

V 90-2

Positive displacement internal gear pump



Product Data

Capacity
Up to 927 l/min

Pressure
Up to 12 bar

Viscosity
**Up to 60.000 cSt
for standard versions**

Temperature
Up to 300°C

Indicative picture of the product

Characteristics

The V Series internal gear volumetric pumps, standard versions, are designed to handle clean fluids (including abrasive fluids) with viscosity from 20 to 60.000 cSt. Higher viscosities can also be managed by V Series pumps with:

- accurate size selection
- fluid-specific rotation speed adjustment
- clearances adjustments and specific construction

Designed for heavy and demanding duties, they are used in all industrial applications where gentle management of viscous, sensitive and challenging products is required. V Series rotary volumetric pumps ensure flow rates are proportional to the rotational speed and allow constant pulsation-free flows, regardless of the back pressure; setups with frequency variators ensure accurate and variable flow rates based on feedback signals coming from control devices (flow rate, pressure, mass, level, etc.). Volumetric rotary pumps with internal gears allow reversible rotation and different ports orientation, for maximum installation versatility and flexibility.

Advantages

- 1 Simple design.** Only two moving parts: rotor and idler gears, and only one shaft seal.
- 2 Reliable, robust and built for long life.** Perfect handling of medium-high viscosity fluids, low peripheral speeds of the rotor, an external support with a large-sized roller bearing to support axial and radial loads in order to ensure a longer service life.
- 3 Simple and minimal maintenance.** Inspections and adjustments can be carried out without removing the pump, piping or drive.
- 4 Reversibility.** By inverting the direction of rotation the flow of liquid is reversed. Full performance is available in either direction of flow.
- 5 Preheating.** Heating chambers cast around the casing or integrated in the cover and on the seal housing, allowing high viscosities accurate control.
- 6 Constant flow.** directly proportional to the rotational speed and virtually independent of the pressure. Smooth pulsation-free flow, preventing pressure spikes which could cause vibrations in the pipework.
- 7 Gentle handling of shear-sensitive fluids.** Thanks to low rotation speed and wider cavities between gear teeth, any alterations of viscous and sensitive products are avoided.

Applications *(some type of fluids)*

Resins, polymers
Polyurethane foams (isocyanate and polyol)
Glues, adhesives, sealants
Plastic materials, rubbers, compounds for coatings
Paints, inks, dyes and synthetic pigments
Soaps, surfactants, cleaning products
Bitumen, pitch, tar
Food production fluids such as molasses, dextrose, glycerin, lecithin, syrups, chocolate, peanut butter, vegetable oils, starches, animal feed, animal fats, pet food
Fertilizers
Lubricating fuel oils
Additives
Alcohols and solvents
Glycol

Certifications

ATEX 2014/34/EU
EC N. 1935 / 2004

V 90-2 - PERFORMANCES BASED ON VISCOSITY AND WORKING PRESSURE

Displacement liters/rev	Viscosity mm ² /s (cSt)	Rpm (max)* rpm	Pressione (bar)			
			2	4	8	12
2,2	20	430	5,6 / 924	8,8 / 902	15,0 / 858	21,4 / 814
	60	430	6,0 / 927	9,0 / 909	15,0 / 871	21,6 / 834
	200	390	6,3 / 843	9,3 / 828	15,0 / 798	20,7 / 768
	600	340	7,0 / 736	10,0 / 725	15,0 / 702	19,7 / 678
	2.000	280	7,9 / 608	10,0 / 600	14,3 / 585	18,5 / 570
	6.000	230	8,5 / 500	10,4 / 496	14,0 / 486	17,6 / 475
	20.000	175	8,5 / 383	10,0 / 380	13,0 / 376	15,5 / 371
	60.000	135	8,3 / 296	9,7 / 296	12,0 / 294	14,1 / 293

*Max allowed speed - based only on the viscosity of the pumped fluid.

Select correct maximum speed value considering all the other chemical-physical characteristics of the pumped fluid.

V 90-2 - TYPE AND POSITION OF SUCTION AND DISCHARGE PORTS - WEIGHTS - WORKING TEMPERATURES

Suction and discharge ports		Port position		Weight (kg)	Max Temperature fluid [°C] (depending on the type of mechanical seal selected)
Type	Measure	Cast iron pump	Carbon steel and stainless steel pump	Depending on pump version	
EN - EN 1092-2 CAST IRON EN 1092-1 STAINLESS STEEL TYPE B (R.F.) or TYPE A (F.F.)	DN100 PN16	90° / 180°	90°	190	300 for cast iron pumps
ANSI - ANSI B16.1 CAST IRON CLASS 125 R.F. o F.F. ANSI B16.5 STAINLESS STEEL CLASS 150 R.F. o F.F.	4"	90° / 180°	90°		200 or stainless steel pumps Depending on the type of seal

V 90-2 - PRODUCT DESCRIPTION

V	90-2	A	L	M	V	S	T4	BS	+Y
									○ +Y Construction variants and accessories (see table no.3 and table no.4). Can be multiple
								○ BS Construction materials (see table no.2)	
							○ T4 Type of shaft seal (see table no.1)		
						○ S Bare shaft pump with bearing for coupling by means of a Flexible Coupling			
				○ V Pump for vertical installation. No indication: pump for standard setup					
			○ M Pumps compliant with REGULATION (EC) N. 1935/2004 (MOCA) No indication: standard pump						
		○ L 180° port position (only for cast iron pumps). No indication: pump with standard port position (90°)							
		○ A Pump according to ATEX directive A - gas; AD - gas and dust No indication: standard pump (safe zone)							
	○ 90-2 Pump model (size)								
○ V Series positive displacement internal gear pumps									

Key:

■ highlighted backgrounds: always present in the pump naming

□ backgrounds not highlighted: construction variants and accessories

TABLE 1 - SHAFT SEALING

P	Packing gland
P1	Flushed packing gland. For ATEX pumps' versions, this option is mandatory and specifies a construction with a thermocouple well (no flushing).
P...-RAD	Lip Ring Seal (only sizes up to V 100-2 included) - Contact factory for availability of combinations with ATEX versions (A - AD)
T4 (T6)	UNI EN 12756 standard dimension mechanical seal. Graphite/ceramic with PTFE gaskets. A PTFE lip seal is mounted behind the main seal to contain a barrier liquid (Quench). On request, a quench liquid reservoir (+O2). For the V 25-2 and V 30-2, the denomination is T5
T4W (T6W)	UNI EN 12756 standard dimension mechanical seal. Tungsten or silicon carbide/ceramic with PTFE gaskets. A PTFE lip seal is mounted behind the main seal to contain a barrier liquid (Quench). On request, a quench liquid reservoir (+O2) can be supplied. For the V 25-2 and V 30-2, the denomination is T5W.
T7*	Double tandem mechanical seal (not available on V 25-2 and V 30-2)
T8*	Double back-to-back mechanical seal

* The seal materials and lubrication system are decided on case by case depending on the chemical and physical characteristics of the liquids

TABLE 2 - MATERIAL

No key	Cast iron with bronze bushes. For lubricating and non lubricating liquids
G	Cast iron construction with cast iron bushes. For lubricant and non-lubricant fluids.
BS	Cast iron with graphite bushes. Tight tolerances. Idler with special antigalling treatment. AISI 329 or SAF 2205 steel shaft and idler pin. Suitable for all types of solvents, including chlorinated solvents, which do not corrode cast iron
HT	In ductile iron with internal bronze bushes for circulating heat transfer oil up to +300°C.
HTR	In cast iron with internal bronze bushes and generous tolerances for liquids up to +300°C. Especially suitable for pumping hot bitumen, tar and pitch. Preheating jacket around casing. On request on type V 50-3 and up, preheating jacket also around axial seal (+R1). On type V 50-3 and up, preheating jackets with flanged ports, plain or grooved
K	CF-8M (AISI 316) stainless steel. Graphite bushes (liquids with viscosity up to 10,000 cSt). For higher viscosities or abrasive liquids, use pumps with options +B (bronze bushes) or +W2 (idler pin and bushes in tungsten carbide)
AW	Hardened steel construction for highly abrasive fluids (such as paints, resins, polyols, and bitumens); tungsten carbide idler pin and bushings.

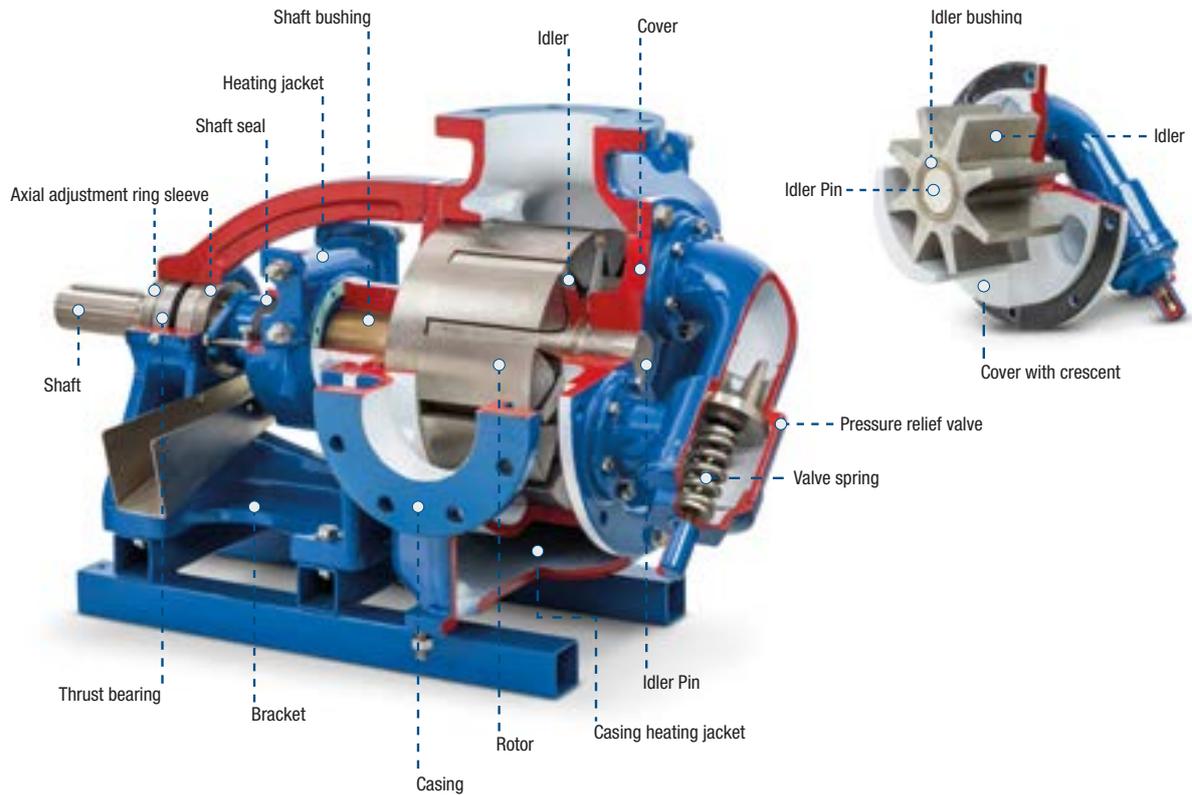
TABLE 3 - EXECUTIONS

A - AD	ATEX version; A = gas; AD = gas and dust (for pumps with mechanical seal, the +O2 barrier fluid containment tank is included)
L	180° ports casing (only cast iron pumps). Not available for HTR version or with the +R option
M	Pumps compliant with REGULATION (EC) N. 1935/2004 (MOCA)
V	Vertical pump installation (from V 25-2 to V 100-2 - only with mechanical seal). Request feasibility.
+FR	EN 1092 type B flanges on suction and discharge ports (inquire for availability on other connections).
+FA	ANSI 125/150 FF flanges on suction and discharge ports (inquire for availability on other connections).
+FAR	ANSI 125/150 RF flanges on suction and discharge ports (inquire for availability on other connections).
+R	Full jacketing around the pump casing (available only for cast iron pumps with 90° ports).
+R1	Heating jacket on the seal box (not available for ATEX pumps; not available with accessory +O2).
+R2	Heating (or cooling) jacket on the cover (not available in combination with +EH)
+R3	+R +R1 (only available for cast iron pumps with 90° ports - Not available for ATEX pumps, with +O2 option and in combination with +EH)
+R4	+R1 +R2 (not available for ATEX pumps, with +O2 option and in combination with +EH)
+EH	Not available
+B	Bronze bushes (if not provided as a standard - not in combination with +W1 - +W2).
+W	Mechanical seal static face in tungsten carbide or silicon carbide (see table 1 - T5 - T5W - T6 - T6W).
+W1	Tungsten carbide idler pin and idler bush
+W2	Tungsten carbide idler pin and bushes, and stainless steel stellite coated shaft for stainless steel pumps
+QPQ	ardened components (only for cast iron pumps)
+K33	Hardened components (only for stainless steel pumps)
+X	Special construction (as specified on the product offer)

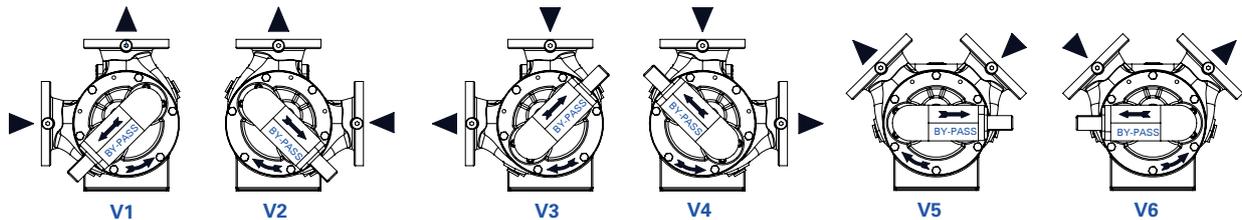
TABLE 4 - OPTIONALS

+O2	With quench liquid reservoir (included for ATEX pumps)
+O2X	Pressure vessel for double mechanical seals ST8 (API PLAN 53A - Refer to specific documents)
+Y	Pressure relief valve - Calibration for standard pressures (from 1 to 6 bar).
+YH	High-pressure relief valve - Calibration for high pressures (from 7 to 13 bar cast iron models - from 7 to 12 bar stainless steel models).
+PT	Thermowell for ATEX pump (to be evaluated for ATEX version as indicated in the manual)
+TC	Thermocouple for ATEX pump (to be evaluated for ATEX version as indicated in the manual)
+X	Special construction (possible additional description in specific document)

*The use of some types of variants and accessories excludes others; if in doubt, contact the office.



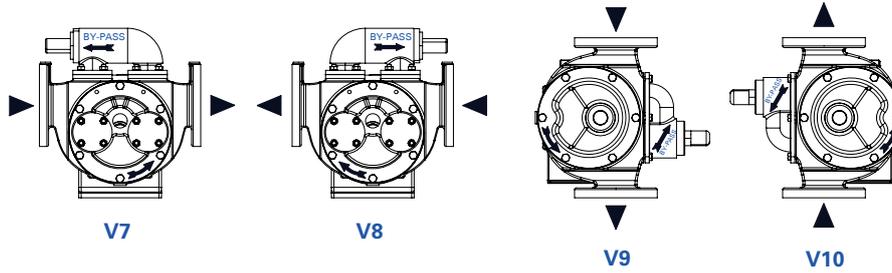
V 90-2 PUMP MODEL - PORT POSITION: 90°



STANDARD POSITIONING: V1

V 90-2 MODEL - PORT POSITION: 90° - BARE SHAFT PUMP FOR ELASTIC COUPLING (S) WITH PACKING GLAND (P)									
Standard version	Casing	Cover	Rotor	Idler	Idler Pin	Shaft	Bushings	Packing gland	
V 90-2 SP PUMP	EN 1563 EN-GJS-500 DUCTILE CAST IRON	18NiCrMo5 EN 10084 CARBON STEEL	18NiCrMo5 EN 10084 CARBON STEEL	BRONZE	PTFE				
V 90-2 SPG PUMP	EN 1563 EN-GJS-500 DUCTILE CAST IRON	18NiCrMo5 EN 10084 CARBON STEEL	18NiCrMo5 EN 10084 CARBON STEEL	GREY CAST IRON	PTFE				
V 90-2 SPHTR PUMP	EN 1563 EN-GJS-500 DUCTILE CAST IRON	18NiCrMo5 EN 10084 CARBON STEEL	18NiCrMo5 EN 10084 CARBON STEEL	BRONZE	PTFE - GRAPHITE				
V 90-2 SPK PUMP	ASTM A351 CF8M STAINLESS STEEL	AISI 329 STAINLESS STEEL	SAF 2205 EN 10088 STAINLESS STEEL	GRAPHITE	PTFE				
V 90-2 MODEL - PORT POSITION: 90° - BARE SHAFT PUMP FOR ELASTIC COUPLING (S) WITH SINGLE MECHANICAL SEAL (T4-T4W)									
Standard version	Casing	Cover	Rotor	Idler	Idler Pin	Shaft	Bushings	Seal	
V 90-2 ST4W PUMP	EN 1563 EN-GJS-500 DUCTILE CAST IRON	18NiCrMo5 EN 10084 CARBON STEEL	18NiCrMo5 EN 10084 CARBON STEEL	BRONZE	TUNGSTEN CARBIDE or SILICON CARBIDE - CERAMIC - PTFE - STAINLESS STEEL				
V 90-2 ST4WG PUMP	EN 1563 EN-GJS-500 DUCTILE CAST IRON	18NiCrMo5 EN 10084 CARBON STEEL	18NiCrMo5 EN 10084 CARBON STEEL	GREY CAST IRON	TUNGSTEN CARBIDE or SILICON CARBIDE - CERAMIC - PTFE - STAINLESS STEEL				
V 90-2 ST4BS PUMP	EN 1563 EN-GJS-500 DUCTILE CAST IRON	AISI 329 STAINLESS STEEL	SAF 2205 EN 10088 STAINLESS STEEL	GRAPHITE	GRAPHITE - CERAMIC - PTFE - STAINLESS STEEL				
V 90-2 ST4WAW PUMP	ASTM A217 WC6 CARBON STEEL	18NiCrMo5 EN 10084 CARBON STEEL	SAF 2205 EN 10088 STAINLESS STEEL	TUNGSTEN CARBIDE	TUNGSTEN CARBIDE or SILICON CARBIDE - CERAMIC - PTFE - STAINLESS STEEL				
V 90-2 ST4K PUMP	ASTM A351 CF8M STAINLESS STEEL	ACCIAIO INOX AISI 328	ACCIAIO INOX SAF 2205 EN 10087	GRAPHITE	GRAPHITE - CERAMIC - PTFE - STAINLESS STEEL				
V 90-2 ST4WK PUMP	ASTM A351 CF8M STAINLESS STEEL	AISI 329 STAINLESS STEEL	SAF 2205 EN 10088 STAINLESS STEEL	GRAPHITE	TUNGSTEN CARBIDE or SILICON CARBIDE - CERAMIC - PTFE - STAINLESS STEEL				
V 90-2 MODEL - PORT POSITION: 90° - BARE SHAFT PUMP FOR ELASTIC COUPLING (S) WITH DOUBLE MECHANICAL SEAL (T8)									
Standard version	Casing	Cover	Rotor	Idler	Idler Pin	Shaft	Bushings	Seal	
V 90-2 ST8W PUMP	EN 1563 EN-GJS-500 DUCTILE CAST IRON	18NiCrMo5 EN 10084 CARBON STEEL	18NiCrMo5 EN 10084 CARBON STEEL	BRONZE	TUNGSTEN CARBIDE or SILICON CARBIDE - CERAMIC - PTFE - STAINLESS STEEL				
V 90-2 ST8BS PUMP	EN 1563 EN-GJS-500 DUCTILE CAST IRON	AISI 329 STAINLESS STEEL	SAF 2205 EN 10088 STAINLESS STEEL	GRAPHITE	GRAPHITE - CERAMIC - PTFE - STAINLESS STEEL				
V 90-2 ST8K PUMP	ASTM A351 CF8M STAINLESS STEEL	AISI 329 STAINLESS STEEL	SAF 2205 EN 10088 STAINLESS STEEL	GRAPHITE	GRAPHITE - CERAMIC - PTFE - STAINLESS STEEL				

V 90-2 PUMP MODEL - PORT POSITION: 180°

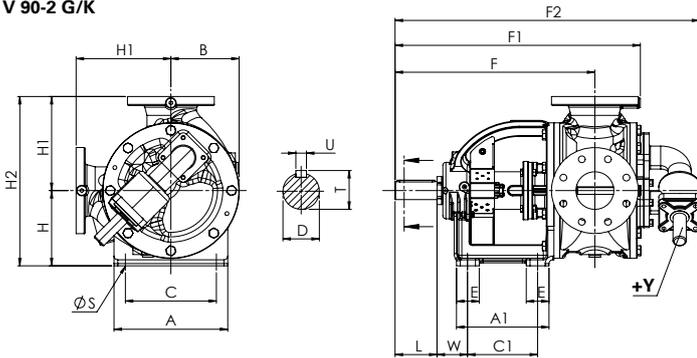


STANDARD POSITIONING: V7

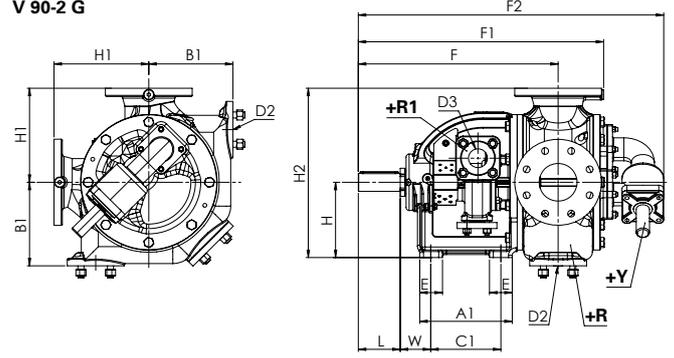
V 90-2 MODEL - PORT POSITION: 180° (L*) - BARE SHAFT PUMP FOR ELASTIC COUPLING (S) WITH PACKING GLAND (P)								
Standard version	Casing	Cover	Rotor	Idler	Idler Pin	Shaft	Bushings	Packing gland
V 90-2L SP PUMP	EN 1563 EN-GJS-500 DUCTILE CAST IRON	18NiCrMo5 EN 10084 CARBON STEEL	18NiCrMo5 EN 10084 CARBON STEEL	BRONZE	PTFE			
V 90-2L SPG PUMP	EN 1563 EN-GJS-500 DUCTILE CAST IRON	18NiCrMo5 EN 10084 CARBON STEEL	18NiCrMo5 EN 10084 CARBON STEEL	GREY CAST IRON	PTFE			
V 90-2 MODEL - PORT POSITION: 180° (L*) - BARE SHAFT PUMP FOR ELASTIC COUPLING (S) WITH SINGLE MECHANICAL SEAL (T4-T4W)								
Standard version	Casing	Cover	Rotor	Idler	Idler Pin	Shaft	Bushings	Seal
V 90-2L ST4BS PUMP	EN 1563 EN-GJS-500 DUCTILE CAST IRON	AISI 329 STAINLESS STEEL	SAF 2205 EN 10088 STAINLESS STEEL	GRAPHITE	GRAPHITE - CERAMIC - PTFE - STAINLESS STEEL			
V 90-2 MODEL - PORT POSITION: 180° (L*) - BARE SHAFT PUMP FOR ELASTIC COUPLING (S) WITH DOUBLE MECHANICAL SEAL (T8)								
Standard version	Casing	Cover	Rotor	Idler	Idler Pin	Shaft	Bushings	Seal
V 90-2L ST8BS PUMP	EN 1563 EN-GJS-500 DUCTILE CAST IRON	AISI 329 STAINLESS STEEL	SAF 2205 EN 10088 STAINLESS STEEL	GRAPHITE	GRAPHITE - CERAMIC - PTFE - STAINLESS STEEL			

DIMENSIONS FOR 90° PORTS POSITIONING VERSION

V 90-2 G/K



V 90-2 G



V 90-2 K

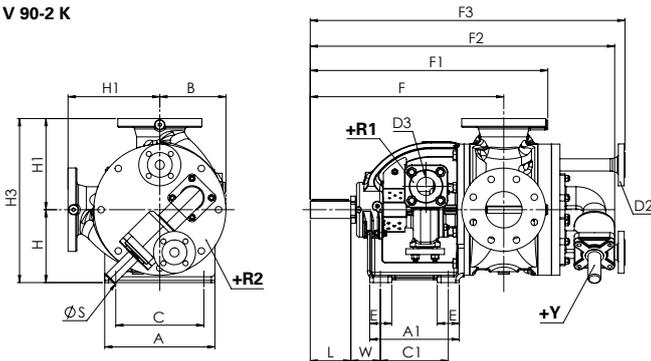


TABLE FOR 90° PORTS POSITIONING VERSION

	A		A1		C		C1		E		ØS		W		L		H		H1		H2	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
V 90-2 G K	300	11.8	244	9.6	240	9.4	185	7.3	60	2.4	18	0.7	80	3.1	110	4.3	200	7.9	250	9.8	450	17.7
V 90-2 G	300	11.8	244	9.6	240	9.4	185	7.3	60	2.4	18	0.7	80	3.1	110	4.3	200	7.9	250	9.8	450	17.7
V 90-2 K	300	11.8	244	9.6	240	9.4	185	7.3	60	2.4	18	0.7	80	3.1	110	4.3	200	7.9	250	9.8	450	17.7

	B		B1		F		F1		F2		F3		Dj6		T		U		D2		D3	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
V 90-2 G K	180	7.1	220	8.7	527	20.7	647	25.5	805	31.7	-	-	48	1.9	51.5	2	14	0.6	-	-	-	-
V 90-2 G	180	7.1	220	8.7	527	20.7	647	25.5	805	31.7	-	-	48	1.9	51.5	2	14	0.6	DN40	DN40	DN40	DN40
V 90-2 K	180	7.1	220	8.7	527	20.7	647	25.5	805	31.7	857	33.7	48	1.9	51.5	2	14	0.6	DN25	DN25	DN40	DN40

DIMENSIONS FOR 180° PORTS POSITIONING VERSION

V 90-2L G

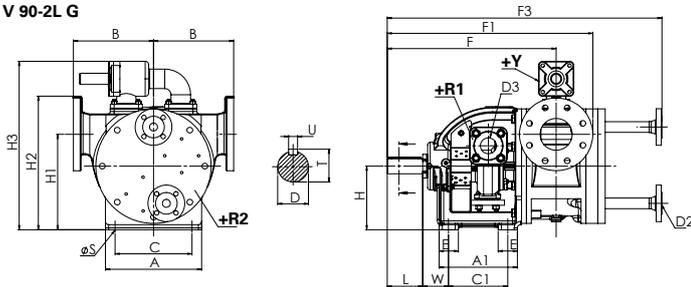


TABLE FOR 180° PORTS POSITIONING VERSION

	A		A1		C		C1		E		ØS		W		L		H		H1		H2	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
V 90-2L G	300	11.8	244	9.6	240	9.4	185	7.3	60	2.4	18	0.7	80	3.1	110	4	200	7.9	300	11.8	420	16.5

	H3		B		F		F1		F2		F3		Dj6		T		U		D2		D3	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
V 90-2L G	529	20.8	250	9.8	527	20.7	647	25.5	-	-	857	33.7	48	1.9	51.5	2	14	0.6	DN25	DN25	DN40	DN40