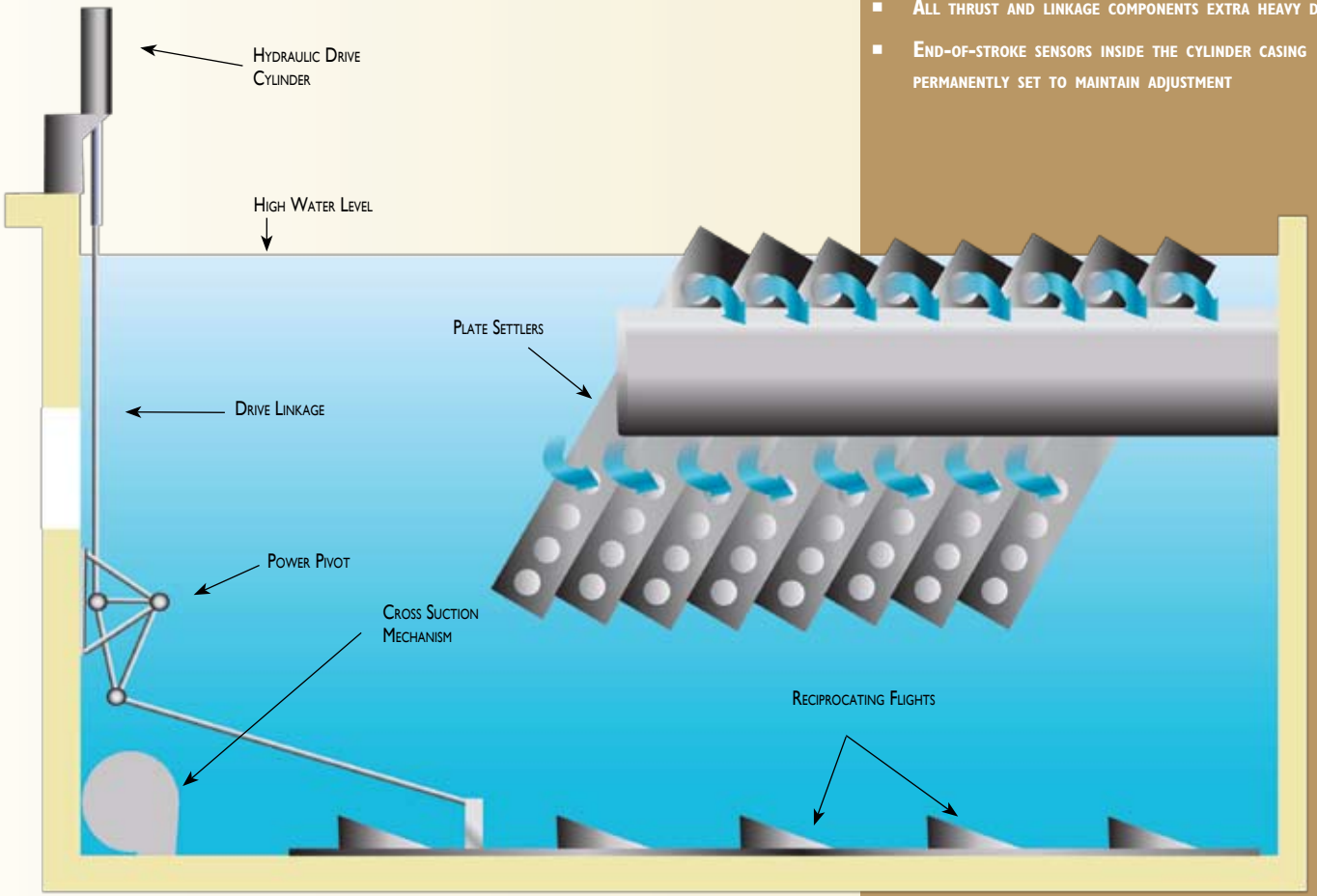
The MRI Power Pivot transmits a 20,000 lb. force and enables removal of dense sludge.

Low-profile and floor-hugging, the MRI U/S Ultra-Scraper integrates well with MRI Plate Settlers, as shown at the water treatment plant in Brisbane, Australia. (Below)

welding needed.

MRI U/S Ultra-Scraper also can be used as a cross-collector at the end of the basin. (Above)

The scraper moves back and forth as the hydraulic drive cylinder extends and retracts. This migrates the sludge to the end of the basin where it is removed by the cross-suction mechanism.



Advantages of the MRI U/S Ultra-Scraper:

- The only double-acting, reciprocating linear scraper made in the United States
- Field assembled with pre-cut, pre-made components that bolt together for ease of installation
- No field cutting and field welding required (unlike other brands)
- Simple, quick assembly reduces basin downtime and mistakes
- Parts readily available from Colorado
- All drive components, hydraulic parts and controls from top U.S. makers such as Rockwell International/Allen-Bradley, Baldor, Vickers, and more
- All thrust and linkage components extra heavy duty
- End-of-stroke sensors inside the cylinder casing permanently set to maintain adjustment

*Patented

MRI SLUDGE COLLE

Precise engineering. Proven tech

Trust MRI for trend-setting innovation.

Experience, reliability, creativity and know-how. These are the qualities that have enabled Meurer Research to lead advancements in water and wastewater treatment solutions since 1978.

Now Meurer Research is pleased to offer a choice in superior sludge collection products—continuing the innovative and efficient designs in MRI's more than 30-year history of advancements.

With over 50 patents and thousands of installations, from design, engineering and production to installation, education and after-market customer service, MRI has helped utility companies, municipalities and engineers find solutions to complex issues.

MRI has installed thousands of water treatment products worldwide in its more than 30 years of leading advancements in water and wastewater treatment solutions. Installed products pictured are the MRI Hoseless Cable-Vac at Lexington, KY, and MRI Plate Settlers at Gallentin, TN and Durango, CO.

nology.

Other products available from Meurer Research are:

Inclined Plate Settlers

Hoseless Cable-Vac™ Sludge Collectors

U/S Ultra-Scraper Sludge Collectors

Paddle Wheel and Turbine Flocculators

Membrane Pre-Treatment

Package Plants

Floating Plate Settlers

Backwash and Residuals Reclaim

Baffles

Tube Settlers

Pilot Plants

Membrane Filters

MANUFACTURED IN GOLDEN, COLORADO, MRI SHIPS WATER TREATMENT PRODUCTS WORLDWIDE.

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