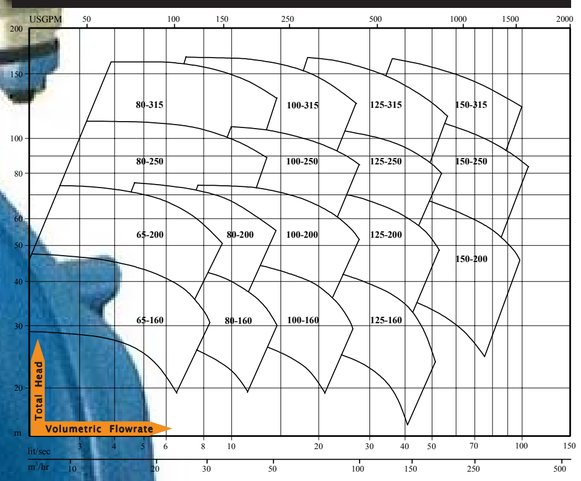
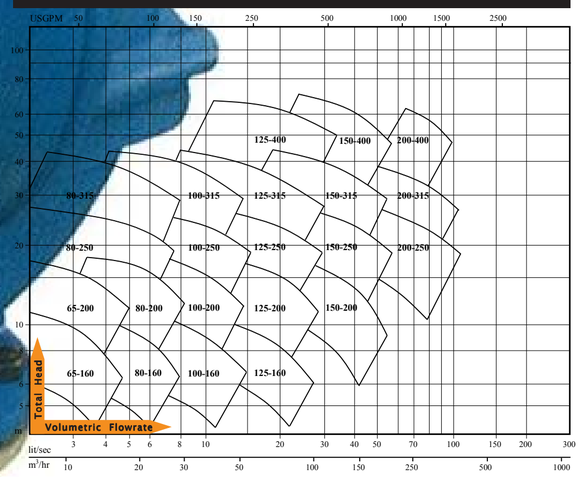
Performance Range

Performance tested to ISO 9906 Class II | Test water temperature of 20°C

50Hz | 2900 rpm | 2-pole



50Hz | 1450 rpm | 4-pole



Remarks | Refer to MONOFLO individual pump performance curves for accurate selections.

Vector

V T

ISO 2858 Single Stage Vertical In-line Back Pull-out Centrifugal Pump

General

Designed in accordance to international standard of ISO2858, **'Vector'** is a range of single-stage, vertical centrifugal pumps, with in-line flanged suction and discharge ports, driven by an electric motor. *Vector* is characterised by the compact build of the pump, ease in installation; and servicing & maintenance when required.

The vertical in-line construction allows direct mounting into pipework to realise the savings in installation cost and space, when compared to horizontal base-mounted pumpsets. Where space is limited and piping configuration and accessibility for maintenance are important, *Vector* is the ideal option.

Except the volute casing, most of the *Vector*'s parts are interchangeable with Monoflo *ISO-Magna* Series end suction centrifugal pumps.

Suction & discharge flanges in an 'in-line' arrangement, with small pump foot print...ideal where installation space is a constrain.

Design Features

'IN-LINE' CONSTRUCTION | The suction and discharge flanges are on a common centerline, 180 degrees apart, and are equally sized to simplify piping and installation. When installed, the pump becomes an integral component of the pipe work. This arrangement eliminates the need for flexible connectors, inertia bases, field grouting and alignment, hence installation cost is also greatly reduced.

DIRECT-COUPLING | Unlike design with extended shaft, where the impeller is directly mounted onto the motor shaft, motor in the *Vector* design is direct-coupled, via a coupling, to the pump hydraulic assembly. This arrangement allows the user a flexibility in their choice of motors. In addition, when the motor is out-of-service, a standard motor can be installed immediately to resume operation.

TAPER MOUNTED IMPELLER | The hydraulically & dynamically balanced impeller is taper mounted and keyed to shaft for positive drive during operation, and easy removal from shaft during servicing & maintenance.

'BACK PULL-OUT' FEATURE | Feature allows access to the whole rotating assembly, including impeller & mechanical seal, for maintenance & service, while the casing remains connected to the pipework.

Applications

BUILDING SERVICES | General water transfer & pressure boosting; circulation of water in heating & air-conditioning systems; fire protection; landscaping & water feature applications.

INDUSTRIAL | General liquid transfer & circulation in industrial processes; circulation in machine cooling, heat exchanger and other manufacturing processes. Also applicable in marine & shipbuilding applications.

AGRICULTURAL & FARMING | Horticultural irrigation & sprinkler systems.

Circulation in a central air-conditioning system. Hydraulics in complete stainless steel construction.

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cat:vector/rev4/07

Model Designation

VT 80 - 315 / B

DIN-MASTER MODEL PREFIX |

DIMENSIONS
Pump nominal suction & discharge diameter in mm |
Impeller nominal diameter in mm |

MATERIAL EXECUTION |
G | Cast iron casing; cast iron impeller
B | Cast iron casing; bronze impeller
NG | Nodular cast iron casing; cast iron impeller
NB | Nodular cast iron casing; bronze impeller
S | Stainless steel casing; stainless steel impeller

'In-line with VECTOR...'

Pump | Operating limits & data	
Liquid handled	Clean water or slightly-aggressive liquid compatible to pump material of construction
Working pressure	Maximum working pressure up to **16 bar** (with exception of some models at 10 bar). Pressure rating up to **24 bar** available as option.
Flowrate	Maximum capacity up to **110 litres/sec** (**400 m³/hr**).
Discharge head	Maximum discharge pressure up to **160 metres** (**16 bar** or **160kPa**).
Operating temperature	The ambient temperature shall not exceed **40ºC**. Temperature range of medium pumped, from **-15ºC** to **105ºC**, depending on type of shaft seal.
Operating speed	Nominal operating speed up to **2 900 r.p.m.** at **50Hz**, and **3 600 r.p.m.** at **60Hz**.
Flanges	PN 16 | ISO7005.2 1988; BS 4504-1969 Table 16/11; DIN 2501/P1PN16 PN 25 as option

Construction & Description

STUB SHAFT |
The heavy-duty stainless steel stub shaft connects the motor shaft to the impeller. By means of a stub shaft, allows the user a flexibility in their choice of motors. In addition, when the motor is out-of-service, a standard motor can be installed immediately to resume operation. [Figure 1]

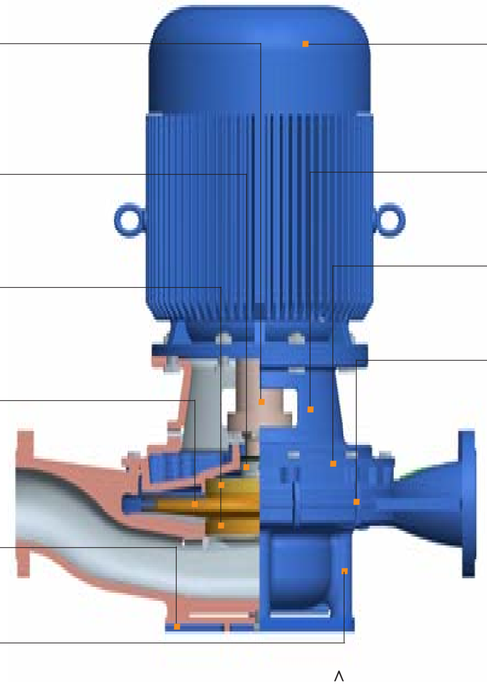
SHAFT SEAL [MECHANICAL SEAL] |
As standard, *Vector* is installed with a mechanical seal to prevent leakage around the shaft. Depending on the type and conditions of medium pumped, various sealing materials are available as options. [Figure 1]

WEAR RINGS |
Both the casing and backplate are fitted with replaceable wear rings. They protect the pump casing from wear and allow simple maintenance of proper running clearances to reduce maintenance costs and maintain operating efficiency.

IMPELLER |
Computer Fluid Dynamics (CFD) software-aided, *Vector*'s hydraulically-balanced, enclosed-type impeller is designed for optimum efficiency. It is keyed to the taper end of the (stub) shaft for a postive drive, and secure by means of washer and an impeller nut. The 'taper mount' facilitate easy removal of impeller during servicing.

BASE [Option] |
Base to allow pump to be mounted on a foundation or inertia block, so as not to put pipeline under stress.

SUPPORT FEET |
Support feet are integrally casted on the volute casing. The pump has an option to be directly mounted onto the floor, or bolted on an optional base if a foundation is preferred.



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Computer modeling of a 3-dimensional cut-away construction of Vector

MOTOR | Industry standard, flange-mounted electric motor designed for vertical in-line pump. *Vector*'s design incorporating a stub shaft to connect the motor shaft and impeller, allows versatility and convenience in opting other types and/or make of motors of the users' choice.

ADAPTOR | The adaptor, a sturdy cast iron bell-shaped housing, provides a rigid union of the pump casing (backplate) and (flange of) the electric motor.

BACKPLATE | The backplate or casing cover is designed for easy removal from pump casing to facilitate 'back pullout' of hydraulic assembly.

VOLUTE CASING | Aided by *Computer Fluid Dynamics* program, the volute casing is designed with a bend suction which pre-rotates the fluid entering, hence improving hydraulic performance.

The in-line casing, heavily 'ribbed' to resist pipe strain, with integral suction & discharge connections allowing the entire rotating hydraulic assembly to be removed for maintenance & servicing without having to disturb the pipework.

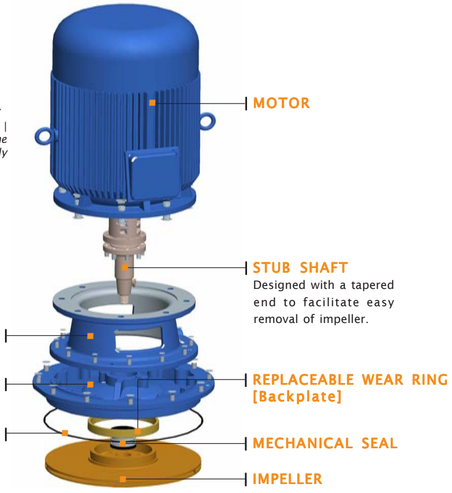

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Figure 1 | Exploded view of the hydraulic assembly

Material of construction			
Parts	**Standard**	**Optional**	
Casing & backplate	**Cast iron GG25** *AS 1830/T260 | BS 1452Gr260*	**Nodular [Ductile] cast iron** *AS1831/400 | BS2789Gr500/7*	**Cast stainless steel** *AS 2074/H6B | BS1504Gr316*
Impeller	**Cast iron GG25** *AS 1830/T260 | BS 1452Gr260*	**Gunmetal [Bronze]** *AS1565/836 | BS1400LG2*	**Cast stainless steel** *AS 2074/H6B | BS1504Gr316*
(Stub) Shaft	**Stainless steel 420** *AS 1444/420 | BS 970Gr.420 S37*	**Stainless steel 316** *AS 1444/316 | BS 970Gr.316 S16*	**Duplex stainless steel** *1.4460*
Shaft sleeves [Gland packed shaft seal]	**Stainless steel 420** *AS 1444/420 | BS 970Gr.420 S37*	**Stainless steel 316** *AS 1444/316 | BS 970Gr.316 S16*	**Duplex stainless steel** *1.4460*
Casing & backplate wear ring	**Cast iron GG25** *AS 1830/T260 | BS 1452Gr260*	**Gunmetal [Bronze]** *AS1565/836 | BS1400LG2*	
Shaft seal	**Mechanical seal** *Carbon/Silicon Carbide, Nitrile o-ring*	**Mechanical seal** *SiC/SiC, Viton o-ring*	

Remarks: For more comprehensive pump construction material, and equivalent material specification, refer to MONOFLO Pumps technical data sheets.