

ROTO CUBE

SINGLE-POT PROCESSOR



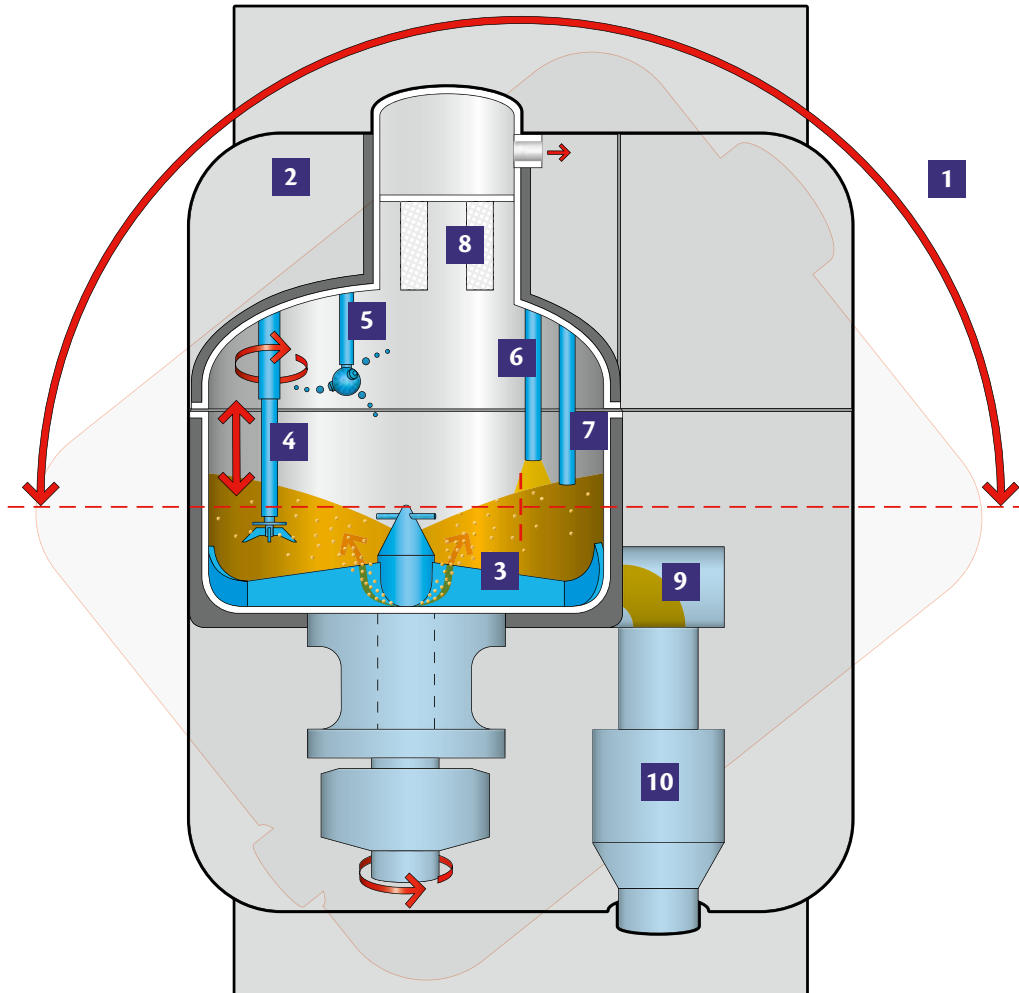
ROTO CUBE

Developed in 1984, as a contained solution for the processing of highly active pharmaceutical products, ROTO CUBE technology became the benchmark for single pot process.

ROTO CUBE allows the entire process of any type of product, from the loading of raw materials to the discharge of dry granules, carried out in a single, contained bowl, thus eliminating contact between product, operator and the environment.

- PROCESS IN HIGH CONTAINMENT
- MAXIMUM PRODUCT YIELD
- REDUCED RISK OF CONTAMINATION
- MINIMUM MANPOWER, SPACE AND ENERGY
- SAFE USE OF SOLVENTS
- ACCURATE DETECTION OF PROCESS END-POINT
- PERFORMING SCADA CONTROL SYSTEM



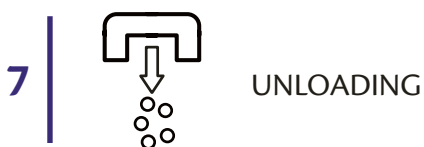
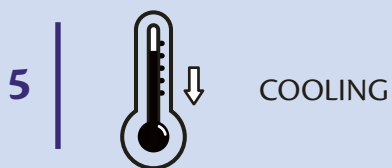
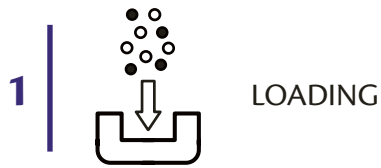


ALL IN ONE CUBE

1. JACKETED AND TILTING BOWL FOR REDUCING DRYING TIME
2. 90° LID OPENING FOR EASY ACCESS TO THE BOWL
3. GA.ST. SYSTEM TO REDUCE DRYING TIME
4. TELESCOPIC CHOPPER FOR MAXIMUM BATCH SIZE FLEXIBILITY
5. WASH IN PLACE SYSTEM FOR ACCURATE CLEANING
6. BINDER SPRAYING FOR HOMOGENEOUS LIQUID DISTRIBUTION
7. LOADING OF RAW MATERIAL BY MEANS OF VACUUM OR GRAVITY
8. FILTERS TO PROTECT THE VACUUM PUMP
9. UNLOADING VALVE FOR MATERIAL DISCHARGE
10. IN-LINE MILLING DURING GRANULES DISCHARGE

ROTO CUBE PROCESS DIAGRAM

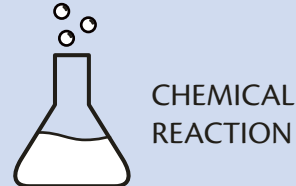
ALL IN ONE BOWL



WATER BASED
ALCOHOL BASED
EFFERVESCENT
TEMPERATURE SENSITIVE
OXYGEN SENSITIVE



WAX GRANULES
MODIFIED RELEASE GRANULES



API ENCLOSURE IN POLYMERS
SALIFICATION OF API
API COMPLEXATION WITH EXCIPIENTS
API CRYSTALLIZATION



Impeller



Telescopic chopper



Sampling

DRYING IN ROTO CUBE

Vacuum, gas stripping system (GA.ST.), heated and tilting bowl allow drying of wet product with excellent yield and product quality.

In this way drying process is very efficient, capable to dry products at low temperature, with efficient solvent recovery and minimum exhausts in the environment.

Vacuum drying promotes solvent evaporation at lower temperature. Evaporation becomes faster if vacuum is combined with gas stripping system (GA.ST.), a small stream of air/nitrogen through the product which acts as a carrier of the vapors.

The tilting bowl during drying phase moves gently the granules to achieve a good particle size enhancing heat transfer from the bowl to the product. Use of tilting bowl helps either to shorten the drying time.



ROTO CUBE



COMPACT DESIGN FOR PROCESS CONTAINMENT

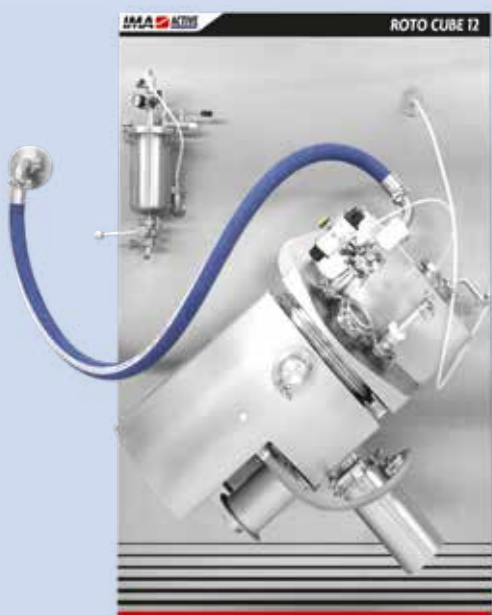
ROTO CUBE is all in one granulation solution designed to carry out many process steps in the same pot.

It is very suitable to work in high containment since product transfers and surface in contact with the product are sensibly reduced.

Product loading and unloading can be managed by means of containment valves.

WASH IN PLACE

DUE TO ITS COMPACT DESIGN, ROTO CUBE IS ALSO FAST TO CLEAN AND CLEANING VALIDATION IS FACILITATED.



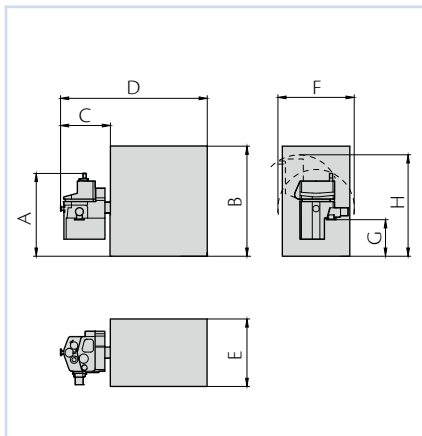
ROTO FOR LABORATORY

Laboratory scale models can be used for formulation and scale up studies to easily achieve production requirements.

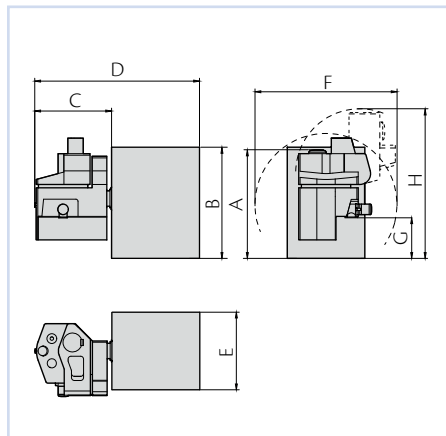


TECHNICAL DATA

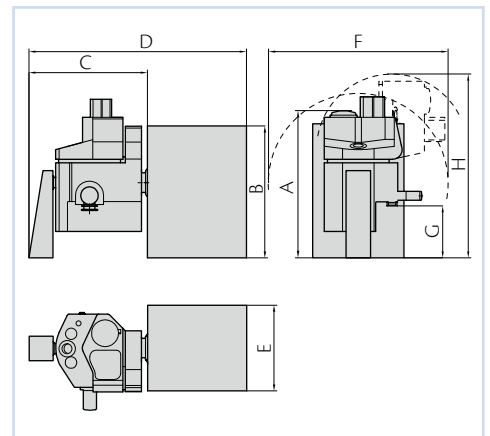
ROTO CUBE 12-30



ROTO CUBE 60 - 1200



ROTO CUBE 1500 - 3000



	ROTO CUBE										
Model	12	30	60	120	300	600	900	1,200	1,500	2,000	3,000
Bowl capacity (l)	12	30	60	120	300	600	900	1,200	1,500	2,000	3,000
Product quantity (l)	4-8	10-20	20-40	40-80	100-200	200-400	300-600	400-800	500-1,000	650-1,350	1,000-2,000
A (mm)	1,400	1,450	2,200	2,360	2,900	3,100	3,500	3,500	4,300	4,520	5,730
B (mm)	2,020		2,400		2,680	2,880	3,380	3,380	4,200	4,200	4,500
C (mm)	770	920	1,300	1,375	1,750	2,000	2,130	2,250	2,360	3,700	4,000
D (mm)	2,610	2,760	3,570	3,650	4,330	4,600	4,700	4,860	4,860	5,650	5,950
E (mm)	1,075		1,660		2,000		2,200		2,200	2,400	
F (mm)	1,400	1,400	2,450	2,550	3,000	3,700	3,950	4,100	4,200	4,400	5,400
G (mm)	720	675	900		1,075	1,060	1,320	1,270	1,350	1,450	1,500
H (mm)	1,730	1,870	2,700	2,950	3,510	3,860	4,450	4,670	4,790	5,100	6,000
Impeller speed (rpm)	20-597	20-434	20-347	10-277	10-205	10-163	10-142	10-130	10-122	5-110	5-96
Chopper speed (rpm)	700-1,500										

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