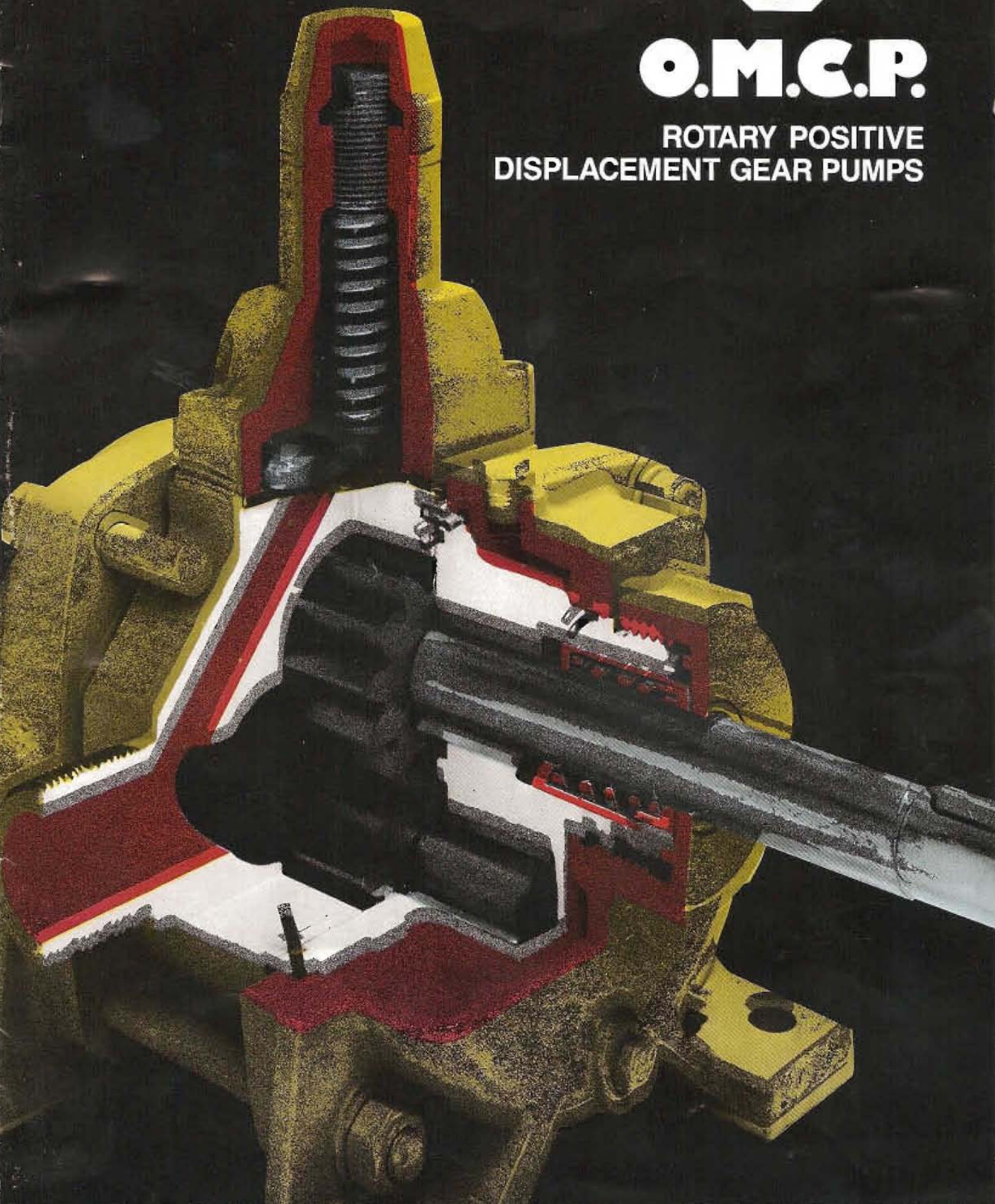




O.M.C.P.

**ROTARY POSITIVE
DISPLACEMENT GEAR PUMPS**

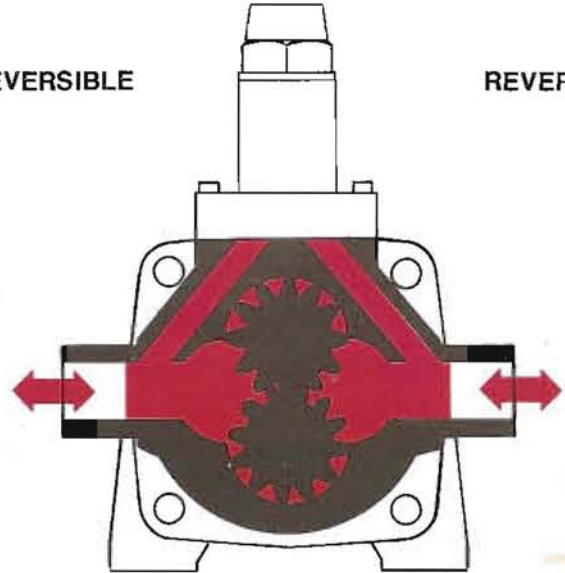




ROTARY POSITIVE DISPLACEMENT GEAR PUMPS

REVERSIBLE

REVERSIBLE



OPERATION

Type V Series of Rotary Positive Displacement Gear Pumps incorporate spur gears which have a special corrected and rectified profile in order to obtain the maximum possible volumetric output and pressure consistent with the lowest possible noise level. A special feature is that **the pumps are reversible**. That is to say that when the rotation of the pump is reversed, **the flow of liquid takes place in the opposite direction**. The pump is therefore first choice for applications involving emptying and re-filling cycles.

The spaces between the teeth of the driver and driven gears entrain the pumped liquid and convey it from the suction side to the discharge side.

This gentle and simple action **ensures that no shock or violent disturbance is transmitted to the media so that delicate liquids can be handled without altering their physical characteristics**.

The pumps retain the basic principals of all positive displacement pumps viz:

SELF PRIMING.

CAPACITY VARIES AS THE ROTATIONAL SPEED.

PRESSURE DEVELOPED IS INDEPENDENT OF THE ROTATION SPEED.

The pumps can be driven by:

- 4 - 6 - 8 pole electric motors, 50 or 60 Hz direct coupled through flexible couplings.
- Geared motors and speed reducers.
- Speed variators. In this case the pumps can be used as Dosing and Metering Pumps since the capacity varies as the rotational speed.

APPLICATIONS

These pumps are used widely for handling hot, cold, low and high viscosity liquids **providing they are free of abrasive and suspended particles** and possess slight lubricating properties.

The pumps are equipped with **two heating or cooling chambers as standard features** which make them attractive for use in the Process Industries. The chambers are rated for **6 bar** internal pressure.

Built on relief valves and by-pass are available for applications **not exceeding 10 bar**.

All units are tested before despatch to British Standards and the tolerances comply with Class II Tests ($\pm 10\%$).

COMMON TYPES OF INSTALLATIONS

- Displacement pumps
- Pressurising pumps
- Circulating pumps
- Dosing pumps
- Injection pumps (into vacuum systems)
- Extraction pumps (from vacuum systems)

STANDARD CONSTRUCTION

- Casings, covers and chambers: Close grained Cast Iron to BS 1452.17
- Gears and shafts: Carbon Steel Hardened and Ground
- Casing joints: Rubber O Rings
- Bearings: Re-newable Bronze sleeve bearings, self lubricating
- Shaft sealing is guaranteed by the uni-directional mechanical seal with carbon/steel faces and VITON O Rings
- Mechanical seals with PTFE elastomers can also be supplied together with special seal faces of tungsten or silicon carbides

STAINLESS STEEL CONSTRUCTION

- Casings and covers: Cast CF.8.M Stainless Steel
- Chambers: Close grained Cast Iron to BS.1452.17
- Gears and shafts: AISI.316 Stainless Steel heat treated
- Bearings: Special resin impregnated carbon *6-12mm KE0AM110*
- Casing joints: VITON O Rings on request PTFE
- Mechanical Seal: to suit the liquid handled. Uni-directional
- Suction and discharge connections are threaded male pipe thread. On request flanges to BS 4504 Table 25 can be provided as well as flanges to ANSI B 16.5
- If required the pumps can be equipped with conventional packed stuffing boxes either single or double with lantern ring

SPECIAL CONSTRUCTION

Pumps can be supplied to suit the customers particular requirements.

OPERATIONAL PARAMETERS	UNITS OF MEASURE	STANDARD CONSTRUCTION	STAINLESS STEEL
CAPACITY	Litres per hour US gals/hour	150 - 48000 40 - 12700	150 - 31000 40 - 8200
CAPACITY	cm ³ /rpm US gals/revolution	1 - 460 4 - 120	1 - 460 4 - 120
HEAD	Metres Feet	200 656	100 328
DEVELOPED PRESSURE	bar psig	20 286	10 143
MOTOR SPEED	rpm	10 - 1750	10 - 1150
INSTALLED MOTOR POWER	HP kW	0,55 - 75 0,37 - 55	0,55 - 75 0,37 - 55
VISCOSITY	°Engler c.St.	6,5 - 5000 50 - 40000	6,5 - 5000 50 - 40000
OPERATING TEMPERATURE	Degrees °C Degrees °F	minus 15 - plus 300 plus 5 - plus 575.	minus 15 - plus 300 plus 5 - plus 575

TYPICAL APPLICATIONS

PAINT AND FURNITURE INDUSTRIES

Solvents - flocculants - pigments - dyestuffs in paste and liquid form - organic and synthetic glues - resins - etc.



CHEMICAL INDUSTRY

Acids - bases - emulsions - polymers - hydraulic oils - lub oils - heat transfer oils - feedstock - etc.



SUGAR INDUSTRY

Molasses - blackstrap - syrups - glucose - etc.



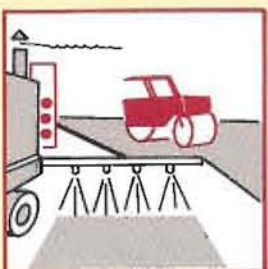
PAPER INDUSTRY

Soap sulphate - fatty esters - tallow - tall oil - cellulose - etc.



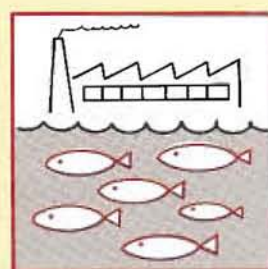
OIL AND PETROCHEMICAL INDUSTRY

Asphalt - bitumen - naptha - gas oil - kerosine - solvents - lub oils - gasolines - polymers - crude oil - olefins - emulsions - glues - etc.



FISH PRODUCTS INDUSTRY

Fish oils - cod liver oil - halibut liver oil - fish proteins - fish glues - sperm oil - etc.



EDIBLE OIL INDUSTRY

Olive oil - palm oil - rapeseed oil - soybean oil - lard - margarine - corn oil - additives - etc.



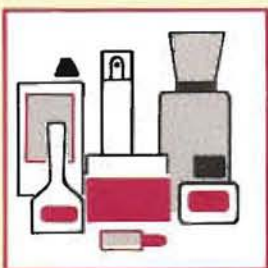
FOOD INDUSTRY

Marmalade - jam - tomato juice and puree - tomato sauce - mayonnaise - chocolate - honey - margarine - cream cheese - cream - condensed milk - glycerine - egg yoke - licorice - glucose - gelatine - etc.



COSMETIC INDUSTRY

Fatty acids - olein - sulphonated alcohols - creams - shampoos - tooth paste - soaps - etc.



FINE CHEMICAL AND PHARMACEUTICAL INDUSTRY

Aniline oil - chlorinated hydrocarbons and solvents - stearic acid - ointments - sulphides - phenols - etc.



PERFORMANCE DATA

Standard Cast Iron Construction

Type	Branches	rpm	1 bar		5 bar		10 bar		15 bar		20 bar	
			l/hour	kW	l/hour	kW	l/hour	kW	l/hour	kW	l/hour	kW
V. 15	3/4" gas	1450	1300	0,18	1280	0,35	1230	0,67	1170	0,96	1060	1,18
V. 29	1" gas	1450	2500	0,31	2450	0,67	2370	1,29	2240	1,84	2040	2,21
V. 52	1 1/4" gas	1450	4500	0,52	4430	1,22	4260	2,32	4040	3,32	3680	4,02
V. 92	1 1/2" gas	1450	8000	0,86	7870	2,14	7580	4,13	7180	5,89	6550	7,14
V. 138	2" gas	1450	12000	1,18	11800	3,24	11360	6,19	10780	8,84	9830	10,75
V. 230	2 1/2" gas	1450	20000	1,84	19680	5,38	18940	10,30	17960	14,72	16380	17,89
V. 345	3" gas	1450	30000	2,58	29500	8,02	28400	15,46	26940	22,10	24570	26,80
V. 460	3 1/2" gas	1450	40000	3,24	39400	10,75	37880	20,60	35920	29,44	32760	35,70

For conversion:

0.746 kW = 1 British Horsepower
 1 litre = 0.2642 US gallons
 1 litre = 0.2202 Imperial gallons
 1 bar = 14.5038 lbf/in²

TESTS

Testing is in accordance with British Standards for Class II Performance Tests ($\pm 10\%$)

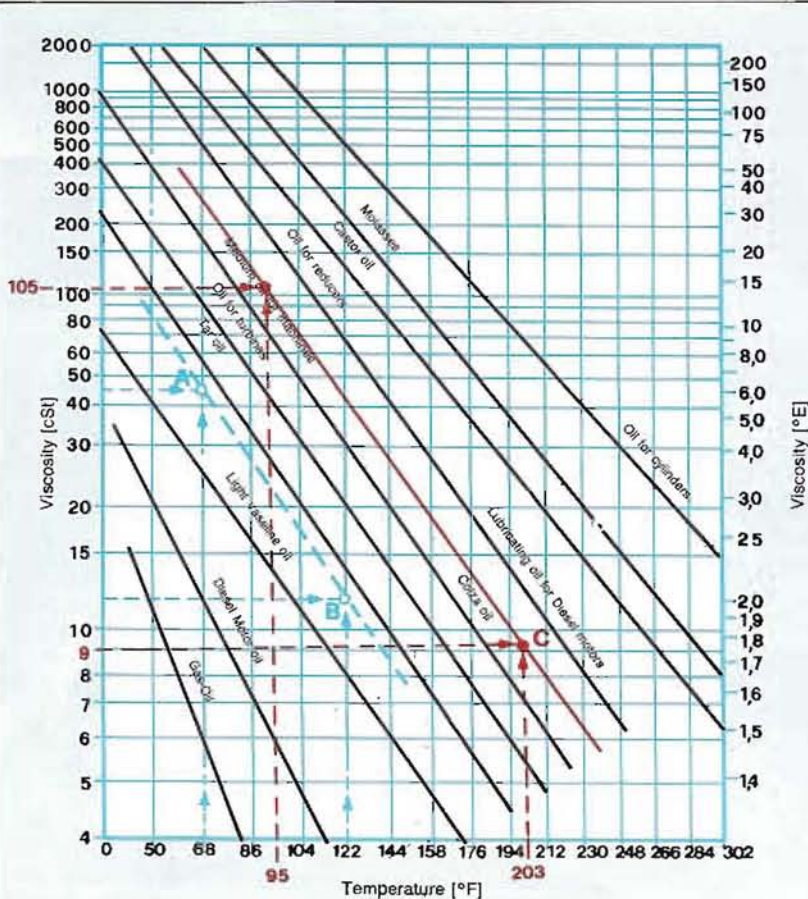
Stainless Steel Construction

Type	Branches	rpm	1 bar		5 bar		10 bar	
			l/hour	kW	l/hour	kW	l/hour	kW
V. 15	3/4" gas	960	860	0,12	850	0,22	815	0,45
V. 29	1" gas	960	1650	0,23	1620	0,45	1570	0,85
V. 52	1 1/4" gas	960	3000	0,34	2930	0,81	2820	1,55
V. 92	1 1/2" gas	960	5300	0,56	5210	1,40	5020	2,73
V. 138	2" gas	960	8000	0,79	7815	2,14	7520	4,13
V. 230	2 1/2" gas	960	13250	1,26	13000	3,57	12540	6,85
V. 345	3" gas	960	19900	1,69	19530	5,30	18800	10,30
V. 460	3 1/2" gas	960	26500	2,14	26090	7,14	25080	13,70

The performance data indicated is referred to handling liquids having a viscosity of 10° Engler and a density of 1.000 kg/m³ with a suction lift of 5 metres at 20 °C and at a barometric pressure of 1013 mbar.

WHEN USING 60 Hz MOTORS
 THE PERFORMANCE AT CONSTANT
 PRESSURE VARIES
 AS FOLLOWS:

CAPACITY: +20%
 rpm: +20%
 POWER ABS: +30% approx.



VISCOSITY VARIATION CHART VERSUS THE TEMPERATURE OF SOME COMMONLY USED PRODUCTS AND SIMILARS

Coordinates have been fixed in order to transform the performance curve into a straight line.

All values resulting from the chart are to be considered as approximate but sufficient to indicate the liquid performance and to help in the choice of the pump.

The chart also helps to assess the performance of other liquids not included.

- 1) If the coordinates of two points are known (viscosity and temperatures):
 the liquid performance can be obtained by connecting the two points.

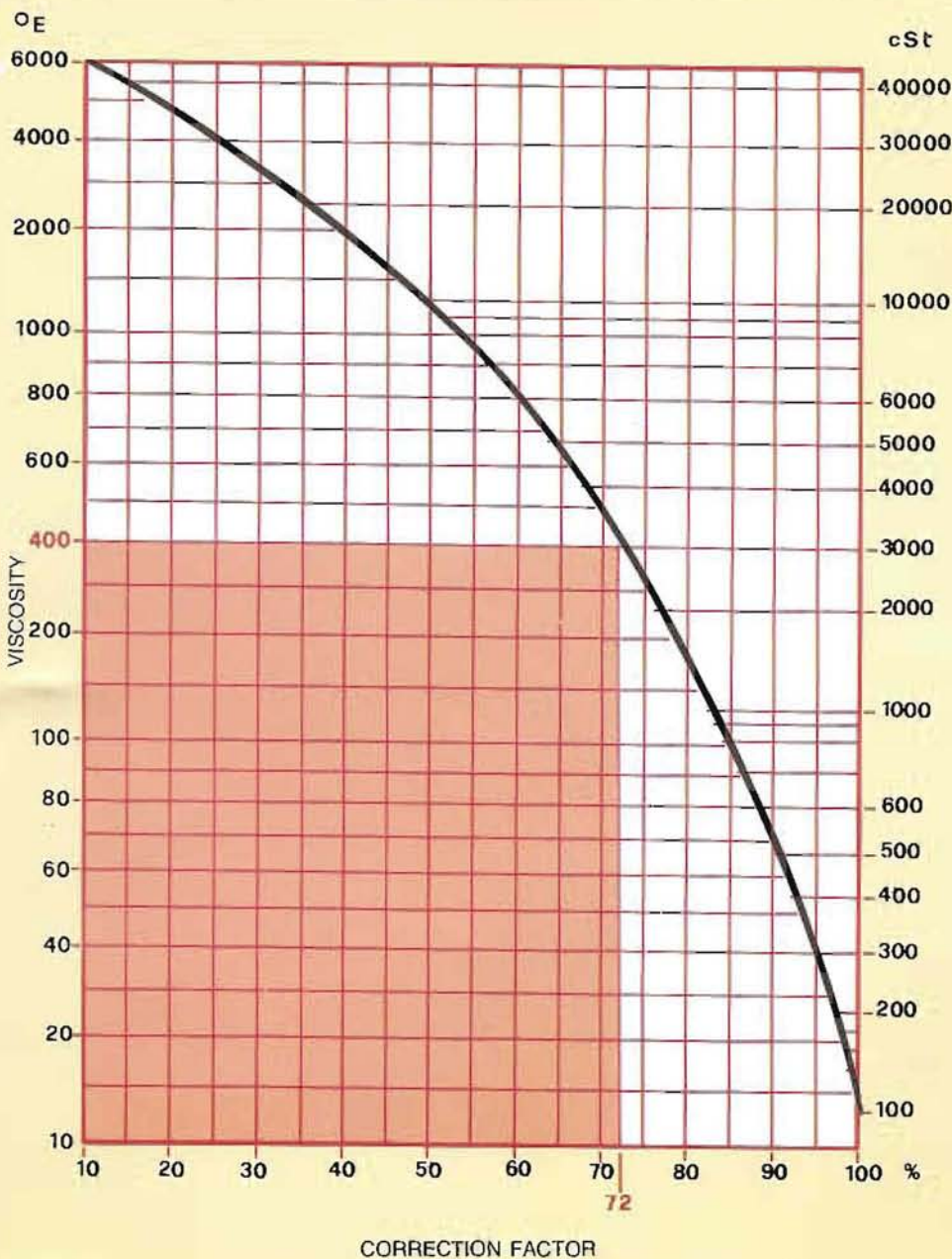
Example: Points «A» and «B» on the chart.

- 2) The liquid performance can be similarly obtained even if the coordinates of only one point (C) are known.

In this case it is sufficient to plot a straight line across point «C» in parallel to the other lines.

Taking for example an oil with a 9 cSt. viscosity at 203 °F: in order to know its viscosity at 95 °F following the straight line indicated at point «C» a 105 cSt. viscosity is found.

$$c \text{ St.} = \frac{c \text{ P.}}{S. G.}$$



PUMP SPEED (rpm) VERSUS VISCOSITY CORRECTION CHART

EXAMPLE: 7000 litres per hour of oil having a viscosity of 400° Engler (3000 cSt or 15000 SSU) is to be pumped against a head of 1 bar. What is the correct rpm?

At 400 °E reference to the curve indicates that the correction factor is 72%.

In order that the pump can handle this product the speed must decrease from 100% to 72% of 1450 rpm i.e. 1044 rpm.

Since this would involve belt pulleys or reduction gears it is better to use a 6 pole motor at 960 rpm.

Pumpe Type V.138 has a capacity of 12000 litres per hour at 1450 rpm. If we derate this pump for 960 rpm (see curve below) the pump will deliver 7920 litres per hour (66% derate). This value is close to the specified capacity.

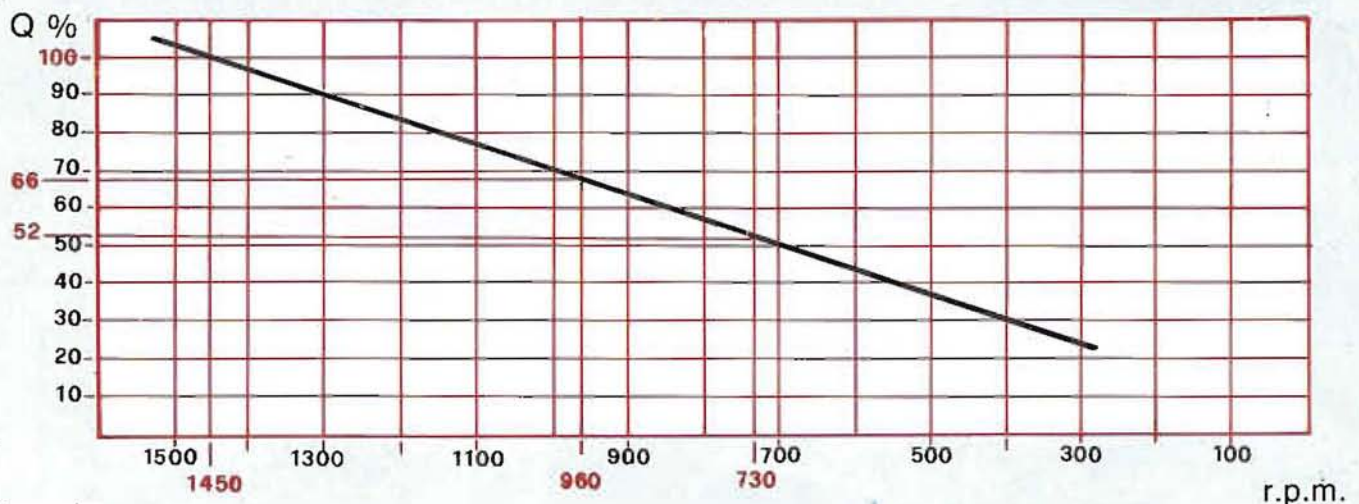
N.B.

This example is **only to help** in the choice of the most suitable pump and to find the most suitable transfer speed for a specific fluid having features and viscosity different from those shown on the Data Table (10 °E).

Total power absorbed by the pump in the new operational conditions will have to be calculated each time using a special calculation system which takes into account both the pump rpm variation and the viscosity of the fluid to be pumped.

It is advisable to ask for the manufacturer's help.

CAPACITY VERSUS rpm VARIATION CHART

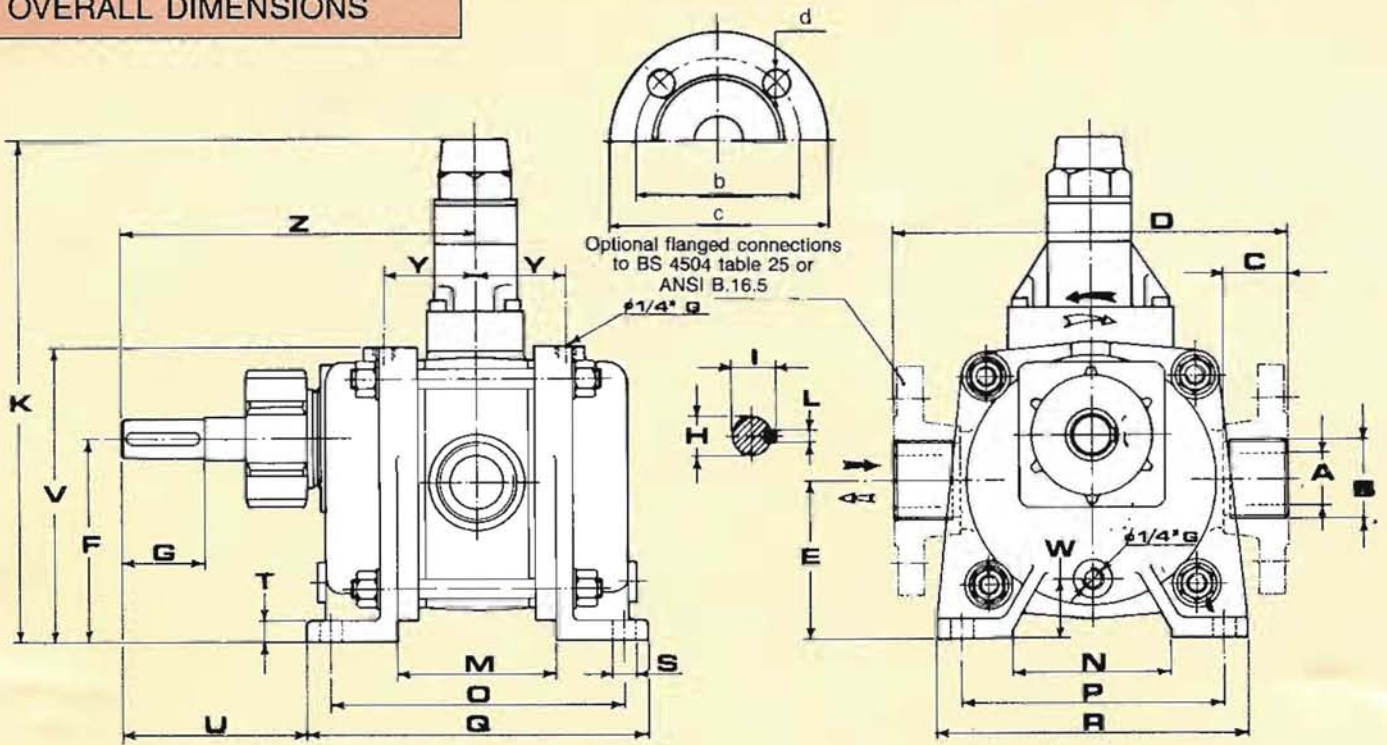


Example:

Capacity per hour at 1450 rpm = 100% (= table values)

Capacity per hour at 960 rpm = 66% (= table values - 24%)

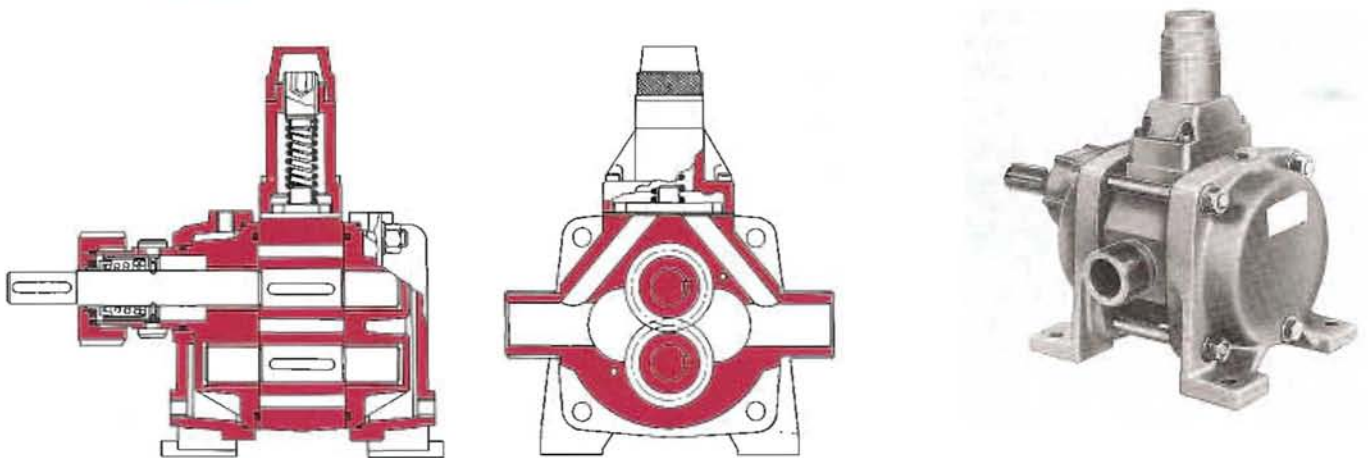
OVERALL DIMENSIONS



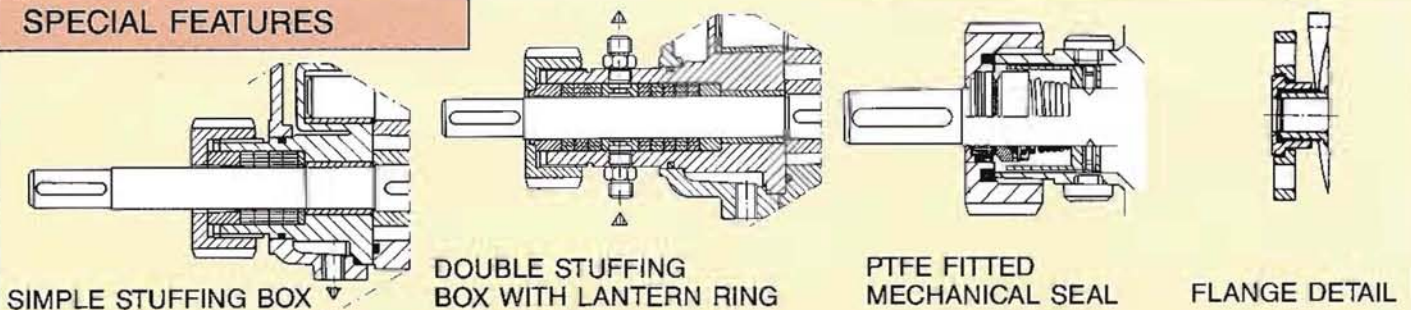
Type	A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q	R	S	T	U	V	Z	Y	W	K	Flanges					Weight kg
																									DN	b	c	d	# holes	
V. 15	15	3/4" G	25	150	62	78	30	12	15	5	60	60	121	92	141	112	10	10	75	115	145,5	36,5	30	233	20	75	105	14	4	7
V. 29	20	1" G	30	180	70	89,5	30	14	17	5	72	68	134	120	154	140	10	10	78	132	155	42	29	255	25	85	115	14	4	10
V. 52	25	1 1/4" G	32	200	80	103	40	18	21,5	6	90	78	157	124	182	150	12	12	115	150	206	48,5	32	299	32	100	140	18	4	16
V. 92	32	1 1/2" G	40	240	96	123,5	50	24	27	8	96	96	181	160	210	190	14	14	135	180	240	55,5	36	330	40	110	150	18	4	26
V. 138	40	2" G	40	260	106	138,5	60	28	31	8	122	108	212	170	244	202	16	16	151,5	200	273,5	60	38	370	50	125	165	18	4	45
V. 230	50	2 1/2" G	49	310	128	167	80	38	41	10	140	130	247	200	284	240	18	18	194	238	336	66,5	42	413	65	145	185	18	8	64
V. 345	65	3" G	55	350	142	186	110	42	45	12	160	146	277	230	318	270	20	20	223	265	382	75,5	44	467	80	160	200	18	8	83
V. 460	80	3 1/2" G	60	360	154	203	110	48	51,5	14	172	160	303	246	348	290	22	22	226	288	400	79,5	46	494	100	190	235	22	8	103

NOTE - Standard construction is with male gas connections. Flange connections to BS 4504 NP 25 or ANSI can be provided.

SECTIONAL DRAWING



SPECIAL FEATURES



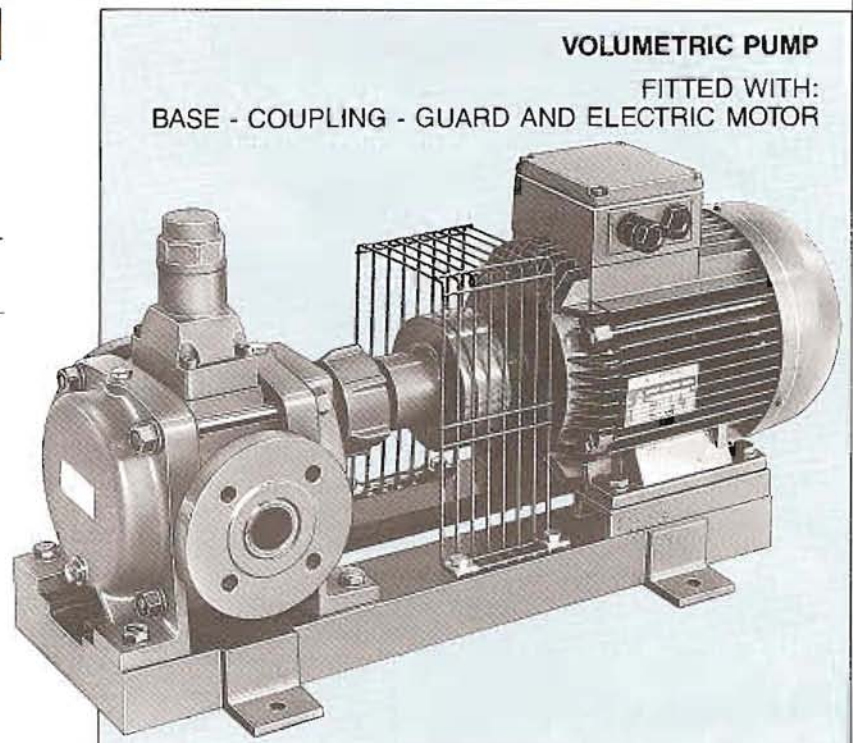
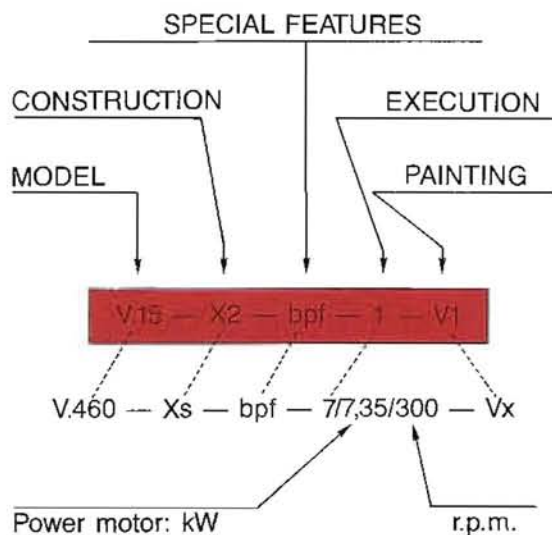
HOW TO ORDER OUR GEAR PUMPS

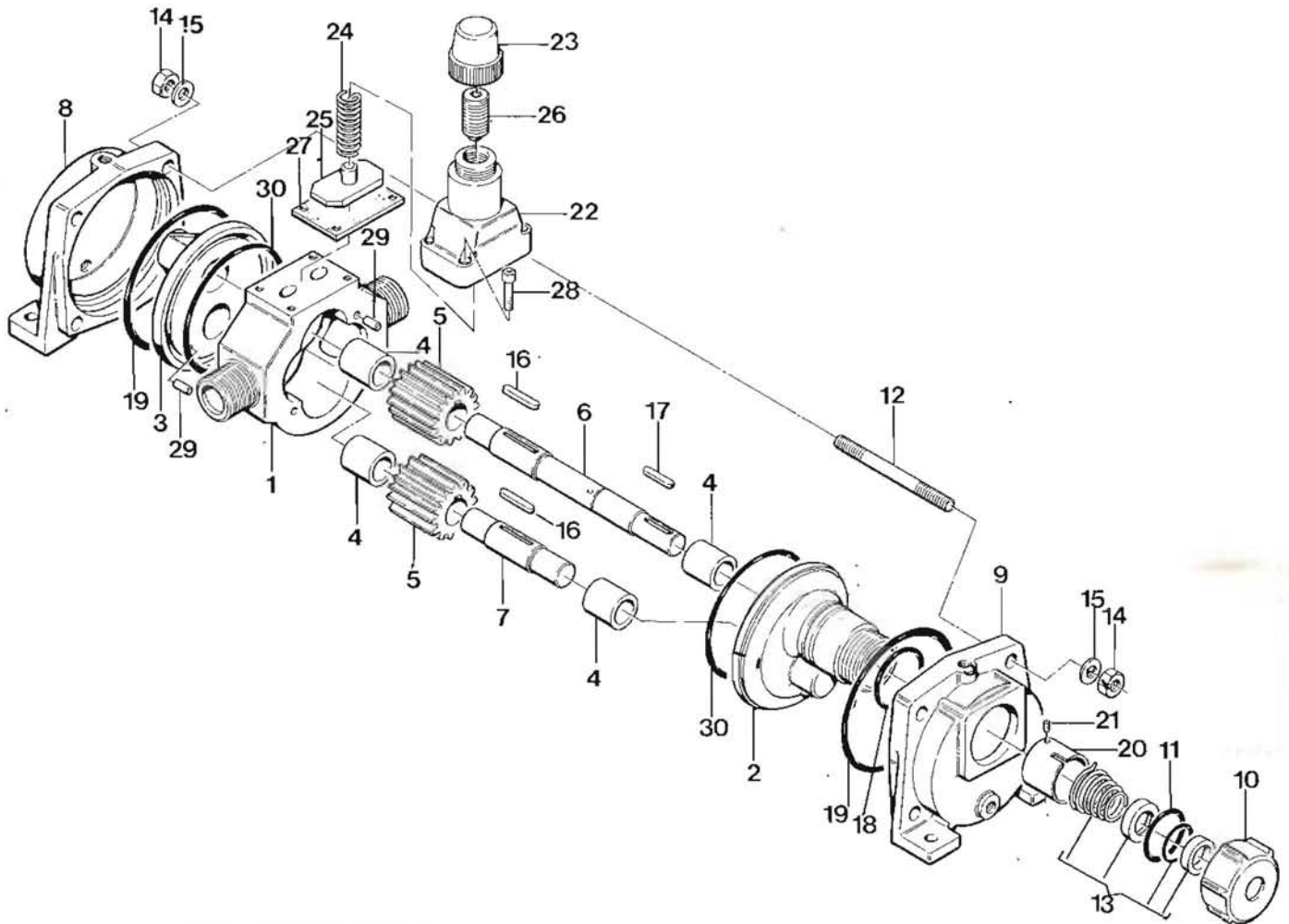
MODEL	V. 15	V. 29	V. 52	V. 92	V. 138	V. 230	V. 345	V. 460
CONSTRUCTION							Standard	Stainless Steel
WITH SIMPLE REVERSIBLE MECHANICAL SEAL AND VITON O-RING							ST. 1	X 1
WITH SIMPLE REVERSIBLE MECHANICAL SEAL AND PTFE O-RING							ST. 2	X 2
WITH SPECIAL SIMPLE REVERSIBLE MECHANICAL SEAL							ST. s	X s
WITH DOUBLE MECHANICAL SEAL							ST. y	X y
WITH STUFFING BOX							ST. b	X b
WITH DOUBLE STUFFING BOX WITH LANTERN RING							ST. b1	X b1

SPECIAL FEATURES		PAINTING	
BY-PASS (RELIEF-VALVE)	= bpf	STANDARD YELLOW RAL. 1004	= V1
BS 4504 NP 25 AND/OR ANSI B.16.5 FLANGES	= f	DIFFERENT COLOURS	= Vx
EXECUTION ON SPECIFICATION	= Z		

EXECUTION		
BARE SHAFT		= 1
FITTED WITH: BASE-COUPLING AND ELECTRIC MOTOR (kW/rpm)		= 2
FITTED WITH: BASE-COUPLING-GUARD AND CUSTOMER'S ELECTRIC MOTOR (kW/rpm)		= 3
FITTED WITH: BASE-COUPLING-GUARD AND MOTOR SPEED REDUCER (kW/rpm)		= 4
FITTED WITH: BASE-COUPLING-GUARD AND CUSTOMER'S MOTOR SPEED REDUCER (kW/rpm)		= 5
FITTED WITH: BASE-COUPLING-GUARD AND MOTOR SPEED VARIATOR (kW/rpm)		= 6
FITTED WITH: BASE-COUPLING-GUARD AND CUSTOMER'S MOTOR SPEED VARIATOR (kW/rpm)		= 7
OTHER EXECUTIONS (ON TROLLEY - TRANSMISSION PULLEY - ETC.)		= 8

KEY TO BUILD UP THE CODE





Part. No.	Q.ty	Description
1	1	Body casing
2	1	Casing cover.DE
3	1	Casing cover NDE
4	4	Sleeve bearing
5	2	Gears (driver and driven)
6	1	Drive shaft
7	1	Idler shaft
8	1	Heating jacket NDE
9	1	Heating jacket DE
10	1	Gland nut
11	1	O Ring for gland nut

Part. No.	Q.ty	Description
12	4	Tie rod
13	1	Uni-directional mechanical seal
14	8	Nut for tie rod
15	8	Lock washer
16	2	Gear key
17	1	Coupling key
18	1	O Ring for heating jacket
19	2	O Ring for heating jacket
20	1	Mechanical seal shroud
21	1	Elastic pin
22	1	By-pass body

Part. No.	Q.ty	Description
23	1	By-pass cover
24	1	Relief valve spring
25	1	Valve seat
26	1	Relief valve adjusting screw
27	1	By-pass gasket
28	4	Socket screw for by-pass body
29	4	Dowel pin
30	2	O Rings for pump body

DE = Drive End NDE = Note Drive End

When ordering spare parts always state the pump type number and serial number