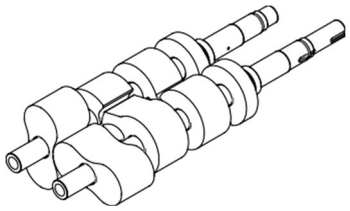
DP SERIES

MULTI-STAGE DRY VACUUM PUMP

DP250T / TS
DP400T / TS



DP Series is a Multi-stage Dry Vacuum Pump with a pair of lobes and a pair of claw rotors rotating in a synchronous way within the pump casing to form suction and discharge operation.

Oil-free, non-contacting, four stage roots and claw profile make it more suitable for pumping air vapour mixtures. It provides a consistent vacuum with high efficiencies, lowest cost of ownership with adequate safety and performance standards.

Pump Technology and Features

Four stage compression (DP400)
Faster air removal and higher rate of compression

Compact design
Pump mounted on a stand-alone frame occupying a footprint <1sq.m

Vertical mount
Self-draining technology and a vertical mount design make the pump more versatile and rugged

Cartridge-type inlet side bearing
Grease lubricated roller bearing ideal for supporting radial loads. Easy replacement of inlet side roller bearing and seals without removing stages

Angular contact bearing
Double row angular contact bearings near the motor take care of simultaneously acting radial and axial loads

Relief valve
A third stage relief valve avoids high pressure build up within stage compression cycle, if the pump crosses 300mbar

The TS version is a Compact Multi-stage Dry Vacuum Pumping System

A fully automated and self-sustained vacuum pumping system designed with all essential safety features makes it industry ready and a plug-and-play standalone unit.

DP250TS/DP400TS Features

Intelligent In-direct cooling (Thermosiphon)
Unidirectional flow of water through the heat exchanger will eliminate blockages that may occur in industrial water supplies.
Cleaning the heat exchanger is also easier if clogging occurs, when compared to the clogging faced within the pump jacket.

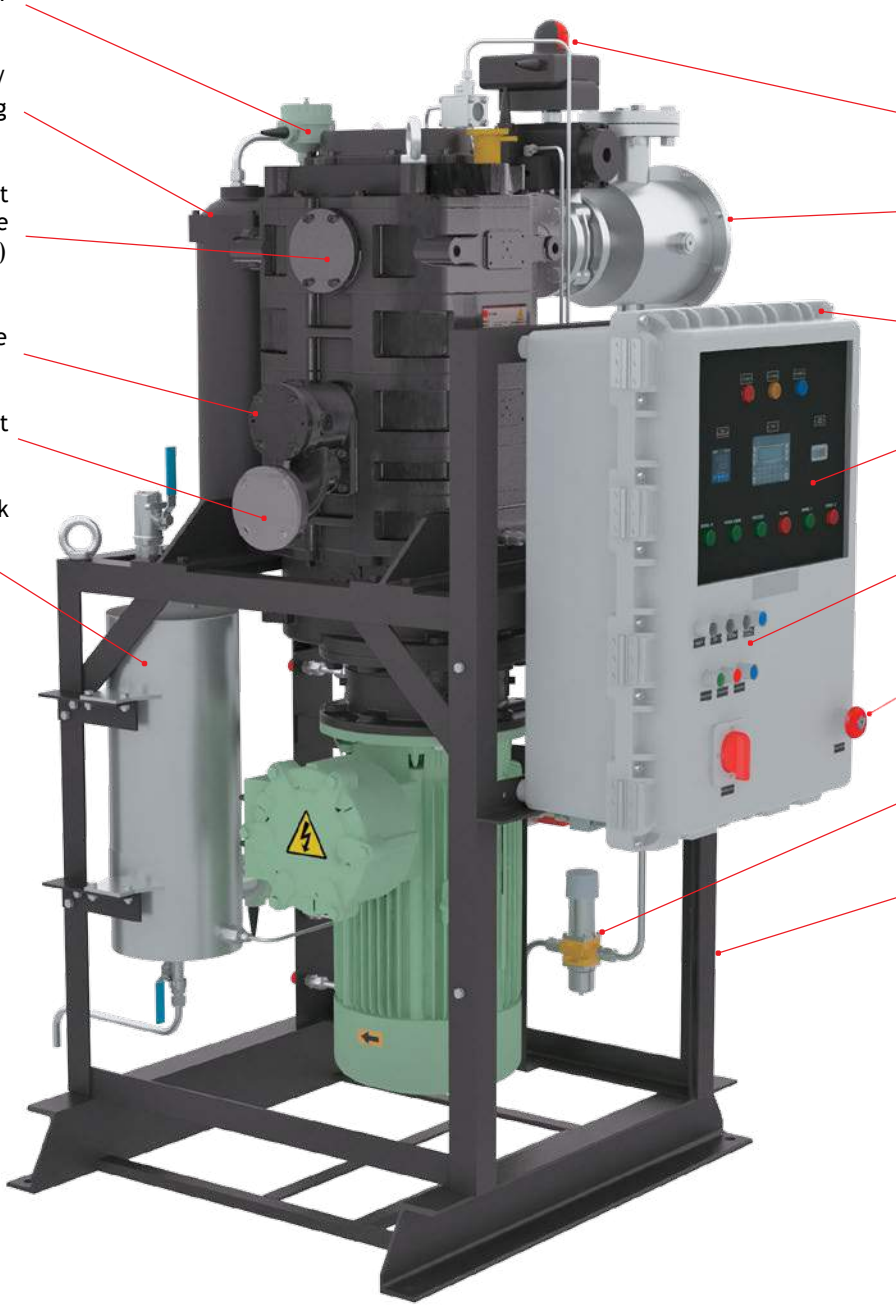
Temperature Control System
Helps is preventing condensation/deposition of chemicals in the stages. It maintains the set temperature by controlling the flow of the cooling water through the heat exchanger. The set temperature is defined by the application.

Inlet purge
Protection from process substances entering into the pump chamber and pipe lines through purging a high pressure nitrogen at the inlet.

Shaft seal purge
It is essential to maintain shaft seals at a positive pressure during operation helping to prevent entry of corrosive/toxic gases towards the pump gear cover.
Life of shaft seals increases as we eliminate the risk of damage that may cause from debris or any other corrosive/toxic gases.
A controlled and customizable feature helps the user to determine the purge frequency based on the usage and application.

Solvent purge
Internal surfaces of the pump are more prone to corrosion and by-product settlement. This is prevented by running the solvent used for distillation. The solvent purge will rinse the pump internals and keep it safe from possible corrosion and process substances.

DP400TS


Temperature Detector
Heat Exchanger/ Indirect Cooling
Additional inlet (In case of pipeline issues found at site)
By pass valve
Pump exhaust
Solvent tank
Isolation Valve
Pump inlet with dust filter
Flame proof control panel
Toughened glass for viewing HMI
Push buttons for controlling HMI
Emergency OFF switch
Thermostatic control valve
MS Frame

DP Series Variants

Features / Versions	Basic (Clean Application)	Intermediate		Advanced	
		(Two Panel)	(Single Panel)	(Two Panel)	(Single Panel)
Models	DP250T DP400T	DP250TSA-2 DP400TSA-2	DP250TSA-1 DP400TSA-1	DP250TSB-2 DP400TSB-2	DP250TSB-1 DP400TSB-1
Heat Exchanger	✓	✓	✓	✓	✓
Shaft Seal Purge	✓	✓	✓	✓	✓
Silencer*	✓	×*	×*	×*	×*
Temperature Control Valve	-	✓	✓	✓	✓
Solvent Tank	-	✓	✓	✓	✓
Inlet N_2 Purge	-	✓	✓	✓	✓
Pressure Transmitter (Exhaust)	-	×	×	✓	✓
Pressure Transmitter (Inlet)	-	×	×	✓	✓
Resistance Temperature Detector	-	×	×	✓	✓
Inlet Isolation Valve	-	✓	✓	✓	✓
Inlet Filter - MS	-	✓	✓	×	×
Inlet Filter - SS	-	×	×	✓	✓
FLP Pendant (on DP system frame)	-	✓	-	✓	-
Control Panel (Non-FLP)	-	✓	-	✓	-
Control Panel (FLP)	-	-	✓	-	✓
Pipelines (SS304)	-	✓	✓	✓	✓

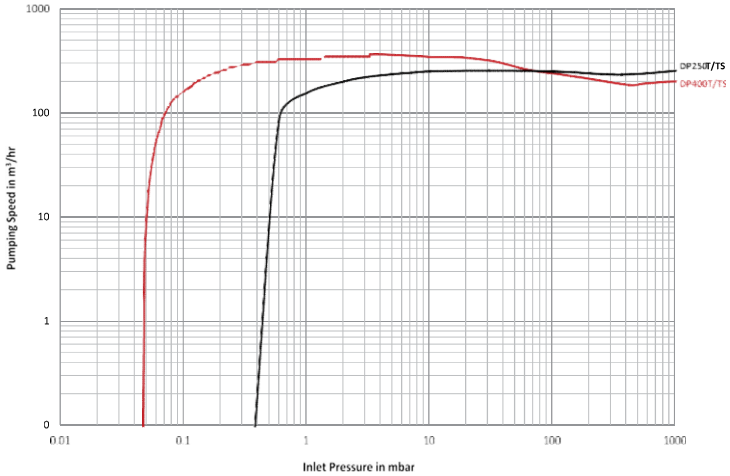
* choice of silencer is optional and based on customer/application requirement

Suggested Industry and Applications

Industry	Markets	Applications	Basic	Intermediate	Advanced
Process Vacuum	Chemical	Aromatic Extraction			●
		Tray Drying		●	●
		Filtration	●		
		Distillation (Common solvents)		●	●
		Distillation (Reactive chemicals)			●
	Pharmaceutical	Short Path Distillation		●	●
		Distillation (Common solvents)		●	●
		Distillation (Reactive chemicals)			●
	Freeze Drying	Freeze Drying (Industrial)	●		
	Electrical & Power	Transformer Drying	●		
Industrial Vacuum	Vacuum Heat Treatment	Vacuum Furnace	●		
	Evacuation	Cryogenic Tank Evacuation	●		
Thin Film Deposition (Non-Semiconductor)	Solar (Photovoltaic)	Solar Lamination	●		

● Recommended
● Optional

Performance Curves



Specifications

Particular	Unit	DP250T	DP400T
Description/Frequency/Phase	Hz	50	50
Orientation	-	Vertical	Vertical
No. of stages	-	3	4
Construction	-	3 claw	1 root + 3 claw
Maximum pumping speed	m^3/h	250	360
Ultimate pressure (total pressure)	mbar	< 0.4	0.05
Motor power	kW	11	11
Power consumption at 10mbar	kW	6	6
Power supply	V	415V, Three phase	415V, Three phase
Motor rotational speed	rpm	3000	3000
Cooling type	Direct/Indirect	Direct	Indirect
Weight	kg	545	645
Noise level*	dB(A)	78	82
Inlet connection	-	ISO63	ISO63
Exhaust connection	-	KF50	KF50
Gearbox oil capacity	L	3.5	3.5
Recommended oil (supplied)	-	ISOVG 150	ISOVG 150
Overall dimensions; (Length x Width x Height)	mm	850 x 750 x 1623	950 x 850 x 1710

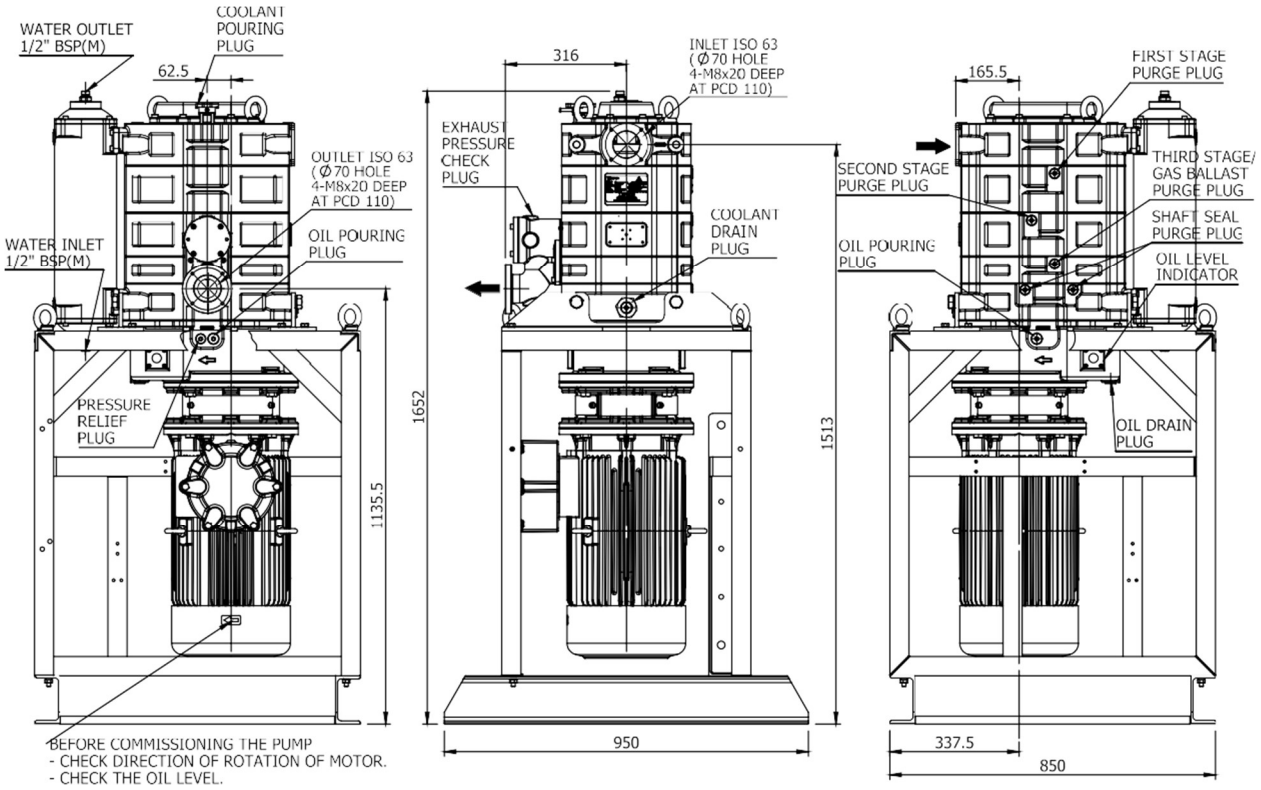
* Pump installed with exhaust duct and standard silencer, running at ultimate. The noise figures above are measured generally in accordance with BS EN ISO 4871:1997. 1 meter from the end of the pump to ISO 11201.

Function	Parameter	Recommended
Shaft Seal Purge	Seal purge supply pressure	2 to 10 bar g
	Regulated pressure of purge to shaft seal (above exhaust back pressure)	0.3 to 0.5 bar g
	Maximum seal purge flow at regulated pressure	20 lpm
	Connection, supply interface	3/8" BSP (F)
Cooling water	Cooling water supply, Water quality	Ryznar Stability Index 6.5-7
	Cooling-water flow	4 - 10 lpm
	Supply temperature range	5 to 35 °C
	Maximum cooling-water supply pressure	10 bar g
	Minimum required pressure differential across supply and return	2 bar g
	Connection, supply interface	1/2" BSP Male
	Normal surface temperature of the pump-body **	40 °C
	Maximum water consumption with pump operating temperature **	4 lpm
	Warm-up time to pump operating temperature with a cooling-water flow rate of **	45 min @ 4lpm flow
	Typical heat removed from pump by cooling-water	5.5 kW
	Cool down time ***	3 hours

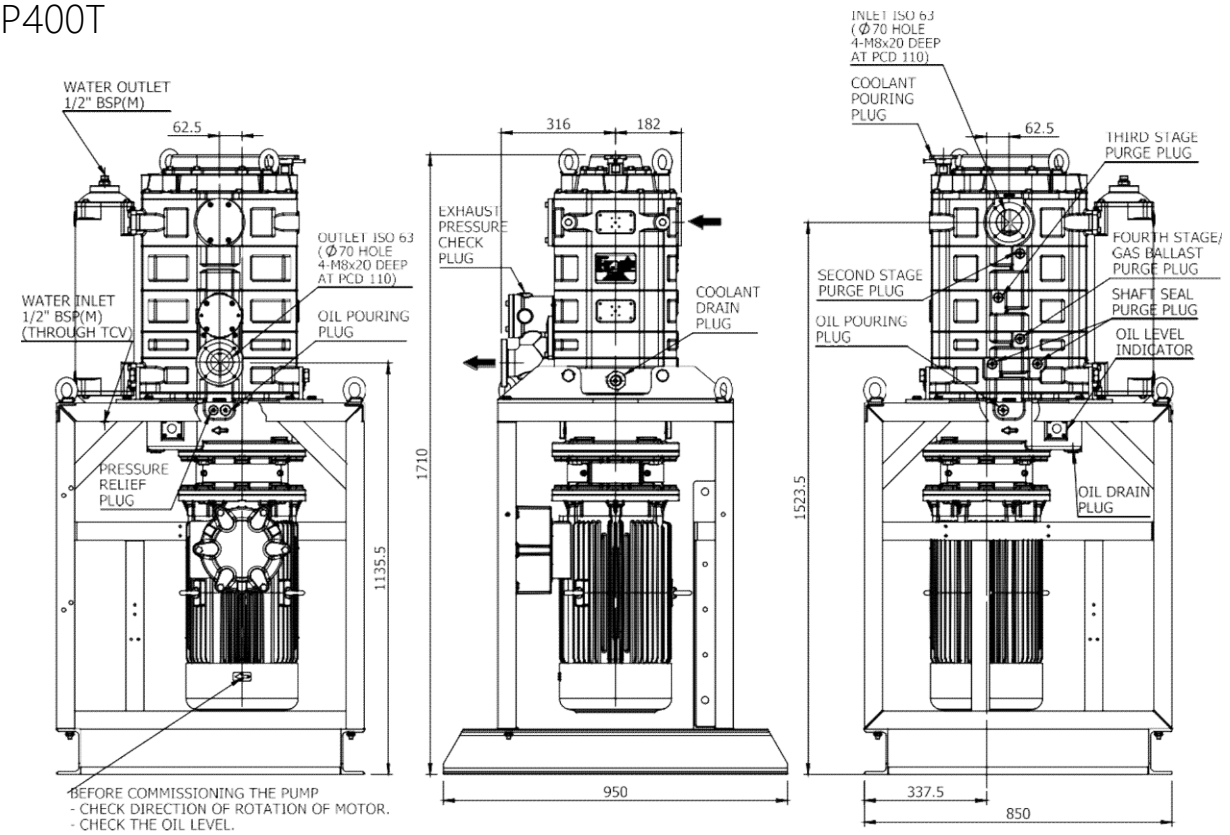
** Pump at ultimate vacuum with a cooling-water supply temerature of 20ºC and an ambient temperature of 20ºC.
*** To a safe temperature for maintenance

Dimensions

DP250T



DP400T



All dimensions indicated above are in mm

GKC

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