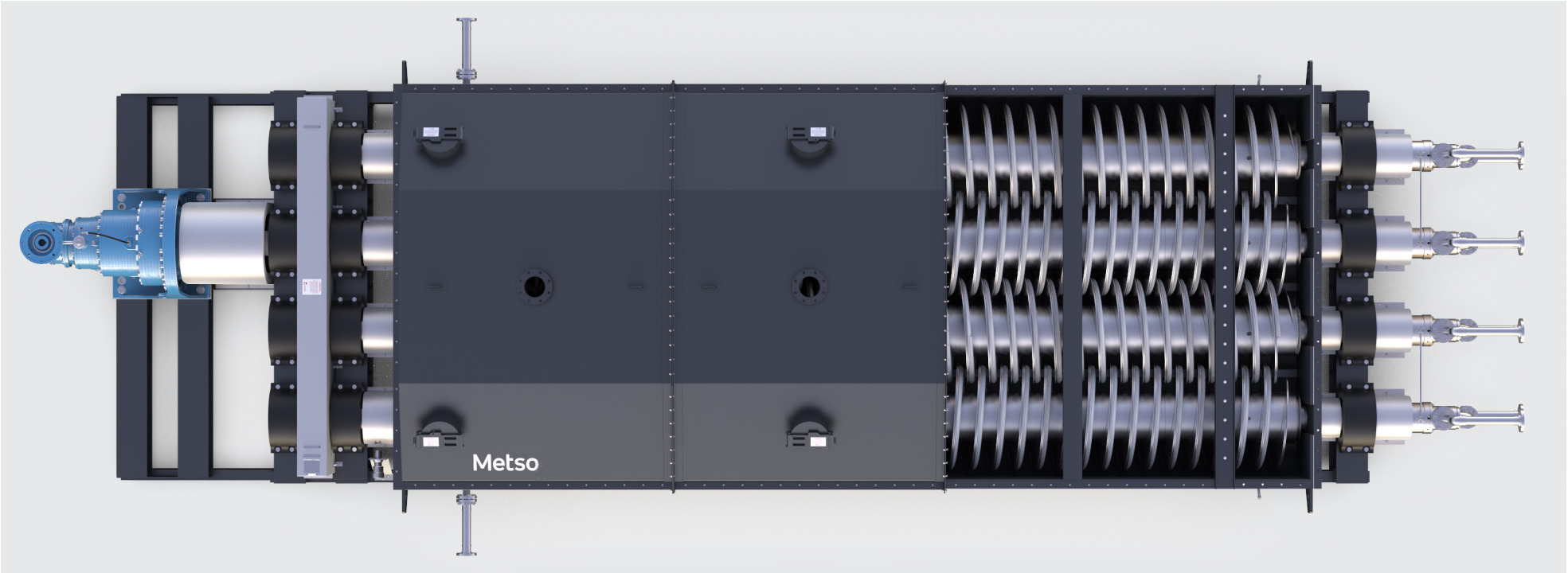
Metso

Indirect heat exchanger

Holo-Flite®



Metso has over 60 years experience in the application design and manufacturing of indirect heat exchanger systems and components. The Holo-Flite® is a proven and efficient thermal processor with over 3,000 installations worldwide.

Process principle
In the Metso Holo-Flite® processor, individual particles are heated or cooled as they come in contact with the surfaces of the hollow flights, shaft and trough. The product to be processed is continuously conveyed in an axial direction by rotating the screw flights along a jacketed trough.

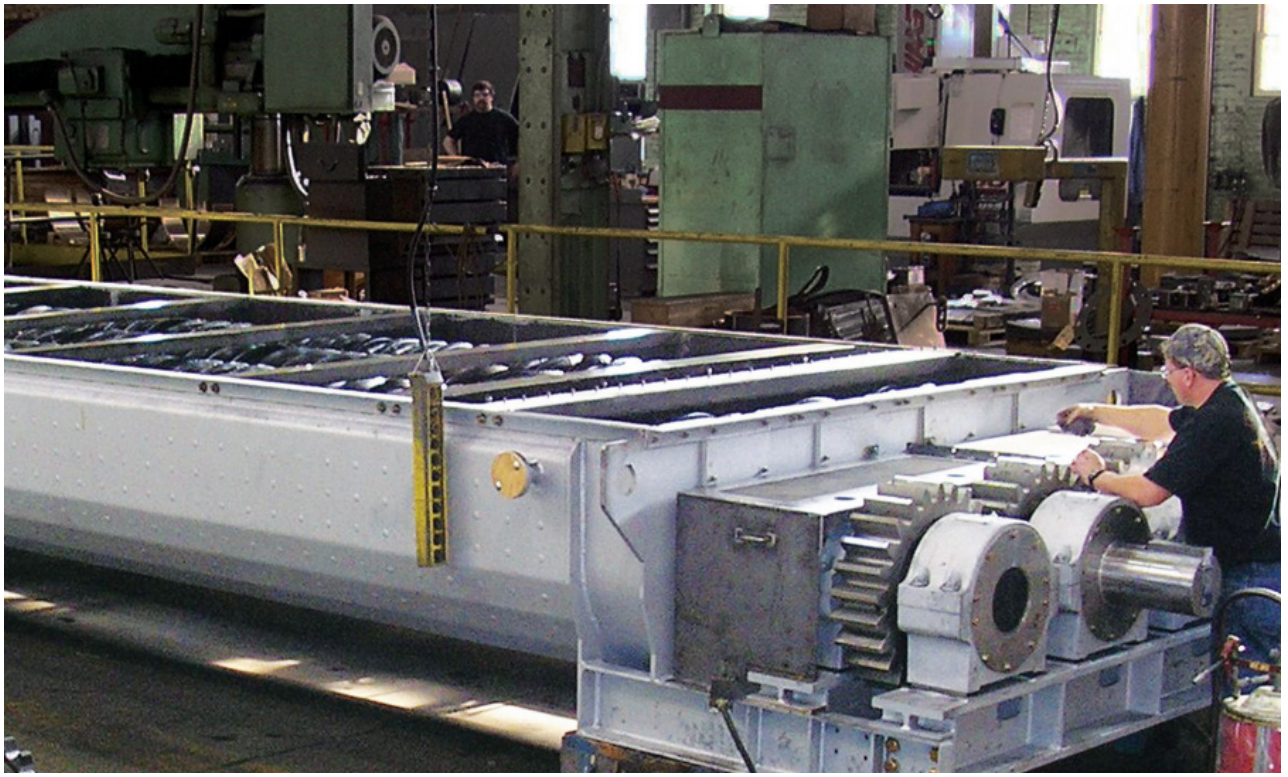
Indirect heat exchange
The Holo-Flite® processor is an indirect heat exchanger where heat is transferred by conduction from a heat transfer medium through a heat transfer surface to the material being processed. The heat transfer fluid is normally water, steam or thermal oil. The material processed does not come in contact with the heat transfer medium resulting in little contamination of the product.

Excellent product temperature control
Since the Holo-Flite® operator has control over heat transfer medium temperature and screw sped, the heat transfer process can be closely controlled. Because the heat transfere medium is normally recycled, heat losses are minimized and a high degree of efficiency is achieved.

Wide operating temperature ranget
The raising and lowering of product temperature beyond a narrow range can often exceed the expansion and contraction capabilities of metals and welded joint design. The Metso Holo-Flite® unique Twin Pad design accommodates these extreme expansion and contraction variations and allows successful operation up to 1200 degrees Celcius.

Effective product conveyance
The Metso Holo-Flite® operates at low speeds, generally below 5 rpm and requires relatively small motors and drives. Gentle mixing of the product occurs at these slow speeds and particle degration, dusting and equipment wear are accordingly minimized.

Versatile design
To meet the various application requirements, the Metso Holo-Flite® can be supplied with single, double or quadruple screw configuration. Holo-Flite® units can also be manufactured to operate under vacuum or pressure. All units are designed and fabricated per ASME Code Section VIII Unfired Pressure Vessels.



Process advantages

Eliminates product contamination
- Heat transfer agent does not come in contact with the product

Highest thermal efficiency
- Heat transfer agent is continually recycled

Economical operation
- Lower power consumption
- Mechanical simplicity
- Continuous operation
- Low maintenance
- No operator required

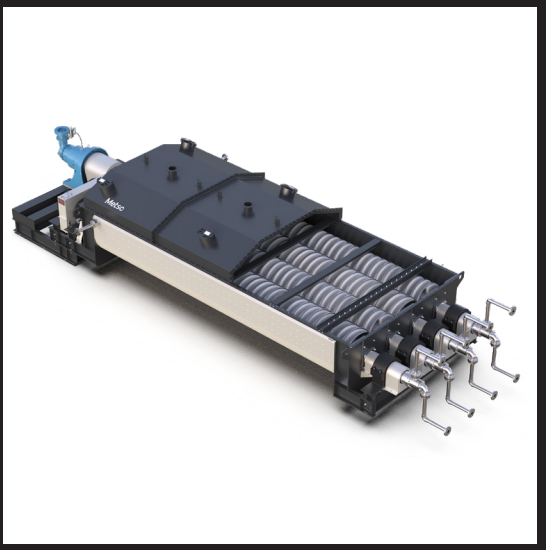
Minimal dusting
- Gentle rotation (1-2 rpm) with little outside air in a controlled atmosphere

Temperature control
- Process materials at closely-controlled temperatures and eliminates hot spots

Operating advantages

Patented Twin Pad screw design
- Screw speed and temperature can be changed to accommodate variations in material throughput and thermal requirements
- Flow of heat transfer agent can be co-current or counter current to the flow of material
- Low horsepower requirements
- Slow screw speeds result in maximum component life

Holo-Flite® configurations
- Six screw sizes: 7, 12, 16, 24, 30 and 36-inch (18, 30, 40, 61 and 90 cm) in diameter
- Holo-Flite® units come with single, double or quad screws
- Various drive arrangements are available to meet individual requirements
- Standard construction materials are available for abrasive applications
- Design and fabrication per ASME Code Section VIII-Unfired Pressure Vessels to 150 PSIG



Benefits

- Versatile design to meet various application requirements
- Energy efficient
- Minimal wear rate
- No product contamination
- Minimal dusting

Laboratory and rental services

Metso can test your product on both a preliminary feasibility or on a full-scale production basis with either a lab-size unit or a production-size Holo-Flite®. We can perform heating, cooling, drying, cooking and solvent evaporation tests quickly and accurately with your samples.

We can provide Holo-Flite® rental units for in-plant testing. The units come with a self-contained electrical hot oil heater. All rental units are complete with vapor dome, and variable speed drive, and ship on skids for ease of shipment and installation

Applications

Chemical processing

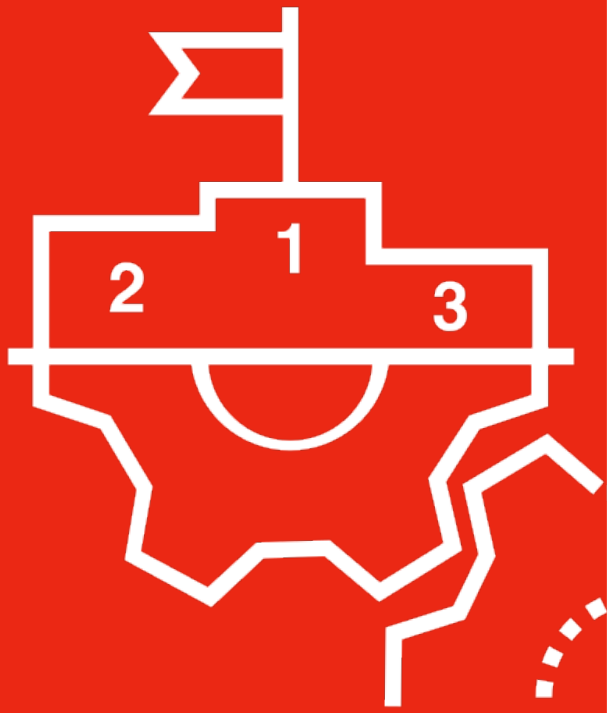
- Cooling: Calcium carbonate, caustic flakes, iron oxide, sodium tripolyphosphate.
- Drying: Alumina, carbon black sodium, chloride, plastics.
- Heating: Pesticides, potassium chloride.

Industrial power applications

- Heating: Limestone filler, petroleum coke.
- Drying: Volume reduction of hazardous and non-hazardous wastes
- Cooling: Incinerator ash, fluidized bed boiler ash and limestone, coke from a calciner.

Mineral processing and coal drying

- Drying: Molybdenum.
- Food processing and environmental
- Many "one of a kind" applications



Data to assist in making better strategic and operational decisions, while reducing fixed costs

Holo-Flite® screw construction

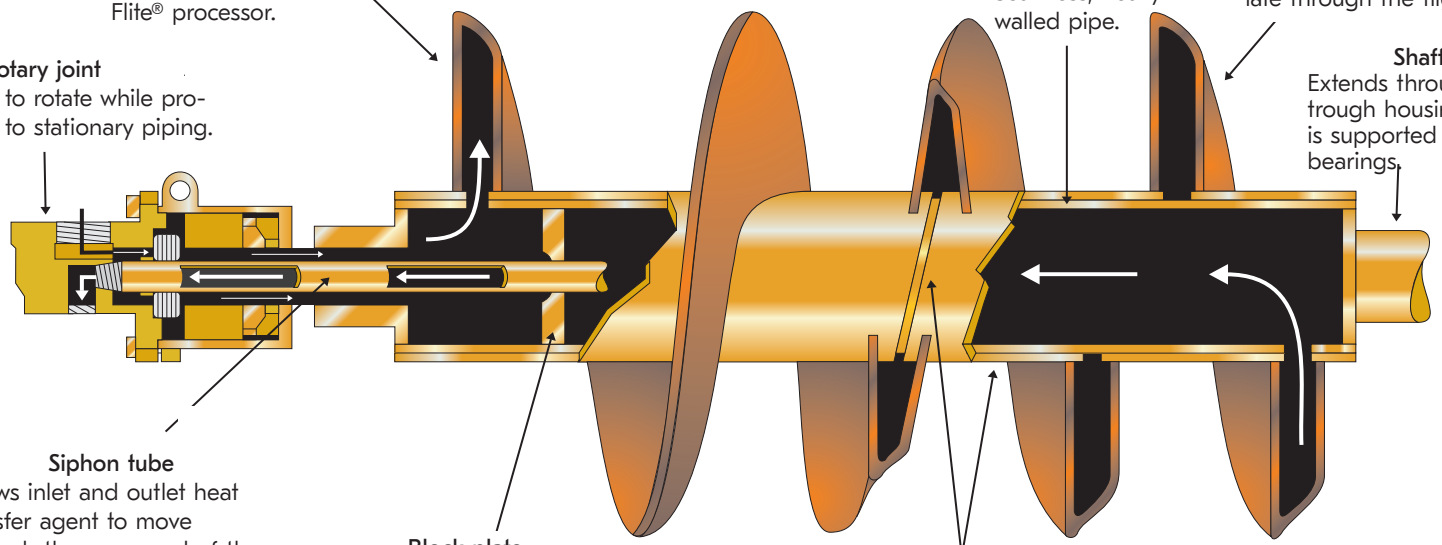
Front flight
Conveys material continuously through the Holo-Flite® processor.

Back flight
The jacketed portion of the flight allows the heat transfer agent to circulate through the flights..

Hollow Stem pipe
Seamless, heavy-walled pipe.

Rotary joint
Allows screw to rotate while providing a seal to stationary piping.

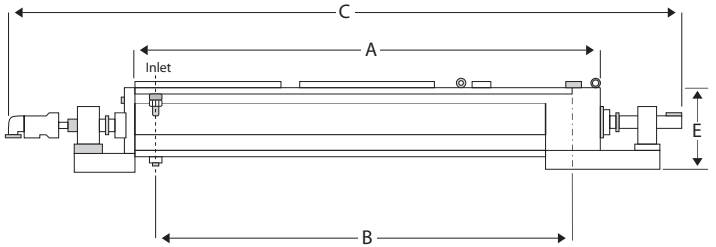
Shaft
Extends through the trough housing and is supported by bearings.



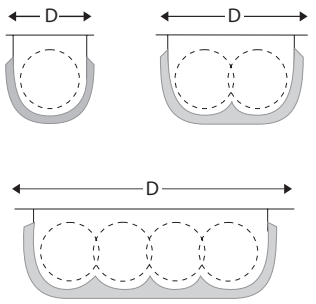
Siphon tube
Allows inlet and outlet heat transfer agent to move through the same end of the screw.

Block plate
Prevents intermixing of inlet and outlet heat transfer agent.

Outer Twin Pad wrap
Wrapped around the stem pipe. Flight are welded to this wrap, allowing them to expand and contract independently of the stem pipe. The Holo-Flite® Processor is the only machine with this patented feature.



Note: The inlet and outlet can be at opposite ends to those shown in the drawing. Where required, the processor can be incllined up to 15° to the horizontal.



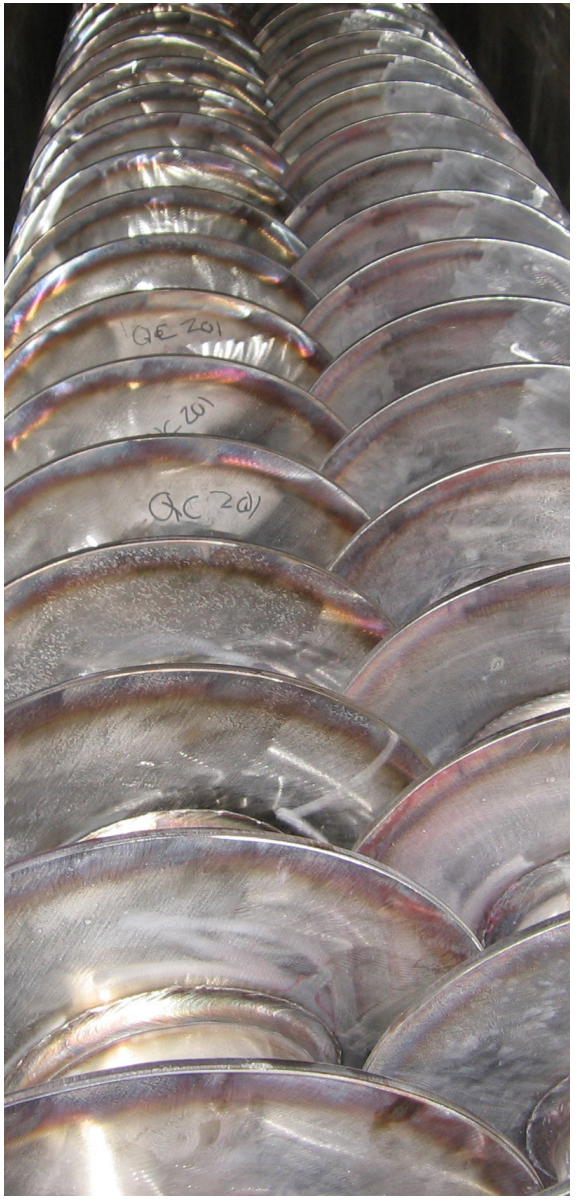
Unit Size & Type Designation:
Each Holo-Flite processor is designated by a group of numbers and letters arranged to specifically identify the unit as indicated to the right.

D 12 10 – 5

- 5 – Pitch of screws – inches
- 10 – Nominal length of screws – feet (mm)
- 12 – Nominal diameter of screws – inches (mm)
- D – Number of screws in tier – S – single, D – double, Q – quadruple

Technical specifications

Unit size	A) Nominal length	B) C/L Inlet to outlet	C) Overall lenght	D) Overall width	E) Overall height	Screw area (ft^2)	Screw diameter
S0710-4	10′ (3048)	9′-2 3/16″ (2799)	13′-9″ (4191)	1′-0″ (305)	1′-1 3/16″ (335)	21	
S0714-4	14′ (4267)	13′-2 3/16″ (4018)	17′-9″ (5410)	1′-0″ (305)	1′-1 3/16″ (335)	30	7 3/8″
D0710-4	10′ (3048)	9′-2 3/16″ (2799)	13′-9″ (4191)	1′-6″ (457)	1′-1 3/16″ (335)	42	(187)
D0714-4	14′ (4267)	13′-2 3/16″ (4018)	17′-9″ (5410)	1′-6″ (457)	1′-1 3/16″ (335)	60	
S1210-5	10′ (3048)	8′-6 13/16″ (2611)	14′-9″ (4496)	1′-6″ (457)	1′-10¼″ (565)	39	
S1218-5	18′ (5486)	16′-6 13/16″ (5050)	22′-9″ (6934)	1′-6″ (457)	1′-10¼″ (565)	74	12 ½″
D1210-5	10′ (3048)	8′-6 13/16″ (2611)	15′-10″ (4826)	2′-4″ (711)	1′-10¼″ (565)	78	(318)
D1218-5	18′ (5486)	16′-6 13/16″ (5050)	23′-10″ (7264)	2′-4″ (711)	1′-10¼″ (565)	148	
S1614-6	14′ (4267)	12′-6 9/16″ (3824)	20′-0″ (6096)	1′-10″ (559)	2′-1″ (635)	79	
S1618-6	18′ (5486)	16′-6 9/16″ (5043)	24′-0″ (7315)	1′-10″ (559)	2′-1″ (635)	106	16″
D1614-6	14′ (4267)	12′-6 9/16″ (3824)	20′-0″ (6096)	2′-10″ (864)	2′-1″ (635)	158	(406)
D1618-6	18′ (5486)	16′-6 9/16″ (5043)	24′-0″ (7315)	2′-10″ (864)	2′-1″ (635)	207	
S2414-6	14′ (4267)	12′-6 9/16″ (3824)	20′-8″ (6299)	2′-6″ (762)	2′-10 11/16″ (881)	173	
S2424-6	24′ (7315)	22′-6 9/16″ (6872)	30′-8″ (9347)	2′-6″ (762)	2′-10 11/16″ (881)	307	
D2414-6	14′ (4267)	12′-6 9/16″ (3824)	22′-0″ (6706)	4′-0″ (1219)	2′-10 11/16″ (881)	346	24″
D2424-6	24′ (7315)	22′-6 9/16″ (6872)	32′-0″ (9754)	4′-0″ (1219)	2′-10 11/16″ (881)	614	(610)
Q2418-6	18′ (5486)	16′-6 9/16″ (5043)	26′-0″ (7925)	7′-1″ (2159)	2′-10 11/16″ (881)	906	
Q2424-6	24′ (7315)	22′-6 9/16″ (6872)	32′-0″ (9754)	7′-1″ (2159)	2′-10 11/16″ (881)	1227	
S3022-7	22′ (6706)	20′-4″ (6198)	29′-4″ (8941)	3′-2″ (965)	3′-7″ (1092)	323	
S3028-7	28′ (8534)	26′-4″ (8026)	35′-4″ (10770)	3′-2″ (965)	3′-7″ (1092)	415	
D3022-7	22′ (6706)	20′-4″ (6198)	30′-11″ (9423)	5′-3″ (1600)	3′-7″ (1092)	645	30″
D3028-7	28′ (8534)	26′-4″ (8026)	36′-11″ (11252)	5′-3″ (1600)	3′-7″ (1092)	829	(762)
Q3022-7	22′ (6706)	20′-4″ (6198)	30′-11″ (9423)	9′-5″ (2870)	3′-7″ (1092)	1290	
Q3028-7	28′ (8534)	26′-4″ (8026)	36′-11″ (11252)	9′-5″ (2870)	3′-7″ (1092)	1659	
S3622-8	22′ (6706)	20′-4″ (6198)	29′-7″ (9017)	3′-7″ (1092)	4′-4″ (1321)	443	
S3628-8	28′ (8534)	26′-4″ (8026)	35′-7″ (10846)	3′-7″ (1092)	4′-4″ (1321)	570	
D3622-8	22′ (6706)	20′-4″ (6198)	31′-3″ (9525)	5′-11″ (1803)	4′-4″ (1321)	886	35 ½″
D3628-8	28′ (8534)	26′-4″ (8026)	37′-3″ (11354)	5′-11″ (1803)	4′-4″ (1321)	1140	(902)
Q3622-8	22′ (6706)	20′-4″ (6198)	31′-3″ (9525)	10′-7″ (3226)	4′-4″ (1321)	1773	
Q3628-8	28′ (8534)	26′-4″ (8026)	37′-3″ (11354)	10′-7″ (3226)	4′-4″ (1321)	2281	



Services at a glance

Get the most out from your resources and achieve better business results. Our services range from supplying an individual spare part to comprehensive solutions covering your maintenance and operations

Spare and wear parts
Our original OEM parts ensure reliability and availability of your equipment and process. We provide recommendations and components for the Holo-Flite®, the scrubber and the hot oil heater.

Process optimization and connected services
We take a holistic view of the Holo-Flite® system including the scrubber and oil heater, which may require a modernization of the automation system for better data quality, process control and troubleshooting (up to date HMI, modern PLC control system provide an understandable and intuitive interface, PLC and CMS).

Maintenance, shutdowns and inspections
Our inspections provide information about the condition of your equipment, recommendations for operations, maintenance, spare parts and possible performance improvements. Annual inspections ensure optimum air flow settings from Holo-Flite® to the scrubber and PLC and confirm correct function of field instruments.

Repairs and retrofits
We provide welding repairs on screws at our workshops or rebuild the screw flights. We also provide support for the repair of key components like main shafts or troughs to reduce component costs and enable fastest restart of the equipment after failure

Modernizations and upgrades
Upgrades could refer to design and material screw enhancements, split housing or seal designs, adapted weir plates, new shaft bearing designs or timing gears, compact and lower cost drive arrangements, improved mixing labs, dead flites or scrapers, different rotary joint designs for easy removal and vapor dome and guarding modifications.

Life Cycle Services
We take our entire aftermarket portfolio and conveniently bundle them into customizable, easily manageable packages. Depending on the scale of your needs, our packages are flexible and equipped to cover a single event or to span multiple years, measured against strict KPIs..

Metso is a frontrunner in providing sustainable technologies, end-to-end solutions and services for the aggregates, minerals processing and metals refining industries globally. By helping our customers increase their productivity, improve their energy and water efficiency and environmental performance with our process and product expertise, we are the **partner for positive change.**

Metso

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