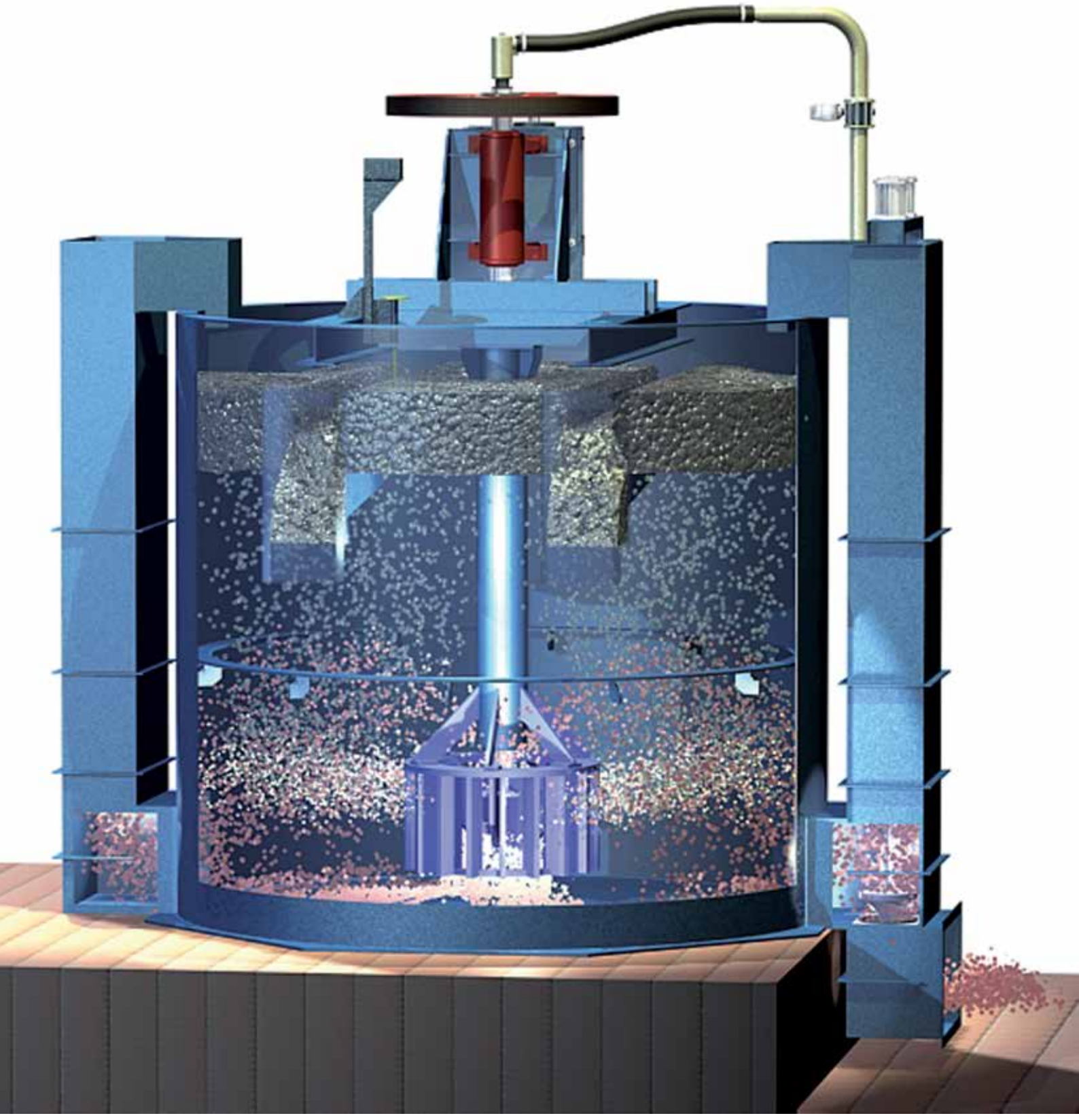
RCS™

Flotation machines

metso
Expect results

Maximum flotation recovery

The flotation concept



The RCS flotation machine is the latest design to use the circular tank concept and combines the benefits of circular cells with the unique features of the mechanism to create the ideal conditions to maximise flotation performance for all roughing, cleaning and scavenging duties.

Metso offers the full range of cell volumes required for modern ore processing plants with cell sizes from 0,8 to 200 m^3.

DV™ Flotation mechanism

The patent-protected DV™ (Deep Vane) mechanism impeller consists of a unique arrangement of vertical vanes with shaped lower edges and air dispersion shelf.

The mechanism design produces powerful radial slurry pumping to the cell wall and gives strong return flows to the underside of the impeller to minimize sanding.

Additionally it is the only mechanism to give maximum slurry recirculation to the upper part of the impeller.

Vertical diffuser vanes promote these radial flow patterns and completely eliminate slurry rotation in the tank.

Enhances flotation performance:

- Maximum particle-bubble contacts within the mechanism and the flotation tank.
- Effective solids suspension during operation and resuspension after shutdown.
- Effective air dispersion and distribution throughout the complete cell volume.

Reduces operating costs:

- Mechanism designed to minimize local high velocity zones within the impeller and diffuser to extend wear life.
- Impellers and diffusers are supplied in high abrasion-resistant elastomers or molded polyurethane.
- Impeller profile is designed to minimize absorbed power.

RCS™ Flotation machine

The RCS™ (Reactor Cell System) flotation machine has been developed to combine the benefits of the circular cell concept with the unique features of the DV™ mechanism to create the ideal conditions to maximize flotation performance for roughing, scavenging, and cleaning duties. Maximum flotation recovery and performance have been achieved by careful attention to tank design.

- A very active lower zone for good solids suspension and transport, designed to maximize and create multiple particle-bubble contacts for recovery of the full range of particle sizes present.
- An upper zone with reduced turbulence to prevent particle-bubble separation of the coarser sizes.
- A quiescent cell surface to minimize particle re-entrainment.

Tank design features

- Circular tank concept with low level slurry entry and exit to minimize slurry short circuiting.
- Modular tank design to simplify construction, shipment and site installation.
- Cell superstructure designed to rigidly support the flotation mechanism and drive and to act as a support for both the drive maintenance platform and a walkway which extends across all cells in the flotation bank. Where environmental regulations apply, the complete cell top can be enclosed to minimize the release of ultrafine particles into the concentrator atmosphere.
- Wear protection is only required in the central area of the tank base, no protection is necessary at the tank wall.

Feed and discharge boxes

Conventional feed, intermediate and discharge boxes are standard. Down flow control dart valves are located at the cell floor level.

Froth handling

Each RCS™ tank is provided with double internal cross-flow launders for effective froth removal and minimal froth transport distance:

- Both launders discharge to one side of the cell to simplify froth handling.
- Froth crowder plates can be easily provided to reduce froth residence times for enhanced coarse particle and scavenger recovery.

Level control

Pulp level control is by conventional pneumatically operated dart valves with float type or customer specified level sensor.

Ease of maintenance:

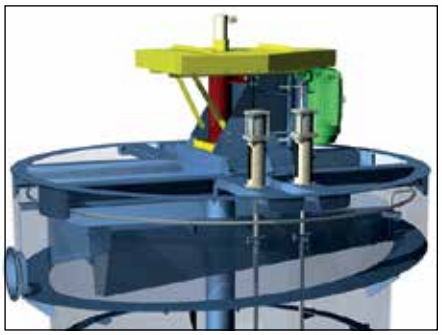
- The DV mechanism is fully suspended from the cell superstructure and can be removed as a complete unit for routine maintenance.
- Wear parts can also be replaced within the flotation machine without removal of the mechanism.

Air control:

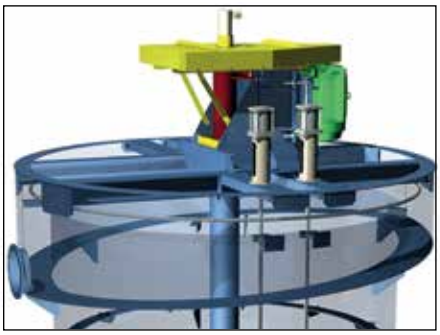
- Flotation air is provided by a separate air blower.
- Aeration rate is manually or automatically controlled at each mechanism.

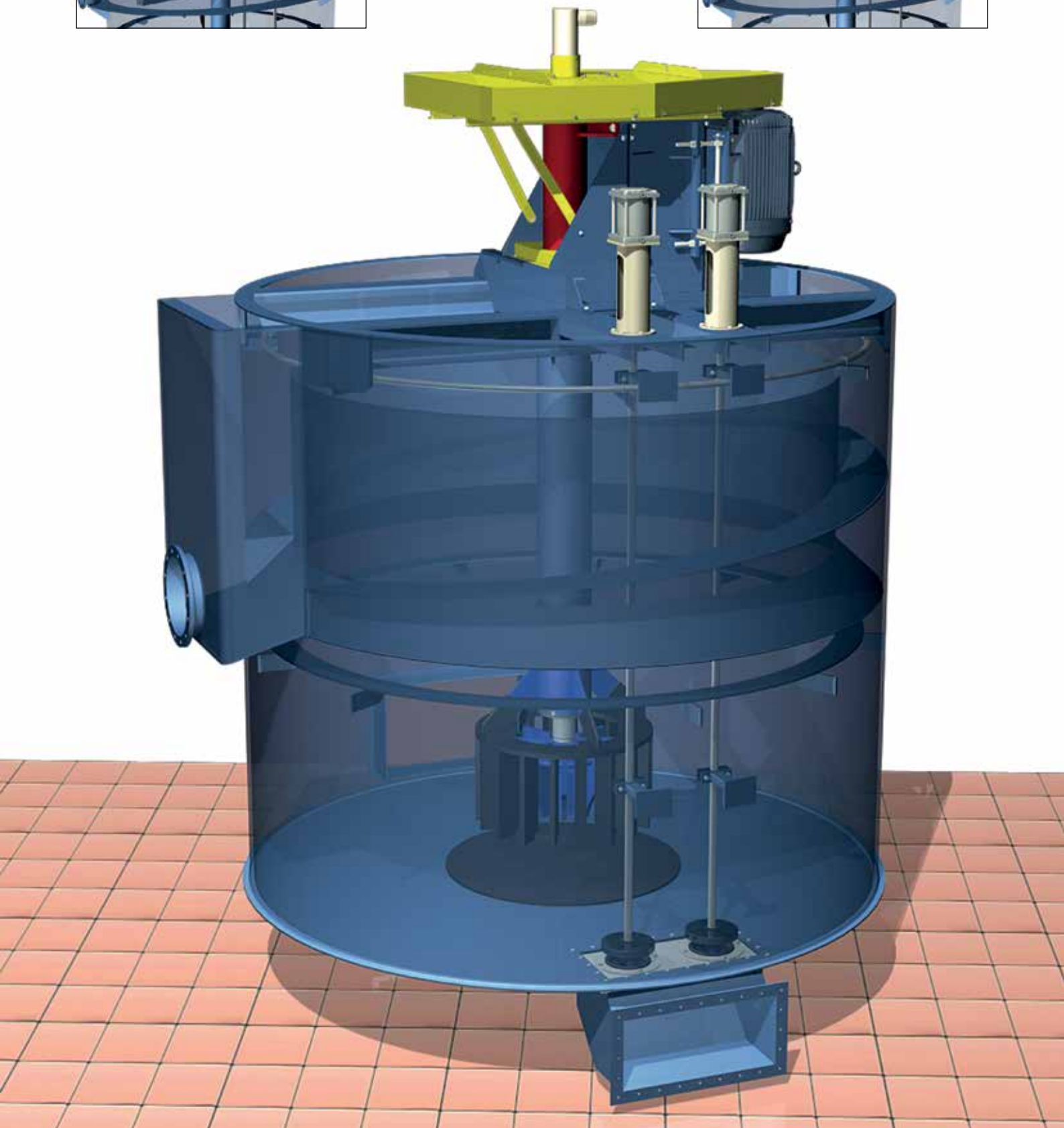
Proven drive systems:

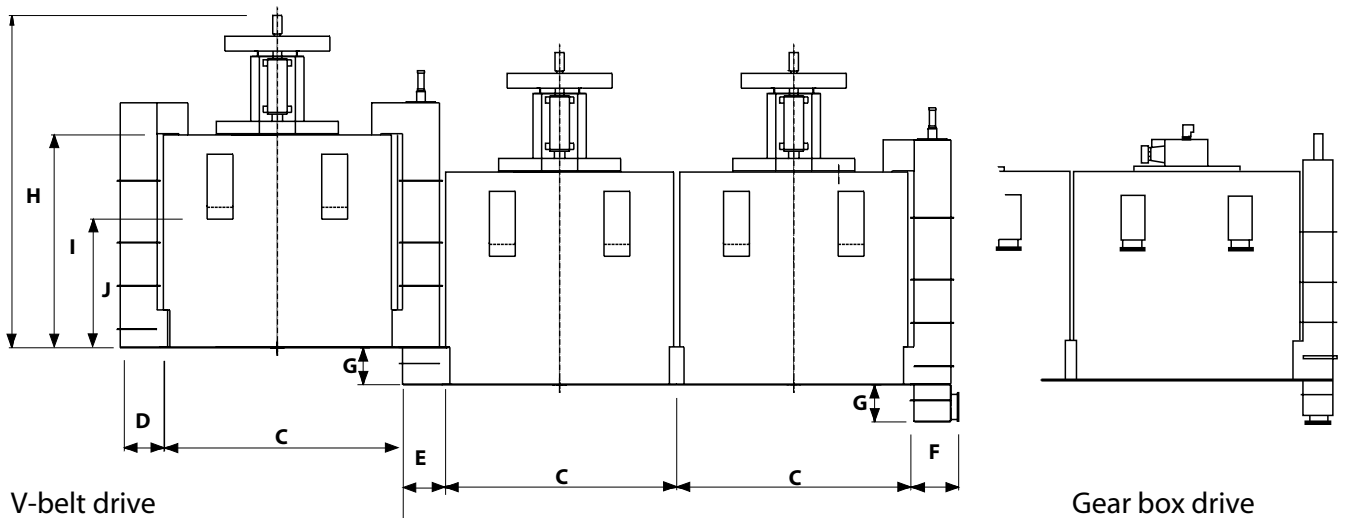
- V-belt drive is standard up to 70 m^3 cell volume and available up to 130 m^3
- Gearbox drive with extended output shaft bearings and drywell construction is standard for cell volumes over 70 m^3. Smaller gearboxes are also available.



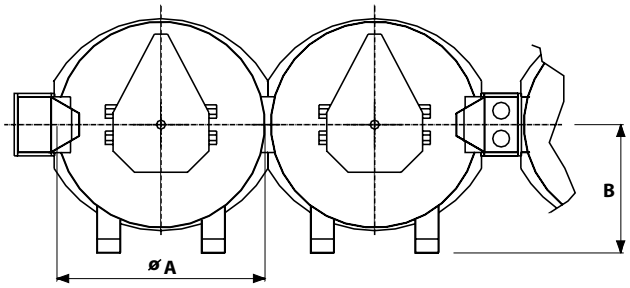
The standard launder solution is with transvers launders, but peripheral internal or external are also available as well as combinations of transvers and peripheral.



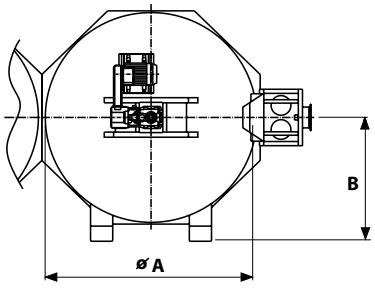




V-belt drive



Gear box drive



Cell dimensions V-belt drive

	∅A*	B	C	D	E	F	G	H	I	J
RCS 0,8	1100	770	1180	140	250	375	190	1790	1240	490
RCS 3	1700	1050	1800	285	300	425	250	2790	1810	1010
RCS 5	2000	1230	2100	425	450	575	250	3020	2080	1295
RCS 10	2600	1550	2700	425	450	575	350	3610	2450	1465
RCS 15	3000	1820	3100	550	600	700	400	3990	2840	1755
RCS 20	3250	2050	3350	550	600	700	450	4610	3060	1765
RCS 30	3700	2300	3800	650	700	800	600	5375	3440	2070
RCS 40	4100	2360	4250	650	700	850	700	5780	3850	2370
RCS 50	4500	2615	4650	675	750	875	750	6100	4190	2495
RCS 70	5000	2950	5150	900	1000	1100	800	6690	4615	2830
RCS 100	5600	3300	5800	950	1100	1150	900	7510	5210	3355
RCS 130	6100	3600	6300	1150	1300	1400	1000	8250	5650	3515
RCS 160	6500	3850	6700	1150	1300	1400	1100	8925	6125	3995
RCS 200	7000	4100	7200	1350	1500	1400	1200	9375	6575	4300

Cell dimensions gear-box drive

	∅A*	B	C	D	E	F	G	H	I	J
RCS 100	5600	3300	5800	950	1100	1150	900	6510	5210	3355
RCS 130	6100	3600	6300	1150	1300	1400	1000	6875	5650	3515
RCS 160	6500	3850	6700	1150	1300	1400	1100	7495	6125	3995
RCS 200	7000	4100	7200	1350	1500	1400	1200	8050	6575	4300

All dimensions in mm *A= Tank Diameter*

V-belt drive

Gear box drive

Specifications

		Cell volume (1)		Connected motor (2)		Air requirements (2)			
		m^3	ft^3	kW	hp	m^3/min	kPag	Acfm	psig
RCS	0,8	0,8	28	5,5	7,5	1	11	35	1,6
RCS	3	3	105	11	15	2	17	70	2,5
RCS	5	5	175	15	20	3	19	110	2,8
RCS	10	10	355	22	30	4	22	140	3,2
RCS	15	15	530	30	40	6	25	210	3,6
RCS	20	20	705	37	50	7	27	250	3,9
RCS	30	30	1060	45	60	9	31	320	4,5
RCS	40	40	1410	55	75	10	34	350	4,9
RCS	50	50	1765	75	100	12	38	420	5,5
RCS	70	70	2470	90	125	15	41	530	5,9
RCS	100	100	3530	110	150	19	47	670	6,8
RCS	130	130	4590	132	200	23	51	810	7,4
RCS	160	160	5650	160	200	25	55	880	8,0
RCS	200	200	7060	200	250	30	59	1060	8,6

(1) Effective volume (2) Per cell, slurry 1.35 S.G.

The Metso Way –
Making the big difference to our customers

Everything we do is based on deep industry knowledge and expertise that makes the big difference to our customers. Decades of close customer collaboration and adapting to our customers' ever changing needs have transformed us into a knowledge company.

www.metso.com
minerals.info@metso.com

Subject to alteration without prior notice

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