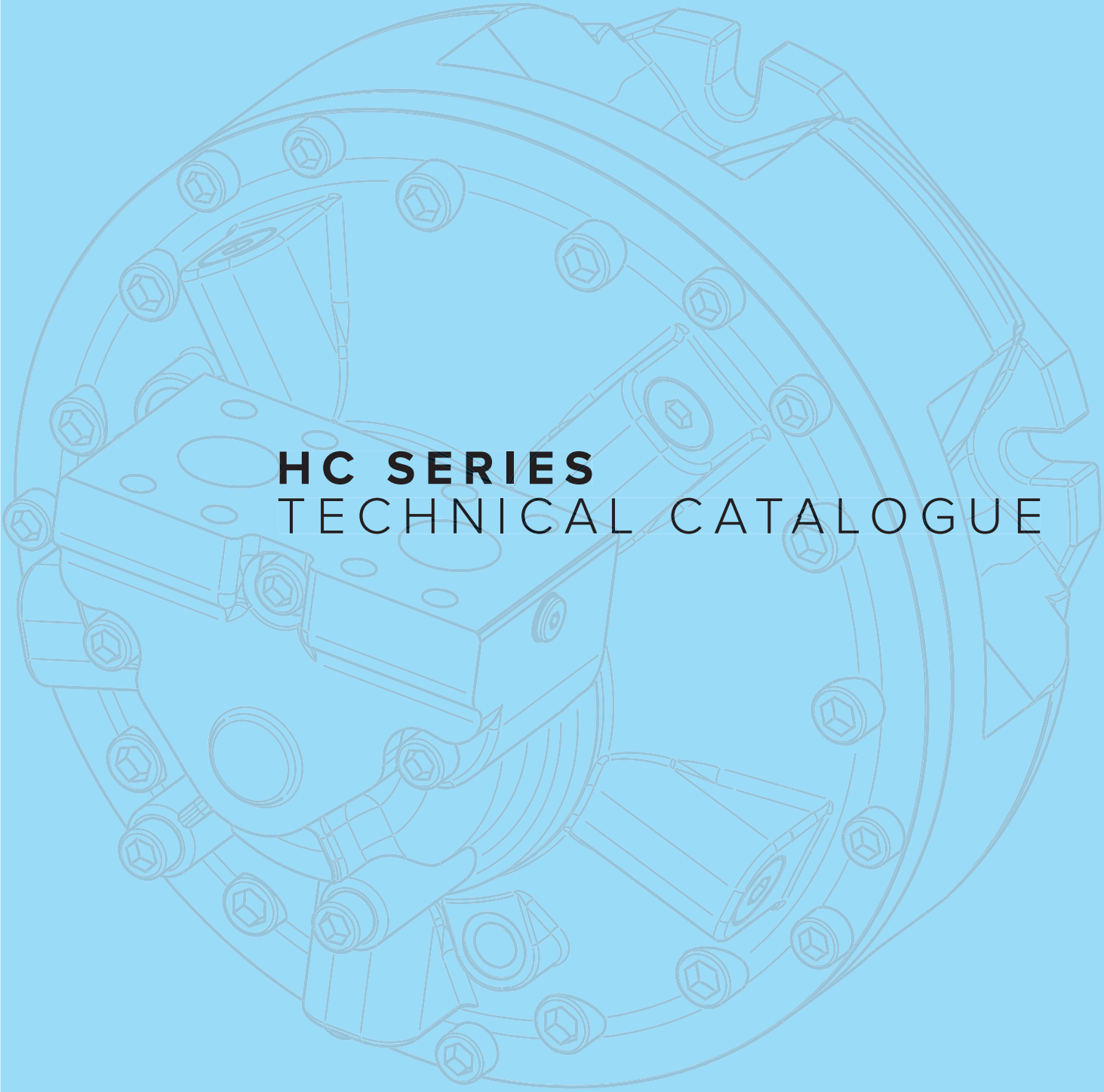
HC 1

DISPLACEMENT

SWIVELLING
CYLINDER
TECHNOLOGY

Italgroup®
HYDRAULIC MOTORS
ITALY

SINGLE DISPLACEMENT HYDRAULIC MOTOR



HC SERIES
TECHNICAL CATALOGUE

HC rev.04 - 08/2021

GENERAL INDEX

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FORMULAS

Torque [Nm] = Specific torque [Nm/bar] * Pressure [bar]

Torque [Nm] = $\frac{\text{Displacement [cc/Rev]} * \text{Pressure [bar]}}{\mathbf{62.8}}$

Power [kW] = $\frac{\text{Torque [Nm]} * \text{Speed [rpm]}}{\mathbf{9549}}$

Power [CV] = $\frac{\text{Torque [Nm]} * \text{Speed [rpm]}}{\mathbf{7023}}$

Speed [rpm] = $\frac{\text{Flow [l/min]} * 1000}{\mathbf{\text{Displacement [cc/Rev]}}}$

Displacement [cc/Rev] = $\frac{\text{Torque [Nm]} * 62{,}8}{\mathbf{\text{Pressure [bar]}}}$

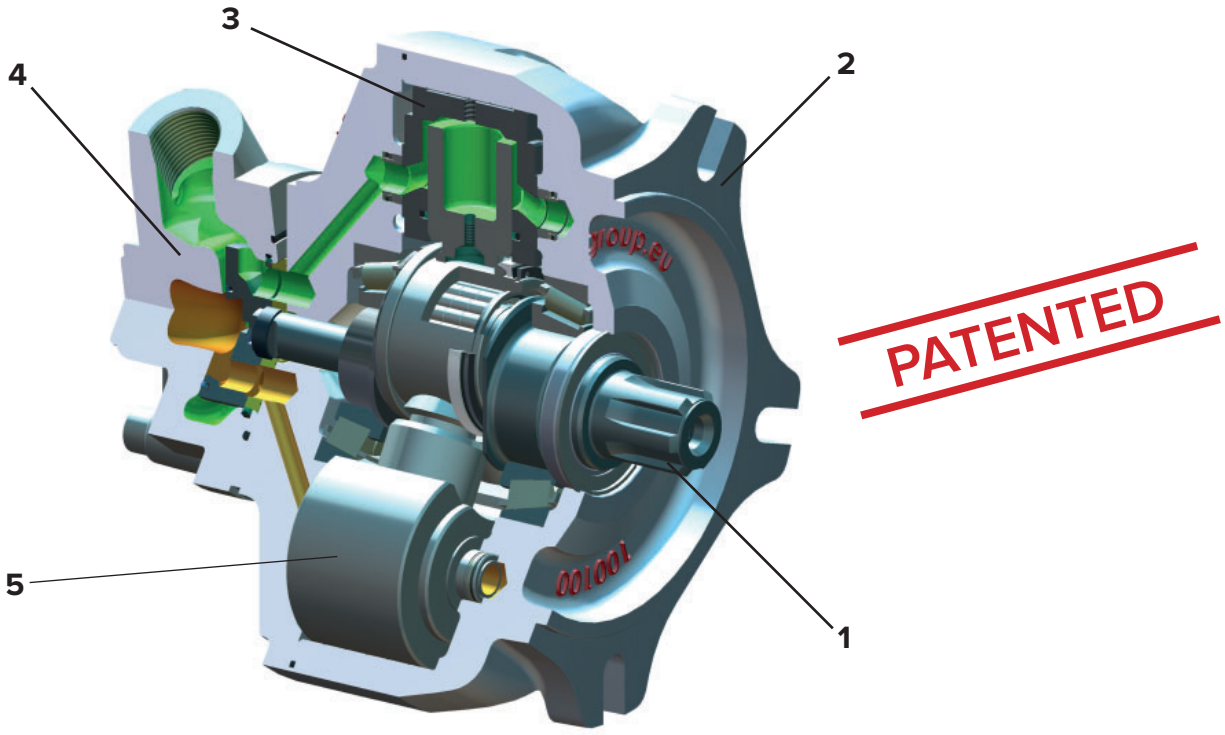
Flow [l/min] = $\frac{\text{Displacement [cc/Rev]} * \text{Speed [rpm]}}{\mathbf{1000}}$

INTRODUCTION
GENERAL INFORMATION

Carefully read the use and maintenance manual before start-up the motor. The use and maintenance manual must be placed near to motor installation location in order to guarantee operators easy access to the instruction manual. For further information please contact Italgroup.

MOTOR DESCRIPTION

HC series motors are radial piston hydraulic motors (generally indicated as LSHT motors, low speed high torque motors) with a rotating shaft (1) and a stationary housing (2). The pistons (3) are located radially and the working fluid provide the mechanical force that push the pistons against the eccentric shaft , providing the shaft ouput torque. The inlet and outlet flow to and from the pistons is regulated by a distributor (4), that provides the oil distribution correct timing. The HC motor design is very compact because the piston and the connecting rod are realized in the same piece, to make this realizable an oscillating cylinder is present (5). Acting in the adequate way (increasing or reducing the oil flow coming from the pump) the motor rotational speed can be increased or reduced. The motor design guarantee extremely high starting torque and high mechanical working efficiency. Respecting the limitation of working parameters (indicated into the technical datasheets) and all recommendations (including fuid recommendations), high motor lifetimes are obtained and very low maintenance requirements are needed.



HC SERIES

Hydraulic motors of the HC series are single displacement crankshaft radial piston motors. Thanks to great variety of accessories HC series can be used in a wide range of applications such as:

- MARINE EQUIPMENTS
- WINCHES
- OFFSHORE EQUIPMENTS
- CONVEYORS
- INJECTION MOULDING MACHINES
- STEEL BENDING MACHINES
- FORK LIFTS TRUCKS
- SKID STEER LOADERS
- DUMPERS
- AGRICULTURAL AND FORESTRY MACHINES
- MUNICIPAL VEHICLES
- AIRPORT MACHINERY

PRODUCT FEATURES:

- High volumetric and mechanical efficiencies
- Very smooth running at low speeds
- High starting torque / constant torque
- High freewheeling / cavitation resistance
- Wide speed range
- Compact Design
- Low maintenance and high reliability
- Bi-directional
- High radial and axial force allowed
- Speed sensor available
- Built-in valves available

MOTOR TECHNICAL DATA

Motor	Size	Displacement	Theoretical torque	Max cont. pressure	Max cont. speed	Peak speed (**)	Max cont. power (*)	Max power	Dry weight
		[cc]	[Nm/bar]	[bar]	[rpm]	[rpm]	[kW]	[kW]	[kg]
HC05 40	05	40	0.62	250	1200	1400	16	25	30
HC05 60	05	60	0.97	250	1200	1400	25	35	30
HC05 75	05	74	1.2	250	1200	1400	32	50	30
HC05 90	05	91	1.4	250	1100	1300	32	50	30
HC05 110	05	115	1.84	250	850	1100	35	55	30
HC05 130	05	129	2.05	250	850	1100	35	55	30
HC05 150	05	151	2.4	250	850	1100	35	55	30
HC05 175	05	166	2.65	250	750	1000	35	55	30
HC05 200	05	191	3.04	250	750	1000	35	55	30
HC05 250	05	226	3.6	250	600	800	35	55	30
HC1 100	1	98	1.57	250	1100	1250	40	60	35
HC1 130	1	129	2.05	250	900	1100	40	60	35
HC1 150	1	154	2.45	250	700	1000	40	60	35
HC1 175	1	173	2.74	250	700	1000	45	75	35
HC1 200	1	200	3.2	250	600	900	45	75	35
HC1 220	1	221	3.52	250	600	800	48	75	35
HC1 250	1	243	3.88	250	600	800	50	75	35
HC1 300	1	289	4.61	250	550	700	50	75	35
HC1 330	1	315	5.01	250	450	650	50	75	35
HC2 200	2	193	3.06	250	1200	1500	75	105	53
HC2 250	2	251	4.00	250	950	1150	75	105	53
HC2 300	2	305	4.84	250	800	950	75	105	53
HC2 350	2	348	5.52	250	650	800	75	105	53
HC2 400	2	424	6.76	250	600	800	75	105	53
HC2 500	2	493	7.84	250	520	700	75	105	53
HC2 600	2	566	9.00	250	480	650	75	105	53
HC2 650	2	624	9.92	250	440	620	75	105	53
HC3 350	3	352	5.6	250	640	800	82	130	92
HC3 400	3	426	6.78	250	600	800	85	130	92
HC3 500	3	486	7.73	250	500	700	85	130	92
HC3 600	3	595	9.47	250	450	600	85	130	92
HC3 700	3	689	11	250	420	600	85	130	92
HC3 800	3	792	12.6	250	400	550	85	130	92
HC3 900	3	872	13.9	250	360	525	85	130	92
HC3 1000	3	988	15.7	250	310	500	85	130	92

Motor	Size	Displacement	Theoretical torque	Max cont. pressure	Max cont. speed	Peak speed (**)	Max cont. power (*)	Max power	Dry weight
		[cc]	[Nm/bar]	[bar]	[rpm]	[rpm]	[kW]	[kW]	[kg]
HC4 400	4	402	6.4	250	850	1050	92	140	155
HC4 500	4	505	8	250	750	900	92	140	155
HC4 600	4	639	10.2	250	650	800	92	140	155
HC4 800	4	789	12.6	250	550	700	92	140	155
HC4 900	4	904	14.4	250	500	600	92	140	155
HC4 1000	4	1022	16.3	250	450	560	92	140	155
HC4 1100	4	1116	17.8	250	415	520	92	140	155
HC4 1250	4	1247	19.8	250	370	465	92	140	155
HC4 1300	4	1315	20.9	250	350	440	92	140	155
HC5 800	5	837	13.3	250	350	470	100	150	190
HC5 1000	5	1060	16.9	250	320	470	100	150	190
HC5 1200	5	1200	19.1	250	320	430	100	150	190
HC5 1300	5	1308	20.8	250	320	430	100	150	190
HC5 1500	5	1462	23.3	250	300	380	100	150	190
HC5 1600	5	1625	25.9	250	280	350	100	150	190
HC5 1800	5	1816	28.3	250	280	350	100	150	190
HC5 2000	5	2010	31.3	250	220	280	100	150	190

For superior performances please refer to HCD catalogue

For all motors:
- Hydrostatic test pressure: 420 bar
- Refer to motor performance diagrams for more information

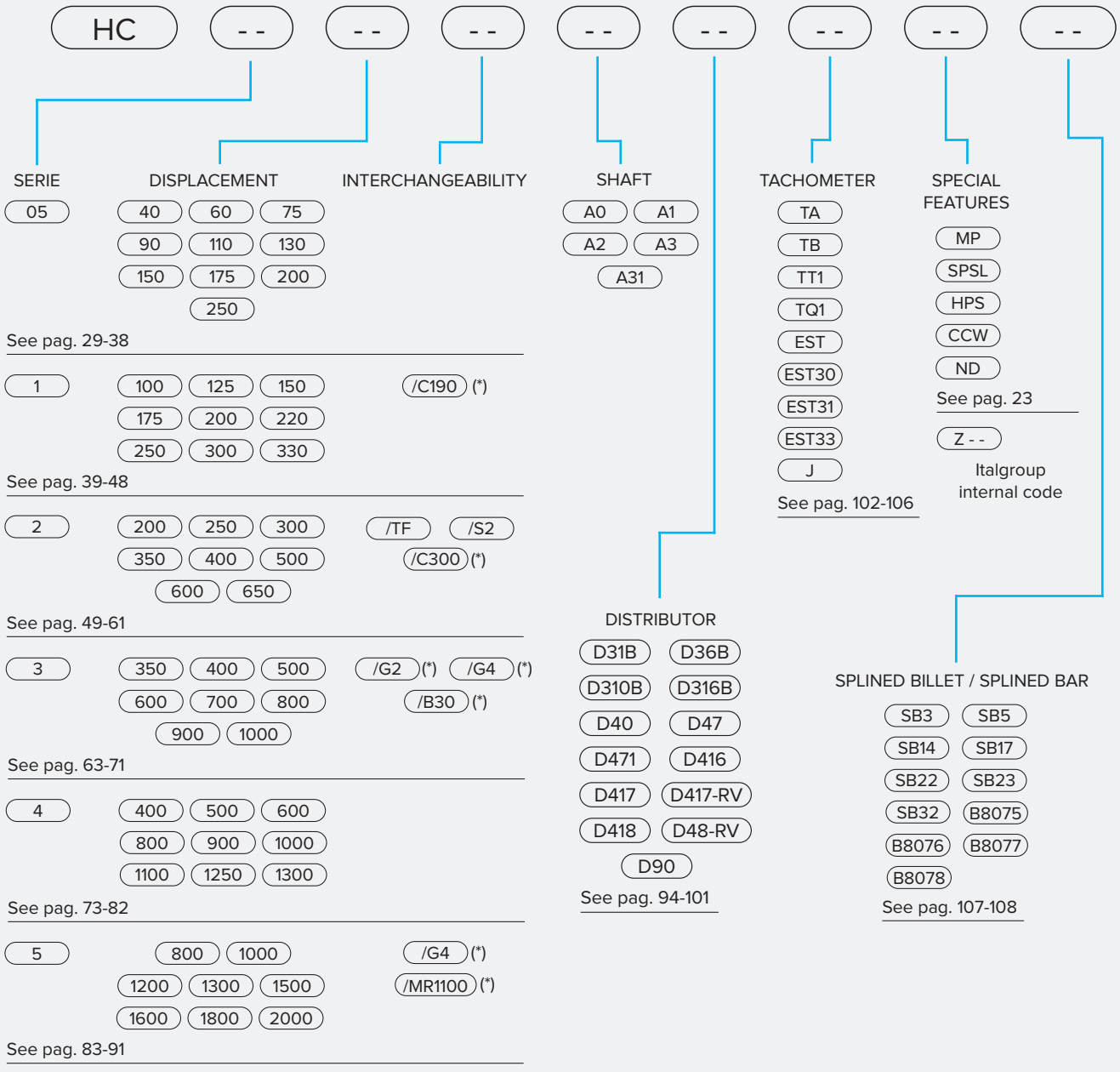
- (*) For motor operation with a continuous duty cycle at maximum continuous power the flushing is usually required. For more information please contact our technical department.
- (**) Do not exceed maximum power.

INTERCHANGEABILITY CHART

Italgroup motor code	Cross reference motor code
HC05	GM05
HC1	GM1 - S1 - M1
HC1/C190 (*)	MR 125 - MR 160 - MR 190
HC2	GM2
HC2/C300 (*)	MR 250 - MR 300 - MRE 330 - MRA 400
HC2/S2	S2 - M2
HC2/TF	TF 1.5
HC3	GM3
HC3/G2 (*)	GM2 - GM3A
HC3/G4 (*)	GM4
HC3/B30 (*)	B30
HC4	GM4
HC5	GM5A
HC5/G4 (*)	GM4
HC5/MR1100 (*)	MR 1100 - MRE 1400 - MRA 1600

(*) For more information (drawings/technical data) please contact Italgroup S.r.l.

HC - ORDERING CODE



(*) For more information (drawings/technical data) please contact Italgroup S.r.l.

HYDRAULIC FLUID RECOMMENDATIONS

Fluid selection

In general, we recommend the use of hydraulic oils with minimum viscosity index of 95, with anti-wear additives (ISO HM and HV). Once normal working temperature is reached, the drain oil viscosity must be at least 20 cSt, preferably in the range from 30 to 50 cSt.
HE oils (ecological fluids) are allowed, but must be used with particular attention, because them can influence the motor seals compatibility, and can reduce motor performances and life. Please contact us in case of HE oils usage.

Optimal viscosity selection

Referring the first approximated selection to the room temperature, we advice the following:

Room temperature	Oil
-20°C/0°C	BP ENERGOL HLP – HM 22
-15°C/+5°C	BP ENERGOL HLP – HM 32
-8°C/+15°C	BP ENERGOL HLP – HM 46
0°C/+22°C	BP ENERGOL HLP – HM 68
+8°C/+30°C	BP ENERGOL HLP – HM 100
-20°C/+5°C	BP BARTRAN HV 32
-15°C/+22°C	BP BARTRAN HV 46
0°C/+30°C	BP BARTRAN HV 68

ATF (automatic transmission fluid) oils, SAE 10-20-30 W oils, multigrade motor oils (SAE 15 W 40, 10 W 40), universal oils, can also be used. Always fill the motor (please refer to the “DRAIN RECOMMENDATIONS” section) with the selected hydraulic fluid before motor start-up. During cold start-up avoid high-speed operation until the system reach the working temperature, in order to provide an adequate lubrication. Every 5-8 °C of increase respect to the optimal working temperature for the selected oil, the hydraulic fluid life decrease of about 40-50% (refer to “OXIDATION” section). Consequently, the motor lifetime will be affected by the working temperature increase respect to the optimal working temperature of the selected oil. The maximum continuous working temperature is 70 °C, the temperature must be measured from motor drain line. If the motor doesn’t have a drain line, the temperature must be evaluated at the return line port.

Fire resistant oil limitations

	Max cont. Pressure [bar]	Max int. Pressure [bar]	Max Speed [rpm]
HFA, 5-95% oil-water	103	138	50%
HFB, 60-40% oil-water	138	172	100%
HFC, water-glycol	103	138	50%
HFD, ester phosphate	250	293	100%

Filtration

Hydraulic systems oil must always be filtered.
The choice of filtration grade derives from needs of service life and money spent. In order to obtain stated service life it is important to follow our recommendations concerning filtration grade.
When choosing the filter it is important to consider the amount of dirt particles that filter can absorb and still operate satisfactorily. For that reason we recommend filters showing when you need to substitute filtering cartridge.

- 25 µm filtration required in most applications
- 10 µm filtration in closed circuit applications

Oxidation

Hydraulic oil oxidizes with time of use and temperature. Oxidation causes changes in colour and smell, acidity increase or sludge formation in the tank. Oxidation rate increases rapidly at surface temperatures above 60°C, in these situations oil should be checked more often.
The oxidation process increases the acidity of the fluid; the acidity is stated in terms of the “neutralization number”. Oxidation is usually slow at the beginning and then it increases rapidly.
A sharp increase (by a factor of 2 to 3) in neutralization number between inspections shows that oil has oxidized too much and should be replaced immediately.

Water content

Oil contamination by water can be detected by sampling from the bottom of the tank. Most hydraulic oils repel the water, which then collects at the bottom of the tank. This water must be drained off at regular intervals. Certain types of transmission oils and engine oils emulsify the water; this can be detected by coatings on filter cartridges or a change in the colour of the oil. In such cases, obtain your oil supplier advice.

Degree of contamination

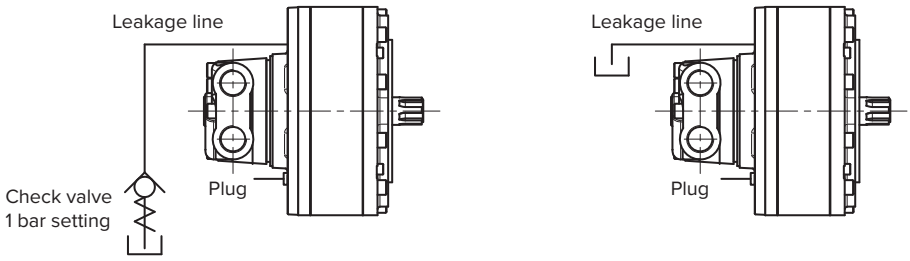
Heavy contamination of the oil causes wear rising in hydraulic system components. Contamination causes must be immediately investigated and remedied.

Analysis

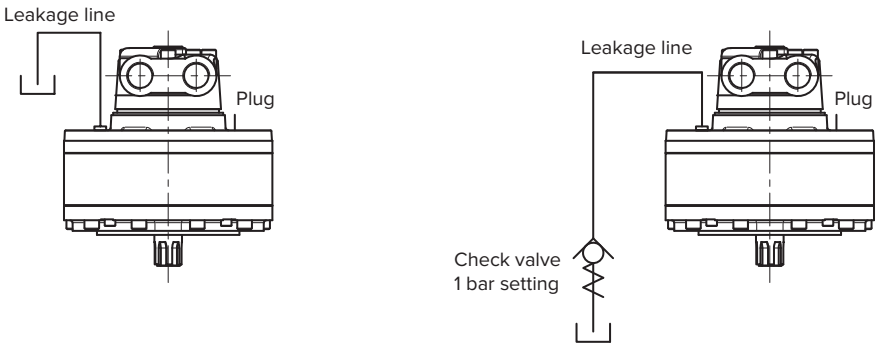
It is recommended oil being analyzed every 6 months. The analysis should cover viscosity, oxidation, water content, additives and contamination. Most oil suppliers are equipped to analyze oil state and to recommend appropriate action. Oil must be immediately replaced if the analysis shows that it is exhausted.

DRAIN RECOMMENDATIONS

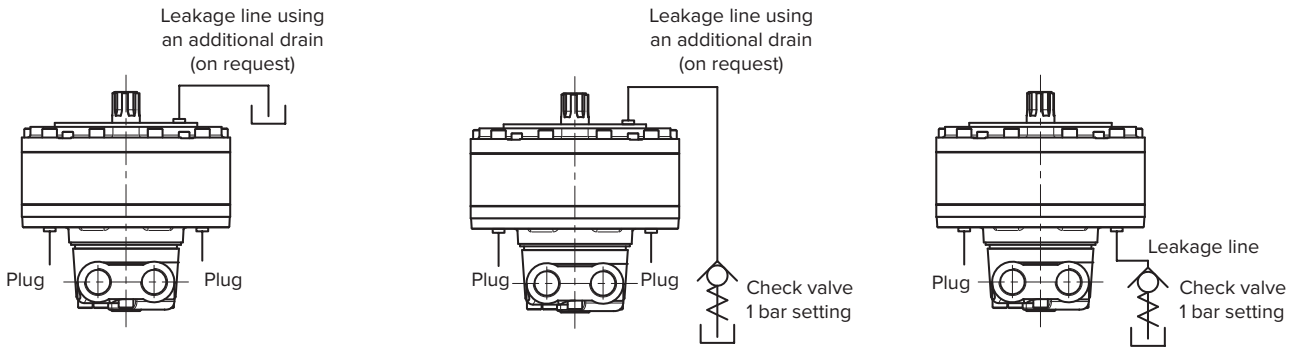
MOTOR AXIS HORIZONTAL



MOTOR AXIS VERTICAL, SHAFT DOWN



MOTOR AXIS VERTICAL, SHAFT UP



LEAKAGE LINE CONNECTION

Always fill the motor with hydraulic fluid before start-up. Arrange piping in a way that the motor cannot drain off and cannot generates air bubbles into the motor case. Under certain conditions may be is necessary to arrange a check valve in order to help avoiding the motor drain off. Always check carefully that the leakage line pressure doesn't overcome 10 bar pressure: therefore leakage lines must be shorter as possible and with a minimum flow resistance.

FLUSHING

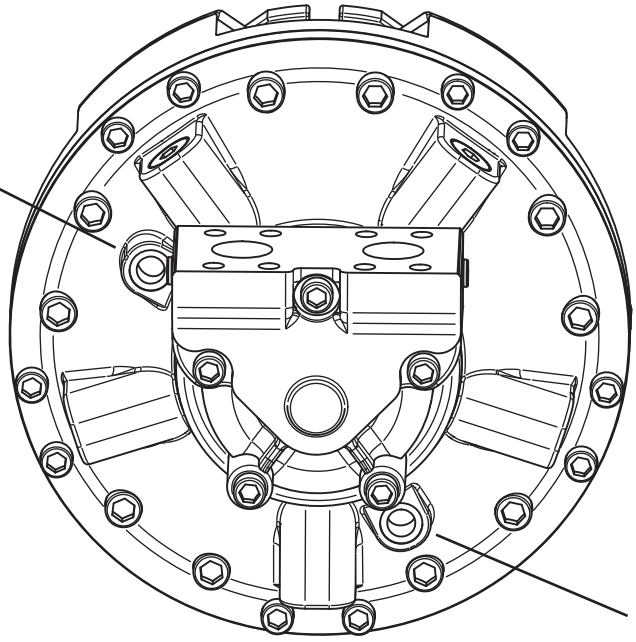
Motor	Flushing flow [l/min]
HC05 40, 60, 75, 90, 110, 130 HC1 100, 130	5
HC05 150, 175, 200, 250 HC1 150, 175, 200, 220, 250, 300, 330 HC2 200, 250, 300	6
HC2 350, 400, 500, 600, 650 HC3 350, 400, 500, 600 HC4 400, 500, 600	8
HC3 700-800-900-1000 HC4 800, 1000, 1100, 1250, 1300 HC5 700, 800, 1000, 1200, 1300, 1500	10
HC5 1600, 1800, 2000	15

Important note: the above value are approximated. The correct way to operate is the following: the flushing flow is adequate if during the motor operation the drain oil viscosity be at least 20 cSt, preferably in the range from 30 to 50 cSt.

Maximum continuous case pressure 6 bar (10 bar peak pressure). Special seals for 20-25 bar continuous case pressure are available upon request (ordering code: HPS).

FLUSHING OUTLET PORT

Please note: the flushing outlet port must always be located in the highest possible position.



FLUSHING INLET PORT

MAXIMUM CASE PRESSURE

6 bar continuous
10 bar peak

For standard HC motors

STANDARD SHAFT SEAL FEATURES

Features

Type: BABSL
Form: AS DIN 3760
Material: SIMRIT® 72 NBR 902
SIMRIT® 75 FKM 595

Material

SIMMERRING® radial shaft seal with rubber covered O.D., short, flexibility suspensed, spring loaded sealing lip and additional dust lip:
see Part B/SIMMERRING®, sections 1.1 and 2.

Application

Sealing lip and O.D.:

– Acrylonitrile-butadiene rubber with 72
Shore A hardness (designation: SIMRIT® 72 NBR 902)
– Fluoro rubber with 75 Shore A hardness
(designation: SIMRIT®75 FKM 595)

Metal insert:
– Plain steel DIN 1624

Spring:
– Spring steel DIN 17223

Operating conditions

See Part B/ SIMMERRING®, sections 2. 4.

Media: mineral oils, synthetic oils

Temperature:
-40°C to +100°C (SIMRIT® 72 NBR 902)
-40°C to +160°C (SIMRIT® 75 FKM 595)

Surface speed: up to 5 m/s

Working pressure: see diagram on next page, pressure is function of surface speed (i.e. of rotating speed and shaft diameter)

Housing and machining criteria

See Part B/ SIMMERRING®, sections 2.

Shaft:

Tolerance:	ISO h11
Concentricity:	IT 8
Roughness:	Ra=0.2-0.8 µm
	Rz=1-4 µm
	Rmax=6 µm
Hardness:	45-60 HRc
Roughness:	non oriented;

preferably by plunge grinding

Housing:

Tolerance:	ISO H8
Roughness:	Rmax<25 µm

Pressure diagram

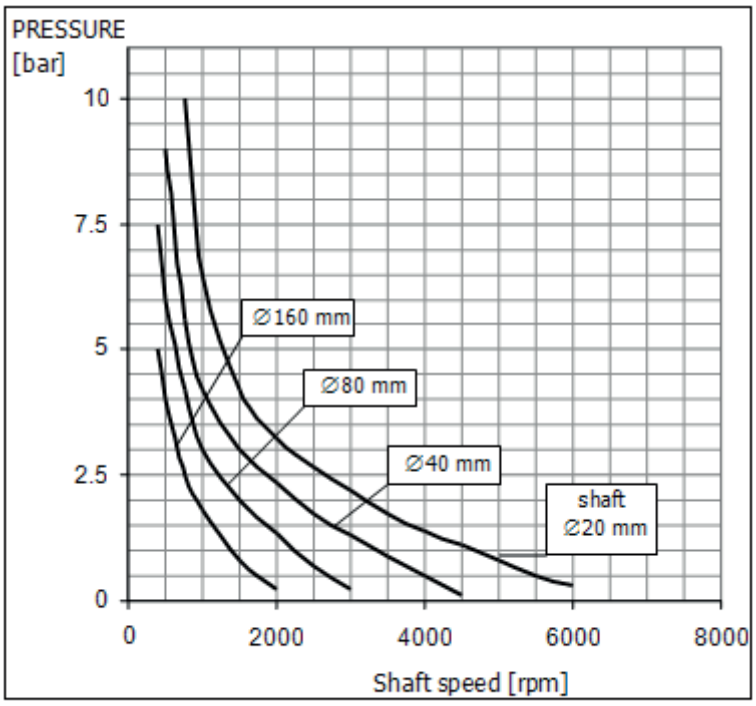


Diagram 1: Pressure Loading Limits

Special seals for 20-25 bar continuous case pressure are available upon request (ordering code: HPS). Refer to page 23 for more information.

MOTOR INSTALLATION AND STARTUP

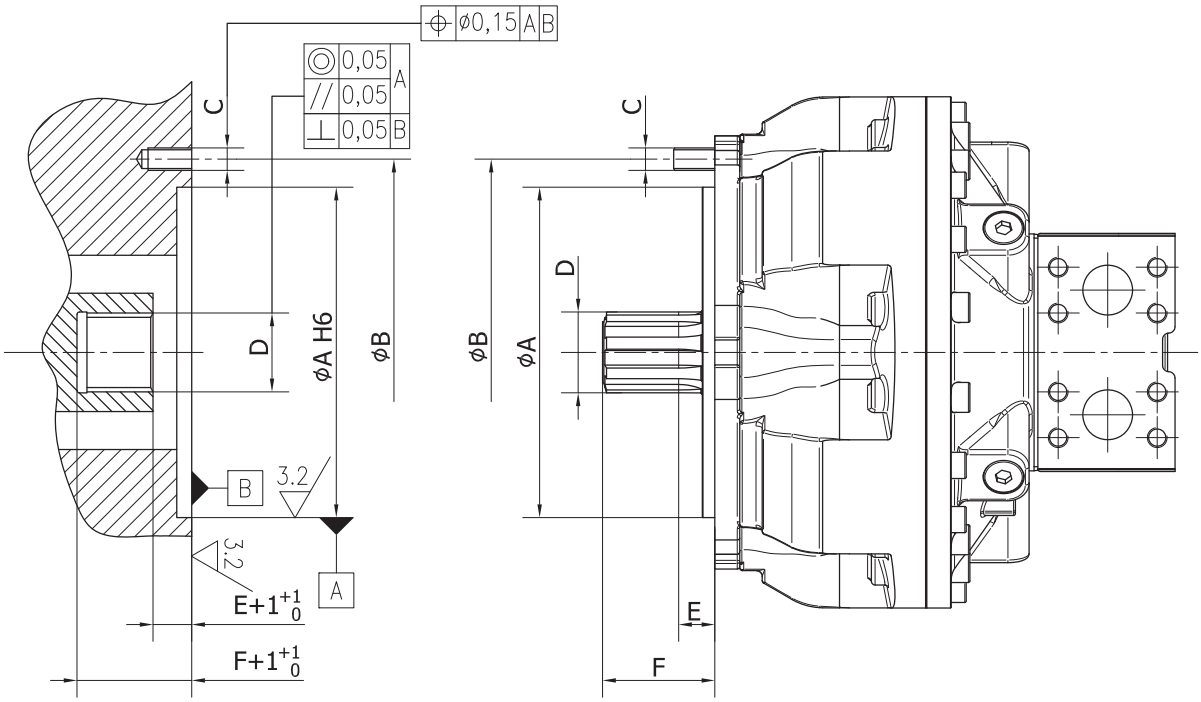
Motor installation and start-up

The motor, after testing, it's packed in different ways that depends by customer and/or logistic requirements. The motor must be carefully moved from his box or pallet, with the assistance of correctly sized movimentation tools, like eyebolts (all the motors has a thread hole in the shaft end, please refer to the HC general catalogue, shafts section) or lifting slings.

When the motor is moved from one place to another always be very careful and act in a way that the motor is stable and under control during movimentation (refer to handling and storage section for more details).

Before mount the motor, check carefully the absence of damage happened for example during transportation and/or storing.

For mounting dimensions please refer to the HC installation drawings. The motor must be installed using the correct screws size (we recommends the use of 10.9 and 12.9 class resistance fixing screws) and must be placed on a structure that is capable to correctly support the motor during functioning: for this reason the structure must not only be able to support the motor weight but must also assure the absence of vibration during operation and must win the reaction forces that are generated by the working torque. Regarding the motor fitting design, the concentricity between the centering diameter (spigot) and shaft (both splined or parallel) must be assured with a strict tolerance (please refer to the following general indication). If the concentricity between the shaft and the centering diameter and/or fixing holes is not respected, in the worst case the motor can have an unusual failure or can work only with low performances. Splined adaptors (splined billets) are available upon request.



Hoses and piping must be clean and free from contamination. Use proper hoses for oil connection, both for inlet and outlet main ports, and for drain line. Refer to hoses and fitting constructors in order to correctly size and select hoses and fittings. In order to keep control on the oil compressibility keep hoses to the minimum recommended size and select pipelines most rigid as possible.

The motor can be mounted in any position (refer also to drain recommendations section). In run-away conditions you must use counterbalance valves. When the motor is installed vertically with shaft pointing upwards, consult our technical department. If the motor is connected to high inertial loads, the hydraulic system must be designed to prevent peaks of pressure and cavitation. Consider the use of relief valves, possibly directly mounted on motor distributor in case the application can generates pressure peaks at the motor ports: the relief valve should be able to discharge all the flow (or at least a good part of it) with a limited pressure increase. Italgroup can provide differents valve types that can be placed directly on the motor distributor (please refer to Italgroup valves technical catalogue).

Motor case and pistons must be completely filled with oil before starting.
Do not load motor to maximum working pressure instantly. During cold start-up avoid high-speed operation until the system reach the working temperature. Connect the case drain directly to tank, and avoid excessive drain line pressure losses (the case drain pressure must not exceed 6 bar continuous pressure for HC serie standard motors). The case drain port on the motor must be located on the highest point of the installation to ensure that the motor will always be full of oil. (See drain recommendations page for more details)

Maximum oil temperature must not exceed 70°C. Heath exchangers must be used with higher temperatures. The operating fluid viscosity must always be higher than a certain minimum value (see “fluid recommendation” section) in order to guarantee an optimal motor internal lubrication. When the working conditions cause the motor case overheating above a critical value, the motor flushing is required. Flushing consists in the introduction of fresh oil (taken from the hydraulic circuit) into the motor case. Oil must be taken from the return line to avoid internal motor damage (the continuous motor case pressure must be maximum 6 bar). Flushing is an important operation that can be very effective to improve motor lifetime with heavy duty working conditions and improve the motor mechanical efficiency.
The motor flushing, if the motor works in one direction only, can be easily performed connecting the motor return line to the lowest motor drain port. The highest motor drain port must be connected to the tank. For D90 flow distributors, the side 1/4” metallic plugs can be used for flushing circuit installation: infact the plug (corresponding to the return line port) can be removed and the connection between motor low pressure port and motor case can be correctly realized.

MOTOR INSTALLATION AND STARTUP

If the motor axis is not horizontal and/or the motor works in bidirectional operation, please contact Italgroup technical department, that can assist you to advice how to perform the desired operation in the best way. Just for your reference, Italgroup can provide you flushing valves in order to perform an effective flushing circuit.

Minimum speed is very low and can reach values near to 0.5-1 rpm (depending on motor displacement). In case of low speed vibration a reasonable back pressure can eliminate or minimize the vibration and noise level (a general guideline value can be defined by 5-8 bar back pressure). For more information please contact our technical department.

HC series motors can works in an efficient way with high back pressures (back pressure occurs for example when hydraulic motors are installed in series circuit). A general guideline for back pressure can be set limitating the inlet and outlet pressure sum to 400 bar. High back pressure values are often responsible of motor overheating, so if drain temperature reach values that bring the oil viscosity under the recommended limit (refer to fluid recommendations section), perform appropriate motor flushing and/or reduce the back pressure.

During start-up and in the period immediately after it, any hydraulic installation must be regurarly and carefully checked at frequent intervals. The working pressure must be checked in order to understand that it agrees with the design values. The drain line pressure for standard motors must not overcome 6 bar continuous. If leakage occurs, check the reason, correct it and carry out new measurements. Check all lines, connections, screws, etc, and tighten if necessary. Replace contaminated fluid immediately.

The motor installation and start-up must be performed by instructed and experienced personnel only.

Please contact us freely to obtain further information.

MOTOR HANDLING AND STORAGE

Motor handling

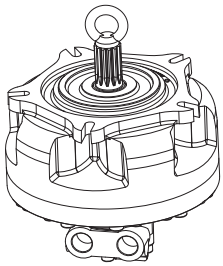
The motor must be correctly packed during transport and correctly stored into the warehouse in order to avoid eventual damages that can make the motor functioning not adequate.

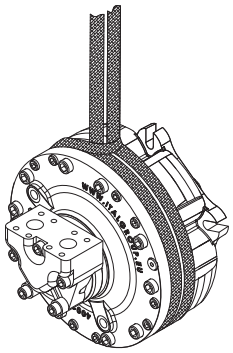
During handling operations, make sure that the motor shaft and tachometer shaft (if present) don't receive any hit, in order to avoid motor damage.

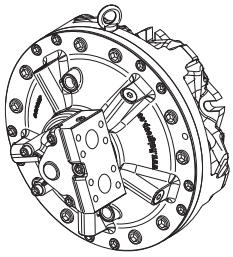
During all operations of lifting and handling, never movimentate motors by hand but use adequate tools. In order to avoid that motor can falls, creating danger for authorized working persons in the nearings, use one of following methods:

- use lifting slings of adequate capacity;
- use adequate eyebolt using the thread hole in the shaft end;
- HC2, HC3, HC4 and HC5 can be lifted and handled using an eyebolt located on the motor external diameter.

Refer to the following pictures.



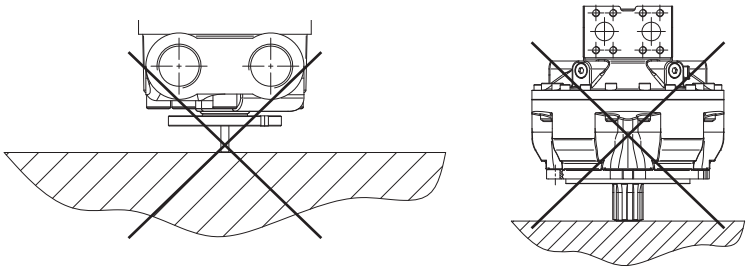




MOTOR HANDLING AND STORAGE

Storage

Storage must be carefully made using adequate storage tools (for example boxes, pallets, etc...) that can guarantee that the motor is stable and cannot move without control, in order to avoid damage problems. Make sure that the weight of the motor doesn't be substained by the motor shaft or by the tachometer shaft (if present).



HC series motors are supplied together with plastic plugs, that keep the hydraulic oil (that was used during final test in Italgroup testing workbench) inside the motor. A thin oil film is present on the internal motor parts, whereas the external parts are covered with antirust oil that prevents damage from oxidation and corrosion.

Therefore the motors can be safely stored into the customer warehouse without performance losses for long periods (up to 4-6 months).
The storing location must has some important characteristics:
- room temperature comprised between -15°C and +55°C without fast and/or excessives temperature excursions;
- low relative humidity;
- absence of aggressive and corrosive medias in the motor nearings.

In particular, if motor should be motionless for more than 4-6 months, it must be protected against internal rust. Proceed as follows:
- fill the motor case with hydraulic oil. After that the motor case is full of oil, close it with a screw plug;
- fill the motor also from inlet or outlet port. Turn the shaft by hand (the shaft must make about one revolution) and finally close the inlet and outlet ports.

Please note that the plastic plugs are necessary not only to keep the hydraulic oil inside the motor, but even to avoid that dirt and other fluids (like water for example) can enter into the motor and create damage during storing or during motor start-up. Therefore make sure all drain ports, supply ports and discharge ports are closed during motor handling and storing. If plugs are missing, use plastic plugs or adequate systems in order to guarantee that the motor is well protected by dirt and other fluids.

MAINTENANCE OPERATIONS

Maintenance operations

All the assembly and maintenance works must be performed when the motor is stopped and not connected to any power source, in order to avoid an accidental start-up. In addition the pressure inside the motor must be set to zero (the motor must be depressurized) before to perform maintenance operations. The motor maintenance must be performed by instructed and experienced personnel only, following carefully Italgroup advices and procedures.

HC series motors are internally lubricated by the operating fluid, if the motors are used according to the technical data reported into the HC catalogue, they need very limited maintenance operations. In order to achieve good performances, long bearings lifetime and safe working, the working fluid must be carefully selected in function of the operating parameters (a fundamental parameter is the ambient temperature range). In case of fire resistence fluid usage , some limitation on pressure and speed can be required. Refer to hydraulic fluid recommendations section for more information. If required please contact Italgroup technical department for further information.

Motor parts	Material
Motor shaft, cylinders, rollers, pins, screws, distributor bush, rotating distributor, distributor joint, pistons, ring for rod	Steel
Motor case, motor flange, distributor body	Cast iron
Distributor disk	Bronze
Slippers	Charged PTFE, PTFE
O-Rings	Elastomer
Radial shaft seal rings	Elastomer

INSTRUCTIONS AND ADVICES

Bearings

The bearing life depends by different factors, like bearing type, motor speed, working pressure, external loads, duty cycle, fluid viscosity, oil cleanliness, type and temperature.

Lifetime is measured by L_{10} which is called “theoretic lifetime”. It represents the number of cycles that 90% of identical bearings can effort at the same load without showing wear and tear.

Please refer to bearing lifetime diagrams reported in the following pages to obtain the theoretical bearing lifetime. **The lifetimes diagrams shown the L_{50}, median or average lifetime, that can be considered as 5 times L_{10}.**

Please note that the theoretical lifetime can be different from the real lifetime, especially in case of heavy duty applications with continuous work cycle.

Please contact Italgroup S.r.l. for more information.

Motor creep speed

The hydraulic motor is able to hold the load acting as a brake (if proper valves or circuit are considered and installed), but a certain creep speed is always present: this is typical of all brands hydraulic motors.

The motor creep speed depends by many factors, like operating conditions (motor displacement and type, pressure load on the shaft, oil viscosity, type and temperature)

If creep speed is higher than desired value a negative brake can be considered: Italgroup can supply negative brakes that can be fitted to the hydraulic motor.

Please contact Italgroup S.r.l. for more information.

SPECIAL FEATURES

Special features

Marine painting

If needed, special painting or primers are available in order to guarantee optimal protection against normal corrosion and marine environment corrosion. The ordering code is MP. Please contact Italgroup S.r.l. for more information.

Speedy-sleeve

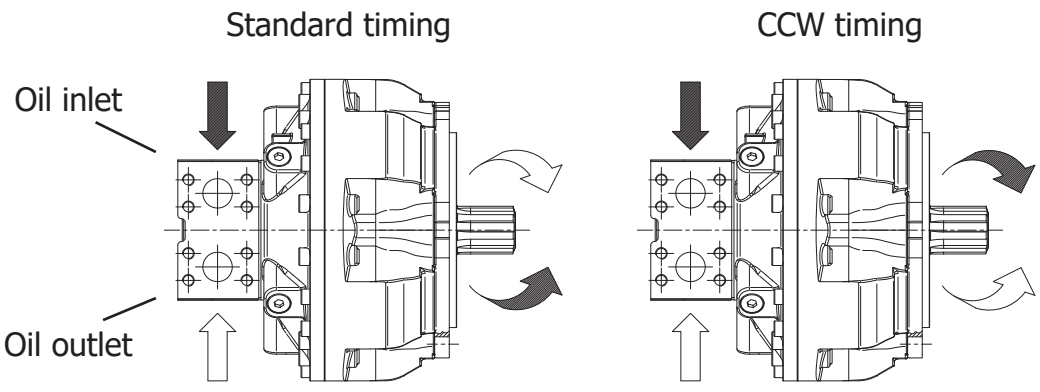
A special inox sleeve is available upon request. In case the motor is used in aggressive medias or environments, this can be very useful in order to protect the motor shaft surface located in proximity of the motor shaft seal. This improves the shaft and seal endurance respect to wear and corrosion. The ordering code is SPSL. Please contact Italgroup S.r.l. for more information.

High pressure shaft seal

Standard HC motors are supplied with high pressure shaft seals, the continuous drain pressure must be maximum 6 bar, whereas the peak drain pressure must be maximum 10 bar. In case the drain line can or must has a higher pressure, special shaft seals are available upon request. The ordering code is HPS. The drain pressure with HPS shaft seal can reach 20-25 bar continuous pressure and 30 bar peak pressure. The HPS shaft seal is bi-directional also, so it can be used for example in underwater applications. Please contact Italgroup S.r.l. for more information.

Counterclockwise rotation

Standard HC motors are supplied with clockwise distributor timing. Please refer to the installation drawings of each section for more information. With ordering code CCW the motor is supplied with counterclockwise rotation timing. Contact Italgroup for more information.



No-drain version

A certain internal leakage is always present in all hydraulic motors. For standard HC motors, the internal leakage must be conveyed to tank through a drain line. HC motors can be realized with the ND option, and this can eliminate the need of drain port connection to tank (the drain connection is made internally and the internal leakage flow is conveyed to motor return line through the motor distributor). In case return line pressure is higher than 6 bar continuous, HPS feature has to be considered.

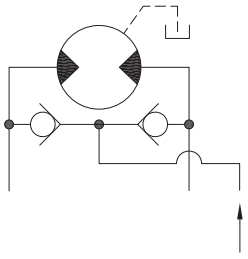
CAVITATION AND FREEWHEELING

Cavitation and freewheeling

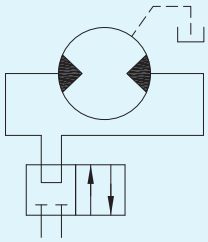
In hydraulic special applications like for example drilling machines, mobile applications, cavitation may be present. Infact when the motor is forced to run at a certain speed that requires an oil flow that is not disposable from the pump, in a transitory or continuous situation, the oil pressure inside the motor pistons decrease and can cause many problems like tractive forces on connecting rods retaining rings, metallic erosion (due to the air/vapour bubbles that develop when the piston pressure is very low and explodes when pressure rise above the equilibrium vapour pressure) and overheating.
It's always better to avoid motor cavitation or at least reduce it during operation (installing for example proper valves and using well designed circuits) but when this event cannot be avoided HC series motors are a very good solution in order to guarantee the correct motor operation in a safe and efficient way. It's always good to take into consideration circuit modifications in order to avoid cavitation, mainly because the other components that are present in the circuit can be more sensible to the problem than the HC motor, therefore the HC can have an efficiency loss not due to the motor characteristics but to a bad cavitation resistance of the other ciruit components.

Pressurization circuit

Please notice that using an auxiliary pump or a proper designed oil accumulator, in many cases (through the low pressure pipe pressurization) cavitation can be avoided or in all cases much reduced.



Auxiliary flow
(from pump or accumulator)

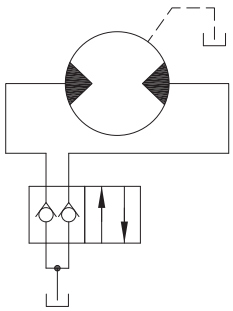


Low speed freewheeling circuit

When the freewheeling requested speed is not high, the circuit shown on the left can be used. The speed for example can be controlled through a variable throttle valve. The main problem is that especially when throttle is acting, oil temperature can reach critical values.

High speed freewheeling circuit

Realizing the freewheeling in this particular way the motor operates without oil into the pistons, so the energy consumption is always the same and independent by the motor speed. In addition this energy loss is very low. This is the most suitable circuit for high speed freewheeling operation.



TROUBLESHOOTING

Problem	Possible cause	Solution
Excessive noises	Cavitation	Adopt an anti-cavitation system
	Mechanical vibrations	Check and fix damaged components
	Irregular pressure or flow	Check other components (pump, valves, accumulators) and check drain flow
	Air bubbles in the circuit	Bleed circuit
Unit overheating	Overflow	Check max allowed flow
	Overpressure	Check relief valve pressure setting
	Oil viscosity too low	Choose the appropriate oil according to the temperature
	Undersized cooling system	Improve cooling system
	Working without oil in the case	Overhaul the unit, fill with oil before start-up
Anomalous drainage flow	Worn motor internal components	Overhaul the motor
	Motor internal seals worn	Overhaul the motor
	Excessive pressure in the motor case	Check drain port size, pressure and flow, check piping connections
Insufficient torque	Pressure relief valve set incorrectly	Check relief valve pressure setting
	Undersized motor displacement	Replace with bigger displ. motor
	Pump not able to reach the design pressure	Check pump integrity
Insufficient speed	Oversized motor displacement	Replace with smaller displ. motor
	Pump not able to reach the design flow	Check pump integrity
	Undersized pump	Improve pump output flow
	Excessive drain flow	Overhaul the motor
Output shaft cannot rotate	Seized motor flow distributor	Overhaul the flow distributor
	Motor internal seizure	Overhaul the motor
	Motor internal seals worn	Check drain flow, overhaul the motor
	Air in the circuit	Bleed the circuit

TROUBLESHOOTING

Problem	Possible cause	Solution
Oil leakage	Worn seals	Replace seals
	Excessive pressure in the motor case	Check drain port size, pressure and flow, check piping connections
	Burst motor shaft seal	Check drain port size, pressure and flow, check piping connections
Incorrecte sense of rotation	Pipes incorrectly connected	Check pipe connections
	Incorrect rotating distributor timing	Change rotating distributor timing

UNITS CONVERSION

LENGHT	1 m	= 39,3701 in
		= 3,2808 ft
		= 1,0936 yd
		= 1000 mm
	1 in	= 0,0833 ft
		= 25,4 mm
	1 ft	= 0,3048 m
		= 0,3333 yd
		= 12 in
	1 yd	= 0,9144 m
		= 3 ft
		= 36 in
	1 km	= 1000 m
		= 1093,6 yd
		= 0,6214 mile
	1 mile	= 1,609 km
		= 1760 yd
SPEED	1 m/s	= 3,6 km/h
		= 2,237 mph
		= 3,2808 ft/s
	1 km/h	= 0,2778 m/s
		= 0,6214 mph
		= 0,9113 ft/s
	1 mph	= 1,609 km/h
		= 0,447 m/s
		= 1,467 ft/s
	1 ft/s	= 0,3048 m/s
		= 1,0973 km/h
		= 0,6818 mph

MASS	1 kg	= 2,2046 lb
FORCE	1 N	= 0,102 kgf
		= 0,2248 lbf
	1 kgf	= 2,205 lbf
		= 9,806 N
	1 lbf	= 0,4536 kgf
		= 4,448 N
PRESSURE	1 bar	= 14,223 psi
		= 0,99 atm
		= 1,02 ata
		= 100000 Pa
		= 100 kPa
		= 0,1 MPa
	1 psi	= 0,0703 bar
FLOW	1 l/min	= 0,264 gpm
		= 1000 cc/Rev
	1 gpm	= 3,785 l/min
		= 3785 cc/min
	1 m^3/s	= 60000 l/min
		= 15852 gpm

POWER	1 kW	= 1,341 HP
		= 1,3596 CV
	1 HP	= 0,7457 kW
		= 1,0139 CV
VOLUME	1 m^3	= 1000 l
	1 l	= 61,023 in^3
		= 0,264 galUS
	1 in^3	= 0,01639 l
		= 16,39 cm^3
		= 0,004326 galUS
	1 galUS	= 3,7879 l
		=231,15 in^3
TORQUE	1 Nm	= 0,102 kgm
		= 0,7376 lbf ft
	1 kgm	= 9,806 Nm
		= 7,2325 lbf ft
	1 lbf ft	= 0,1383 kgm
		= 1,3558 Nm

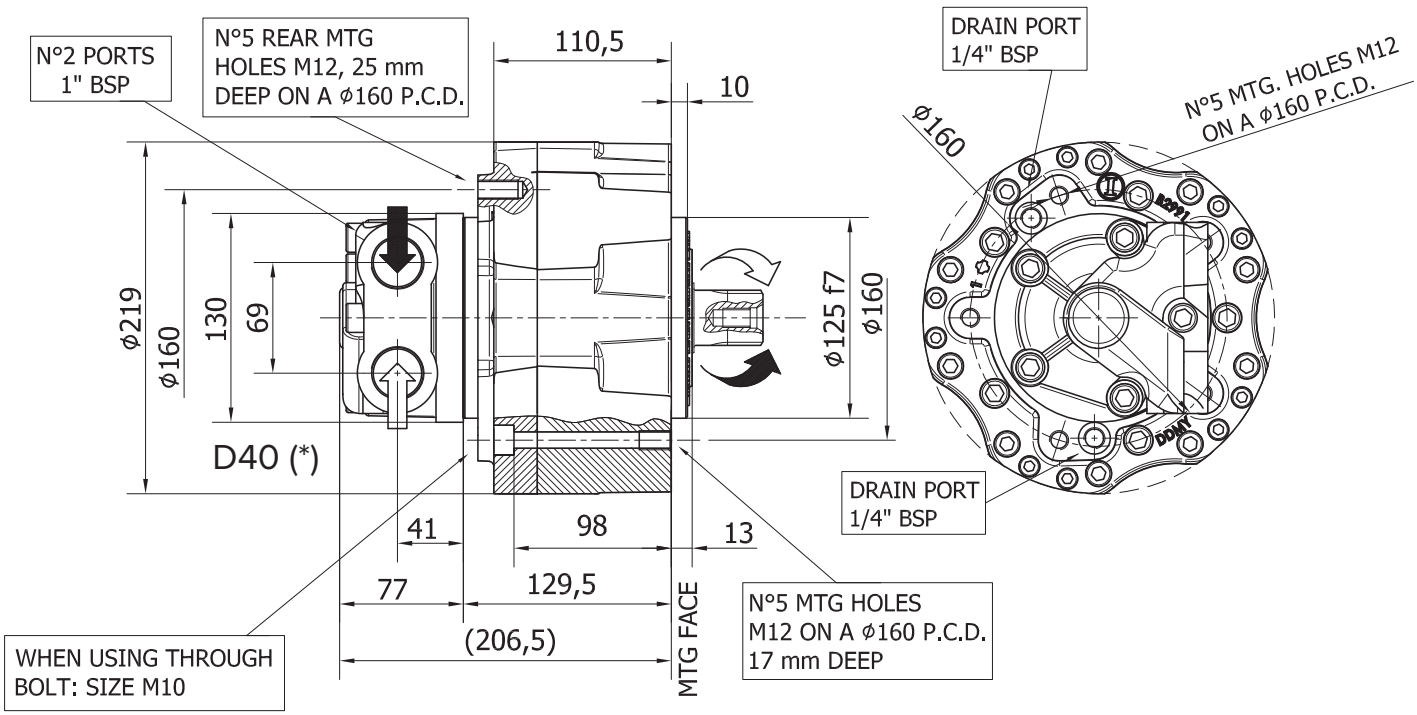
HC05

HC05 40-60-75-90-110-130-150-175-200-250 Pag. 30 - 31

HC05 - PERFORMANCE CURVES Pag. 32 - 37

HC05 - ORDERING CODE Pag. 38

HC05



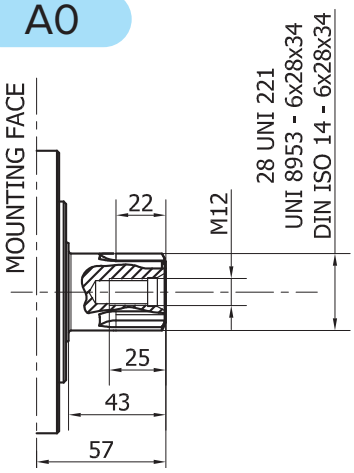
TECHNICAL DATA

		40	60	75	90	110	130	150	175	200	250
DISPLACEMENT	[cc]	40	60	74	91	115	129	151	166	191	226
SPECIFIC TORQUE	[Nm/bar]	0,62	0,97	1,2	1,4	1,84	2,05	2,4	2,65	3,04	3,6
MAX. CONT. PRESSURE	[bar]	250	250	250	250	250	250	250	250	250	250
HYDROSTATIC TEST PRESSURE	[bar]	420	420	420	420	420	420	420	420	420	420
MAX. CONT. SPEED	[rpm]	1200	1200	1200	1100	850	850	850	750	750	600
PEAK SPEED (***)	[rpm]	1400	1400	1400	1300	1100	1100	1100	1000	1000	800
MAX. CONT. POWER (****)	[kW]	16	25	32	32	35	35	35	35	35	35
MAX. POWER	[kW]	25	35	50	50	55	55	55	55	55	55
MAX. CASE PRESSURE	[bar]	6	6	6	6	6	6	6	6	6	6
DRY WEIGHT	[kg]	30	30	30	30	30	30	30	30	30	30
TEMPERATURE RANGE (**)	[°C]	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70

- (*) The standard distributor (D40) is shown. Please refer to distributors section (pag. 94-101) for differents distributor interfaces.
- (**) Please refer to the hydraulic fluid recommendations (pag. 10-11).
- (***) Do not exceed maximum power.
- (****) For motor operation with a continuous duty cycle at maximum continuous power the flushing is usually required. For more information please contact our technical department.

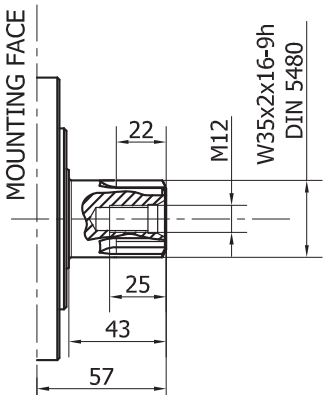
SHAFTS

A0



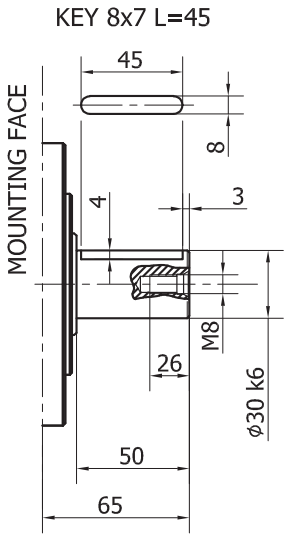
Available spline billet: SB14

A1

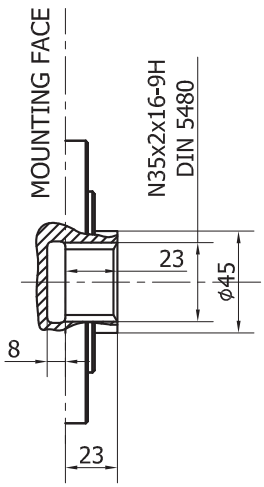


Available spline billet: SB32

A2

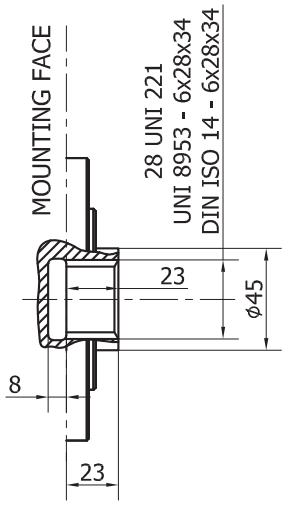


A3



Available spline bar: B8075

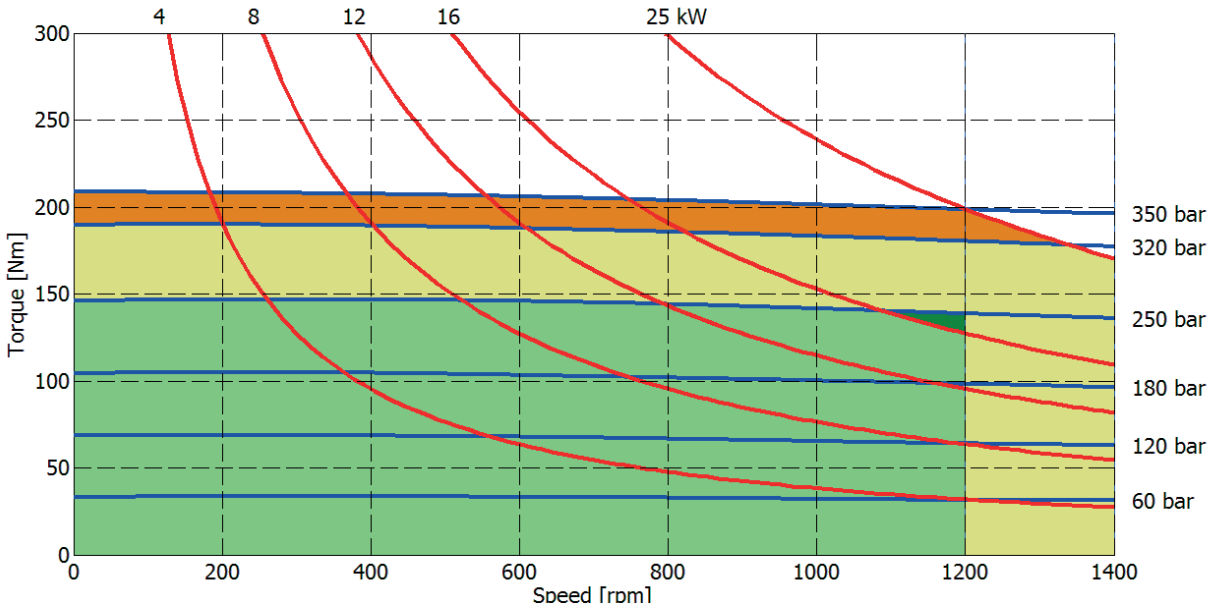
A31



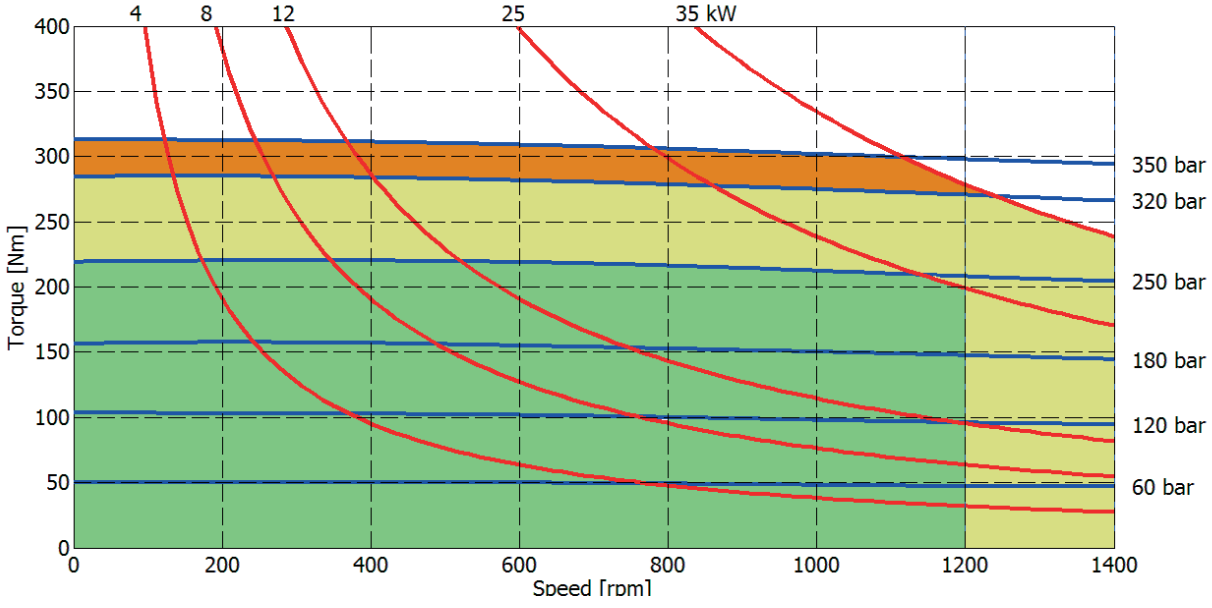
Available spline bar: B8077

HC05 - PERFORMANCE CURVES

HC05 40



HC05 60



Continuous operation

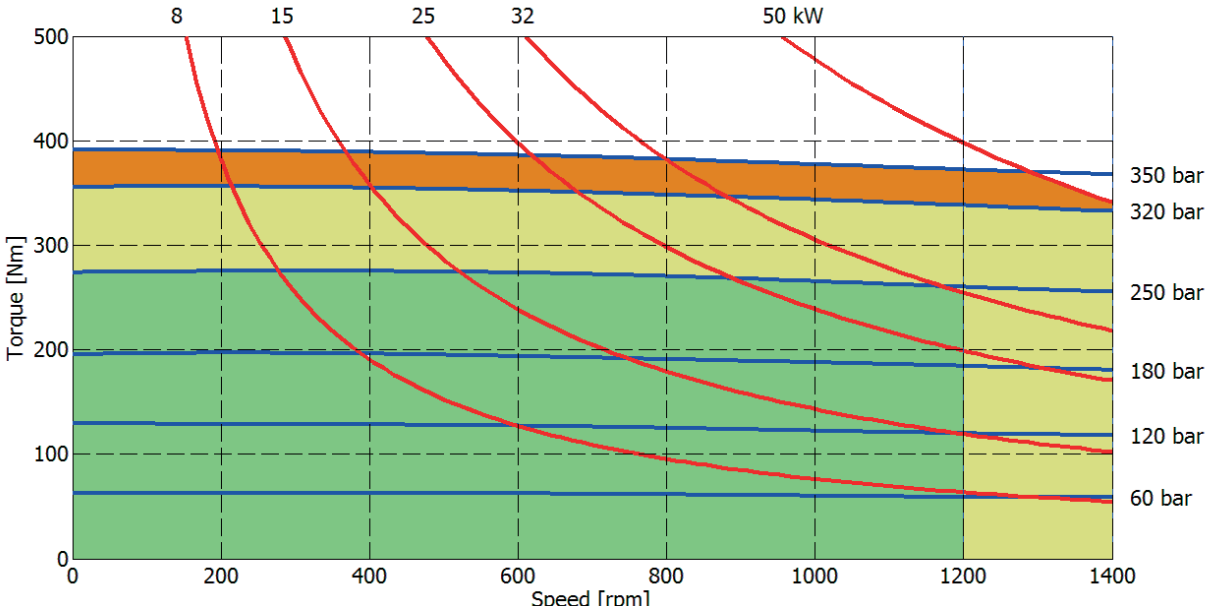
Continuous operation with flushing or intermittent operation (see below for intermittent operation)

Intermittent operation: permitted for a 15% of duty cycle, for 3 minutes maximum period

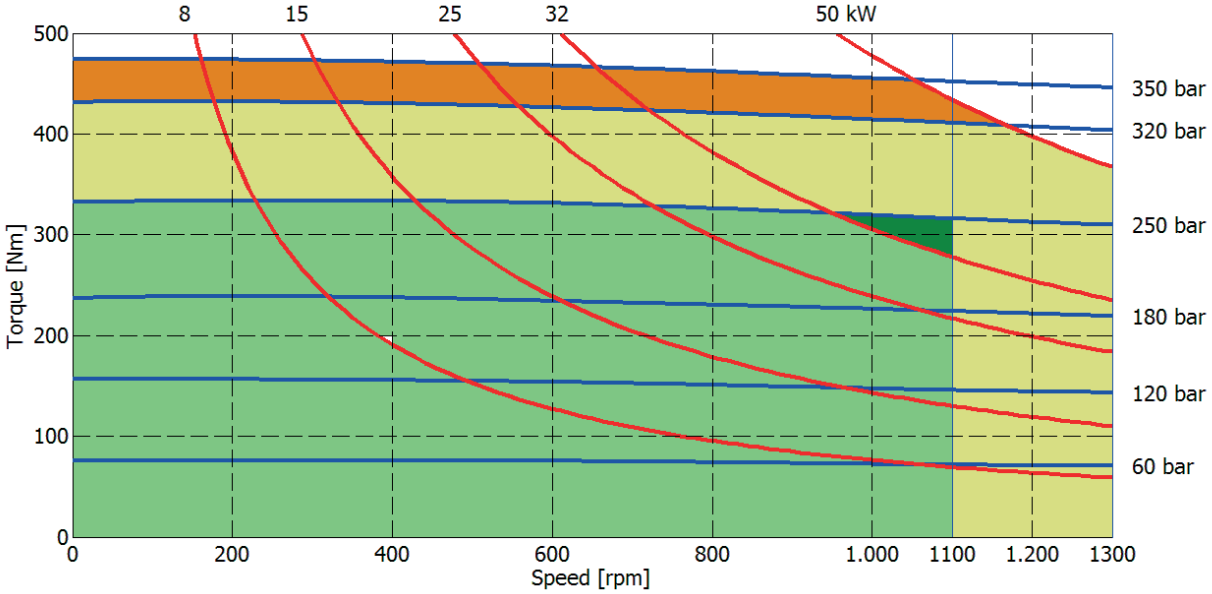
Peak operation: permitted for very short periods (3-5 seconds every 10-15 minutes)

The above diagrams are referring to the hydraulic motor working with a fluid in ideal conditions (viscosity at 40 cSt). In case the working temperature increases and viscosity reach values under the recommended values (see hydraulic fluid recommendations) flushing must be performed or ISO oil grade must be changed. The working temperature must not overcome 70 °C.

HC05 75



HC05 90



Continuous operation

Continuous operation with flushing or intermittent operation (see below for intermittent operation)

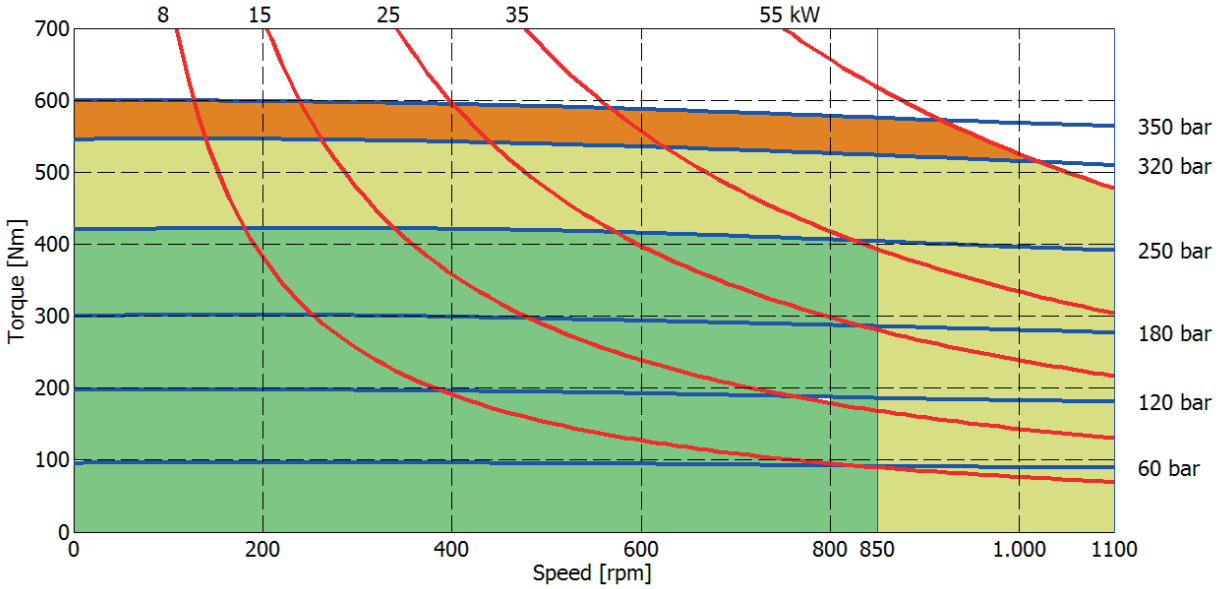
Intermittent operation: permitted for a 15% of duty cycle, for 3 minutes maximum period

Peak operation: permitted for very short periods (3-5 seconds every 10-15 minutes)

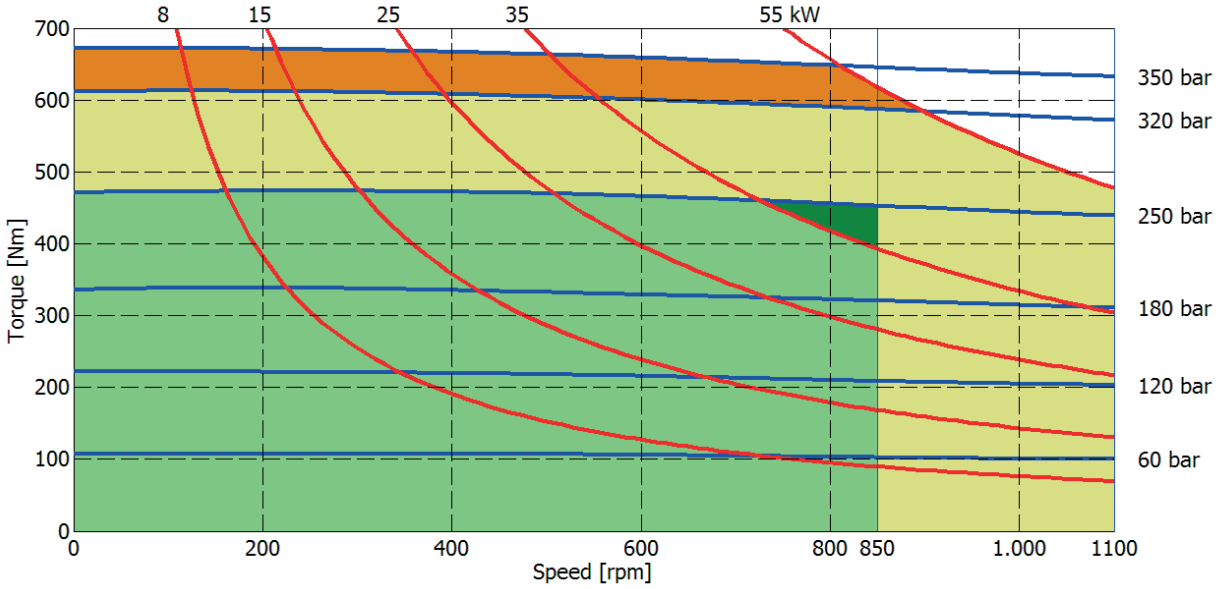
The above diagrams are referring to the hydraulic motor working with a fluid in ideal conditions (viscosity at 40 cSt). In case the working temperature increases and viscosity reach values under the recommended values (see hydraulic fluid recommendations) flushing must be performed or ISO oil grade must be changed. The working temperature must not overcome 70 °C.

HC05 - PERFORMANCE CURVES

HC05 110



HC05 130



Continuous operation

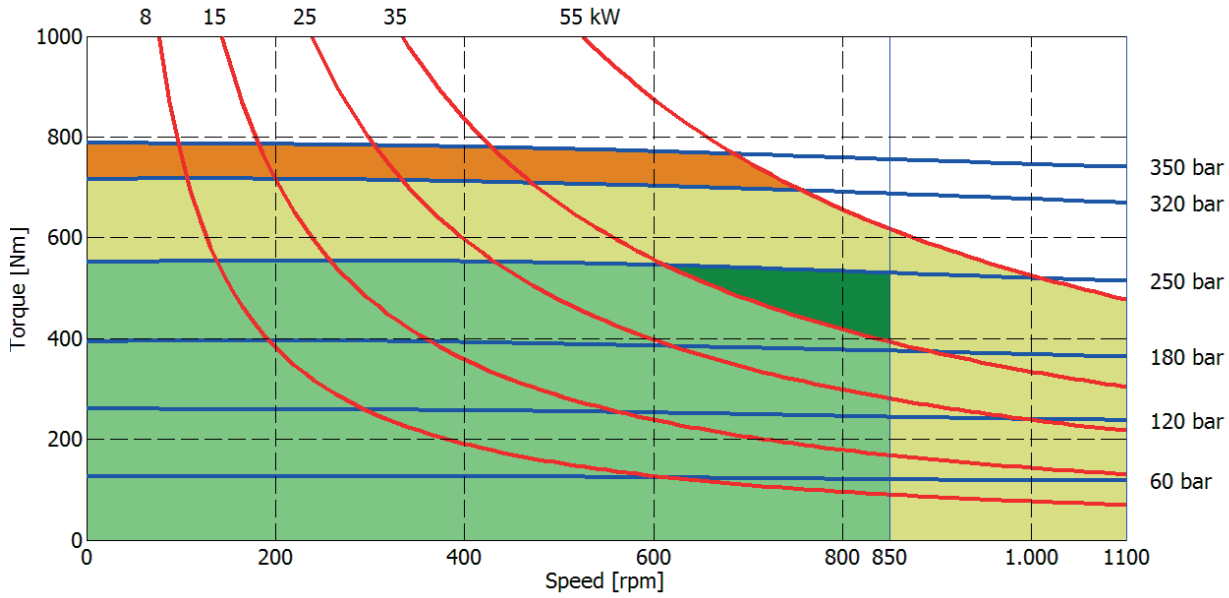
Continuous operation with flushing or intermittent operation (see below for intermittent operation)

Intermittent operation: permitted for a 15% of duty cycle, for 3 minutes maximum period

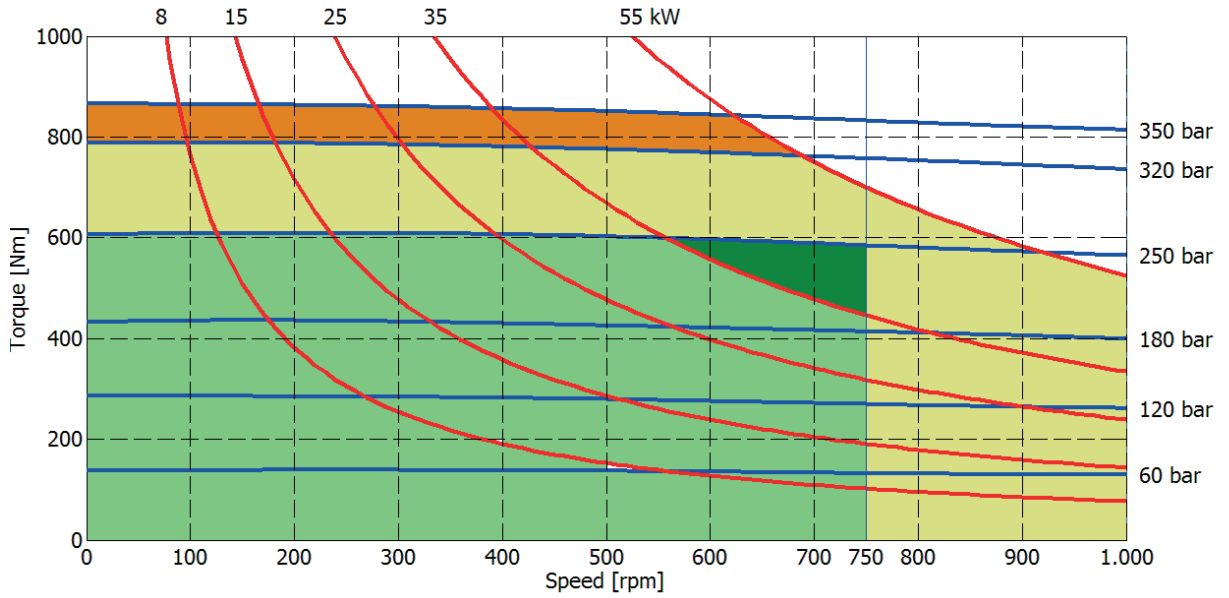
Peak operation: permitted for very short periods (3-5 seconds every 10-15 minutes)

The above diagrams are referring to the hydraulic motor working with a fluid in ideal conditions (viscosity at 40 cSt). In case the working temperature increases and viscosity reach values under the recommended values (see hydraulic fluid recommendations) flushing must be performed or ISO oil grade must be changed. The working temperature must not overcome 70 °C.

HC05 150



HC05 175



Continuous operation

Continuous operation with flushing or intermittent operation (see below for intermittent operation)

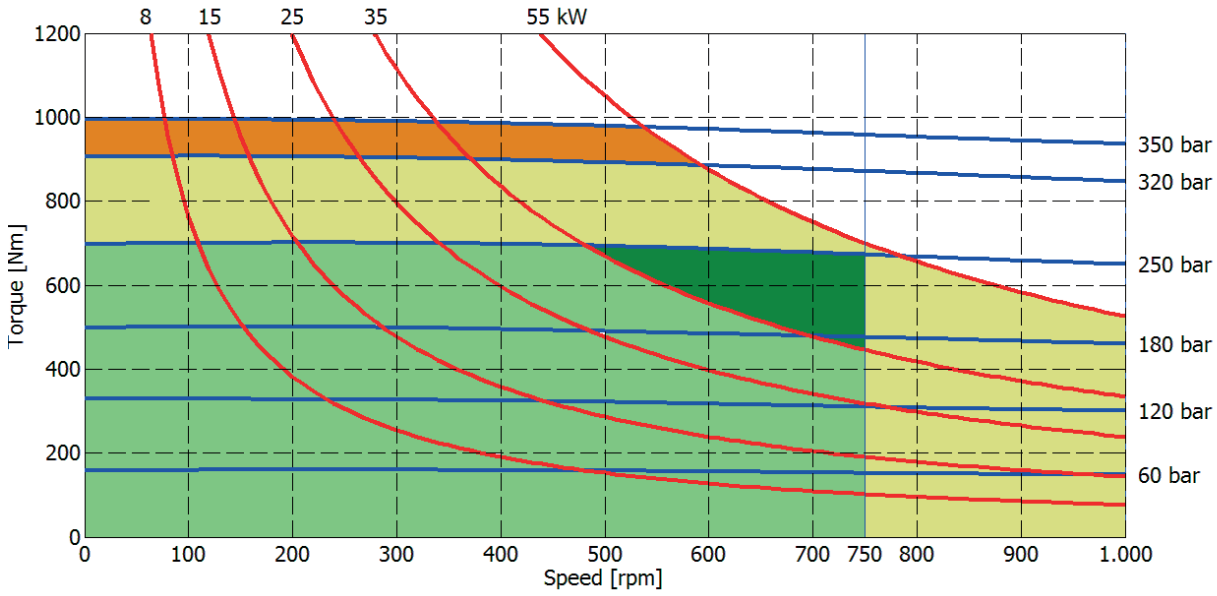
Intermittent operation: permitted for a 15% of duty cycle, for 3 minutes maximum period

Peak operation: permitted for very short periods (3-5 seconds every 10-15 minutes)

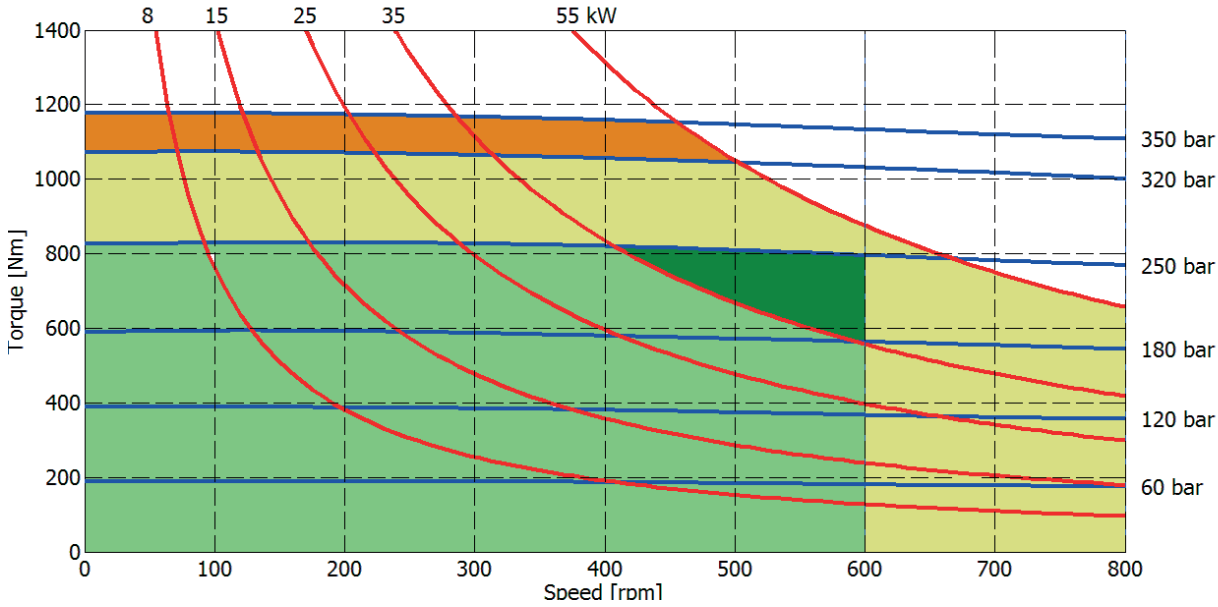
The above diagrams are referring to the hydraulic motor working with a fluid in ideal conditions (viscosity at 40 cSt). In case the working temperature increases and viscosity reach values under the recommended values (see hydraulic fluid recommendations) flushing must be performed or ISO oil grade must be changed. The working temperature must not overcome 70 °C.

HC05 - PERFORMANCE CURVES

HC05 200



HC05 250



Continuous operation

Continuous operation with flushing or intermittent operation (see below for intermittent operation)

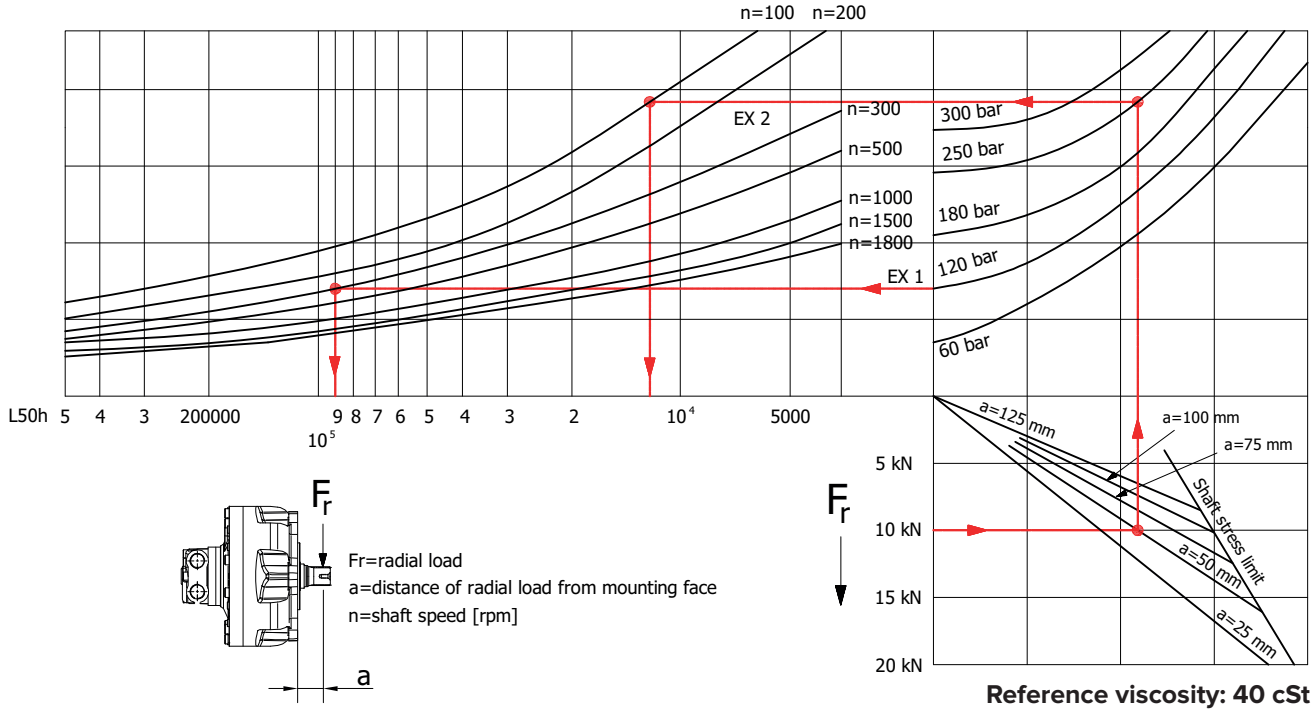
Intermittent operation: permitted for a 15% of duty cycle, for 3 minutes maximum period

Peak operation: permitted for very short periods (3-5 seconds every 10-15 minutes)

The above diagrams are referring to the hydraulic motor working with a fluid in ideal conditions (viscosity at 40 cSt). In case the working temperature increases and viscosity reach values under the recommended values (see hydraulic fluid recommendations) flushing must be performed or ISO oil grade must be changed. The working temperature must not overcome 70 °C.

BEARING LIFE

Reference displacement 110 cc



Reference viscosity: 40 cSt

Example:

We suppose (EX1): p=120 [bar], n=300 [rpm]; we obtain an average lifetime of 90000 [h].

If we suppose (EX2): F_r=10 [kN], a=50 [mm], n=100 [rpm] and p=250 [bar] we obtain an average lifetime of 11000 [h].

The above data are referring to the HC05 series motors, displacement 110 cc.

HC05 - ORDERING CODE

HC05 - - - - - - - - - - SB -

DISPLACEMENT

40 60 75 90 110 130 150 175 200 250

SHAFT

A0 A1 A2 A3 A31

DISTRIBUTOR

D31B D36B D310B D316B D40 D47 D471 D416 D417 D417-RV D418 D48-RV

See pag. 94-101

TACHOMETER

TA TB TT1 TQ1 EST EST30 EST31 EST33 J

See pag. 102-106

SPECIAL FEATURES

MP SPSL HPS CCW ND

See pag. 23

Z - -

Italgroup internal code

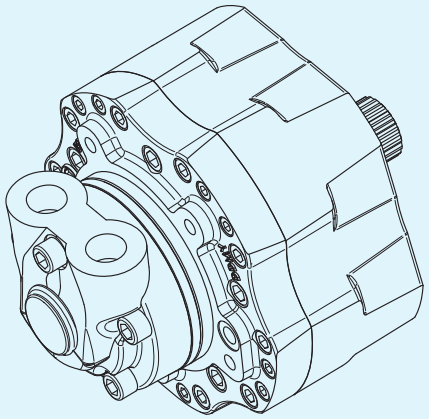
SPLINE BILLET

SB14 SB32

SPLINE BAR

B8075 B8077

See pag. 107-108



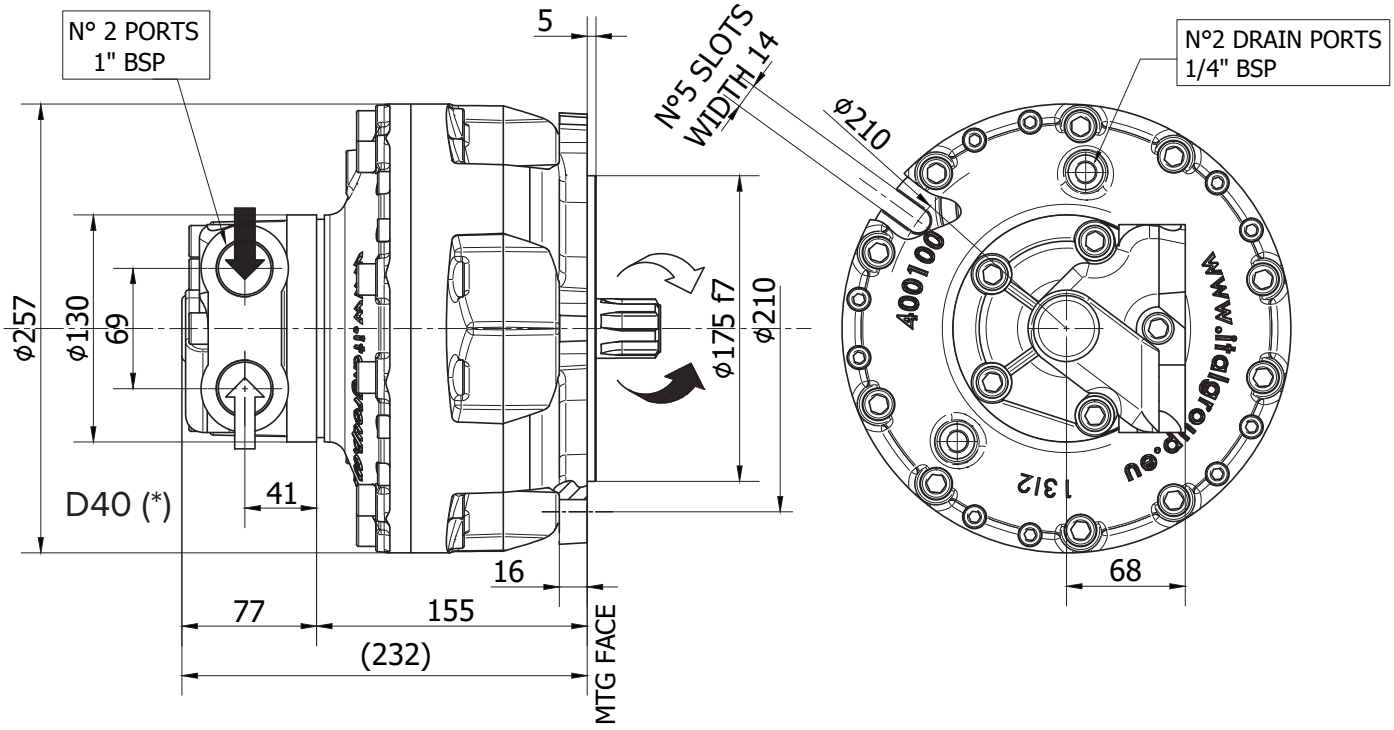
EXAMPLES:

HC05 60 A1 D36B
HC05 110 A2 D40 TA MP CCW
HC05 175 A3 D47 B8075

HC1

HC1 100-130-150-175-200-220-250-300-330	Pag. 40 - 41
HC1 - PERFORMANCE CURVES	Pag. 42 - 47
HC1 - ORDERING CODE	Pag. 48

HC1



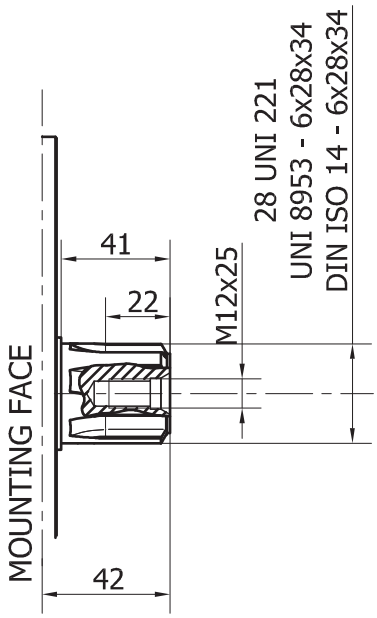
TECHNICAL DATA

		100	125	150	175	200	220	250	300	330
DISPLACEMENT	[cc]	98	128	154	173	200	221	243	289	315
SPECIFIC TORQUE	[Nm/bar]	1,57	2,05	2,45	2,74	3,2	3,52	3,88	4,61	5,01
MAX. CONT. PRESSURE	[bar]	250	250	250	250	250	250	250	250	250
HYDROSTATIC TEST PRESSURE	[bar]	420	420	420	420	420	420	420	420	420
MAX. CONT. SPEED	[rpm]	1100	900	700	700	600	600	600	550	450
PEAK SPEED (***)	[rpm]	1250	1100	1000	1000	900	800	800	700	650
MAX. CONT. POWER (****)	[kW]	40	40	40	45	45	48	50	50	50
MAX. POWER	[kW]	60	60	60	75	75	75	75	75	75
MAX. CASE PRESSURE	[bar]	6	6	6	6	6	6	6	6	6
DRY WEIGHT	[kg]	35	35	35	35	35	35	35	35	35
TEMPERATURE RANGE (**)	[°C]	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70

- (*) The standard distributor (D40) is shown. Please refer to distributors section (pag. 94-101) for differents distributor interfaces.
- (**) Please refer to the hydraulic fluid recommendations (pag. 10-11).
- (***) Do not exceed maximum power.
- (****) For motor operation with a continuous duty cycle at maximum continuous power the flushing is usually required. For more information please contact our technical department.

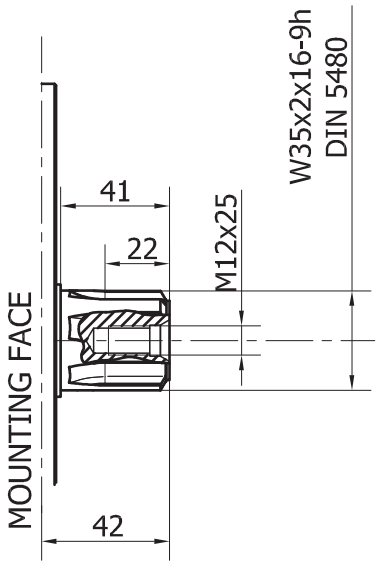
SHAFTS

A0



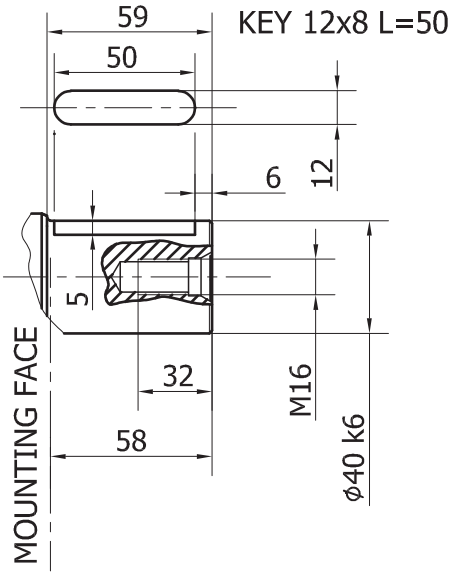
Available spline billet: SB14

A1

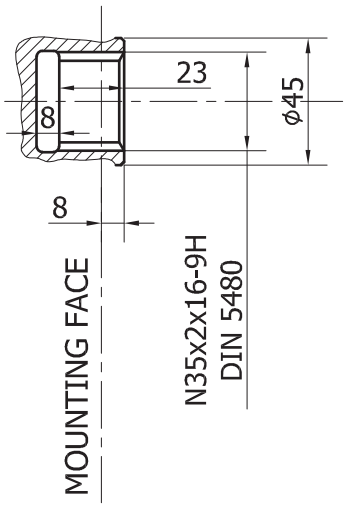


Available spline billet: SB32

A2

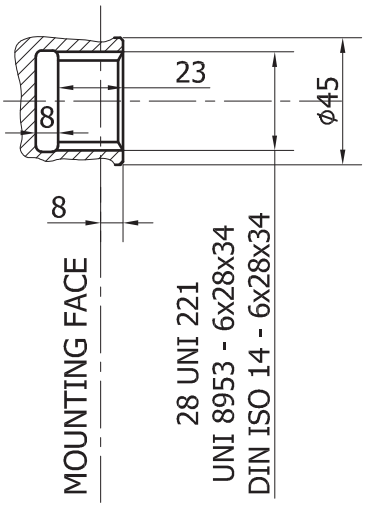


A3



Available spline bar: B8075

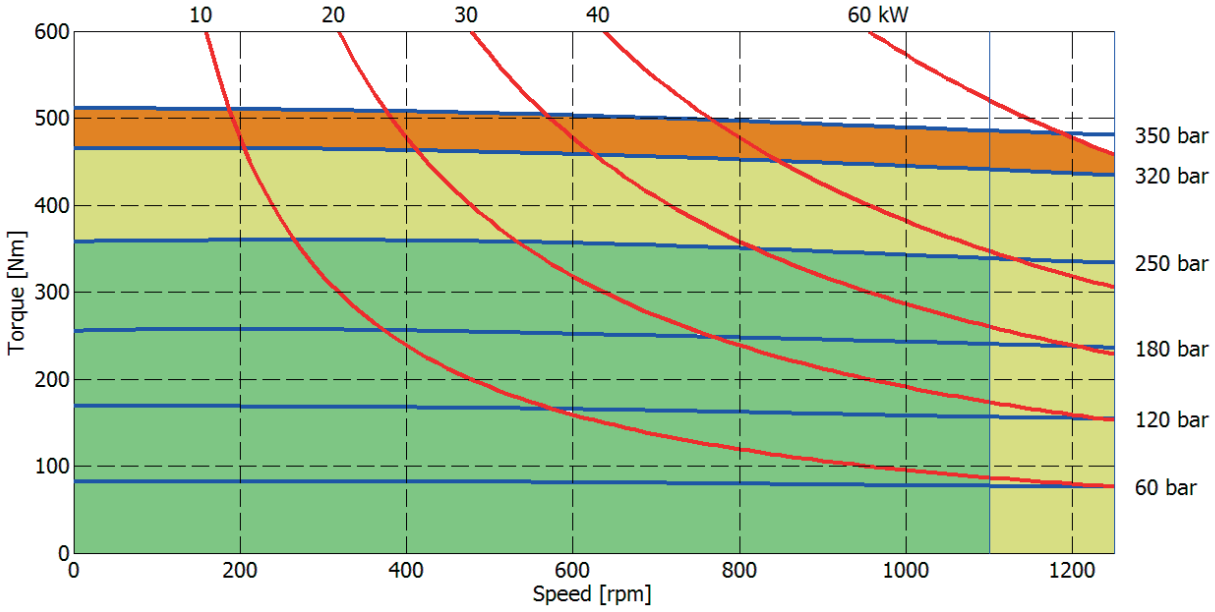
A31



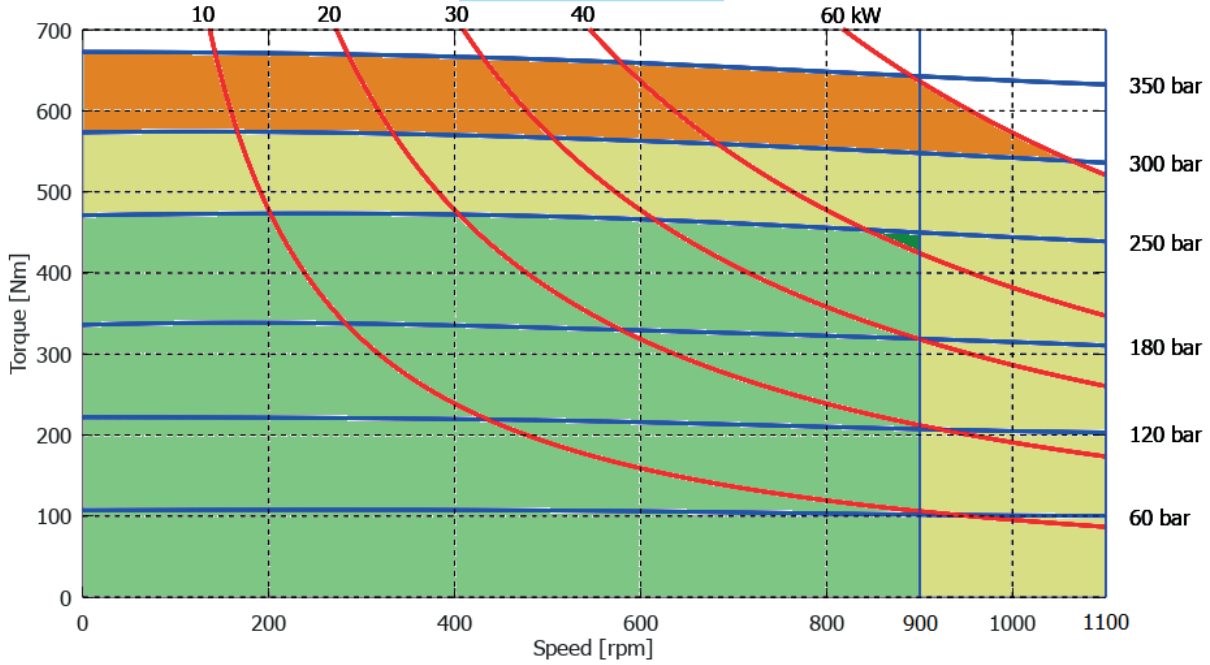
Available spline bar: B8077

HC1 - PERFORMANCE CURVES

HC1 100



HC1 125



Continuous operation

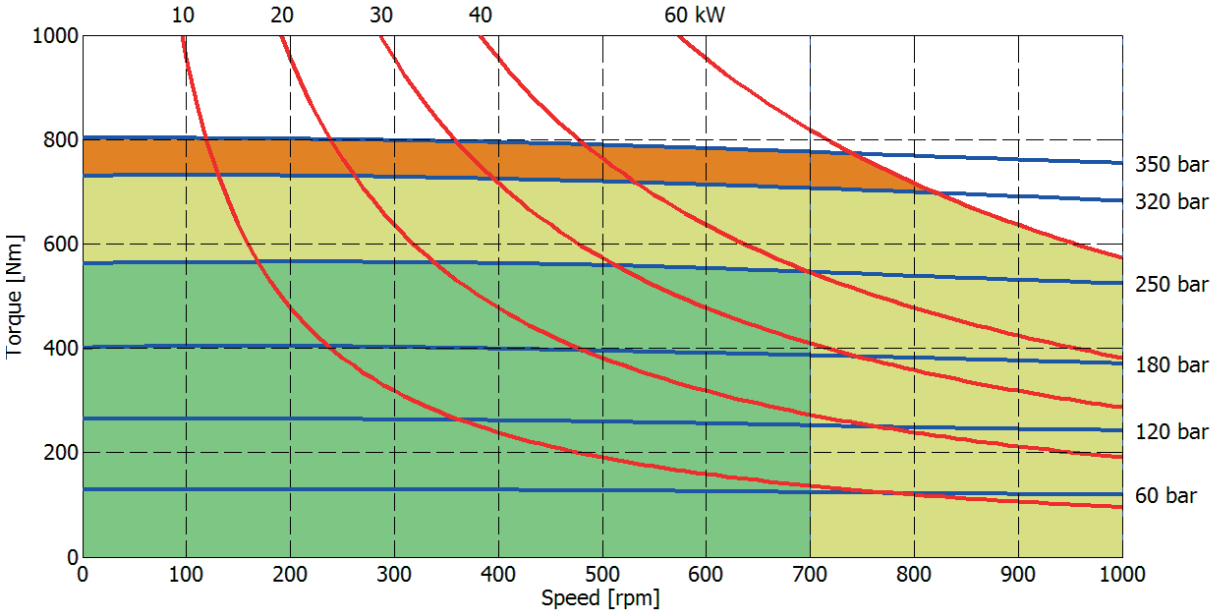
Continuous operation with flushing or intermittent operation (see below for intermittent operation)

Intermittent operation: permitted for a 15% of duty cycle, for 3 minutes maximum period

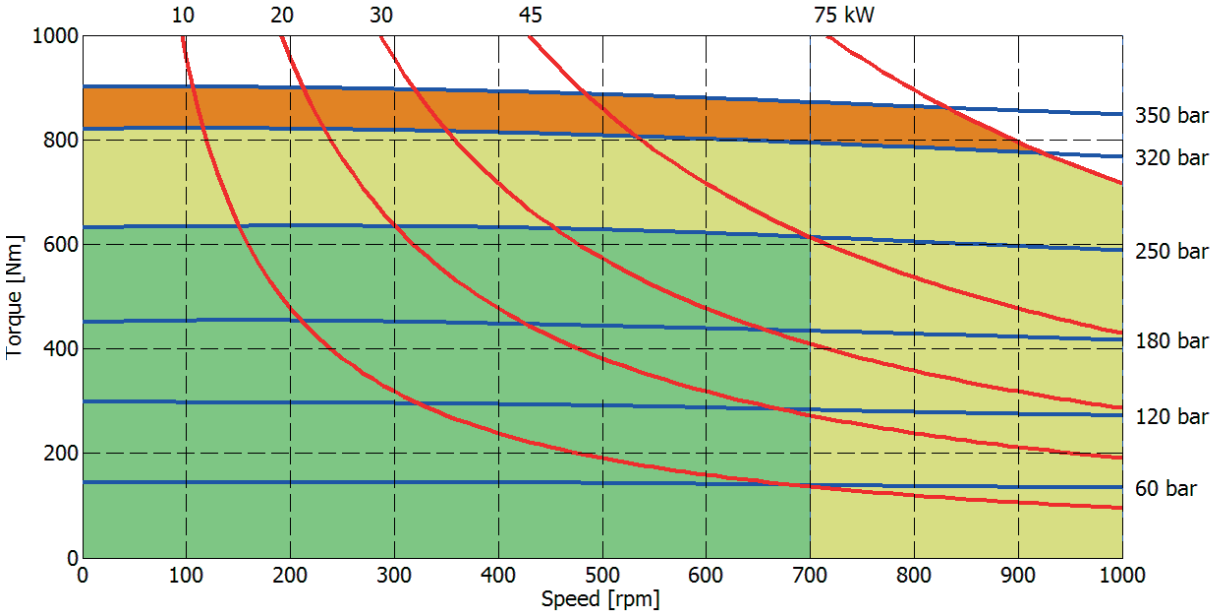
Peak operation: permitted for very short periods (3-5 seconds every 10-15 minutes)

The above diagrams are referring to the hydraulic motor working with a fluid in ideal conditions (viscosity at 40 cSt). In case the working temperature increases and viscosity reach values under the recommended values (see hydraulic fluid recommendations) flushing must be performed or ISO oil grade must be changed. The working temperature must not overcome 70 °C.

HC1 150



HC1 175



Continuous operation

Continuous operation with flushing or intermittent operation (see below for intermittent operation)

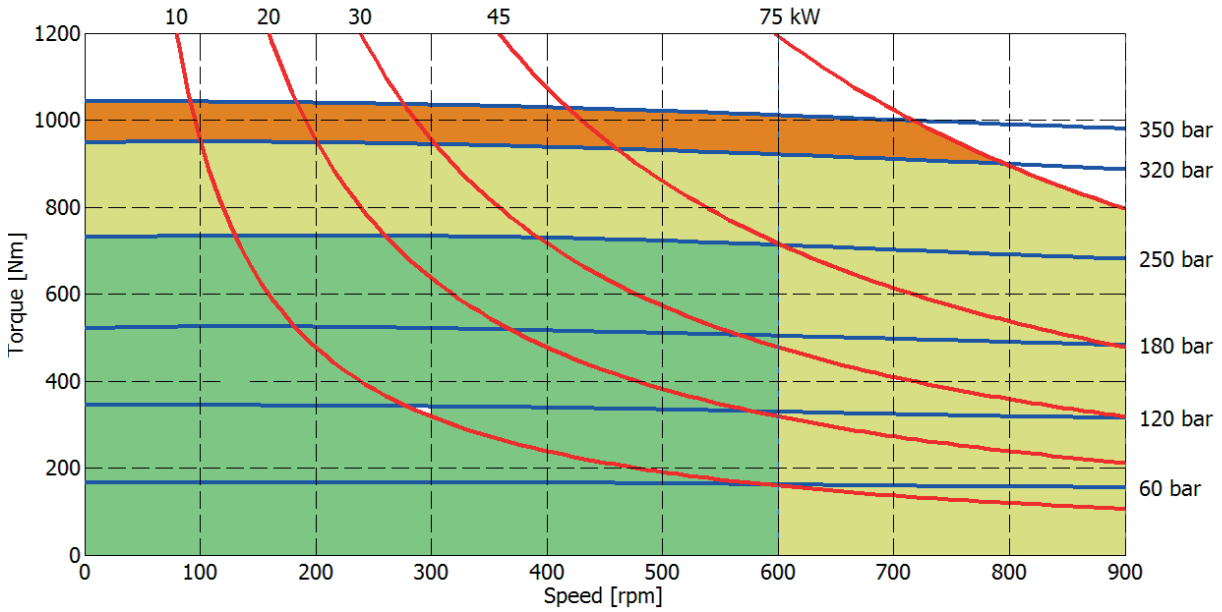
Intermittent operation: permitted for a 15% of duty cycle, for 3 minutes maximum period

Peak operation: permitted for very short periods (3-5 seconds every 10-15 minutes)

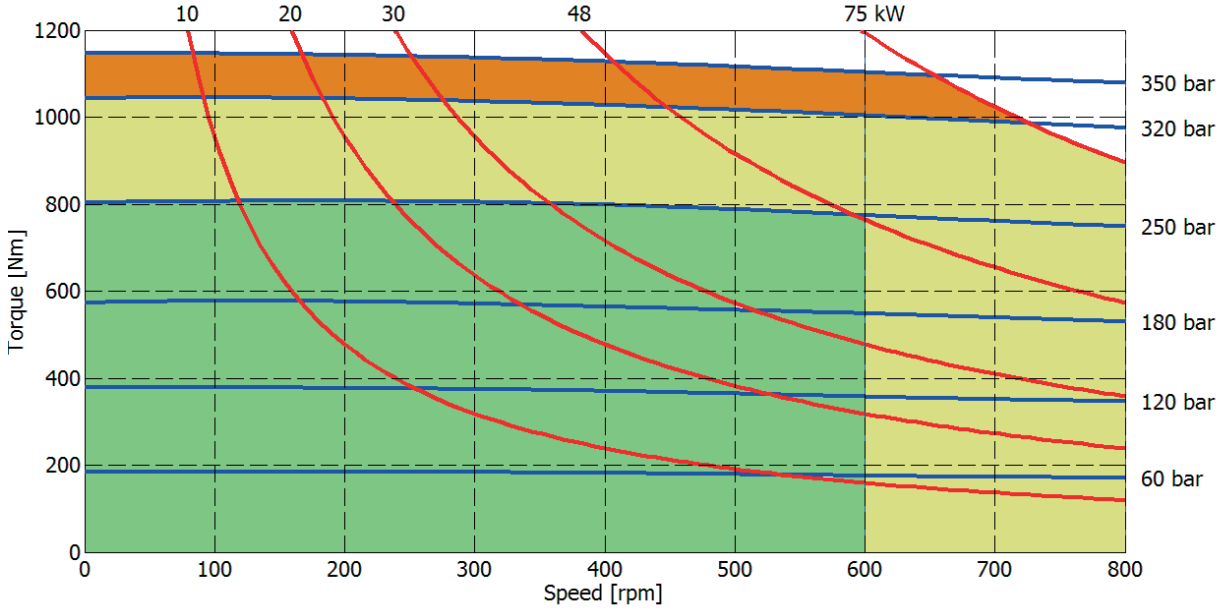
The above diagrams are referring to the hydraulic motor working with a fluid in ideal conditions (viscosity at 40 cSt). In case the working temperature increases and viscosity reach values under the recommended values (see hydraulic fluid recommendations) flushing must be performed or ISO oil grade must be changed. The working temperature must not overcome 70 °C.

HC1 - PERFORMANCE CURVES

HC1 200



HC1 220



Continuous operation

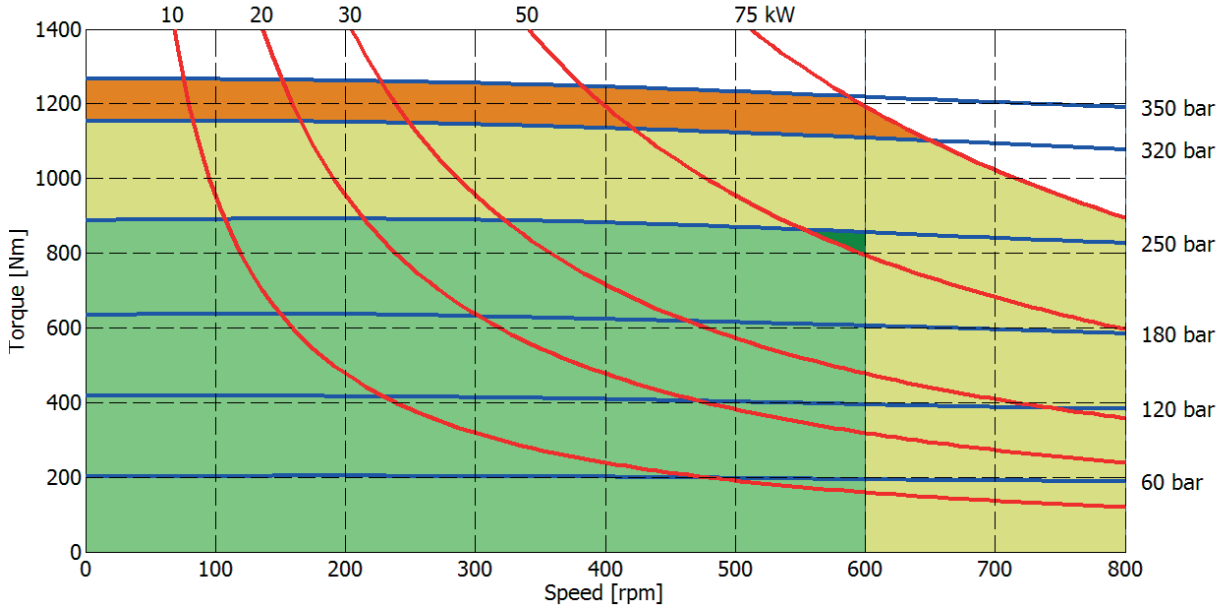
Continuous operation with flushing or intermittent operation (see below for intermittent operation)

Intermittent operation: permitted for a 15% of duty cycle, for 3 minutes maximum period

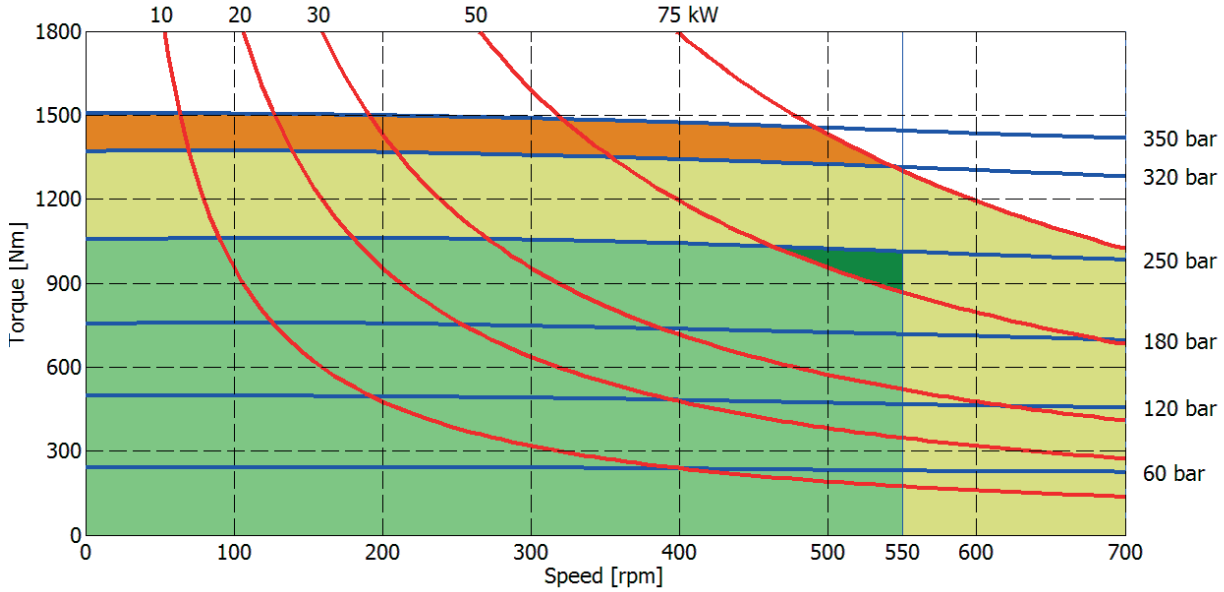
Peak operation: permitted for very short periods (3-5 seconds every 10-15 minutes)

The above diagrams are referring to the hydraulic motor working with a fluid in ideal conditions (viscosity at 40 cSt). In case the working temperature increases and viscosity reach values under the recommended values (see hydraulic fluid recommendations) flushing must be performed or ISO oil grade must be changed. The working temperature must not overcome 70 °C.

HC1 250



HC1 300



Continuous operation

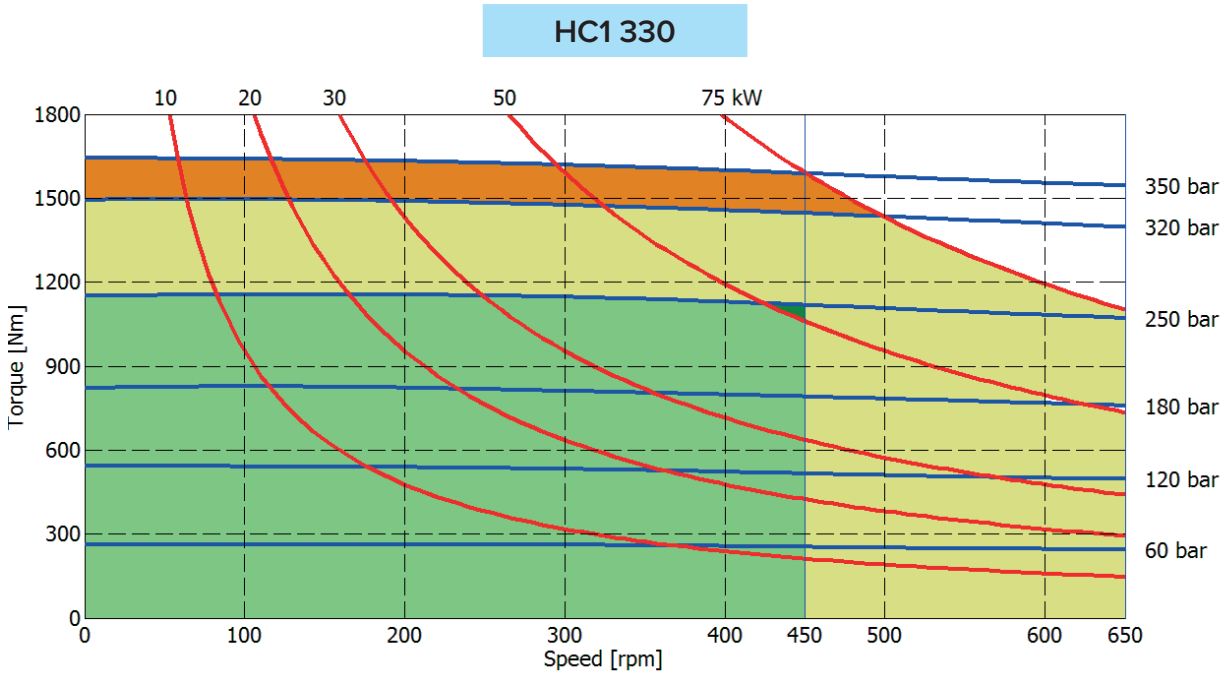
Continuous operation with flushing or intermittent operation (see below for intermittent operation)

Intermittent operation: permitted for a 15% of duty cycle, for 3 minutes maximum period

Peak operation: permitted for very short periods (3-5 seconds every 10-15 minutes)

The above diagrams are referring to the hydraulic motor working with a fluid in ideal conditions (viscosity at 40 cSt). In case the working temperature increases and viscosity reach values under the recommended values (see hydraulic fluid recommendations) flushing must be performed or ISO oil grade must be changed. The working temperature must not overcome 70 °C.

HC1 - PERFORMANCE CURVES



Continuous operation

Continuous operation with flushing or intermittent operation (see below for intermittent operation)

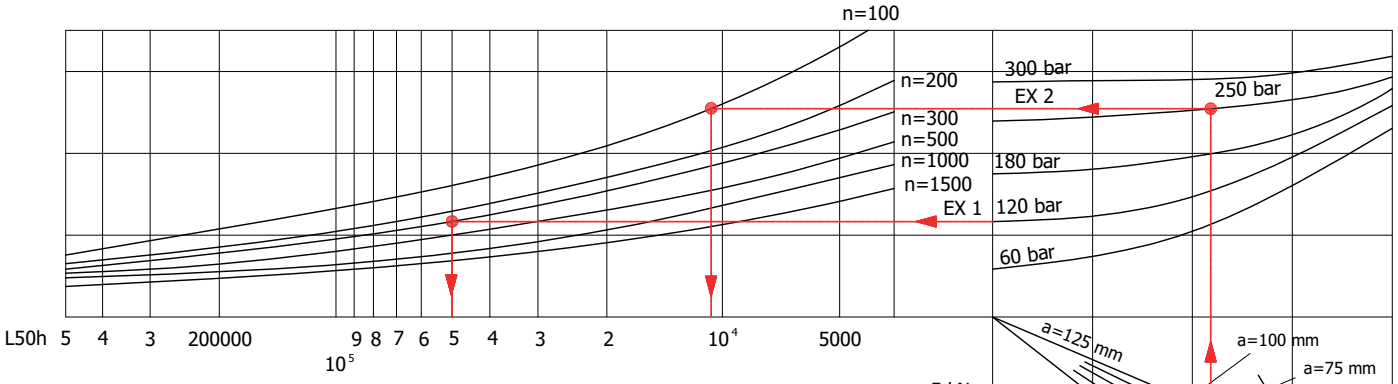
Intermittent operation: permitted for a 15% of duty cycle, for 3 minutes maximum period

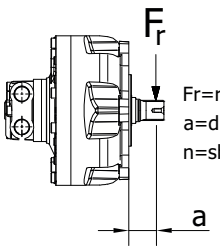
Peak operation: permitted for very short periods (3-5 seconds every 10-15 minutes)

The above diagrams are referring to the hydraulic motor working with a fluid in ideal conditions (viscosity at 40 cSt). In case the working temperature increases and viscosity reach values under the recommended values (see hydraulic fluid recommendations) flushing must be performed or ISO oil grade must be changed. The working temperature must not overcome 70 °C.

BEARING LIFE

Reference displacement 200 cc





Fr=radial load
a=distance of radial load from mounting face
n=shaft speed [rpm]

Reference viscosity: 40 cSt

Example:

We suppose (EX1): p=120 [bar], n=300 [rpm]; we obtain an average lifetime of 50000 [h].
If we suppose (EX2): F_r=10 [kN], a=50 [mm], n=100 [rpm] and p=250 [bar] we obtain an average lifetime of 10500 [h].

The above data are referring to the HC1 series motors, displacement 200 cc.

HC1 - ORDERING CODE

HC1 - - - - - - - - - - - - SB -

DISPLACEMENT
- 100
- 125
- 150
- 175
- 200
- 220
- 250
- 300
- 330

INTERCHANGEABILITY
- /C190 (*)

SHAFT
- A0
- A1
- A2
- A3
- A31

DISTRIBUTOR
- D31B
- D36B
- D310B
- D316B
- D40
- D47
- D471
- D416
- D417
- D417-RV
- D418
- D48-RV

See pag. 94-101

TACHOMETER
- TA
- TB
- TT1
- TQ1
- EST
- EST30
- EST31
- EST33
- J

See pag. 102-106

SPECIAL FEATURES
- MP
- SPSL
- HPS
- CCW
- ND

See pag. 23

- Z - -

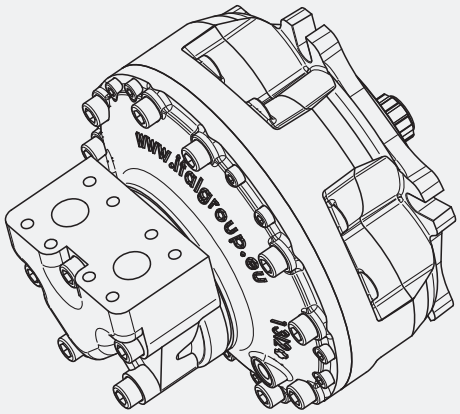
Italgroup internal code

SPLINE BILLET
- SB14
- SB32

SPLINE BAR
- B8075
- B8077

See pag. 107-108

(*) For more information (drawings/technical data) please contact Italgroup S.r.l.



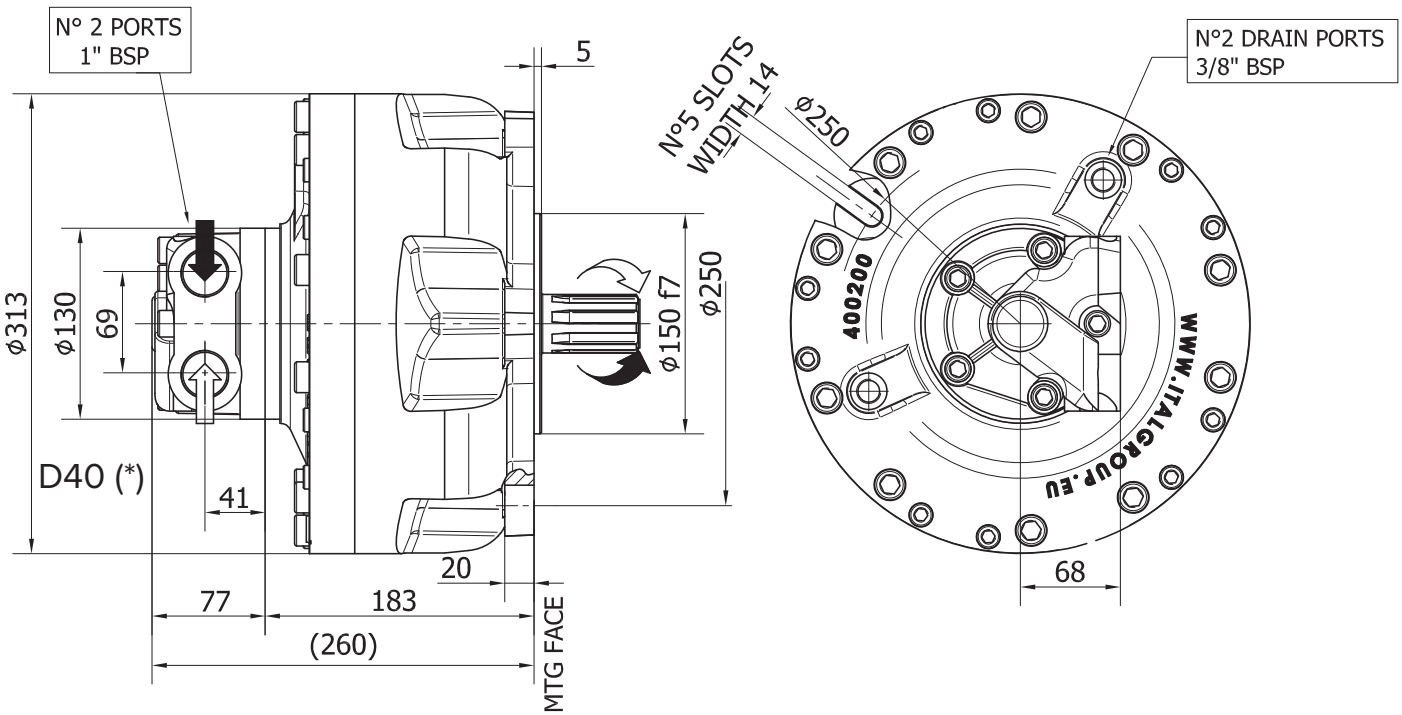
EXAMPLES:

HC1 175 A0 D40 SB14
HC1 200 A3 D47 J
HC1 300 A31 D36B MP CCW

HC2

HC2 200-250-300-350-400-500-600-650	Pag. 50 - 51
HC2/S2 200-250-300-350-400-500-600-650	Pag. 52 - 53
HC2/TF 200-250-300-350-400-500-600-650	Pag. 54 - 55
HC2 - PERFORMANCE CURVES	Pag. 56 - 60
HC2 - ORDERING CODE	Pag. 61

HC2



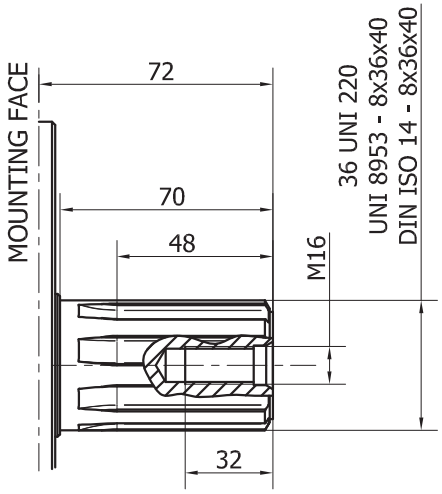
TECHNICAL DATA

		200	250	300	350	400	500	600	650
DISPLACEMENT	[cc]	193	251	305	348	424	493	566	624
SPECIFIC TORQUE	[Nm/bar]	3,06	4,00	4,84	5,52	6,76	7,84	9,00	9,92
MAX. CONT. PRESSURE	[bar]	250	250	250	250	250	250	250	250
HYDROSTATIC TEST PRESSURE	[bar]	420	420	420	420	420	420	420	420
MAX. CONT. SPEED	[rpm]	1200	950	800	650	600	520	480	440
PEAK SPEED (***)	[rpm]	1500	1150	950	800	800	700	650	620
MAX. CONT. POWER (****)	[kW]	75	75	75	75	75	75	75	75
MAX. POWER	[kW]	105	105	105	105	105	105	105	105
MAX. CASE PRESSURE	[bar]	6	6	6	6	6	6	6	6
DRY WEIGHT	[kg]	53	53	53	53	53	53	53	53
TEMPERATURE RANGE (**)	[°C]	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70

- (*) The standard distributor (D40) is shown. Please refer to distributors section (pag. 94-101) for differents distributor interfaces.
- (**) Please refer to the hydraulic fluid recommendations (pag. 10-11).
- (***) Do not exceed maximum power.
- (****) For motor operation with a continuous duty cycle at maximum continuous power the flushing is usually required. For more information please contact our technical department.

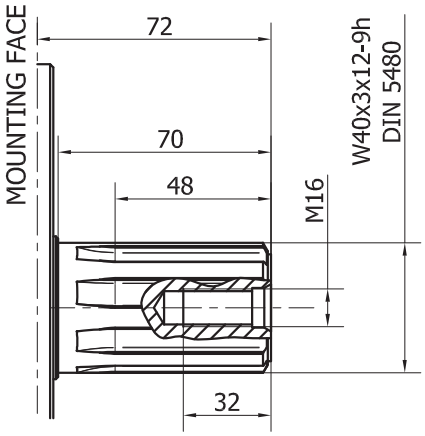
SHAFTS

A0



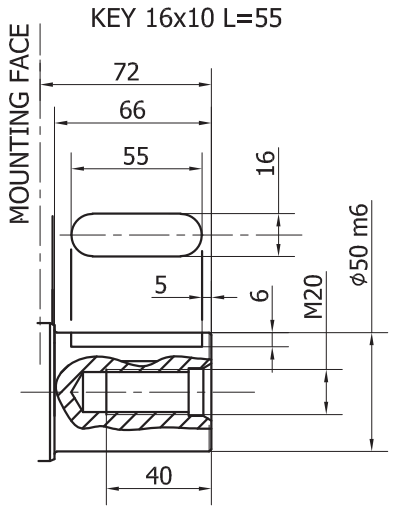
Available spline billet: SB3

A1

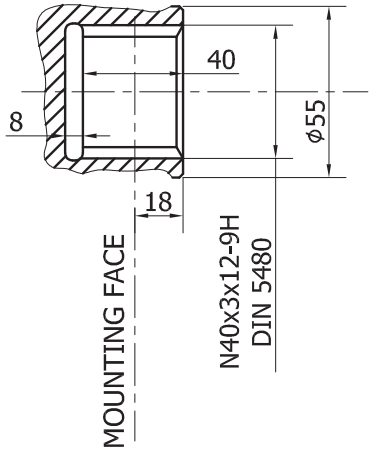


Available spline billet: SB22

A2

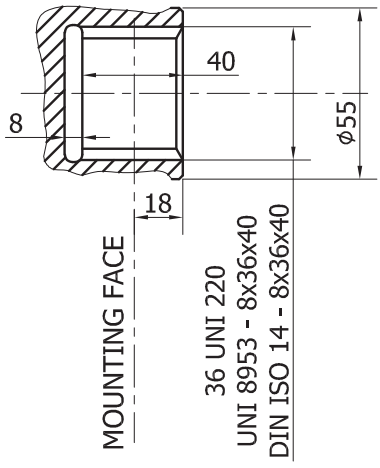


A3



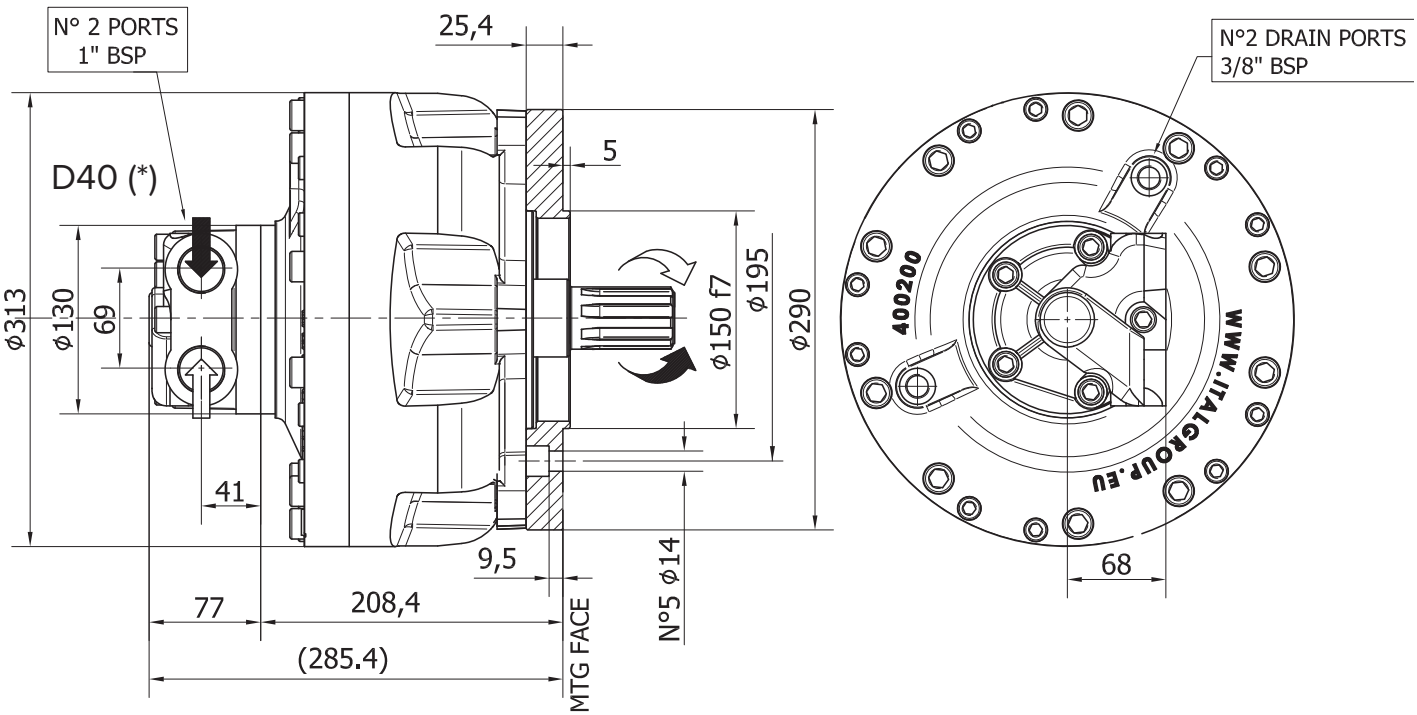
Available spline bar: B8076

A31



Available spline bar: B8078

HC2/S2



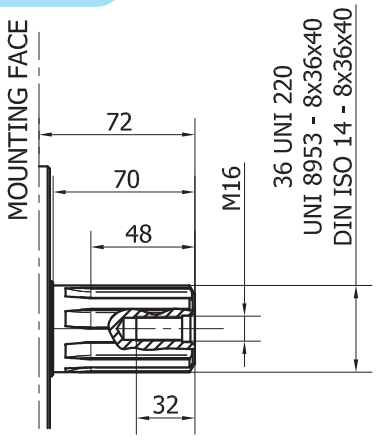
TECHNICAL DATA

		200	250	300	350	400	500	600	650
DISPLACEMENT	[cc]	193	251	305	348	424	493	566	624
SPECIFIC TORQUE	[Nm/bar]	3,06	4,00	4,84	5,52	6,76	7,84	9,00	9,92
MAX. CONT. PRESSURE	[bar]	250	250	250	250	250	250	250	250
HYDROSTATIC TEST PRESSURE	[bar]	420	420	420	420	420	420	420	420
MAX. CONT. SPEED	[rpm]	1200	950	800	650	600	520	480	440
PEAK SPEED (***)	[rpm]	1500	1150	950	800	800	700	650	620
MAX. CONT. POWER (****)	[kW]	75	75	75	75	75	75	75	75
MAX. POWER	[kW]	105	105	105	105	105	105	105	105
MAX. CASE PRESSURE	[bar]	6	6	6	6	6	6	6	6
DRY WEIGHT	[kg]	53	53	53	53	53	53	53	53
TEMPERATURE RANGE (**)	[°C]	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70

- (*) The standard distributor (D40) is shown. Please refer to distributors section (pag. 94-101) for differents distributor interfaces.
- (**) Please refer to the hydraulic fluid recommendations (pag. 10-11).
- (***) Do not exceed maximum power.
- (****) For motor operation with a continuous duty cycle at maximum continuous power the flushing is usually required. For more information please contact our technical department.

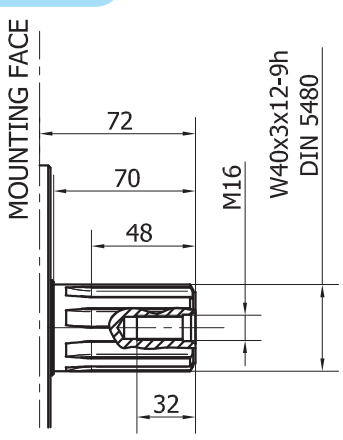
SHAFTS

A0



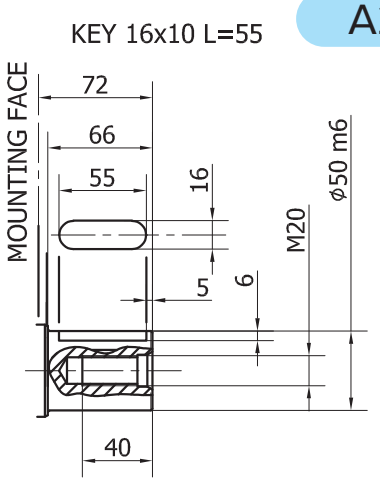
Available spline billet: SB3

A1

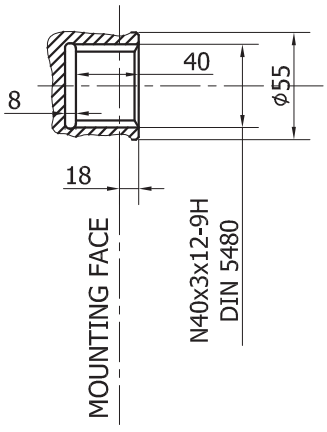


Available spline billet: SB22

A2

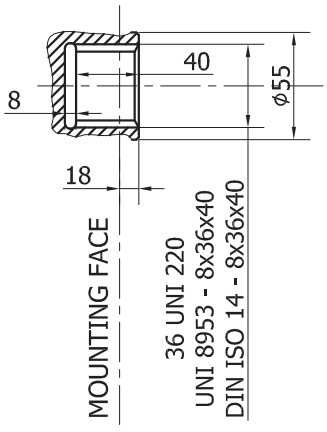


A3



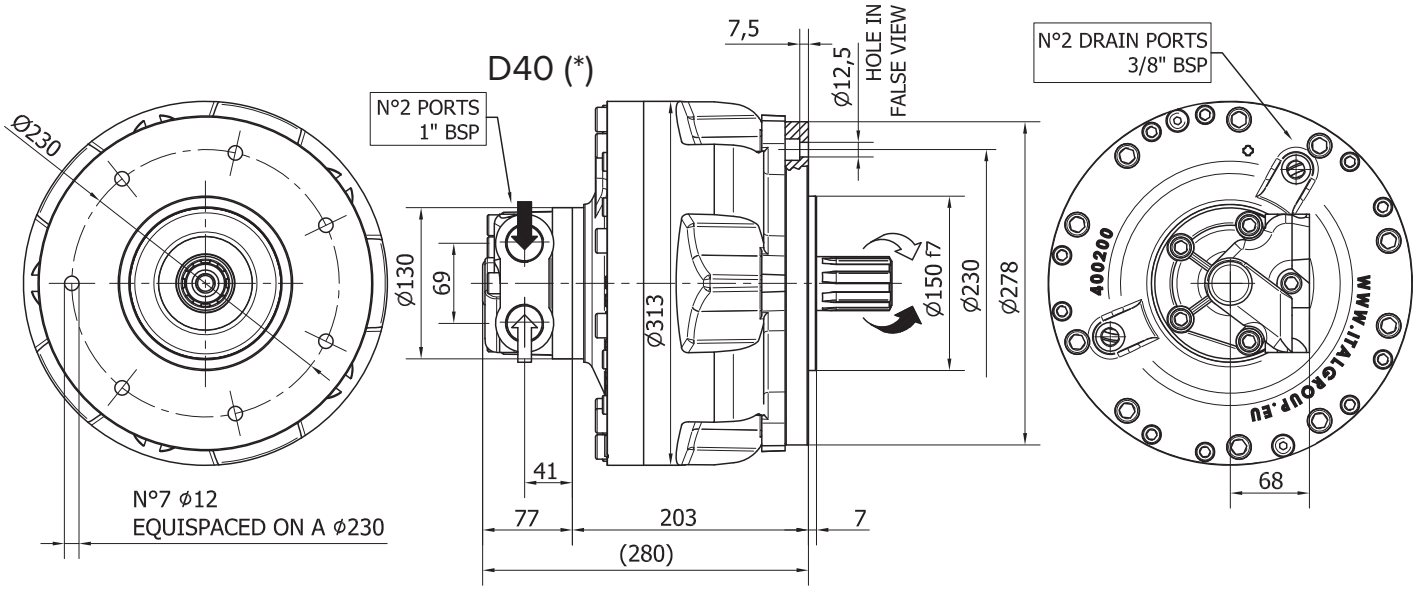
Available spline bar: B8076

A31



Available spline bar: B8078

HC2/TF



TECHNICAL DATA

		200	250	300	350	400	500	600	650
DISPLACEMENT	[cc]	193	251	305	348	424	493	566	624
SPECIFIC TORQUE	[Nm/bar]	3,06	4,00	4,84	5,52	6,76	7,84	9,00	9,92
MAX. CONT. PRESSURE	[bar]	250	250	250	250	250	250	250	250
HYDROSTATIC TEST PRESSURE	[bar]	420	420	420	420	420	420	420	420
MAX. CONT. SPEED	[rpm]	1200	950	800	650	600	520	480	440
PEAK SPEED (***)	[rpm]	1500	1150	950	800	800	700	650	620
MAX. CONT. POWER (****)	[kW]	75	75	75	75	75	75	75	75
MAX. POWER	[kW]	105	105	105	105	105	105	105	105
MAX. CASE PRESSURE	[bar]	6	6	6	6	6	6	6	6
DRY WEIGHT	[kg]	53	53	53	53	53	53	53	53
TEMPERATURE RANGE (**)	[°C]	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70

- (*) The standard distributor (D40) is shown. Please refer to distributors section (pag. 94-101) for differents distributor interfaces.
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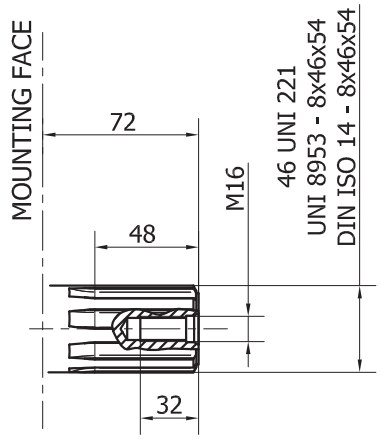
- (****) For motor operation with a continuous duty cycle at maximum continuous power the flushing is usually required. For more information please contact our technical department.

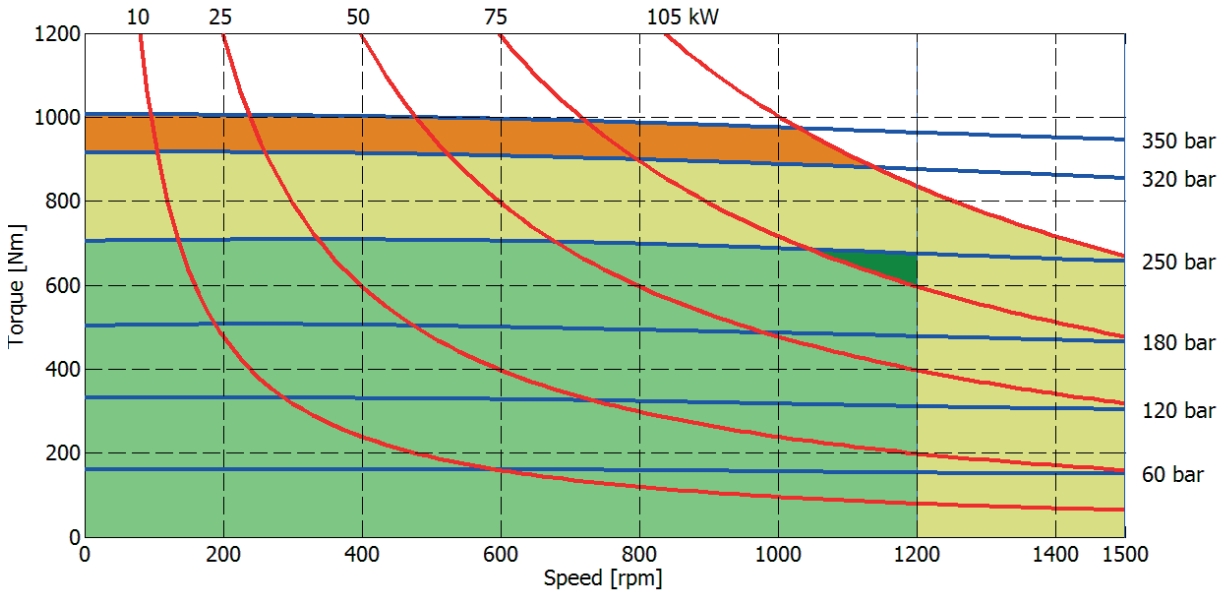
A0



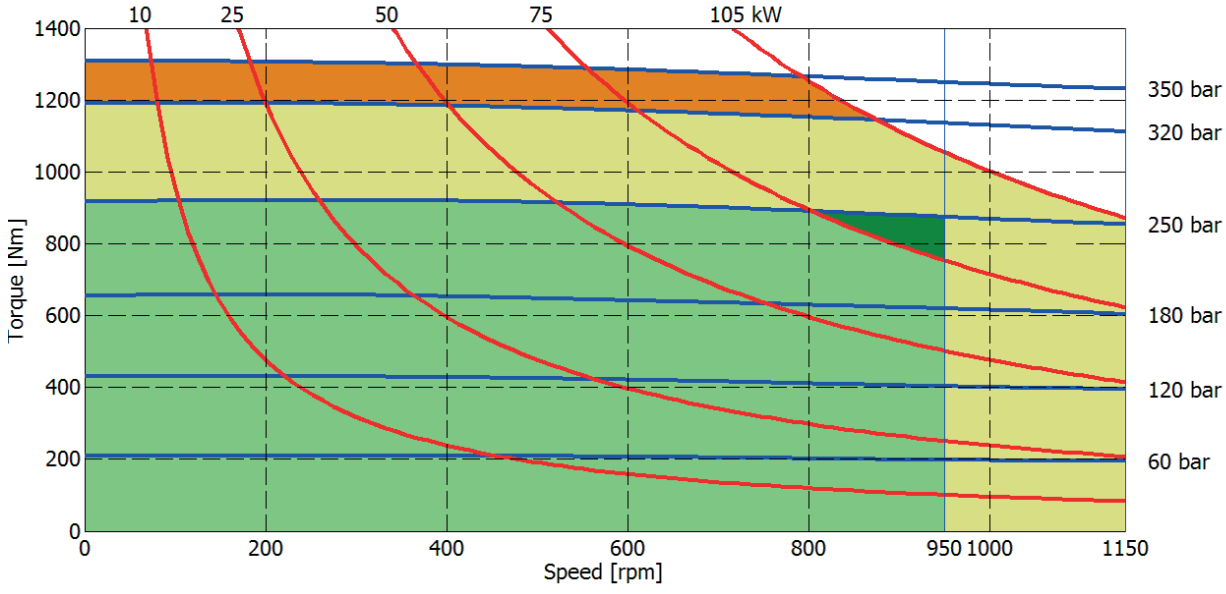
Available spline billet: SB5

HC2 - PERFORMANCE CURVES

HC2 200



HC2 250



Continuous operation

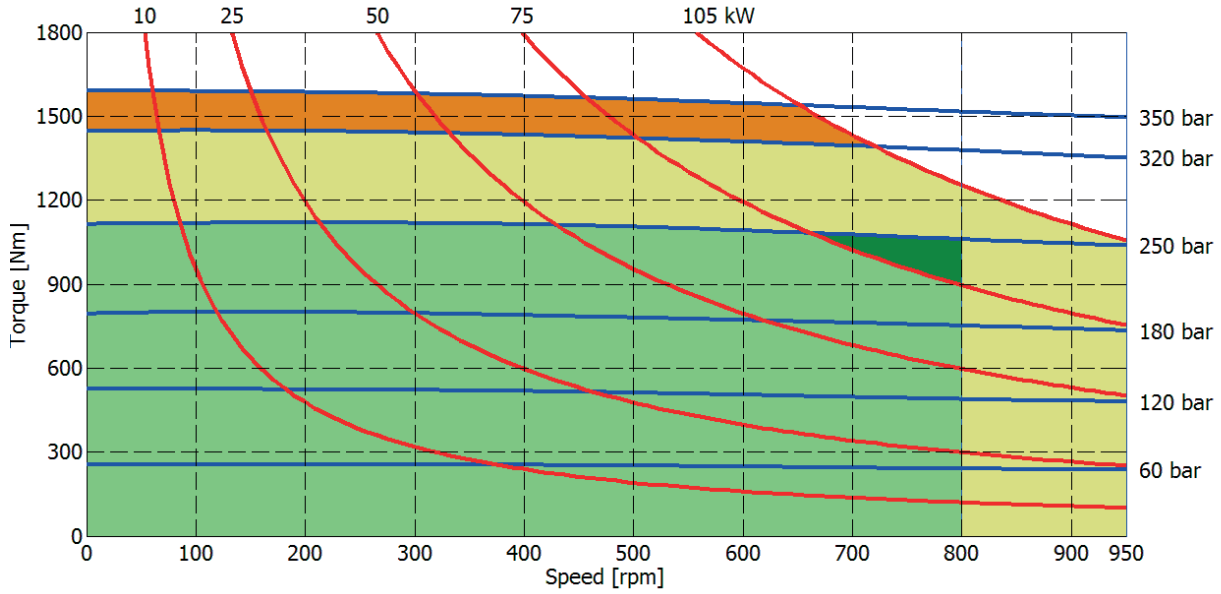
Continuous operation with flushing or intermittent operation (see below for intermittent operation)

Intermittent operation: permitted for a 15% of duty cycle, for 3 minutes maximum period

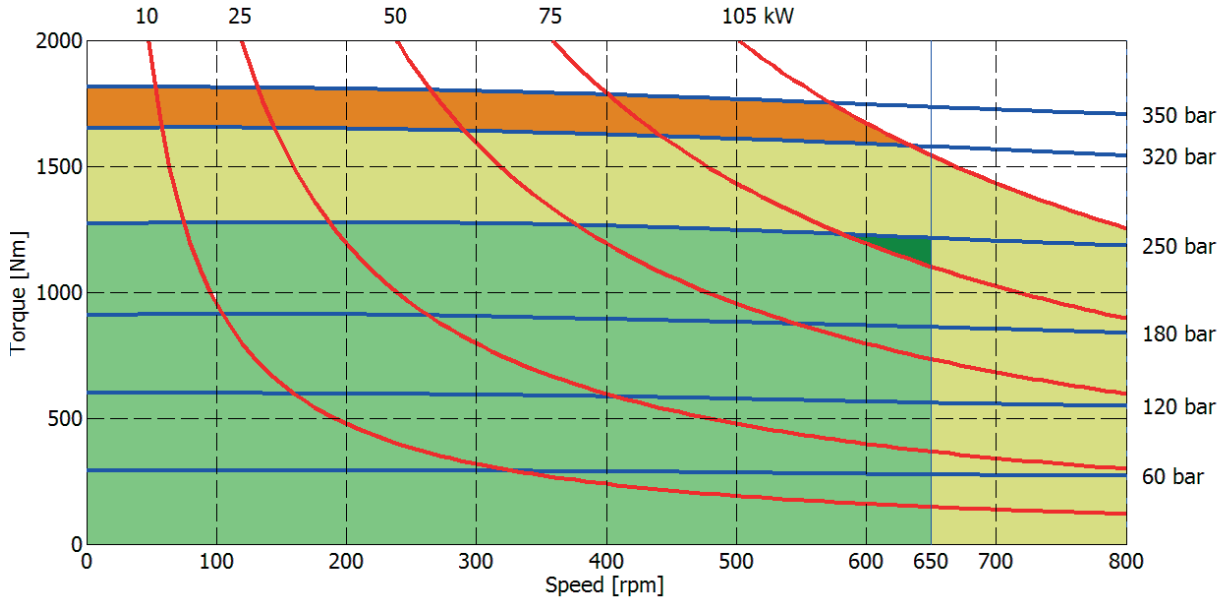
Peak operation: permitted for very short periods (3-5 seconds every 10-15 minutes)

The above diagrams are referring to the hydraulic motor working with a fluid in ideal conditions (viscosity at 40 cSt). In case the working temperature increases and viscosity reach values under the recommended values (see hydraulic fluid recommendations) flushing must be performed or ISO oil grade must be changed. The working temperature must not overcome 70 °C.

HC2 300



HC2 350



Continuous operation

Continuous operation with flushing or intermittent operation (see below for intermittent operation)

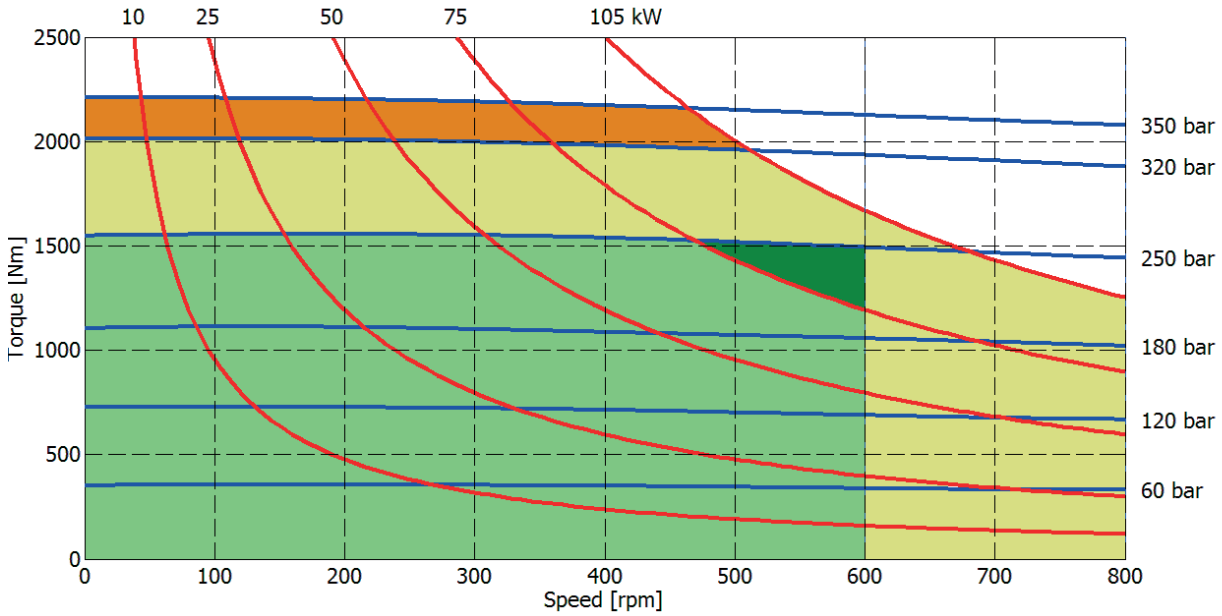
Intermittent operation: permitted for a 15% of duty cycle, for 3 minutes maximum period

Peak operation: permitted for very short periods (3-5 seconds every 10-15 minutes)

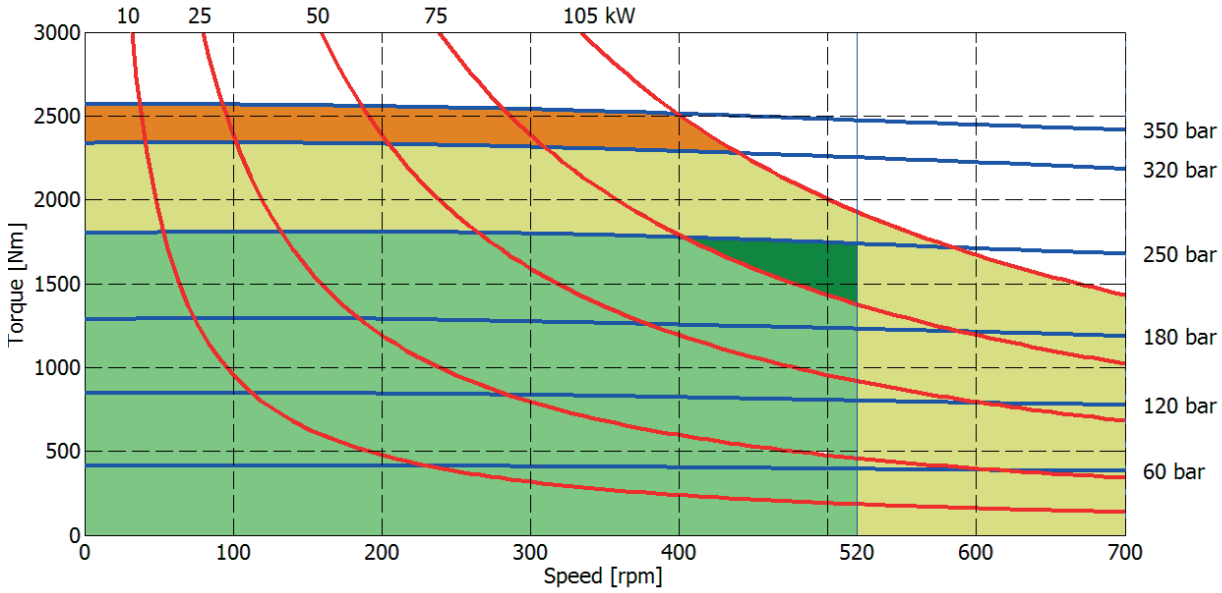
The above diagrams are referring to the hydraulic motor working with a fluid in ideal conditions (viscosity at 40 cSt). In case the working temperature increases and viscosity reach values under the recommended values (see hydraulic fluid recommendations) flushing must be performed or ISO oil grade must be changed. The working temperature must not overcome 70 °C.

HC2 - PERFORMANCE CURVES

HC2 400



HC2 500



Continuous operation

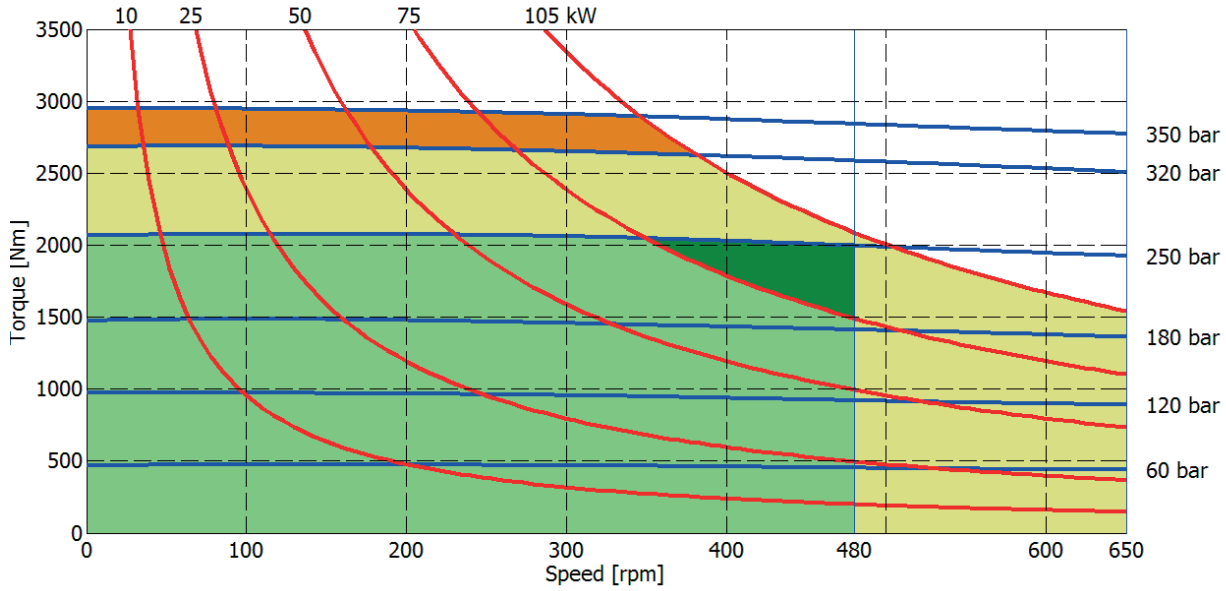
Continuous operation with flushing or intermittent operation (see below for intermittent operation)

Intermittent operation: permitted for a 15% of duty cycle, for 3 minutes maximum period

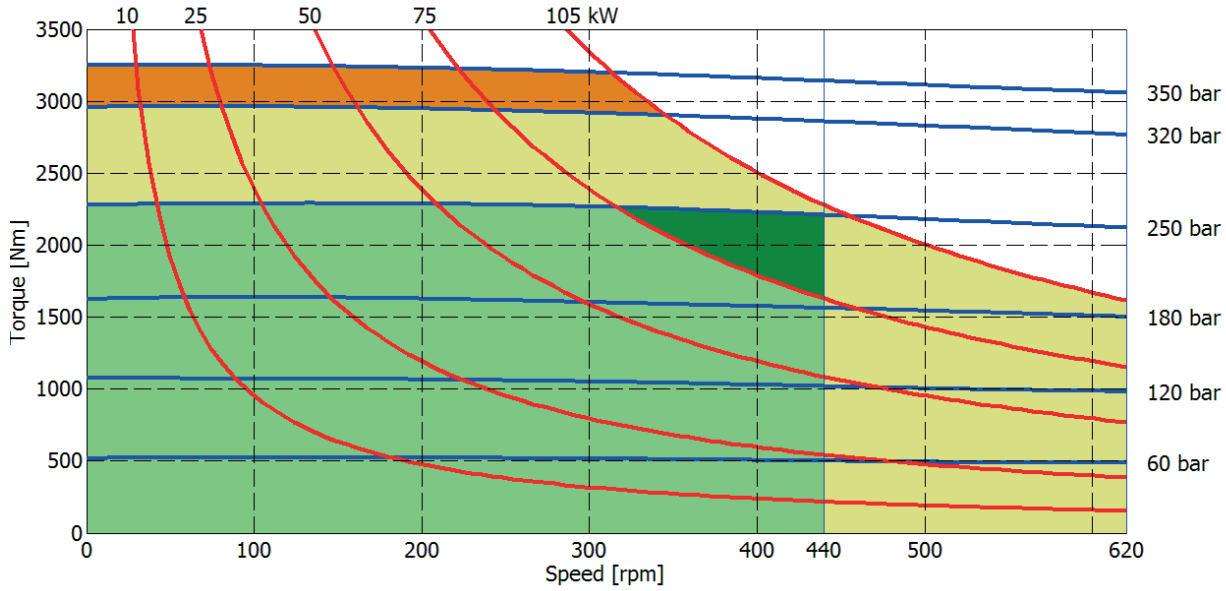
Peak operation: permitted for very short periods (3-5 seconds every 10-15 minutes)

The above diagrams are referring to the hydraulic motor working with a fluid in ideal conditions (viscosity at 40 cSt). In case the working temperature increases and viscosity reach values under the recommended values (see hydraulic fluid recommendations) flushing must be performed or ISO oil grade must be changed. The working temperature must not overcome 70 °C.

HC2 600



HC2 650



Continuous operation

Continuous operation with flushing or intermittent operation (see below for intermittent operation)

Intermittent operation: permitted for a 15% of duty cycle, for 3 minutes maximum period

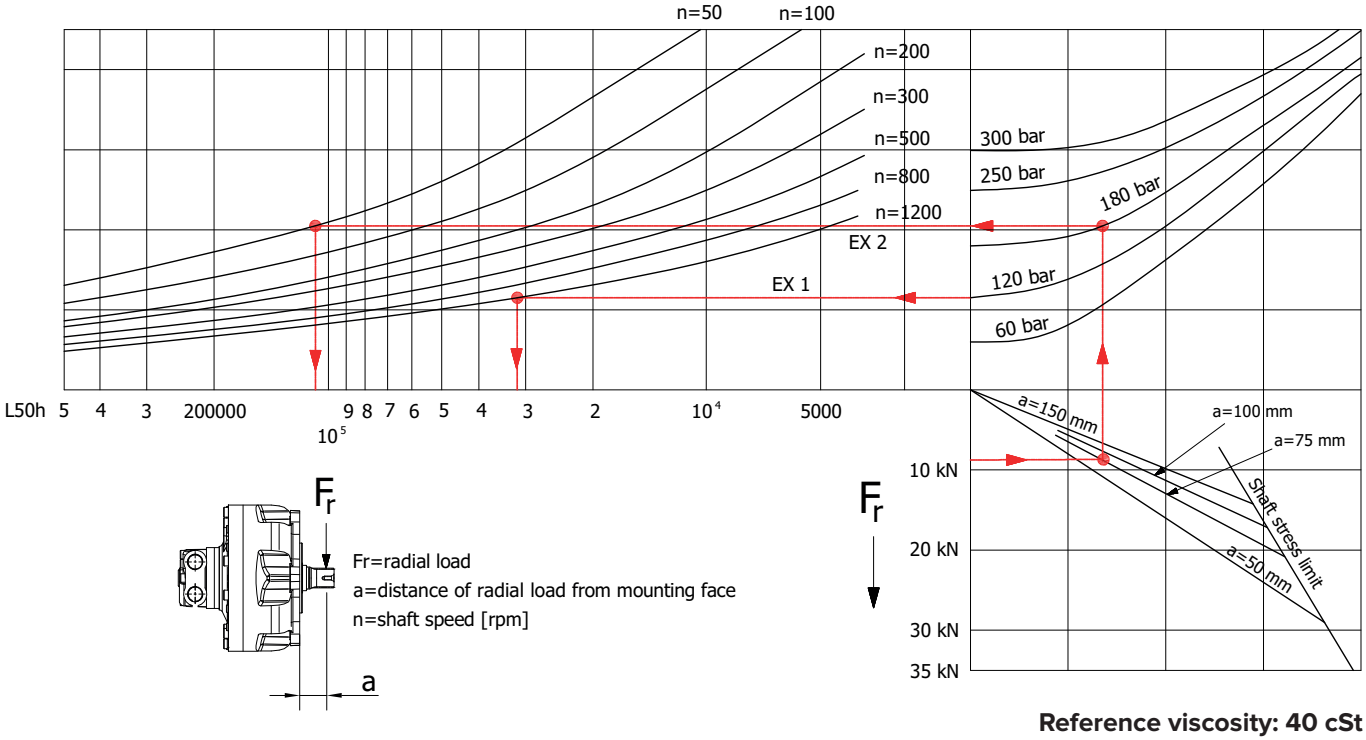
Peak operation: permitted for very short periods (3-5 seconds every 10-15 minutes)

The above diagrams are referring to the hydraulic motor working with a fluid in ideal conditions (viscosity at 40 cSt). In case the working temperature increases and viscosity reach values under the recommended values (see hydraulic fluid recommendations) flushing must be performed or ISO oil grade must be changed. The working temperature must not overcome 70 °C.

HC2 - PERFORMANCE CURVES

BEARING LIFE

Reference displacement 350 cc



Reference viscosity: 40 cSt

Example:

We suppose (EX1): p=120 [bar], n=1200 [rpm]; we obtain an average lifetime of 31000 [h].

If we suppose (EX2): F_r=9 [kN], a=75 [mm], n=50 [rpm] and p=180 [bar] we obtain an average lifetime of 105000 [h].

The above data are referring to the HC2 series motors, displacement 350 cc.

HC2 - ORDERING CODE

HC2 - - - - - - - - - - - - - - SB -

DISPLACEMENT

200
250
300
350
400
500
600
650

INTERCHANGEABILITY

/C300 (*)
/S2
/TF

SHAFT

A0 A01
A1 A2
A3 A31
A32 A4

DISTRIBUTOR

D31B D36B
D310B D316B
D40 D47
D471 D416
D417 D417-RV
D418 D48-RV
D90

See pag. 94-101

TACHOMETER

TA
TB
TT1
TQ1
EST
EST30
EST31
EST33
J

See pag. 102-106

SPECIAL FEATURES

MP
SPSL
HPS
CCW
ND

See pag. 23

Z - -
Italgroup internal code

SPLINE BILLET

SB3
SB5
SB22

SPLINE BAR

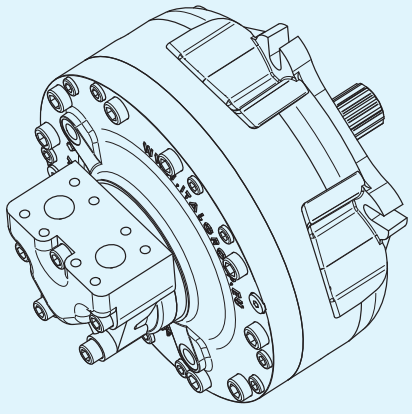
B8076
B8078

See pag. 107-108

(*) For more information (drawings/technical data) please contact Italgroup S.r.l.

EXAMPLES:

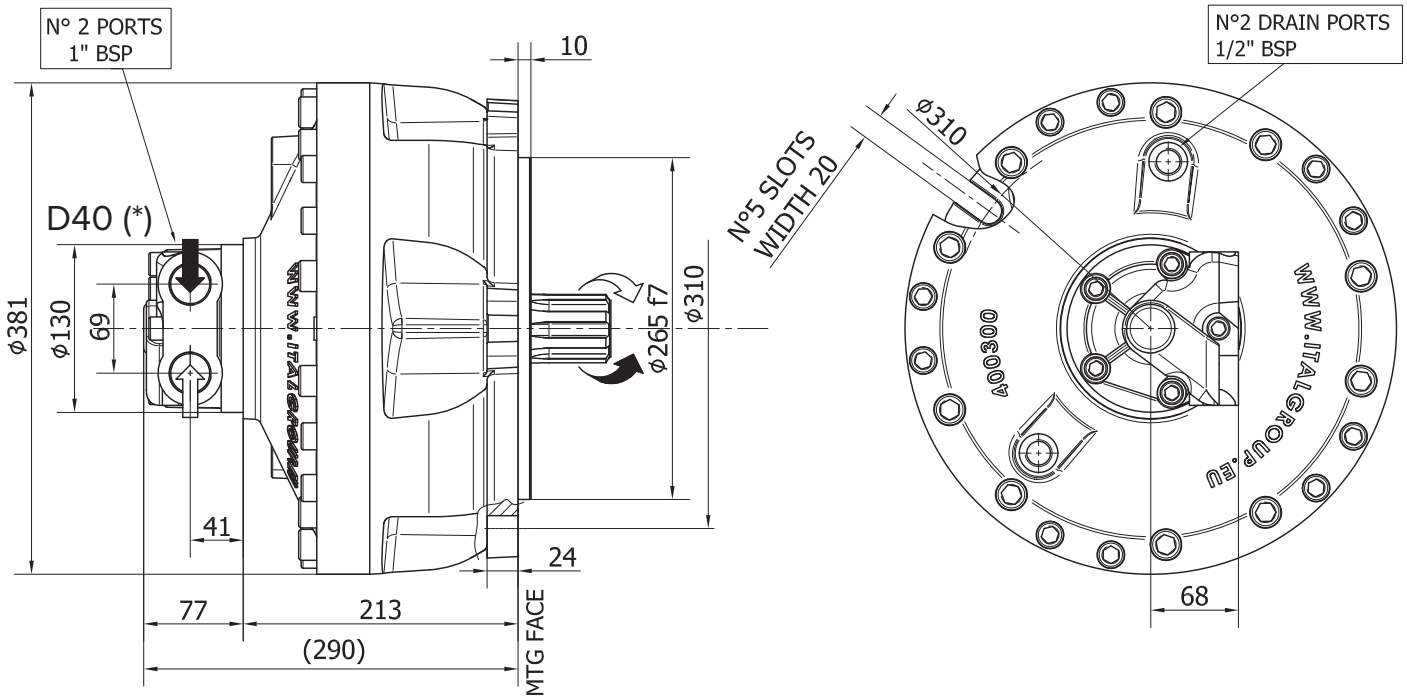
HC2 400 A1 D40 SB22
HC2 300/TF A0 D47 CCW
HC2 600/S2 A0 D310B EST30



HC3

HC3 350-400-500-600-700-800-900-1000	Pag. 64 - 65
HC3 - PERFORMANCE CURVES	Pag. 66 - 70
HC3 - ORDERING CODE	Pag. 71

HC3



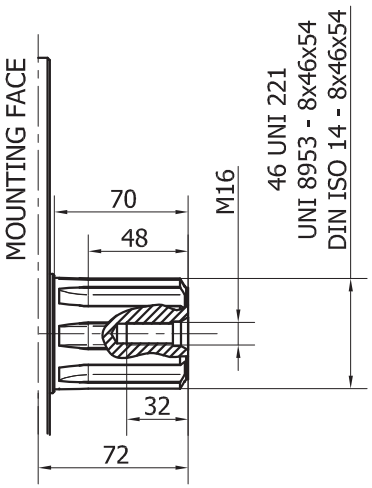
TECHNICAL DATA

		350	400	500	600	700	800	900	1000
DISPLACEMENT	[cc]	352	426	486	595	689	792	872	988
SPECIFIC TORQUE	[Nm/bar]	5,60	6,78	7,73	9,47	11	12,6	13,9	15,7
MAX. CONT. PRESSURE	[bar]	250	250	250	250	250	250	250	250
HYDROSTATIC TEST PRESSURE	[bar]	420	420	420	420	420	420	420	420
MAX. CONT. SPEED	[rpm]	640	600	500	450	420	400	360	310
PEAK SPEED (***)	[rpm]	800	800	700	600	600	550	525	500
MAX. CONT. POWER (****)	[kW]	82	85	85	85	85	85	85	85
MAX. POWER	[kW]	130	130	130	130	130	130	130	130
MAX. CASE PRESSURE	[bar]	6	6	6	6	6	6	6	6
DRY WEIGHT	[kg]	92	92	92	92	92	92	92	92
TEMPERATURE RANGE (**)	[°C]	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70

- (*) The standard distributor (D40) is shown. Please refer to distributors section (pag. 94-101) for differents distributor interfaces.
- (**) Please refer to the hydraulic fluid recommendations (pag. 10-11).
- (***) Do not exceed maximum power.
- (****) For motor operation with a continuous duty cycle at maximum continuous power the flushing is usually required. For more information please contact our technical department.

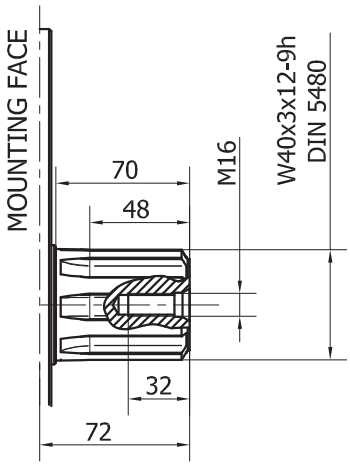
SHAFTS

A0



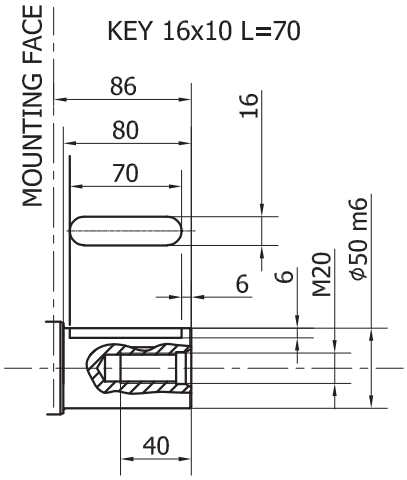
Available spline billet: SB5

A1

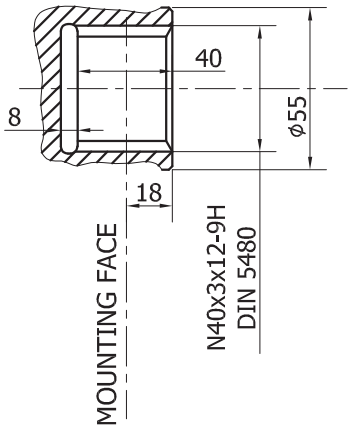


Available spline billet: SB22

A2

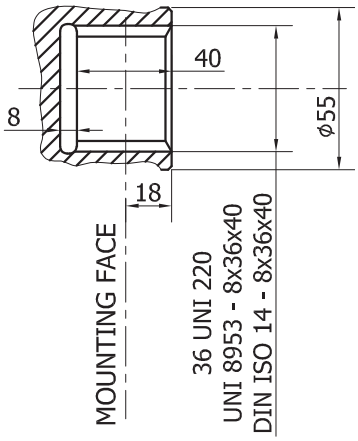


A3



Available spline bar: B8076

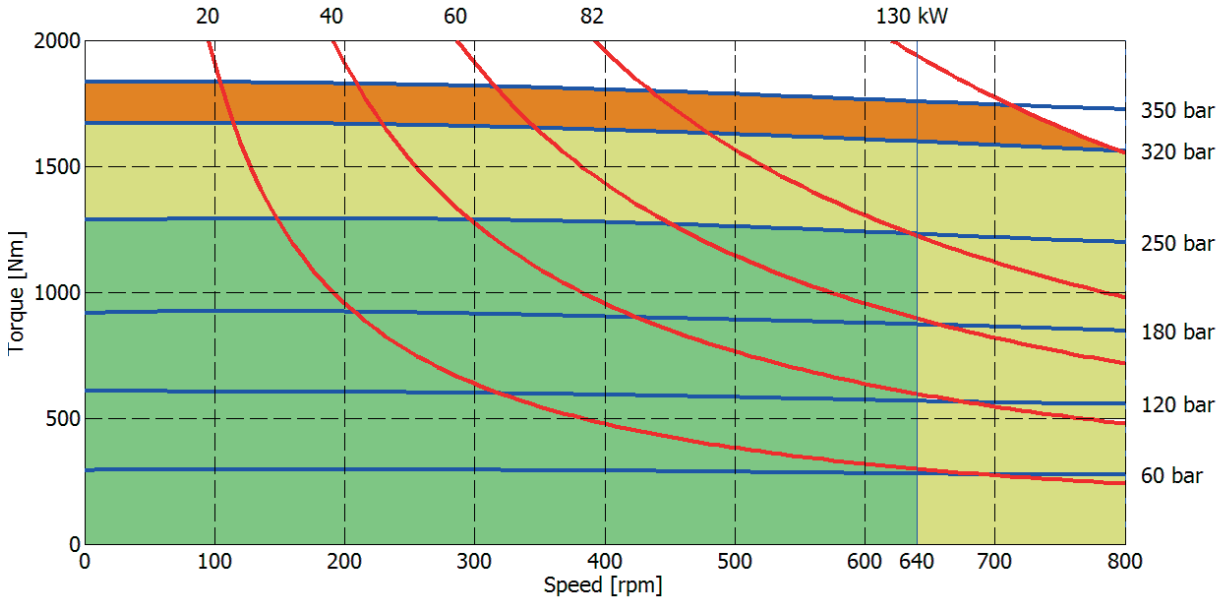
A31



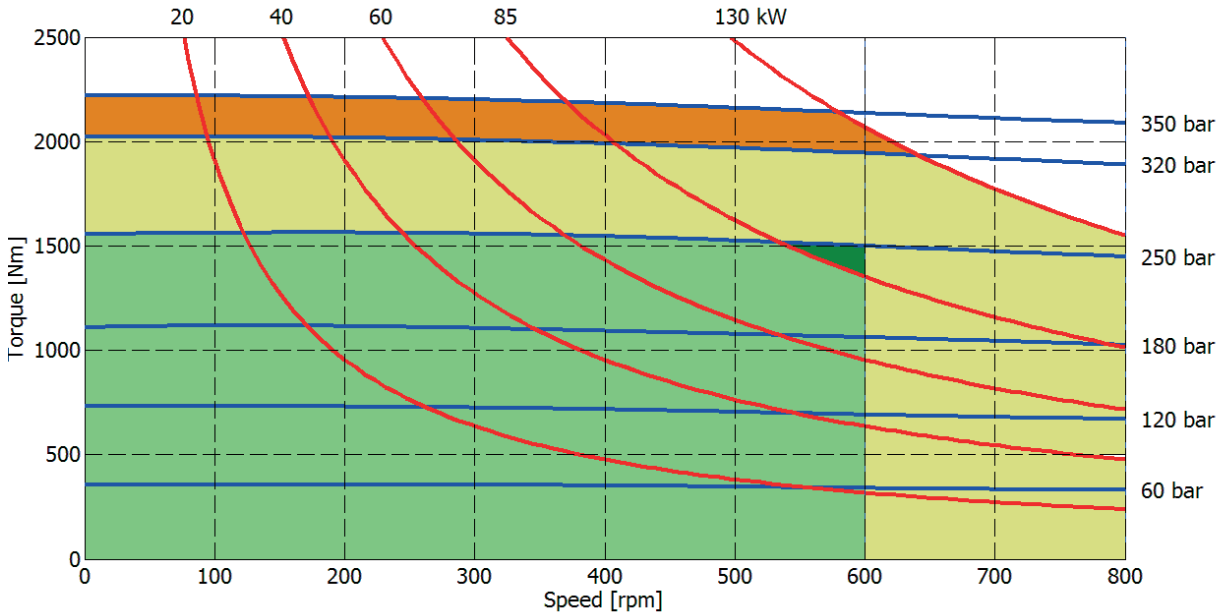
Available spline bar: B8078

HC3 - PERFORMANCE CURVES

HC3 350



HC3 400



Continuous operation

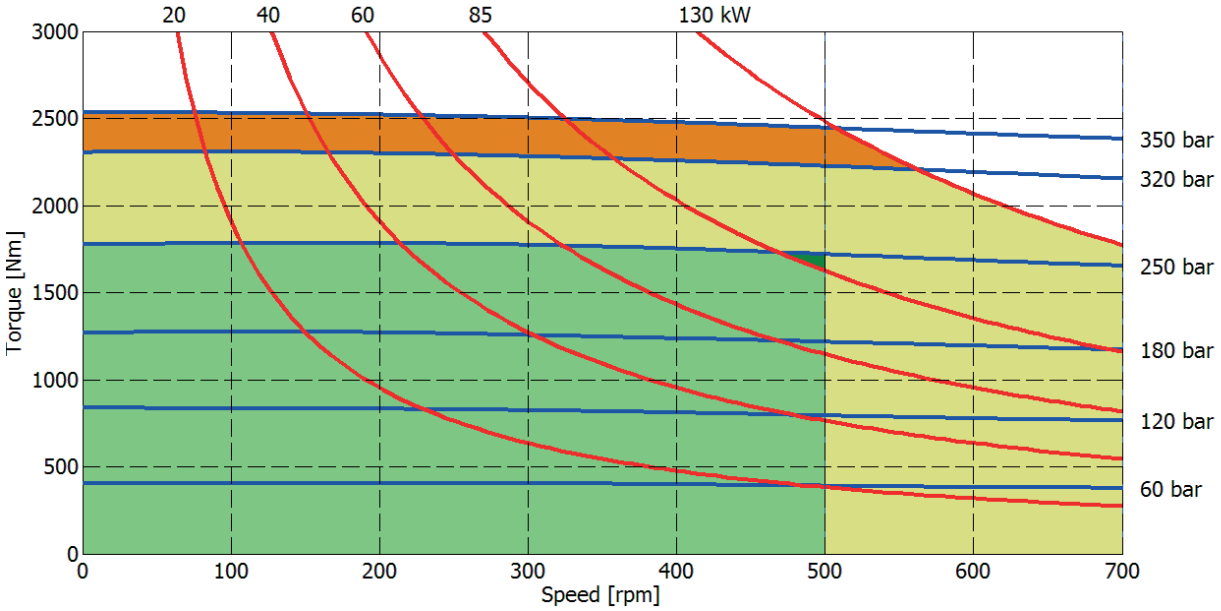
Continuous operation with flushing or intermittent operation (see below for intermittent operation)

Intermittent operation: permitted for a 15% of duty cycle, for 3 minutes maximum period

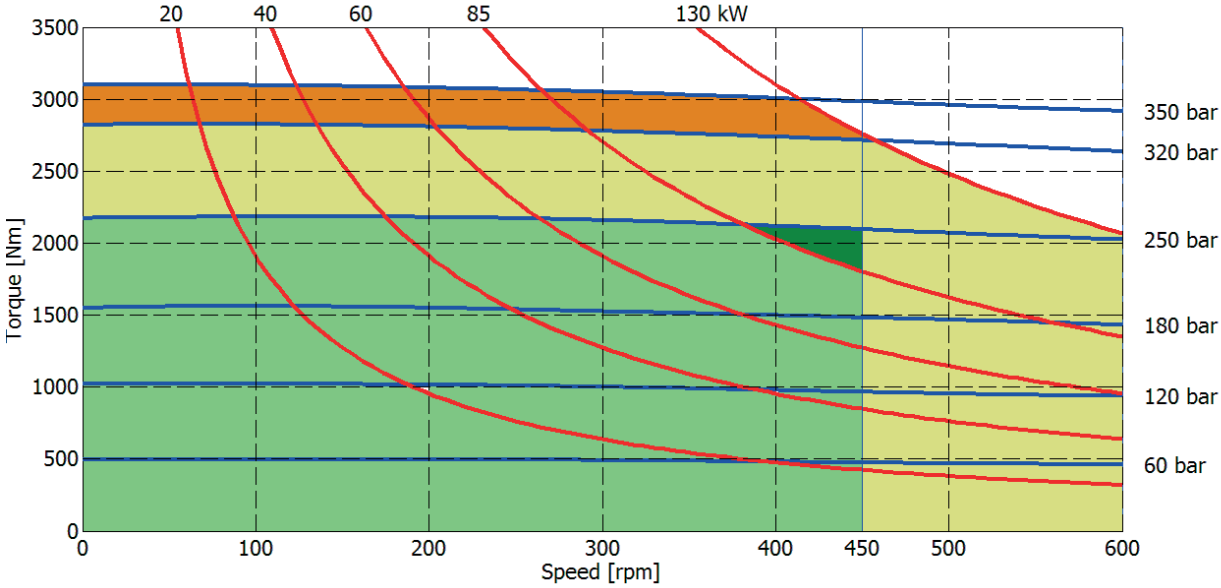
Peak operation: permitted for very short periods (3-5 seconds every 10-15 minutes)

The above diagrams are referring to the hydraulic motor working with a fluid in ideal conditions (viscosity at 40 cSt). In case the working temperature increases and viscosity reach values under the recommended values (see hydraulic fluid recommendations) flushing must be performed or ISO oil grade must be changed. The working temperature must not overcome 70 °C.

HC3 500



HC3 600



Continuous operation

Continuous operation with flushing or intermittent operation (see below for intermittent operation)

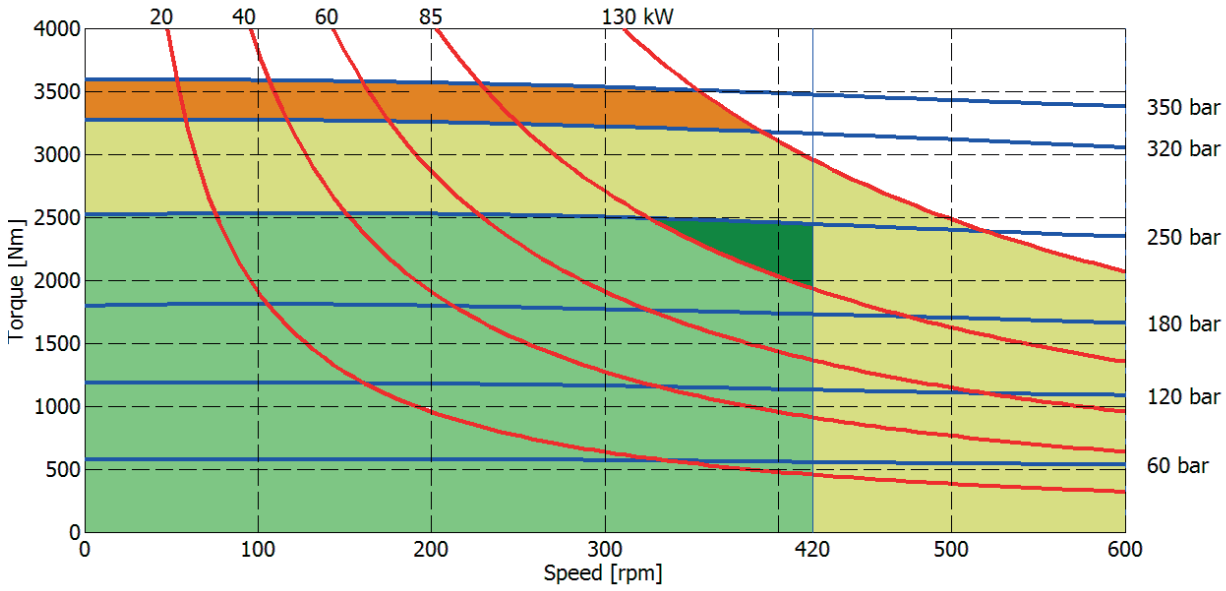
Intermittent operation: permitted for a 15% of duty cycle, for 3 minutes maximum period

Peak operation: permitted for very short periods (3-5 seconds every 10-15 minutes)

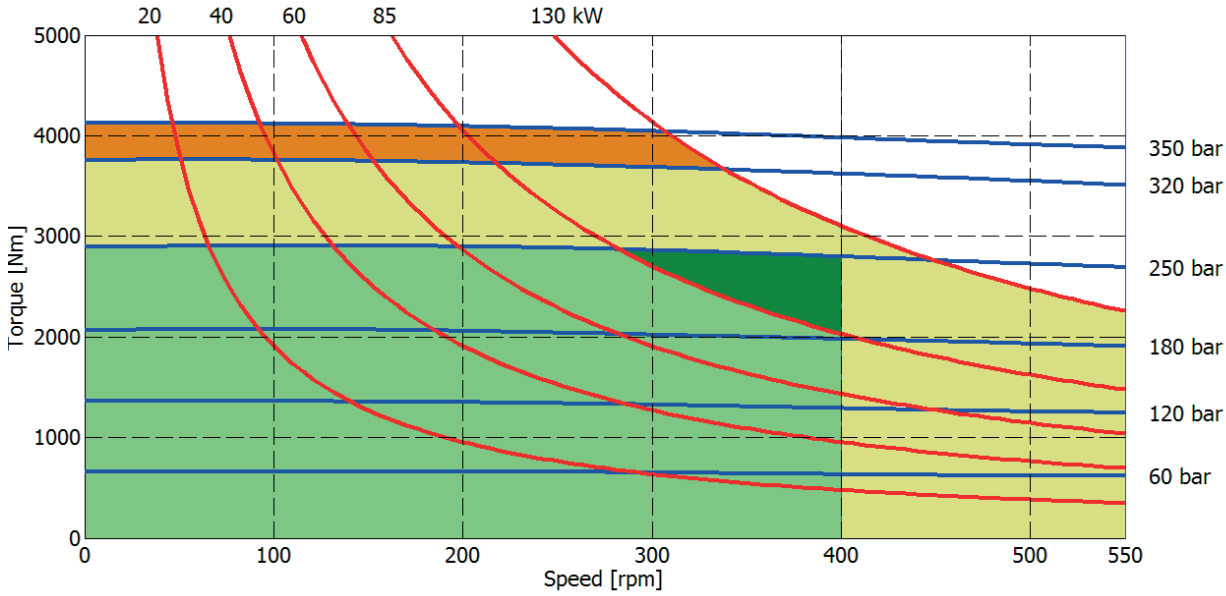
The above diagrams are referring to the hydraulic motor working with a fluid in ideal conditions (viscosity at 40 cSt). In case the working temperature increases and viscosity reach values under the recommended values (see hydraulic fluid recommendations) flushing must be performed or ISO oil grade must be changed. The working temperature must not overcome 70 °C.

HC3 - PERFORMANCE CURVES

HC3 700



HC3 800



Continuous operation

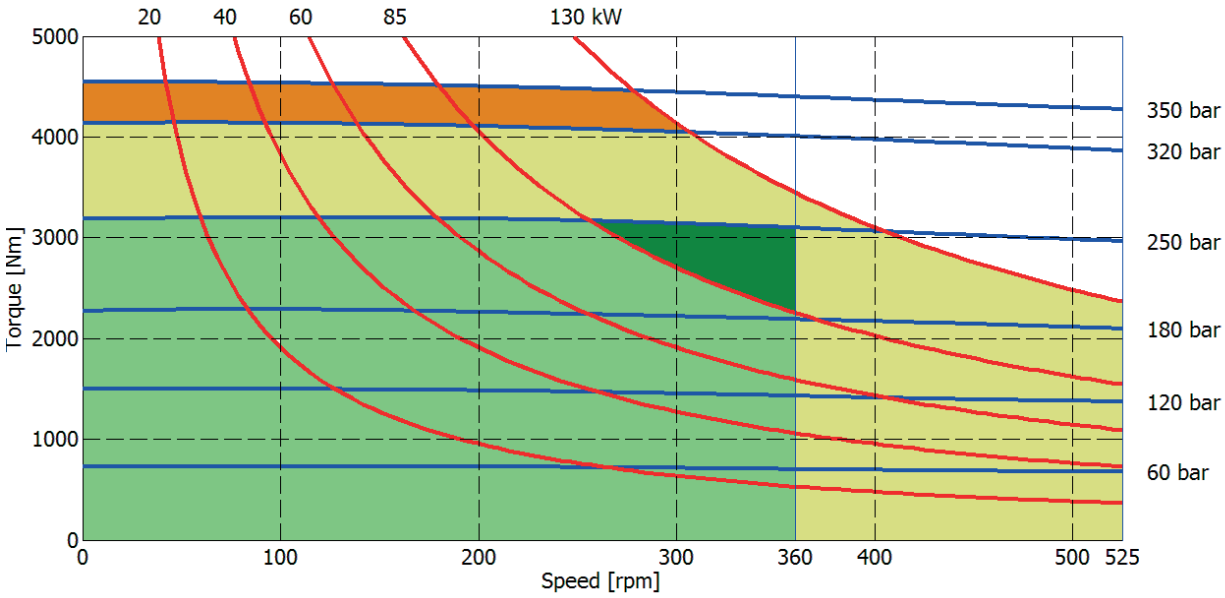
Continuous operation with flushing or intermittent operation (see below for intermittent operation)

Intermittent operation: permitted for a 15% of duty cycle, for 3 minutes maximum period

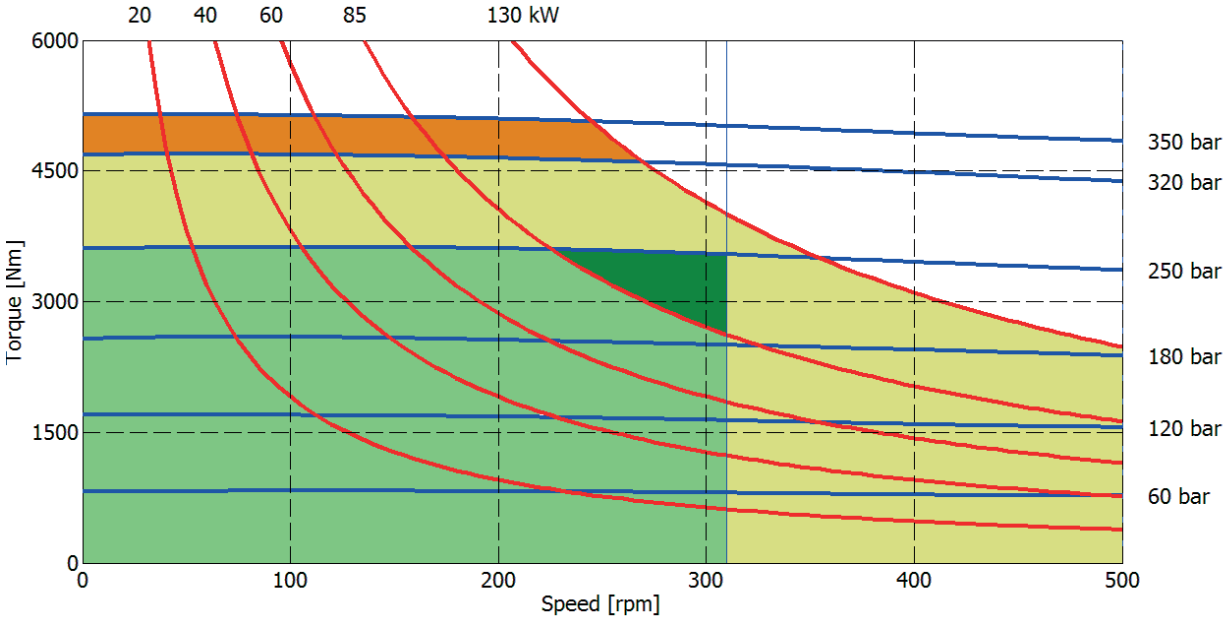
Peak operation: permitted for very short periods (3-5 seconds every 10-15 minutes)

The above diagrams are referring to the hydraulic motor working with a fluid in ideal conditions (viscosity at 40 cSt). In case the working temperature increases and viscosity reach values under the recommended values (see hydraulic fluid recommendations) flushing must be performed or ISO oil grade must be changed. The working temperature must not overcome 70 °C.

HC3 900



HC3 1000



Continuous operation

Continuous operation with flushing or intermittent operation (see below for intermittent operation)

Intermittent operation: permitted for a 15% of duty cycle, for 3 minutes maximum period

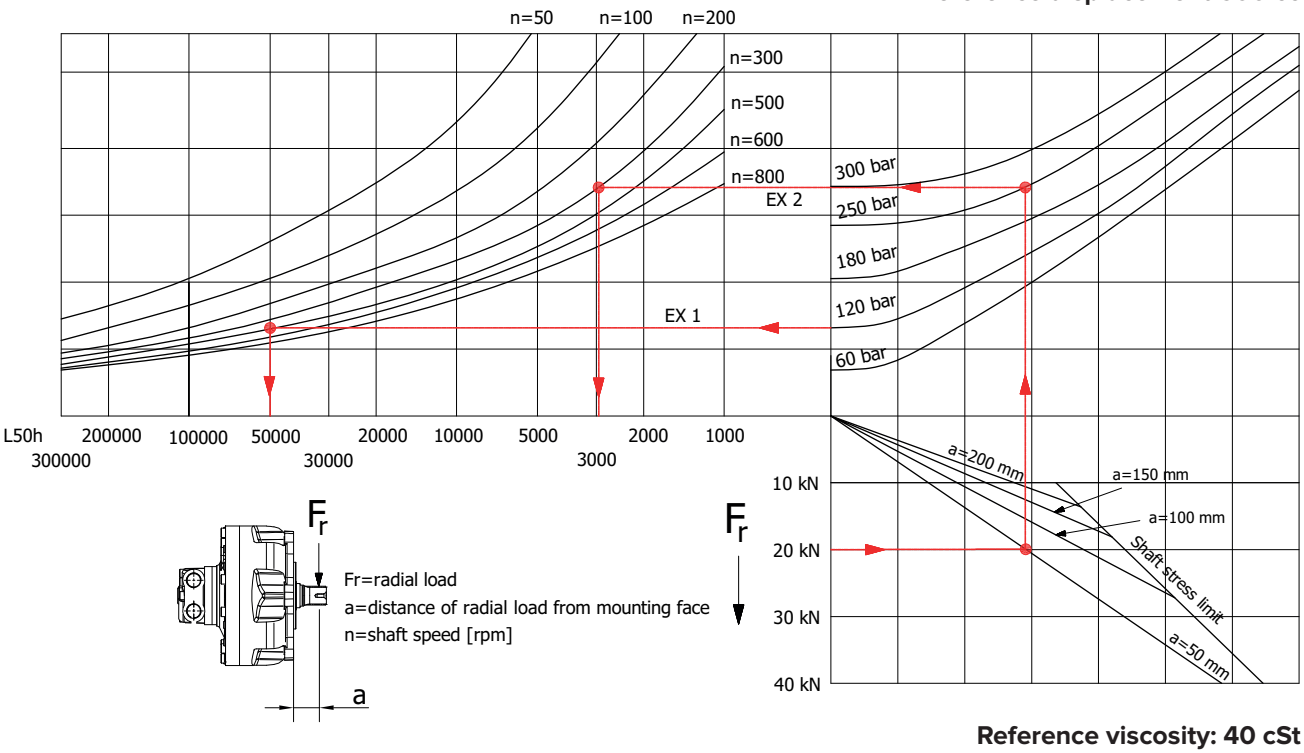
Peak operation: permitted for very short periods (3-5 seconds every 10-15 minutes)

The above diagrams are referring to the hydraulic motor working with a fluid in ideal conditions (viscosity at 40 cSt). In case the working temperature increases and viscosity reach values under the recommended values (see hydraulic fluid recommendations) flushing must be performed or ISO oil grade must be changed. The working temperature must not overcome 70 °C.

HC3 - PERFORMANCE CURVES

BEARING LIFE

Reference displacement 600 cc



Reference viscosity: 40 cSt

Example:

We suppose (EX1): p=120 [bar], n=500 [rpm]; we obtain an average lifetime of 50000 [h].
If we suppose (EX2): F_r=20 [kN], a=50 [mm], n=300 [rpm] and p=250 [bar] we obtain an average lifetime of 2900 [h].

The above data are referring to the HC3 series motors, displacement 600 cc.

HC3 - ORDERING CODE

HC3 - - - - - - - - - - - - - - SB -

DISPLACEMENT

350
400
500
600
700
800
900
1000

INTERCHANGEABILITY

/G2 (*)
/G4 (*)
/B30 (*)

SHAFT

A0 A1
A2 A3
A31

DISTRIBUTOR

D31B D36B
D310B D316B
D40 D47
D471 D416
D417 D417-RV
D418 D48-RV
D90

See pag. 94-101

TACHOMETER

TA
TB
TT1
TQ1
EST
EST30
EST31
EST33
J

See pag. 102-106

SPECIAL FEATURES

MP
SPSL
HPS
CCW
ND

See pag. 23

Z - -
Italgroup internal code

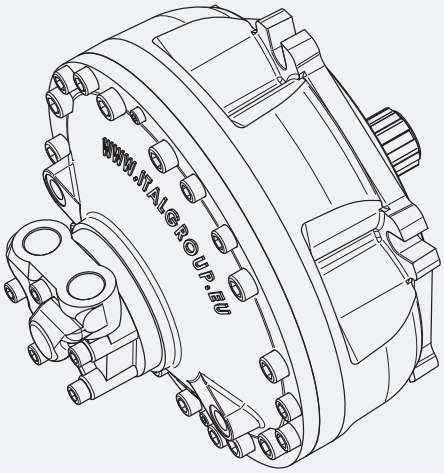
SPLINE BILLET

SB5
SB22

SPLINE BAR

B8076
B8078

See pag. 107-108



(*) For more information (drawings/technical data) please contact Italgroup S.r.l.

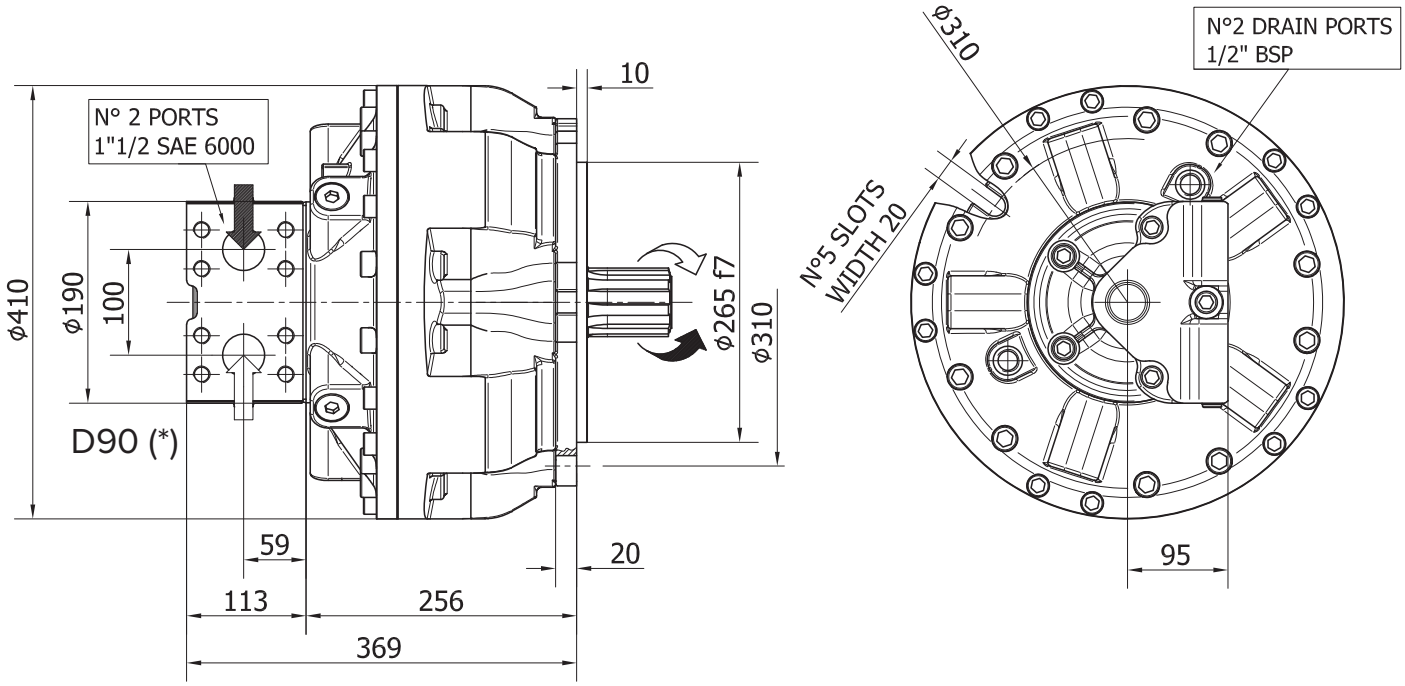
EXAMPLES:

HC3 800 A0 D31B SB5
HC3 1000 A3 D90
HC3 500 A2 D47 TT1 MP

HC4

HC4 400-500-600-800-900-1000-1100-1250-1300	Pag. 74 - 75
HC4 - PERFORMANCE CURVES	Pag. 76 - 81
HC4 - ORDERING CODE	Pag. 82

HC4



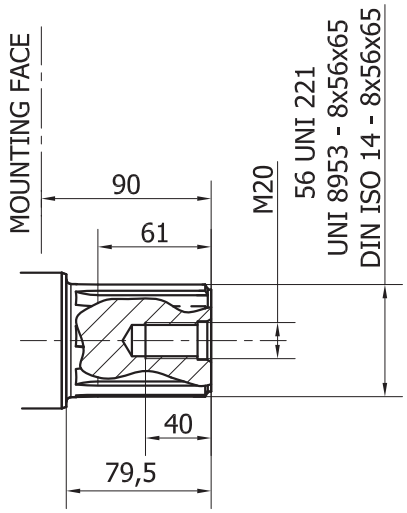
TECHNICAL DATA

		400	500	600	800	900	1000	1100	1250	1300
DISPLACEMENT	[cc]	402	505	639	789	904	1022	1116	1247	1315
SPECIFIC TORQUE	[Nm/bar]	6,4	8	10,2	12,6	14,4	16,3	17,8	19,8	20,9
MAX. CONT. PRESSURE	[bar]	250	250	250	250	250	250	250	250	250
HYDROSTATIC TEST PRESSURE	[bar]	420	420	420	420	420	420	420	420	420
MAX. CONT. SPEED	[rpm]	850	750	650	550	500	450	415	370	350
PEAK SPEED (***)	[rpm]	1050	900	800	700	600	560	520	465	440
MAX. CONT. POWER (****)	[kW]	92	92	92	92	92	92	92	92	92
MAX. POWER	[kW]	140	140	140	140	140	140	140	140	140
MAX. CASE PRESSURE	[bar]	6	6	6	6	6	6	6	6	6
DRY WEIGHT	[kg]	155	155	155	155	155	155	155	155	155
TEMPERATURE RANGE (**)	[°C]	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70

- (*) The standard distributor (D90) is shown. Please refer to distributors section (pag. 94-101) for differents distributor interfaces.
- (**) Please refer to the hydraulic fluid recommendations (pag. 10-11).
- (***) Do not exceed maximum power.
- (****) For motor operation with a continuous duty cycle at maximum continuous power the flushing is usually required. For more information please contact our technical department.

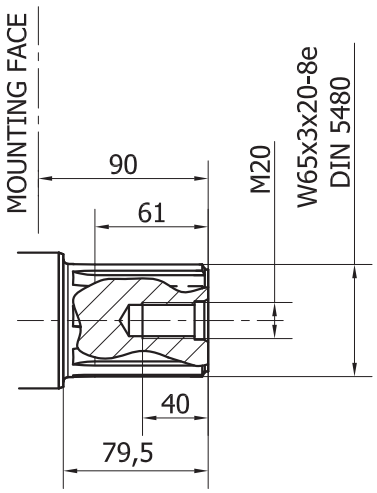
SHAFTS

A0



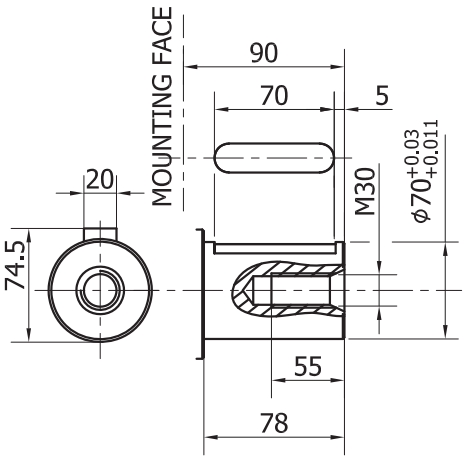
Available spline billet: SB17

A1

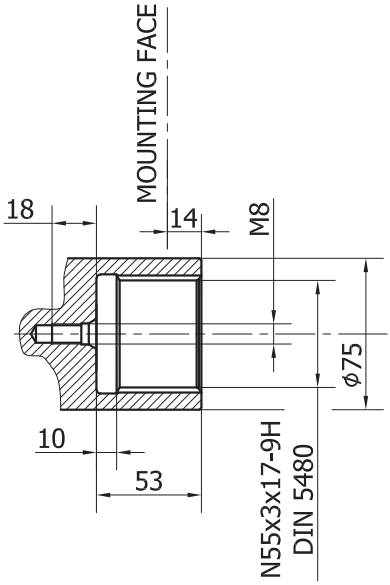


Available spline billet: SB23

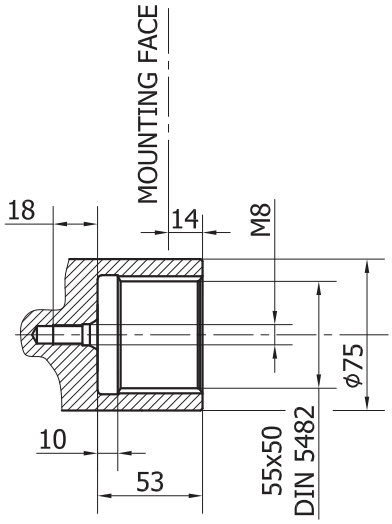
A2



A3

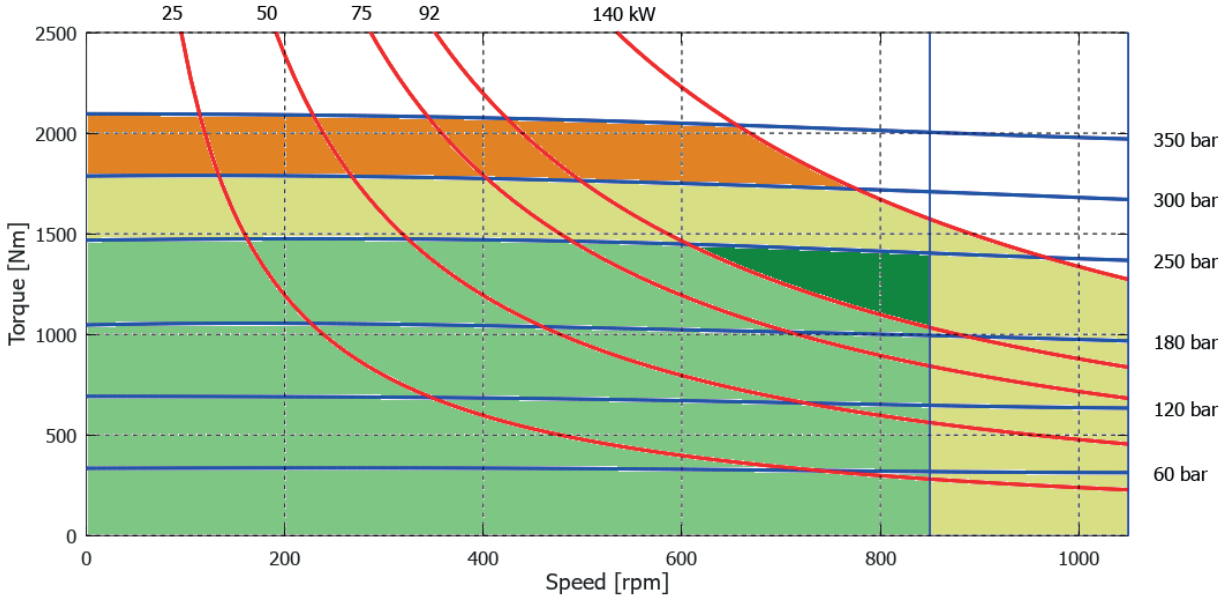


A31

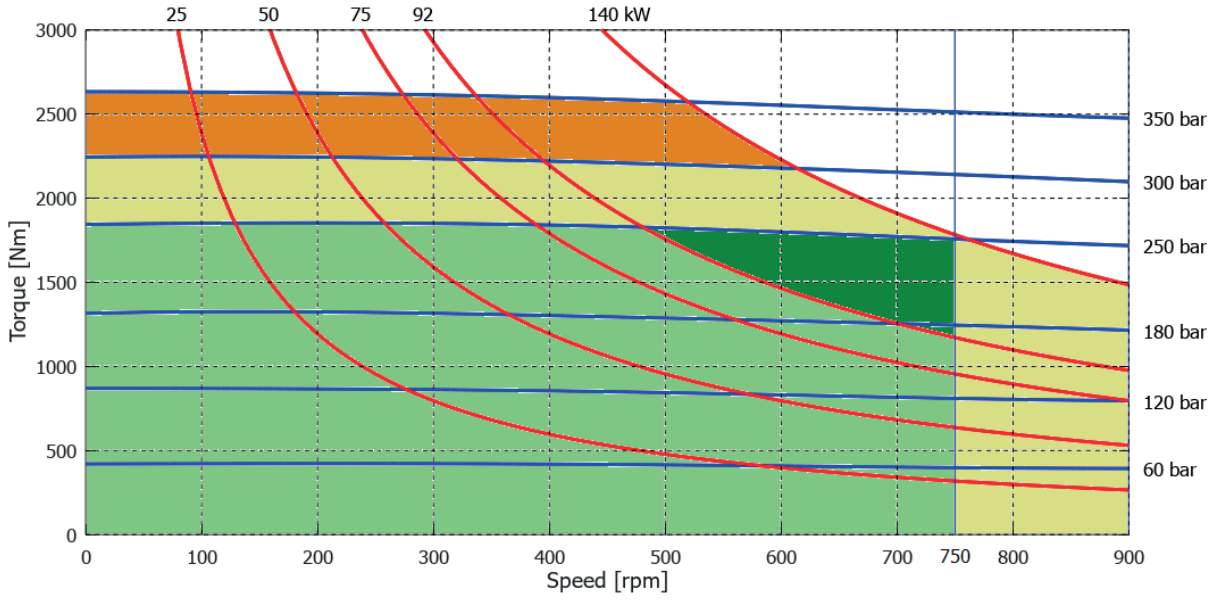


HC4 - PERFORMANCE CURVES

HC4 400



HC4 500



Continuous operation

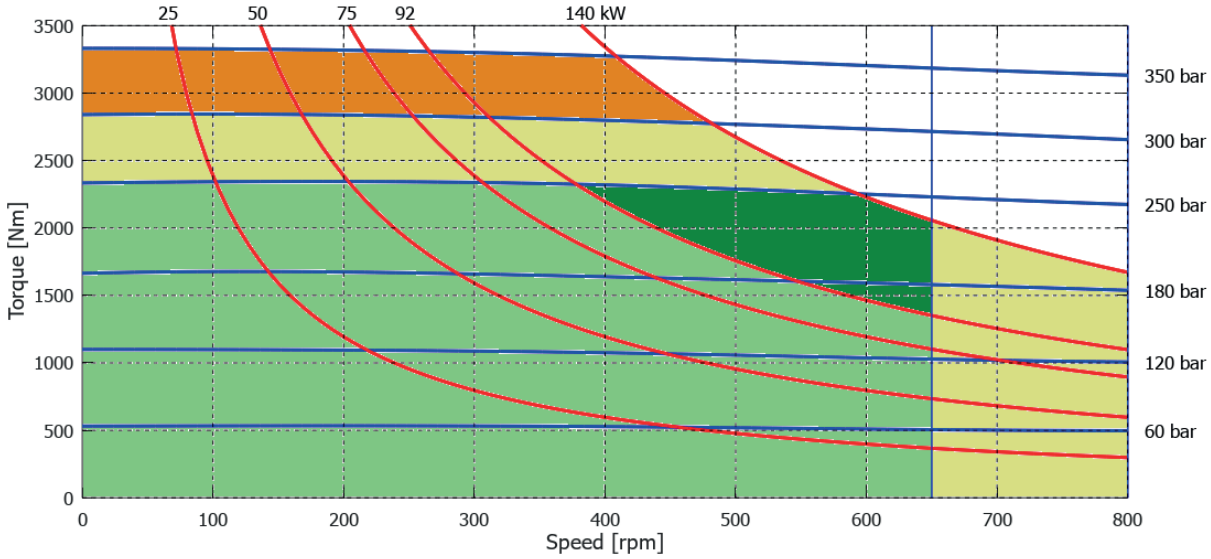
Continuous operation with flushing or intermittent operation (see below for intermittent operation)

Intermittent operation: permitted for a 15% of duty cycle, for 3 minutes maximum period

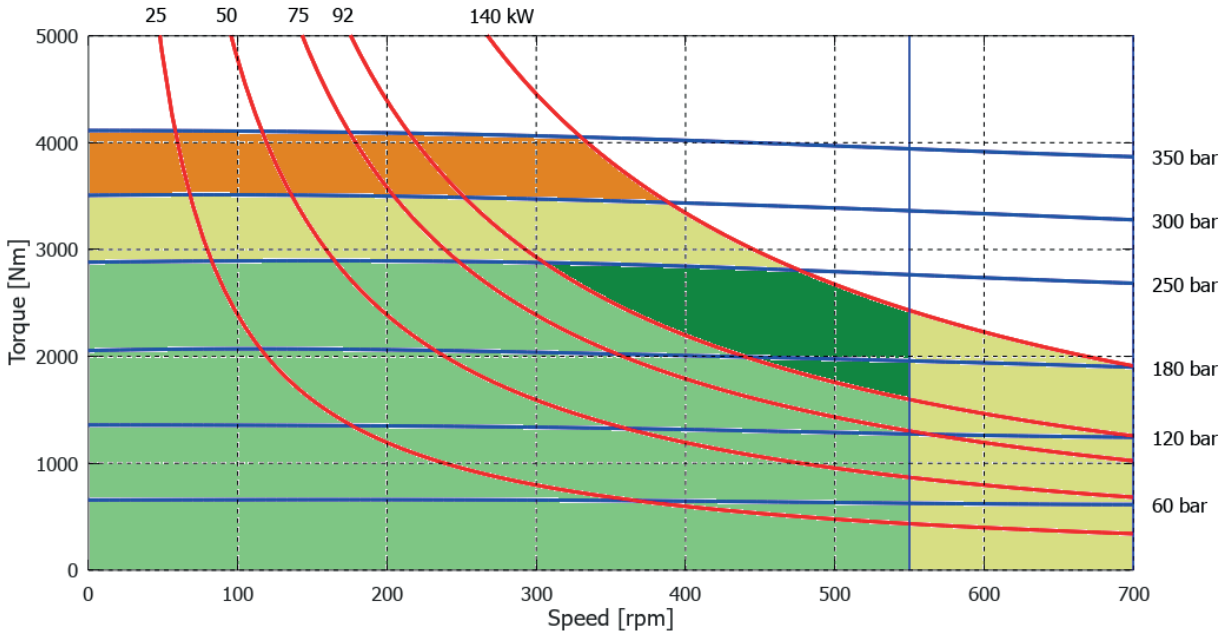
Peak operation: permitted for very short periods (3-5 seconds every 10-15 minutes)

The above diagrams are referring to the hydraulic motor working with a fluid in ideal conditions (viscosity at 40 cSt). In case the working temperature increases and viscosity reach values under the recommended values (see hydraulic fluid recommendations) flushing must be performed or ISO oil grade must be changed. The working temperature must not overcome 70 °C.

HC4 600



HC4 800



Continuous operation

Continuous operation with flushing or intermittent operation (see below for intermittent operation)

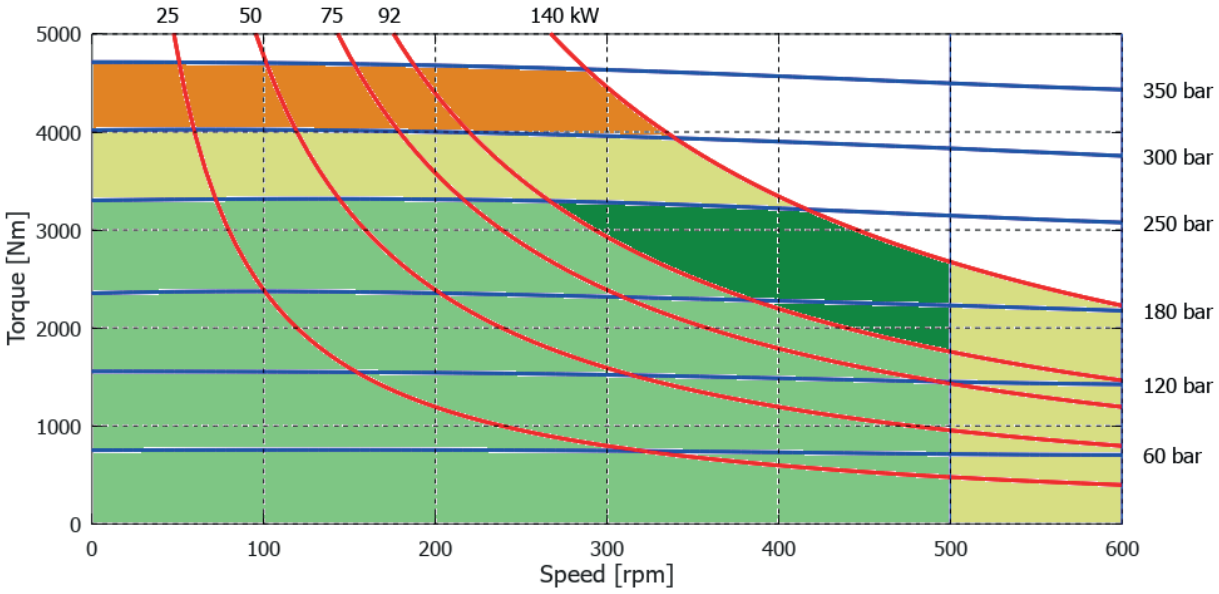
Intermittent operation: permitted for a 15% of duty cycle, for 3 minutes maximum period

Peak operation: permitted for very short periods (3-5 seconds every 10-15 minutes)

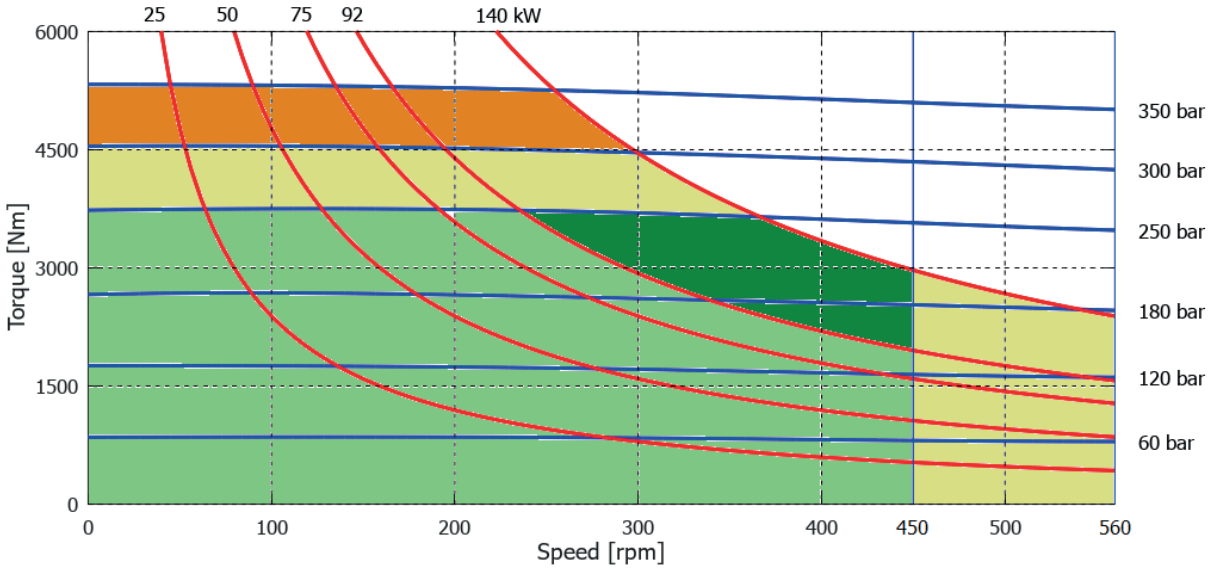
The above diagrams are referring to the hydraulic motor working with a fluid in ideal conditions (viscosity at 40 cSt). In case the working temperature increases and viscosity reach values under the recommended values (see hydraulic fluid recommendations) flushing must be performed or ISO oil grade must be changed. The working temperature must not overcome 70 °C.

HC4 - PERFORMANCE CURVES

HC4 900



HC4 1000



Continuous operation

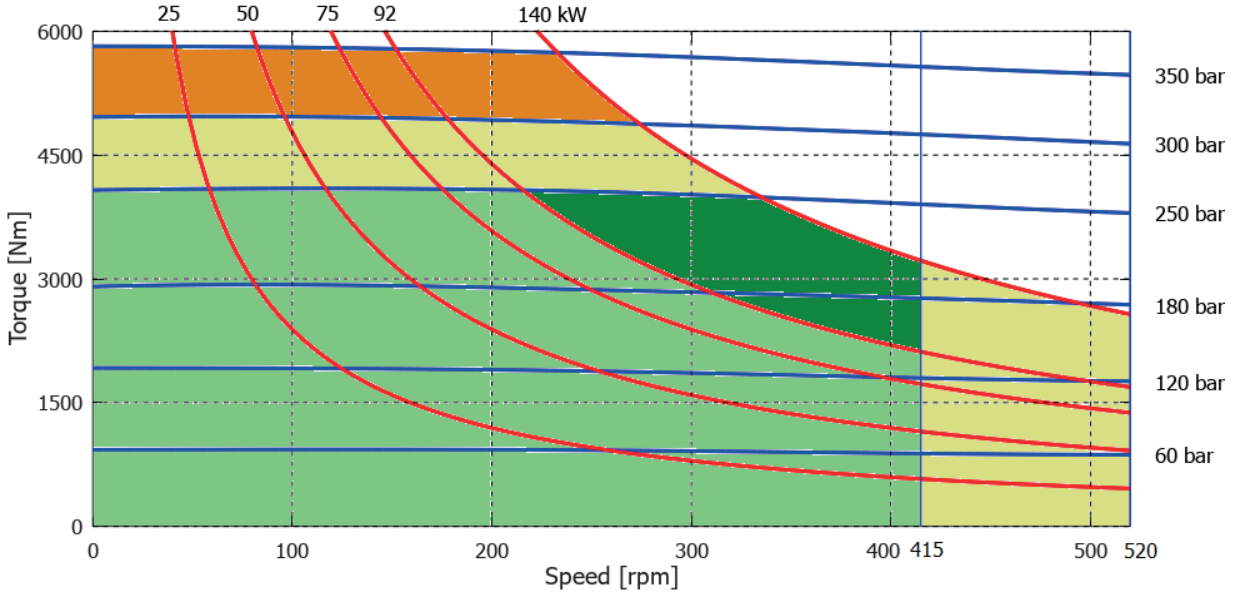
Continuous operation with flushing or intermittent operation (see below for intermittent operation)

Intermittent operation: permitted for a 15% of duty cycle, for 3 minutes maximum period

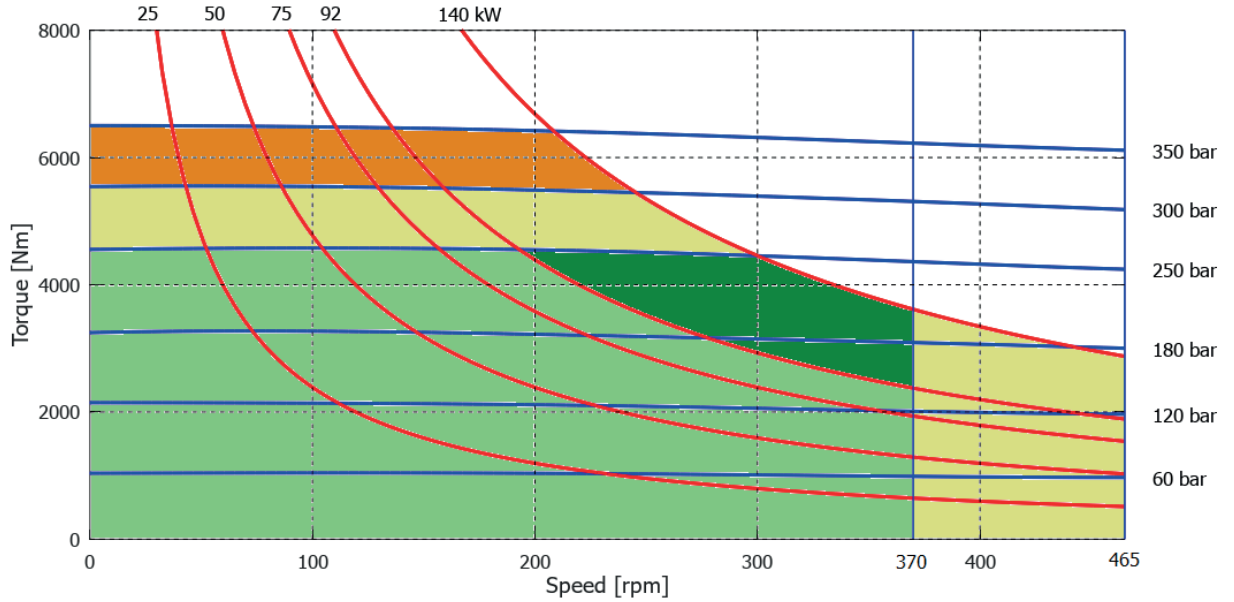
Peak operation: permitted for very short periods (3-5 seconds every 10-15 minutes)

The above diagrams are referring to the hydraulic motor working with a fluid in ideal conditions (viscosity at 40 cSt). In case the working temperature increases and viscosity reach values under the recommended values (see hydraulic fluid recommendations) flushing must be performed or ISO oil grade must be changed. The working temperature must not overcome 70 °C.

HC4 1100



HC4 1250



Continuous operation

Continuous operation with flushing or intermittent operation (see below for intermittent operation)

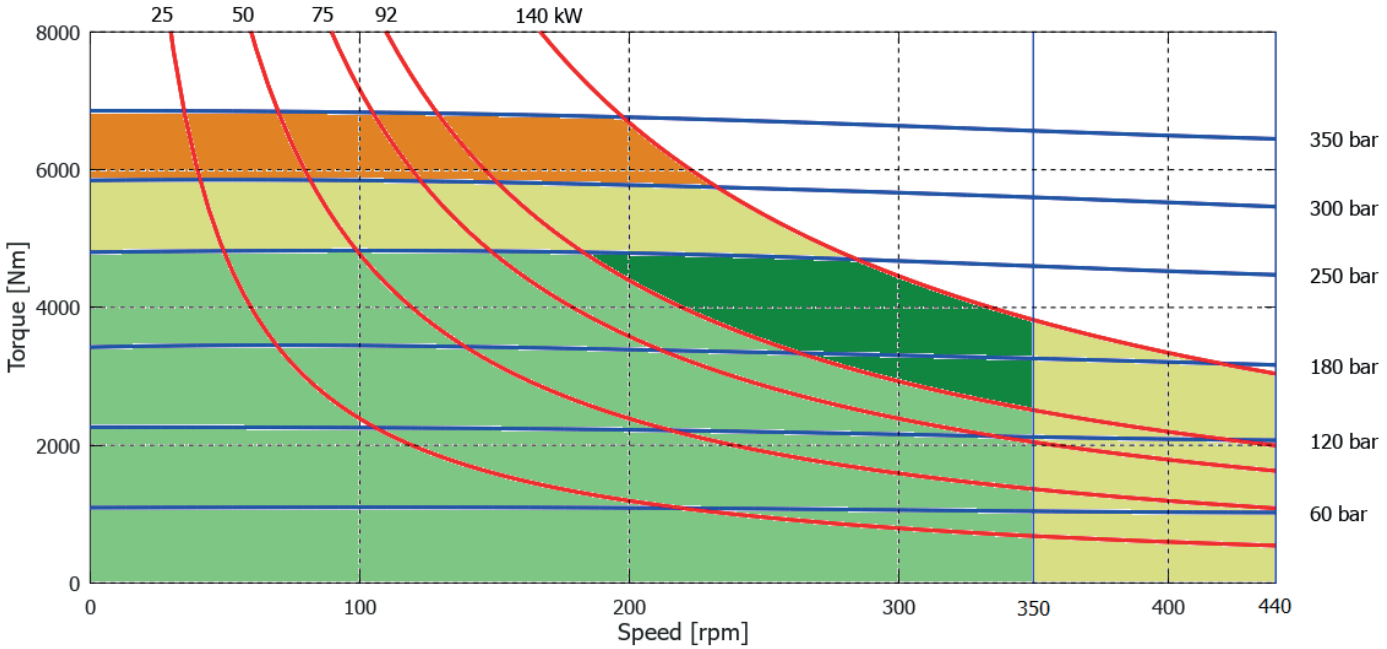
Intermittent operation: permitted for a 15% of duty cycle, for 3 minutes maximum period

Peak operation: permitted for very short periods (3-5 seconds every 10-15 minutes)

The above diagrams are referring to the hydraulic motor working with a fluid in ideal conditions (viscosity at 40 cSt). In case the working temperature increases and viscosity reach values under the recommended values (see hydraulic fluid recommendations) flushing must be performed or ISO oil grade must be changed. The working temperature must not overcome 70 °C.

HC4 - PERFORMANCE CURVES

HC4 1300



Continuous operation

Continuous operation with flushing or intermittent operation (see below for intermittent operation)

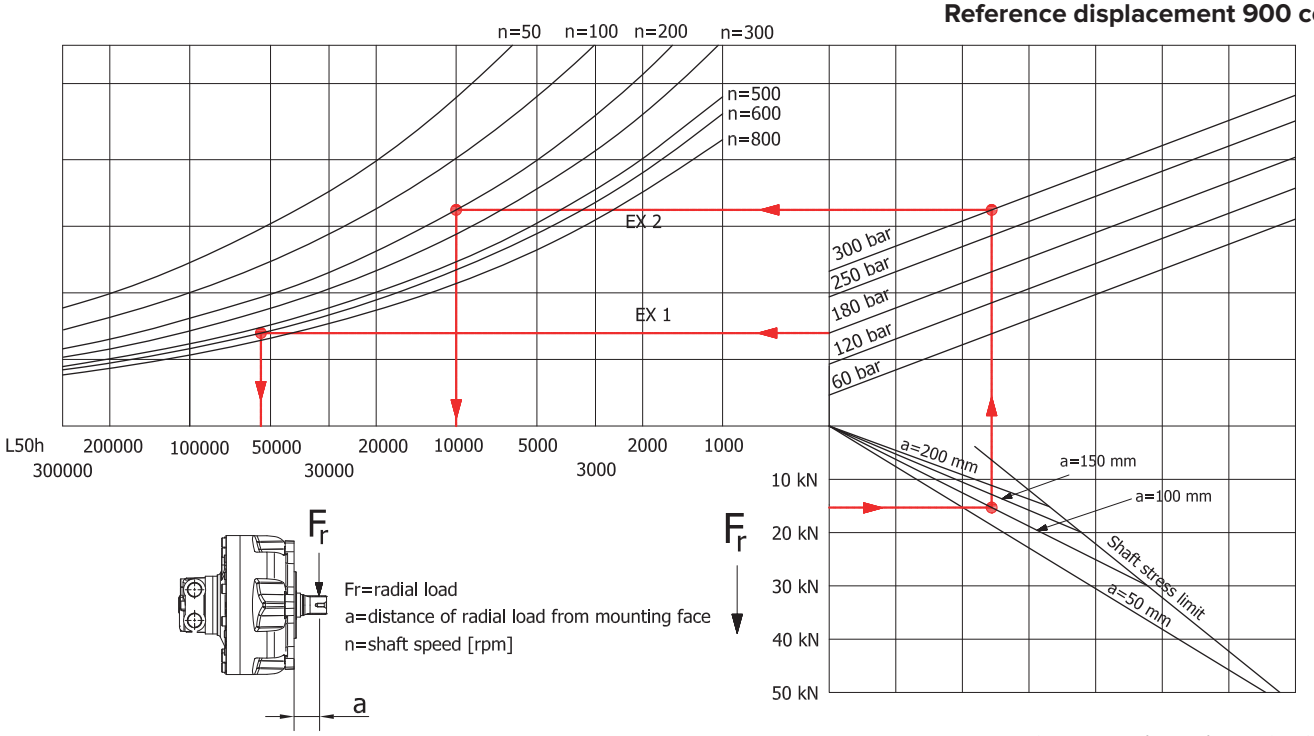
Intermittent operation: permitted for a 15% of duty cycle, for 3 minutes maximum period

Peak operation: permitted for very short periods (3-5 seconds every 10-15 minutes)

The above diagrams are referring to the hydraulic motor working with a fluid in ideal conditions (viscosity at 40 cSt). In case the working temperature increases and viscosity reach values under the recommended values (see hydraulic fluid recommendations) flushing must be performed or ISO oil grade must be changed. The working temperature must not overcome 70 °C.

BEARING LIFE

Reference displacement 900 cc



Fr=radial load
a=distance of radial load from mounting face
n=shaft speed [rpm]

Reference viscosity: 40 cSt

Example:

We suppose (EX1): p=180 [bar], n=600 [rpm]; we obtain an average lifetime of 55000 [h].
If we suppose (EX2): F_r=15 [kN], a=100 [mm], n=200 [rpm] and p=300 [bar] we obtain an average lifetime of 10000 [h].

The above data are referring to the HC4 series motors, displacement 900 cc.

HC4 - ORDERING CODE

HC4 - - - - - - - - - - - - SB -

DISPLACEMENT

400
500
600
800
900
1000
1100
1250
1300

SHAFT

A0 A1
A2 A3
A31

DISTRIBUTOR

D31B D36B
D310B D316B
D40 D47
D471 D416
D417 D417-RV
D418 D48-RV
D90

See pag. 94-101

TACHOMETER

TA
TB
TT1
TQ1
EST
EST30
EST31
EST33
J

See pag. 102-106

SPECIAL FEATURES

MP
SPSL
HPS
CCW
ND

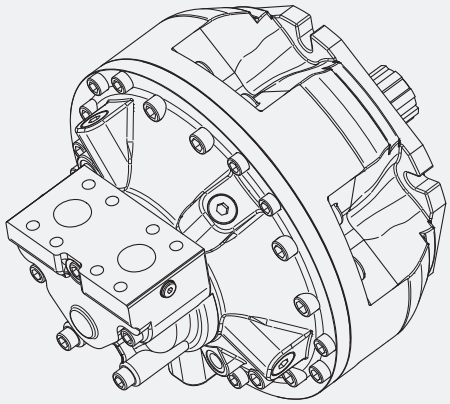
See pag. 23

Z - -
Italgroup internal code

SPLINE BILLET

SB17
SB23

See pag. 107-108



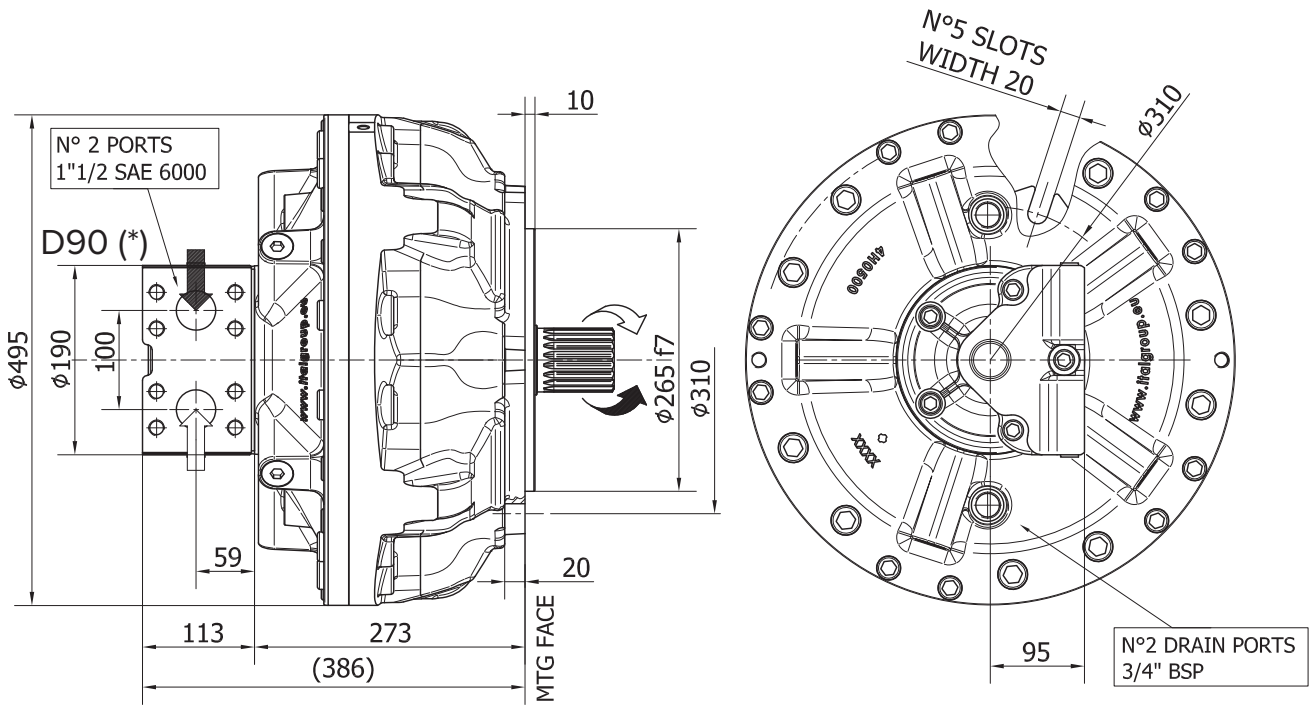
EXAMPLES:

HC4 1000 A3 D90 CCW
HC4 1100 A31 D90 EST31 MP CCW
HC4 500 A1 D47 HPS SB23

HC5

HC5 800-1000-1200-1300-1500-1600-1800-2000	Pag. 84 - 85
HC5 - PERFORMANCE CURVES	Pag. 86 - 90
HC5 - ORDERING CODE	Pag. 91

HC5



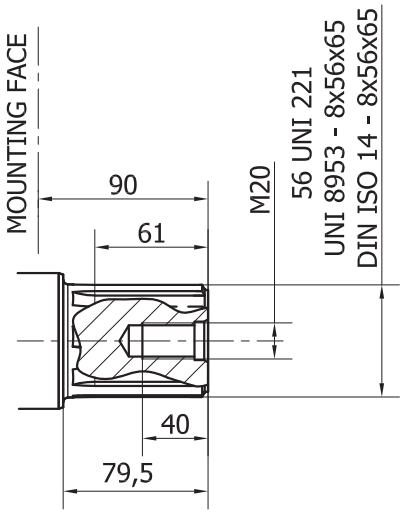
TECHNICAL DATA

		800	1000	1200	1300	1500	1600	1800	2000
DISPLACEMENT	[cc]	837	1060	1200	1308	1462	1625	1816	2010
SPECIFIC TORQUE	[Nm/bar]	13,3	16,9	19,1	20,8	23,3	25,9	28,3	31,3
MAX. CONT. PRESSURE	[bar]	250	250	250	250	250	250	250	250
HYDROSTATIC TEST PRESSURE	[bar]	420	420	420	420	420	420	420	420
MAX. CONT. SPEED	[rpm]	350	320	320	320	300	280	280	220
PEAK SPEED (***)	[rpm]	470	470	430	430	380	350	350	280
MAX. CONT. POWER (****)	[kW]	100	100	100	100	100	100	100	100
MAX. POWER	[kW]	150	150	150	150	150	150	150	150
MAX. CASE PRESSURE	[bar]	6	6	6	6	6	6	6	6
DRY WEIGHT	[kg]	190	190	190	190	190	190	190	190
TEMPERATURE RANGE (**)	[°C]	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70	-30÷70

- (*) The standard distributor (D90) is shown. Please refer to distributors section (pag. 94-101) for differents distributor interfaces.
- (**) Please refer to the hydraulic fluid recommendations (pag. 10-11).
- (***) Do not exceed maximum power.
- (****) For motor operation with a continuous duty cycle at maximum continuous power the flushing is usually required. For more information please contact our technical department.

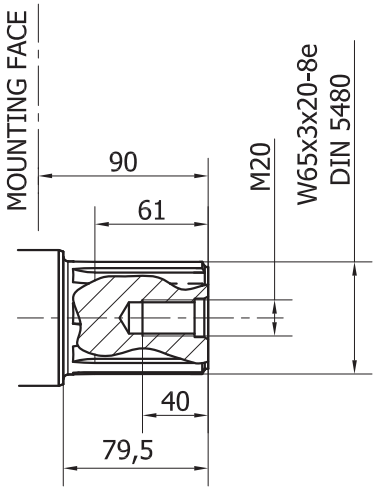
SHAFTS

A0



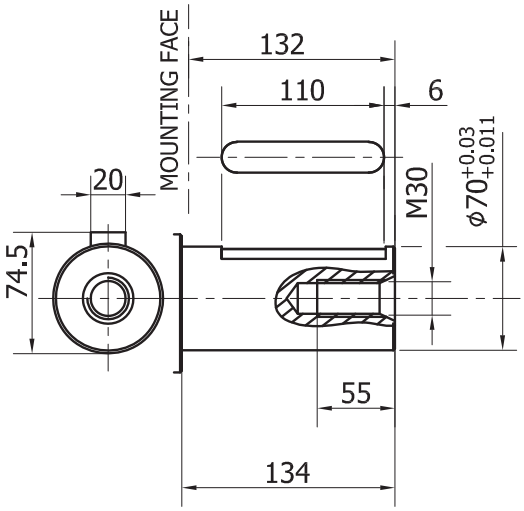
Available spline billet: SB17

A1

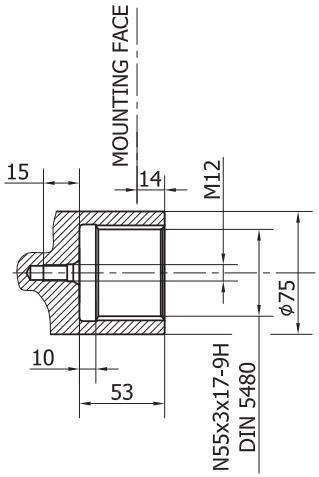


Available spline billet: SB23

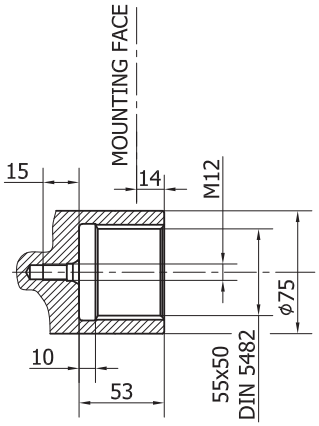
A2



A3

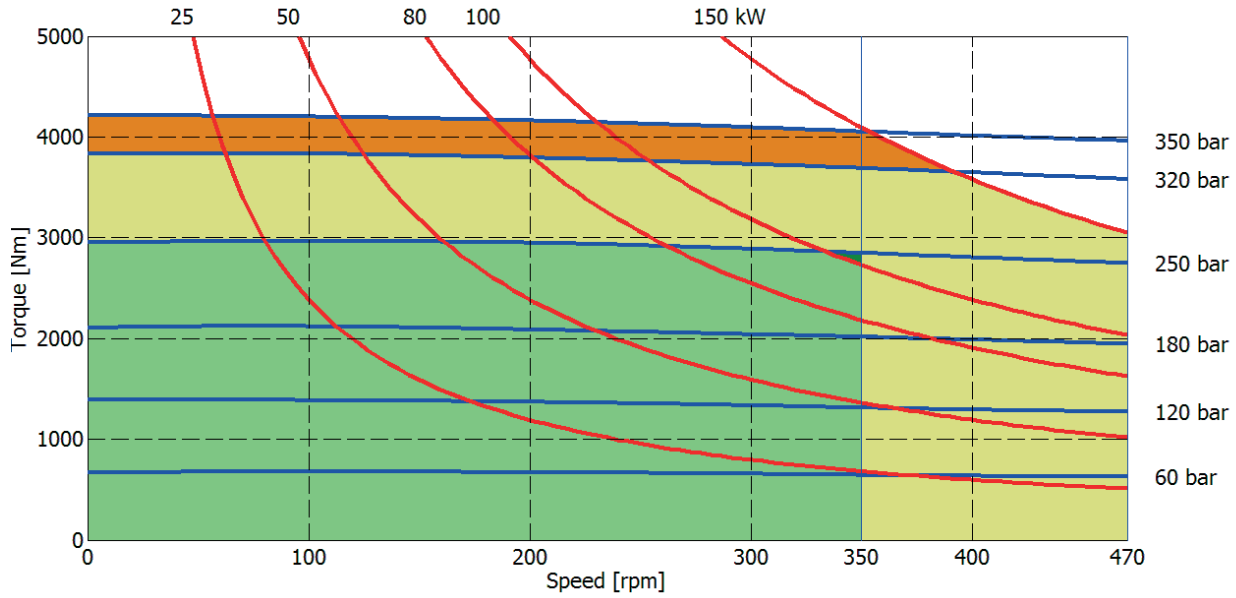


A31

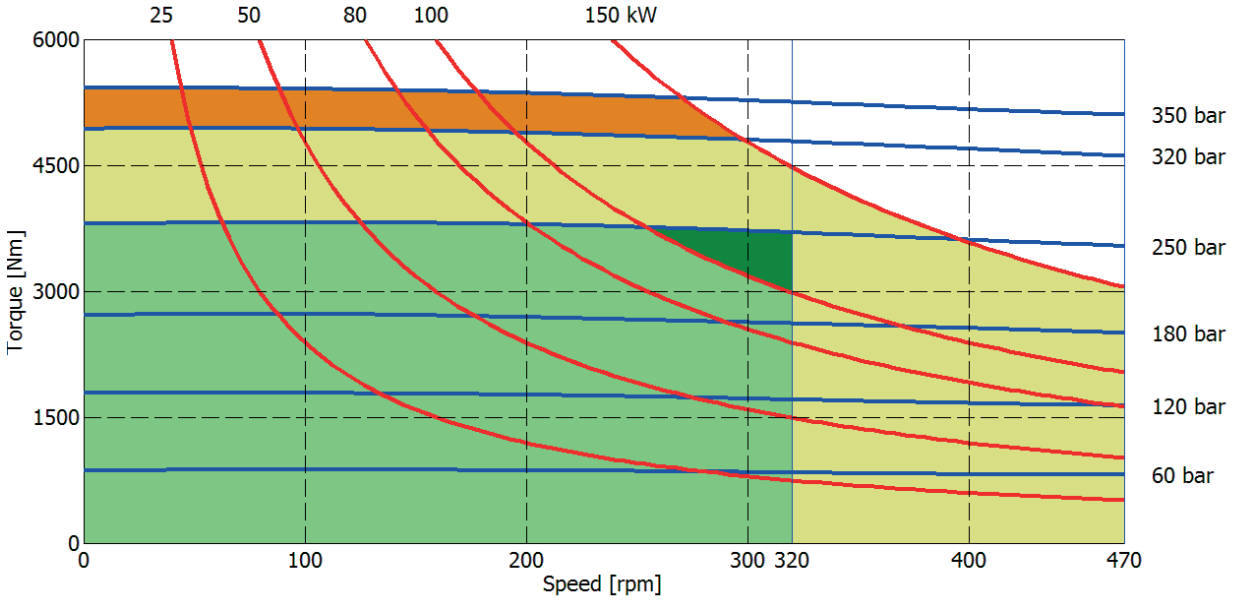


HC5 - PERFORMANCE CURVES

HC5 800



HC5 1000



Continuous operation

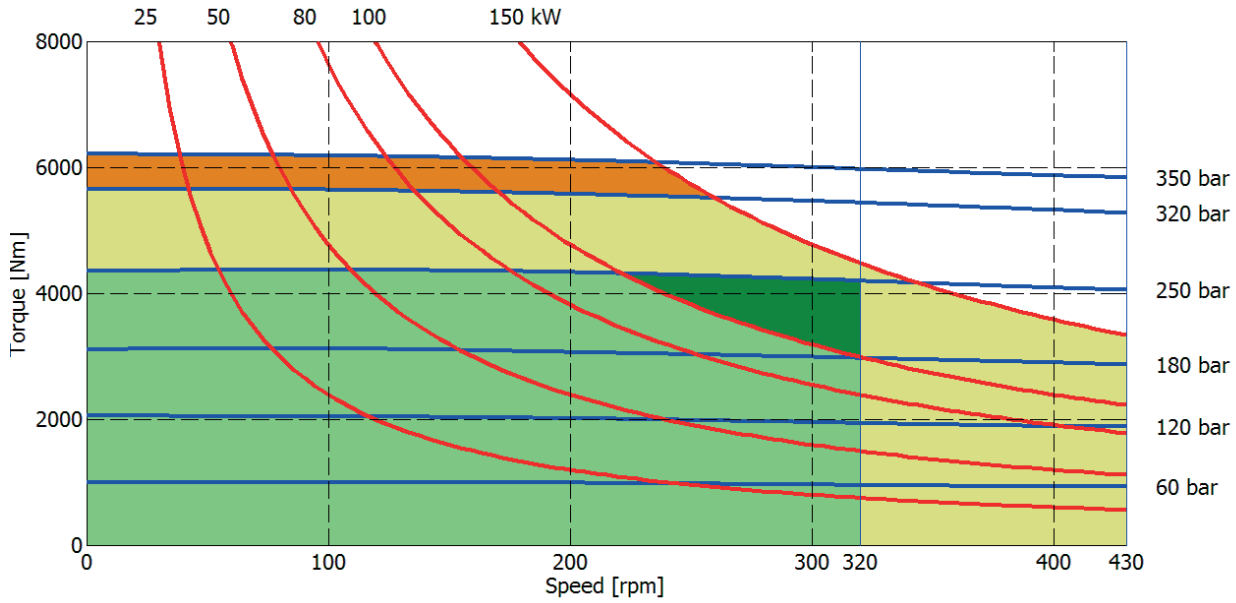
Continuous operation with flushing or intermittent operation (see below for intermittent operation)

Intermittent operation: permitted for a 15% of duty cycle, for 3 minutes maximum period

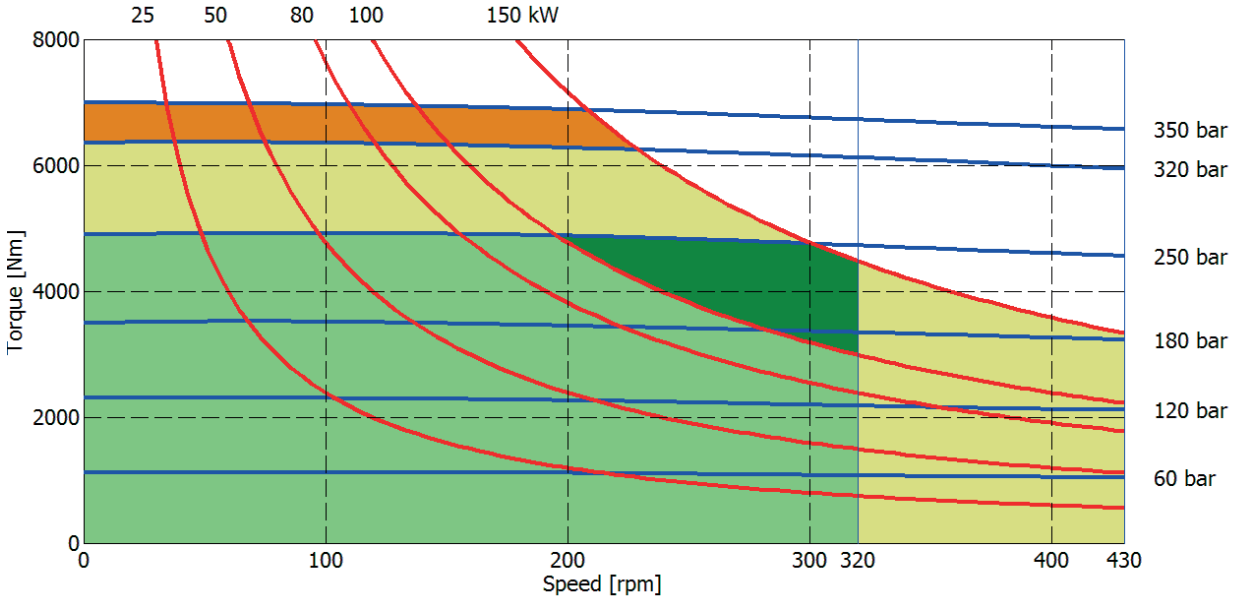
Peak operation: permitted for very short periods (3-5 seconds every 10-15 minutes)

The above diagrams are referring to the hydraulic motor working with a fluid in ideal conditions (viscosity at 40 cSt). In case the working temperature increases and viscosity reach values under the recommended values (see hydraulic fluid recommendations) flushing must be performed or ISO oil grade must be changed. The working temperature must not overcome 70 °C.

HC5 1200



HC5 1300



Continuous operation

Continuous operation with flushing or intermittent operation (see below for intermittent operation)

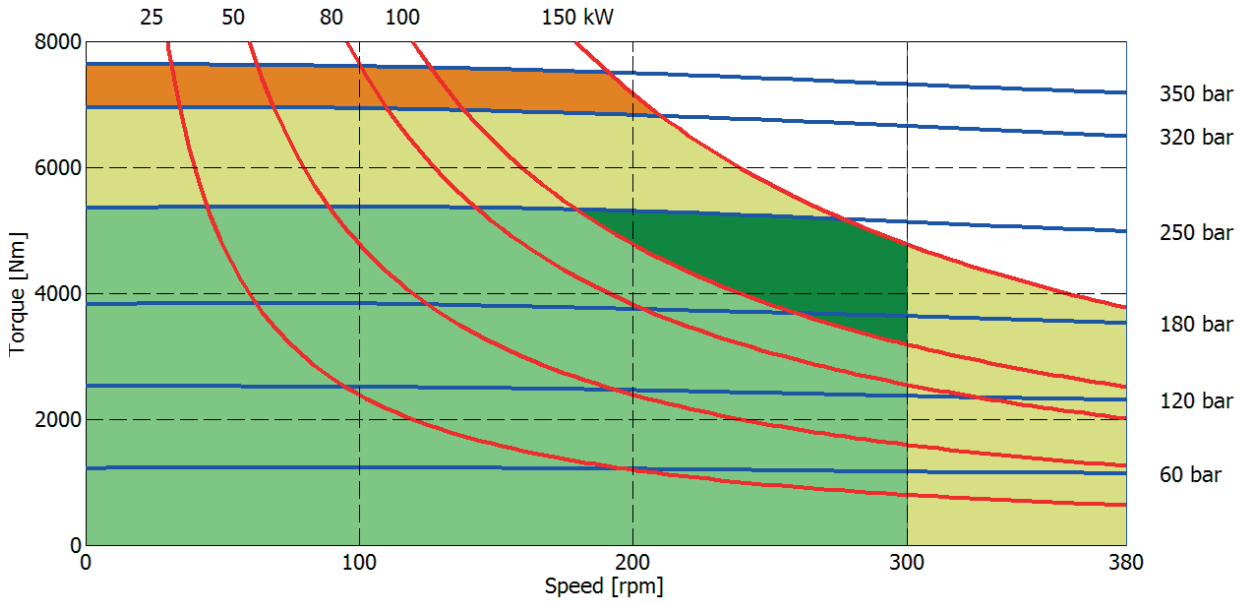
Intermittent operation: permitted for a 15% of duty cycle, for 3 minutes maximum period

Peak operation: permitted for very short periods (3-5 seconds every 10-15 minutes)

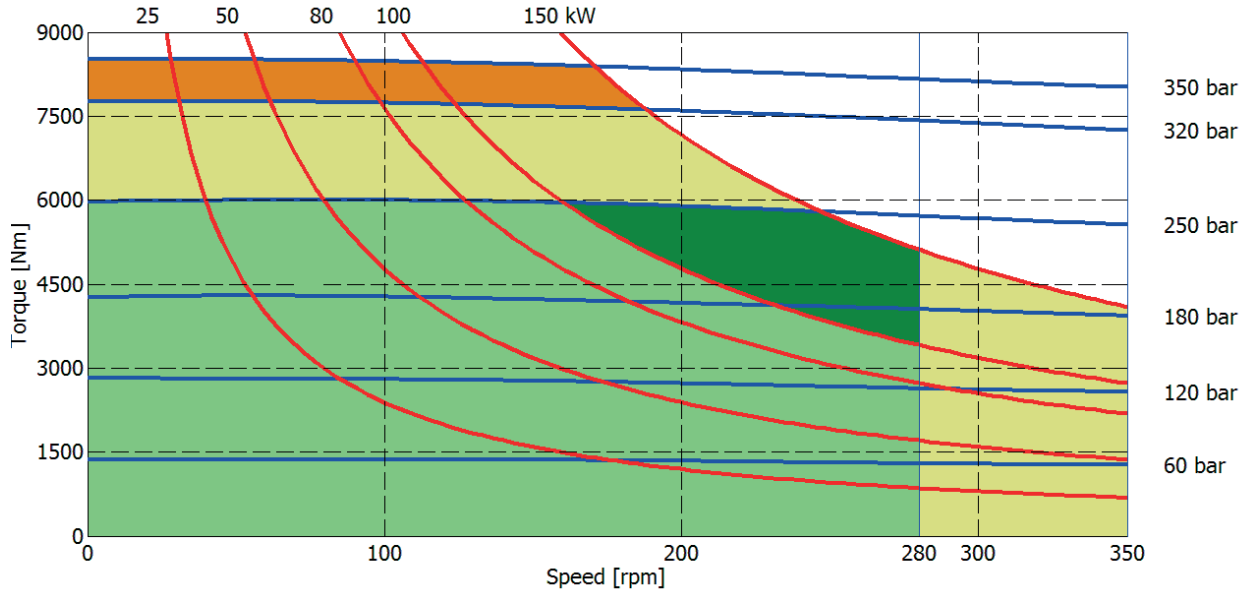
The above diagrams are referring to the hydraulic motor working with a fluid in ideal conditions (viscosity at 40 cSt). In case the working temperature increases and viscosity reach values under the recommended values (see hydraulic fluid recommendations) flushing must be performed or ISO oil grade must be changed. The working temperature must not overcome 70 °C.

HC5 - PERFORMANCE CURVES

HC5 1500



HC5 1600



Continuous operation

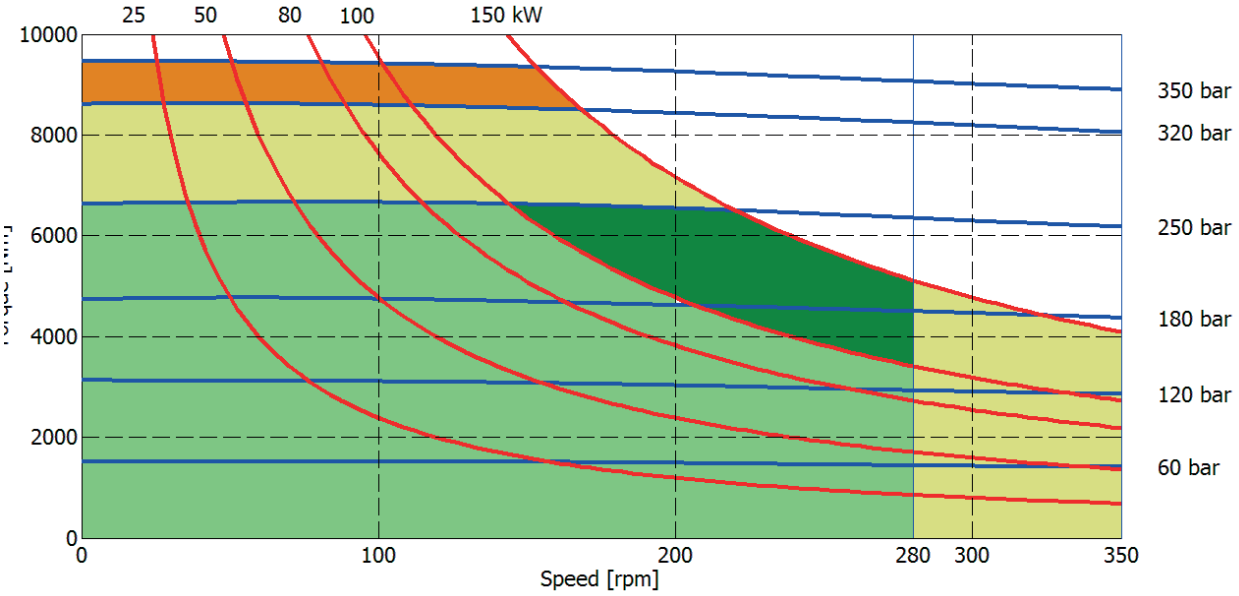
Continuous operation with flushing or intermittent operation (see below for intermittent operation)

Intermittent operation: permitted for a 15% of duty cycle, for 3 minutes maximum period

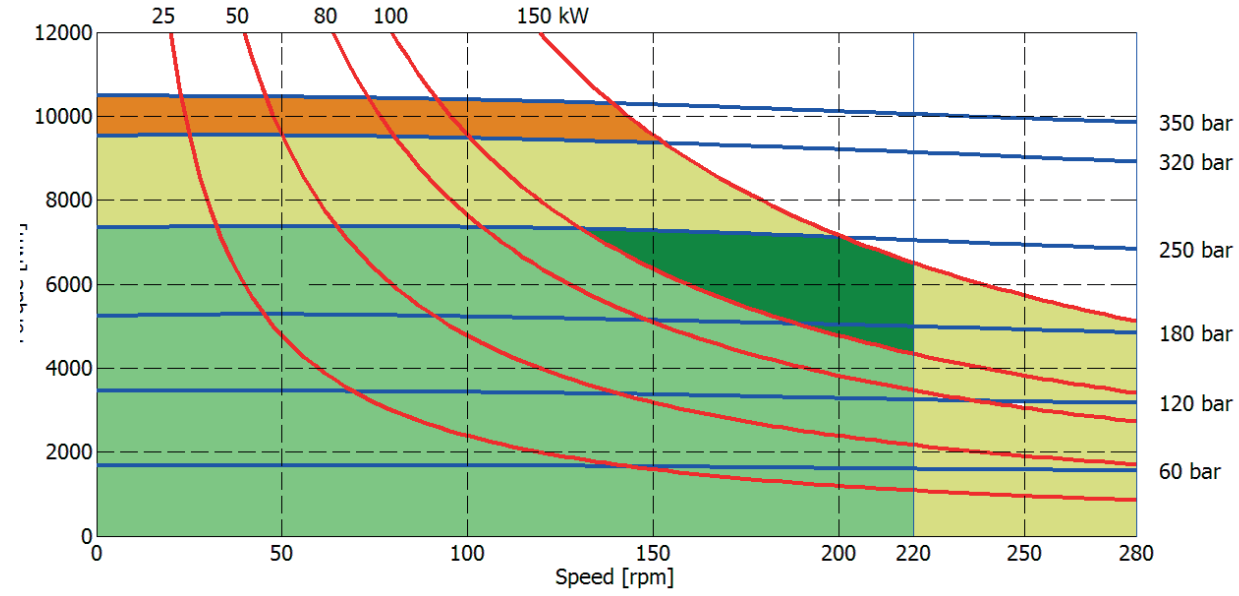
Peak operation: permitted for very short periods (3-5 seconds every 10-15 minutes)

The above diagrams are referring to the hydraulic motor working with a fluid in ideal conditions (viscosity at 40 cSt). In case the working temperature increases and viscosity reach values under the recommended values (see hydraulic fluid recommendations) flushing must be performed or ISO oil grade must be changed. The working temperature must not overcome 70 °C.

HC5 1800



HC5 2000



Continuous operation

Continuous operation with flushing or intermittent operation (see below for intermittent operation)

Intermittent operation: permitted for a 15% of duty cycle, for 3 minutes maximum period

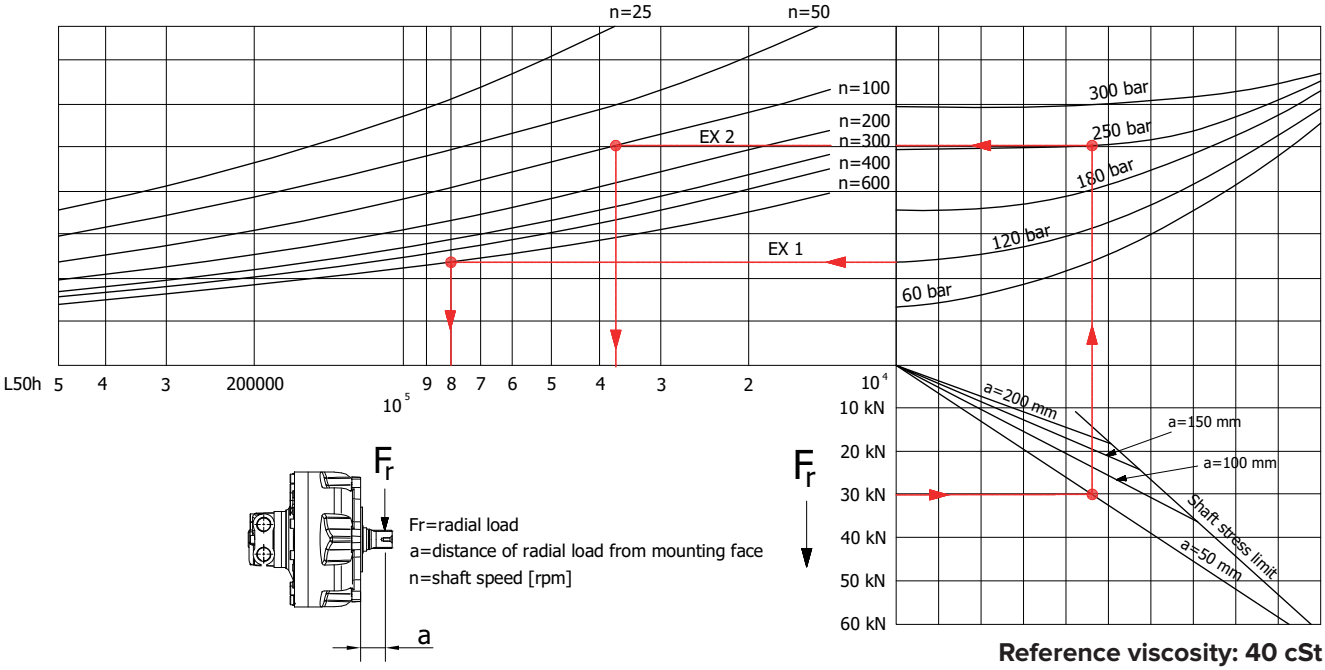
Peak operation: permitted for very short periods (3-5 seconds every 10-15 minutes)

The above diagrams are referring to the hydraulic motor working with a fluid in ideal conditions (viscosity at 40 cSt). In case the working temperature increases and viscosity reach values under the recommended values (see hydraulic fluid recommendations) flushing must be performed or ISO oil grade must be changed. The working temperature must not overcome 70 °C.

HC5 - PERFORMANCE CURVES

BEARING LIFE

Reference displacement 1300 cc



Reference viscosity: 40 cSt

Example:

We suppose (EX1): p=120 [bar], n=600 [rpm]; we obtain an average lifetime of 80000 [h].
If we suppose (EX2): F_r=30 [kN], a=50 [mm], n=100 [rpm] and p=250 [bar] we obtain an average lifetime of 38000 [h].

The above data are referring to the HC5 series motors, displacement 1300 cc.

HC5 - ORDERING CODE

HC5 - - - - - - - - - - - - - - SB -

DISPLACEMENT
- 700
- 800
- 1000
- 1200
- 1300
- 1500
- 1600
- 1800
- 2000

INTERCHANGEABILITY
- /G4 (*)
- /MR1100 (*)

SHAFT
- A0
- A1
- A2
- A3
- A31

DISTRIBUTOR
- D31B
- D36B
- D310B
- D316B
- D40
- D47
- D471
- D416
- D417
- D417-RV
- D418
- D48-RV
- D90

See pag. 94-101

TACHOMETER
- TA
- TB
- TT1
- TQ1
- EST
- EST30
- EST31
- EST33
- J

See pag. 102-106

SPECIAL FEATURES
- MP
- SPSL
- HPS
- CCW
- ND

See pag. 23

- Z - -

Italgroup internal code

SPLINE BILLET
- SB17
- SB23

See pag. 107-108

(*) For more information (drawings/technical data) please contact Italgroup S.r.l.

EXAMPLES:

HC5 1300 A1 D90 SB23
HC5 800 A2 D47
HC5 1000 A31 D90 TA

ACCESSORIES

MOTOR DISTRIBUTORS	Pag. 93 - 101
TACHOMETERS	Pag. 102 - 106
SPLINED BILLETS - SPLINED BARS	Pag. 107 - 108

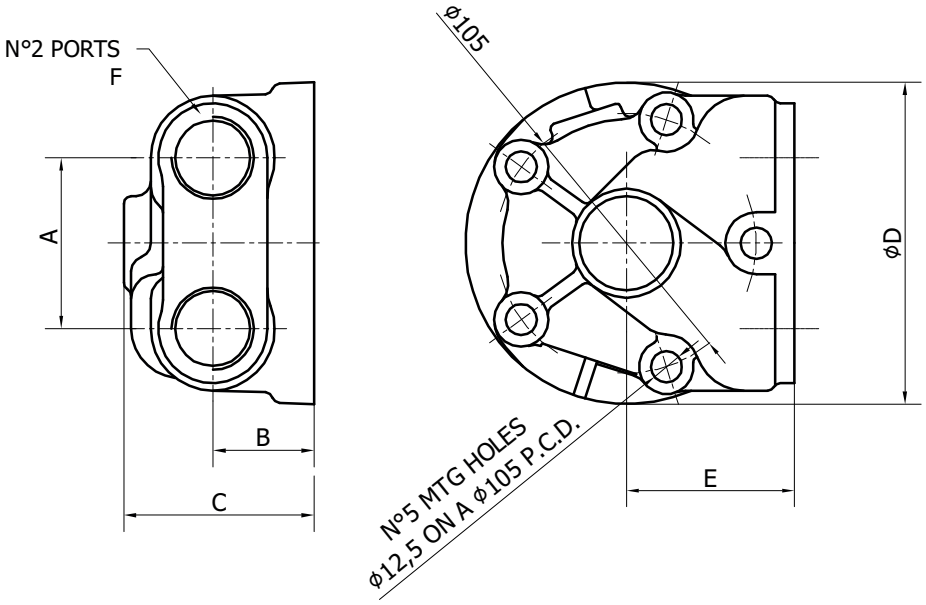
MOTOR DISTRIBUTORS

CODE	PORTS	VALVES - NOTES	PAG.
D31B	3/4” BSP		95
D36B	3/4” SAE		95
D310B	1” BSP		95
D316B	1” SAE		95
D40	1” BSP		95
D47	1” SAE 3000		95
D471	1” SAE 6000		95
D416	1” SAE		95
D417	1” SAE*	With integrated flushing/purge valve	96
D417-RV	1” SAE*	With integrated cross relief valve and flushing/purge valves	97
D418	1” SAE*	With integrated cross relief and no drain valves	98
D48-RV	1” SAE*	With integrated cross relief valves	99
D90	1”1/2 SAE 6000		95

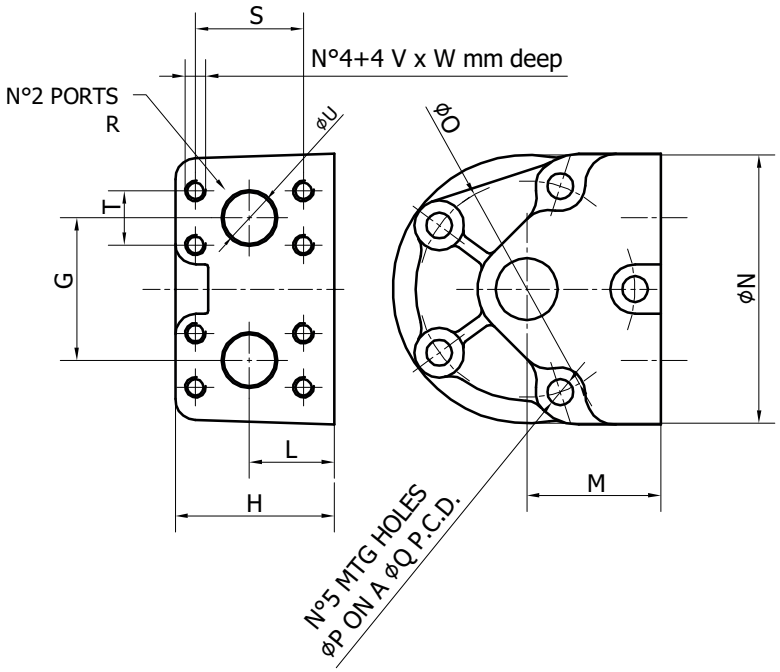
(*) also available with 1” BSP - Male ports (suffix “NIP1M” ; e.g. D417 NIP1M)

MOTOR DISTRIBUTORS

D40-D416-D31B-D310B-D36B-D316B



D47-D471-D90



		D31B	D36B	D310B	D316B	D40	D416	D47	D471	D90
A	[mm]	56	56	56	56	69	69			
B	[mm]	39	39	39	39	41	41			
C	[mm]	67	67	67	67	77	77			
D	[mm]	125	125	125	125	130	130			
E	[mm]	65	65	65	65	68	68			
F	[]	3/4" BSP	3/4" SAE	1" BSP	1" SAE	1" BSP	1" SAE			
G	[mm]							69	74	100
H	[mm]							77	77	113
L	[mm]							41	39	59
M	[mm]							65	65	95
N	[mm]							130	130	190
O	[mm]							105	105	149
P	[mm]							12,5	12,5	14,5
Q										
R	[]							1" SAE 3000	1" SAE 6000	1"1/2 SAE 6000
S	[mm]							52,4	57,2	79,4
T	[mm]							26,2	27,8	36,7
U	[mm]							25	26	40
V	[mm]							M10	M12	M16
W	[mm]							19	19	22

		D31B D36B	D310B D316B	D40 D47 D471 D416 D417 D417-RV D418 D48-RV	D90
MAX. CONT. FLOW	[l/min]	200	300	300	700
MAX. FLOW	[l/min]	400	400	400	1200
MAX. CONT. PRESSURE	[bar]	300	300	300	300
PEAK PRESSURE	[bar]	500	500	500	500
HC05		●	●	●	
HC1		●	●	●	
HC2		●	●	●	◒
HC3		●	●	●	◒
HC4		◒	◒	◒	●
HC5		◒	◒	◒	●

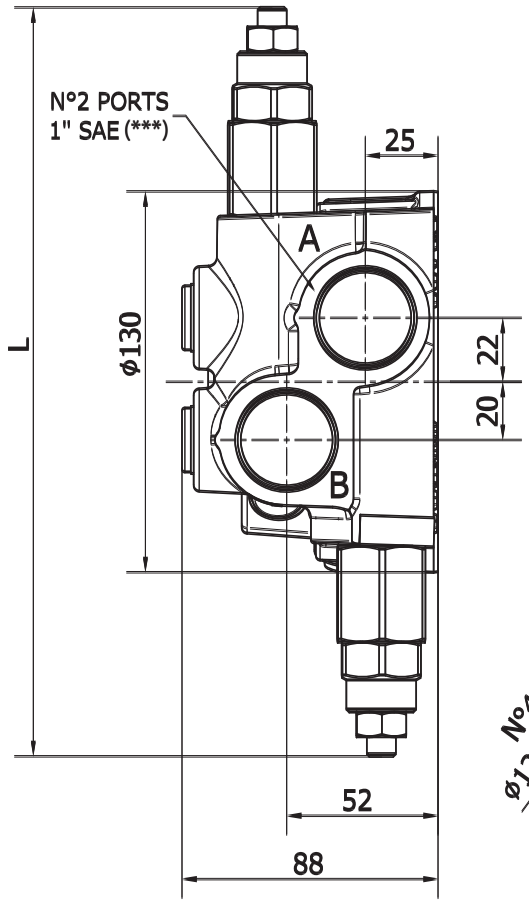
● Standard version

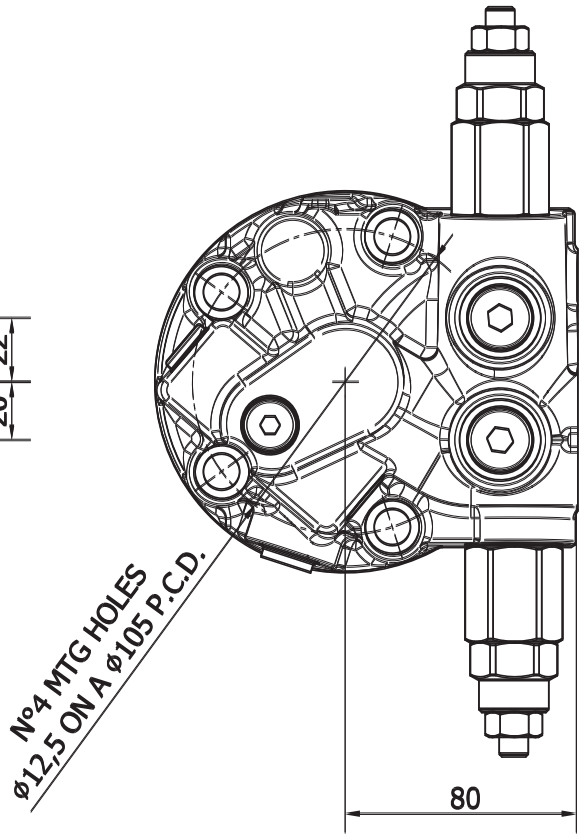
◒ Special version: available on request. Please contact Italgroup for more details

MOTOR DISTRIBUTORS

D418 (***)

With ***integrated no drain*** and ***relief*** valves

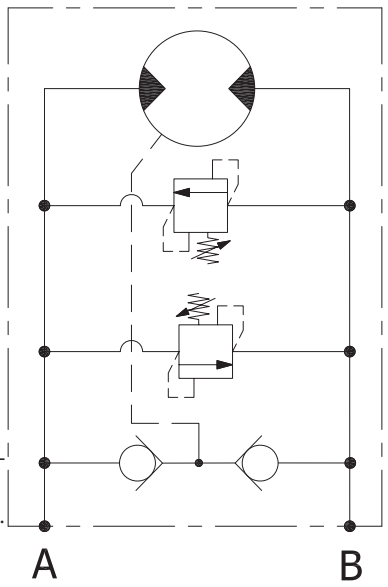




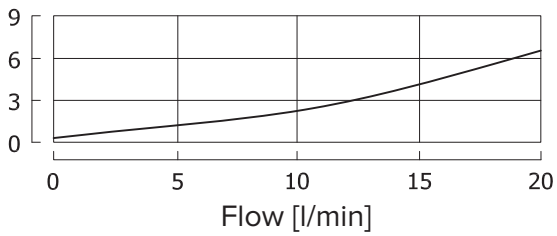
Refer to page 100 for cartridges technical data and performance curves

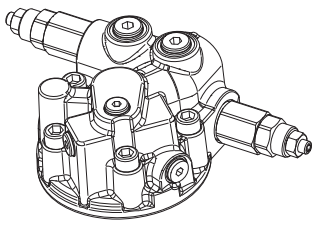
DISTRIBUTOR VERSION	RELIEF CARTRIDGE CODE	L (max value)
D417-RV-03 (*)	03	220
D417-RV-04 (**)	04	222

HYDRAULIC CIRCUIT



CHECK VALVE FLOW



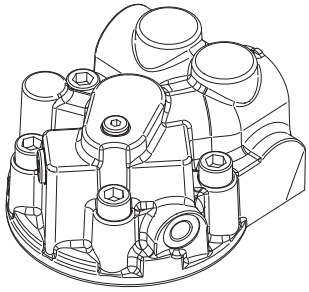


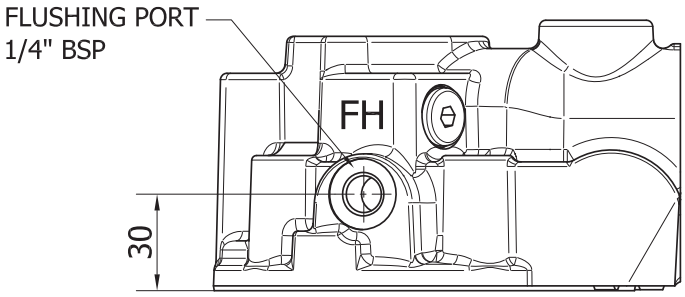
(*) Preferred type. Usually in stock. Also available with 1" BSP - male ports (suffix "NIP1M"; e.g. D417 NIP1M)
(**) Also available with 1" BSP - male ports (suffix "NIP1M"; e.g. D417 NIP1M)
(***) Motor with ND option is required for D418 fitting.

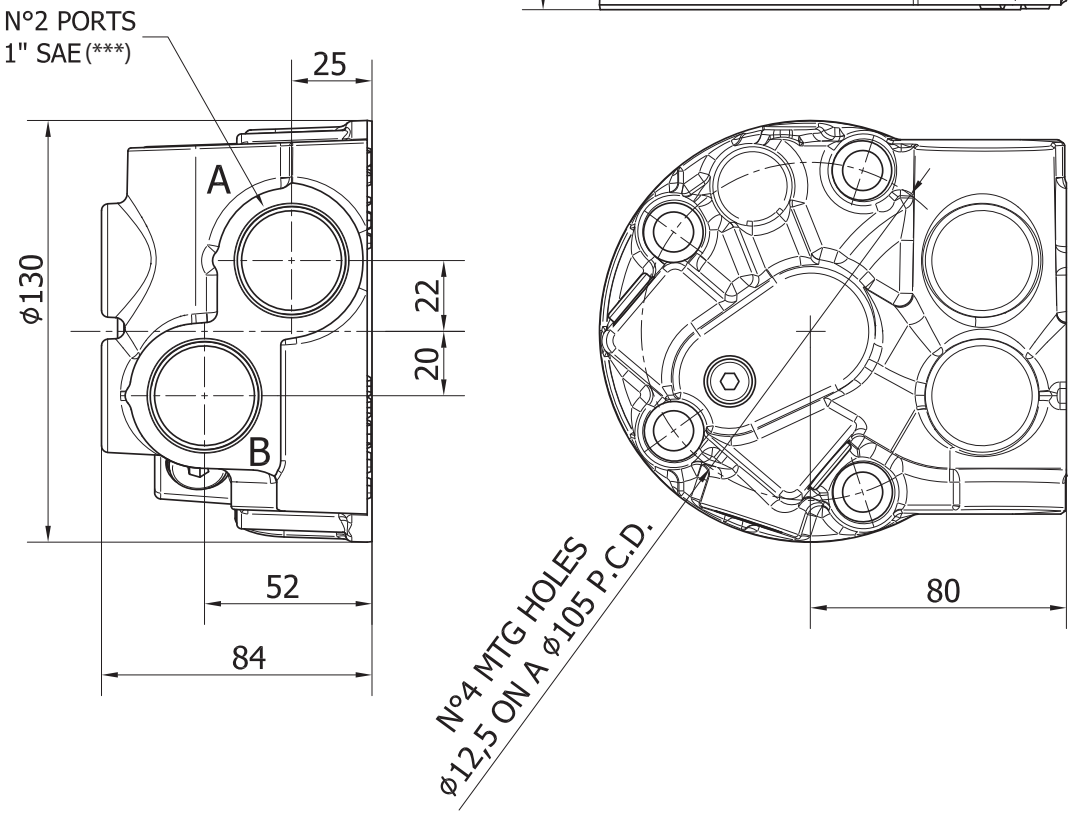
IMPORTANT NOTE
In case return line pressure is more than 6 bar continuous, HPS option is required.

D417 (*)

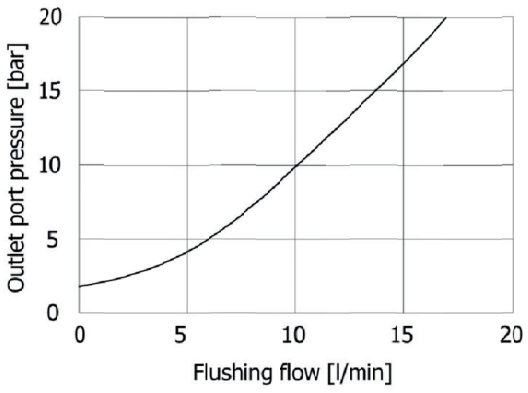
With
integrated flushing valve



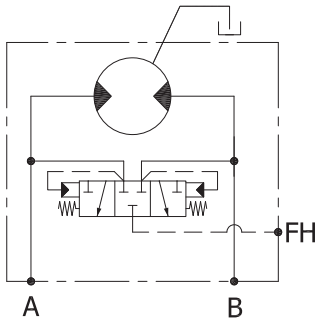




FLUSHING FLOW



HYDRAULIC CIRCUIT

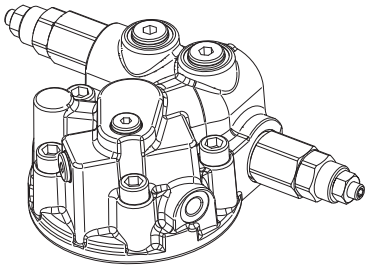


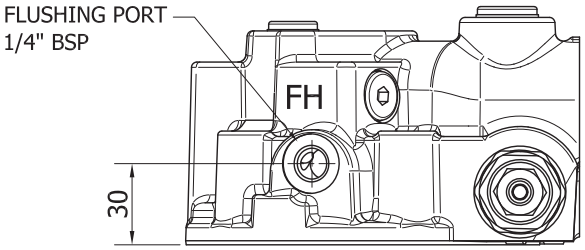
(*) Also available with 1” BSP - Male ports (suffix “NIP1M” ; e.g. D417 NIP1M)

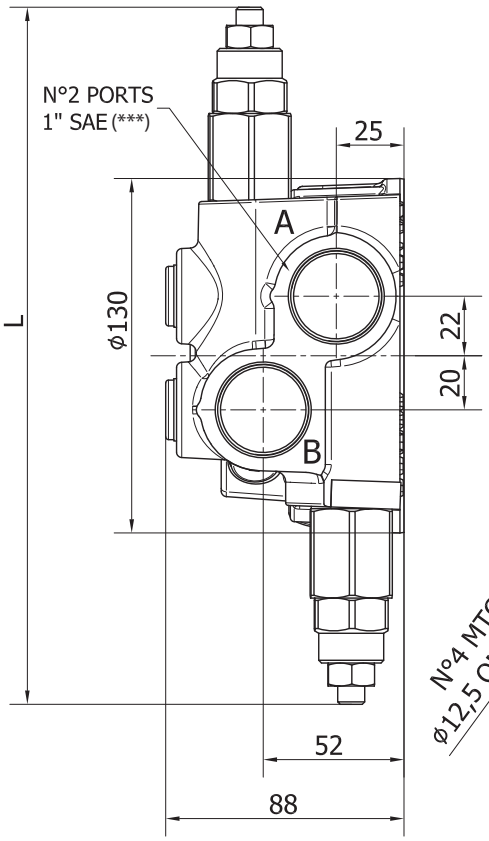
MOTOR DISTRIBUTORS

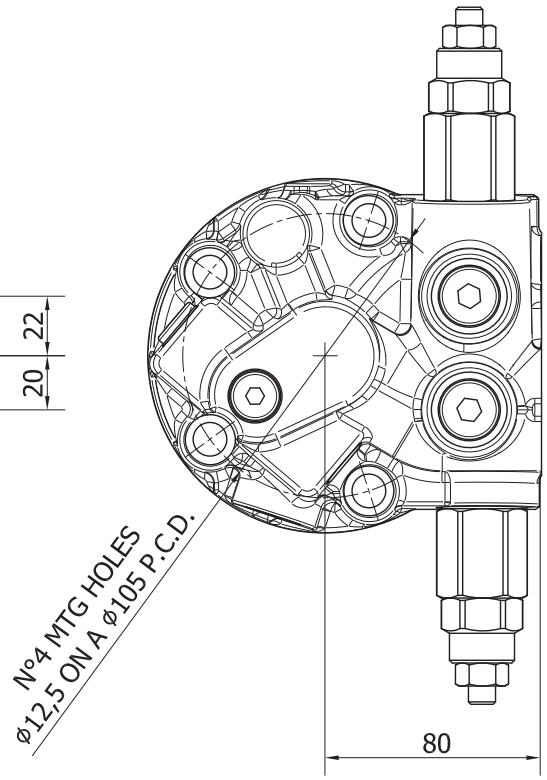
D417-RV

With ***integrated relief and flushing valve***

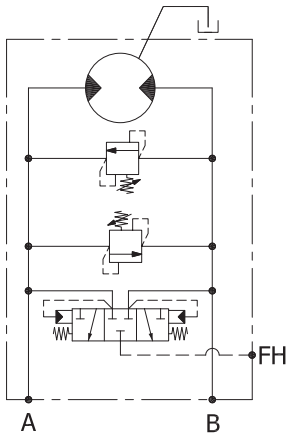






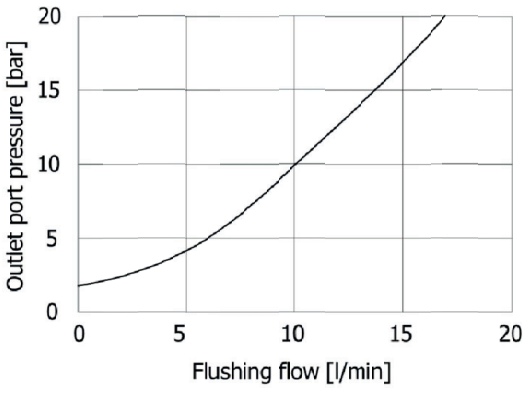


HYDRAULIC CIRCUIT



Refer to page 100 for cartridges technical data and performance curves

FLUSHING FLOW

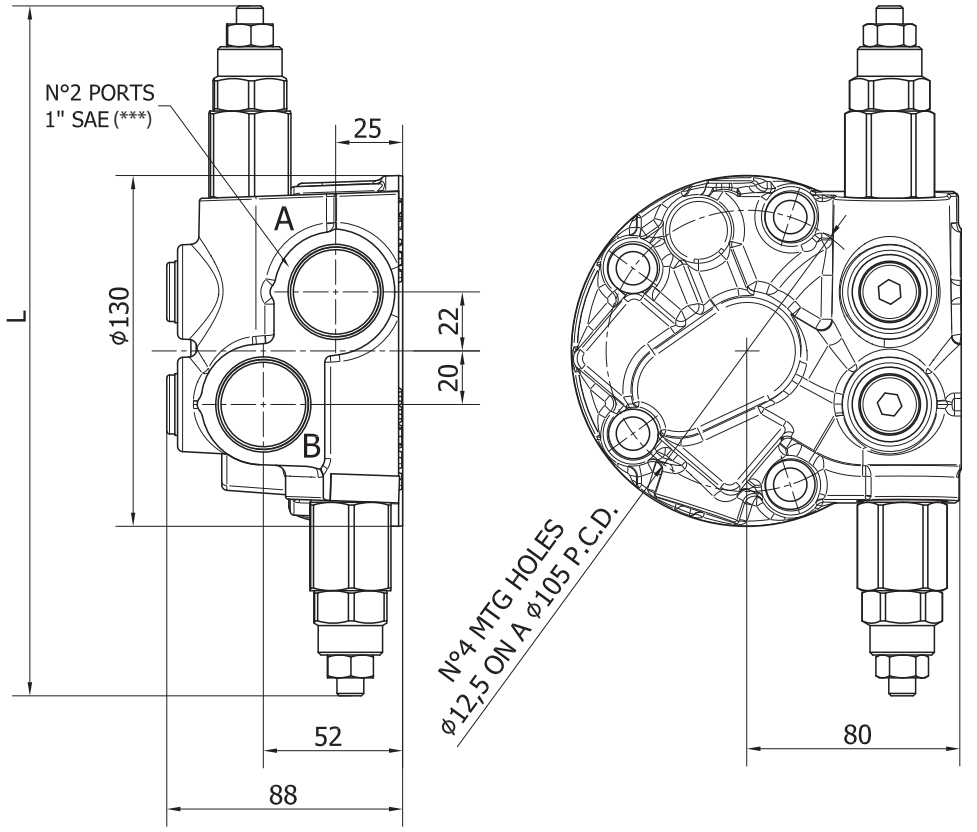


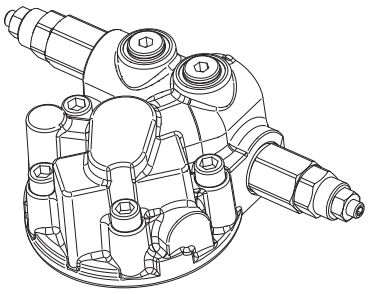
DISTRIBUTOR VERSION	RELIEF CARTRIDGE CODE	L (max value)
D417-RV-03 (*)	03	220
D417-RV-04 (**)	04	222

(*) Preferred type. Usually in stock. Also available with 1” BSP - male ports (suffix “NIP1M”; e.g. D417 NIP1M)
(**) Also available with 1” BSP - male ports (suffix “NIP1M”; e.g. D417 NIP1M)

D48-RV

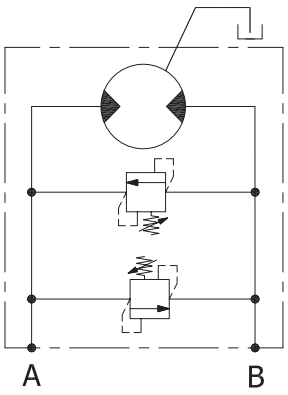
With
integrated relief valves





Refer to page 100 for cartridges technical data and performance curves

HYDRAULIC CIRCUIT



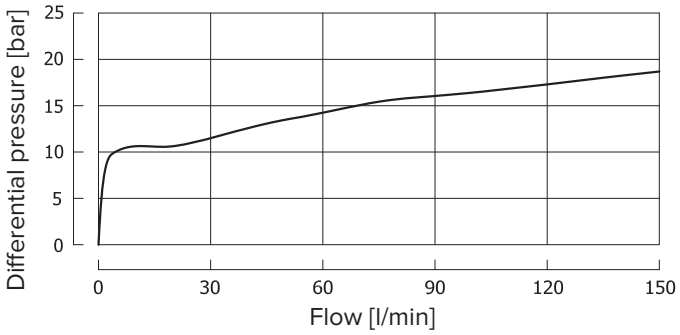
DISTRIBUTOR VERSION	RELIEF CARTRIDGE CODE	L (max value)
D48-RV-03 (*)	03	220
D48-RV-04 (**)	04	222

(*) Preferred type. Usually in stock. Also available with 1” BSP - male ports (suffix “NIP1M”; e.g. D417 NIP1M)
(**) Also available with 1” BSP - male ports (suffix “NIP1M”; e.g. D417 NIP1M)

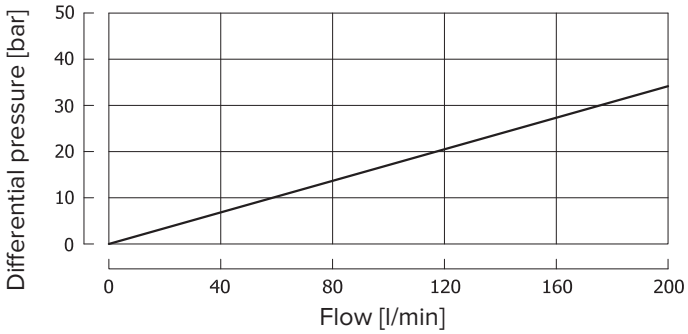
RELIEF CARTRIDGES DATA

RELIEF CARTRIDGE CODE	Nominal flow [l/min]	Pressure setting range [bar]	Standard pressure setting [bar]	Set screw pressure setting adjustmen [bar/revolution]
03	150	20-350	20	120
04	200	70-420	70	60

TYPICAL PRESSURE RISE - CARTRIDGE 03



TYPICAL PRESSURE RISE - CARTRIDGE 04

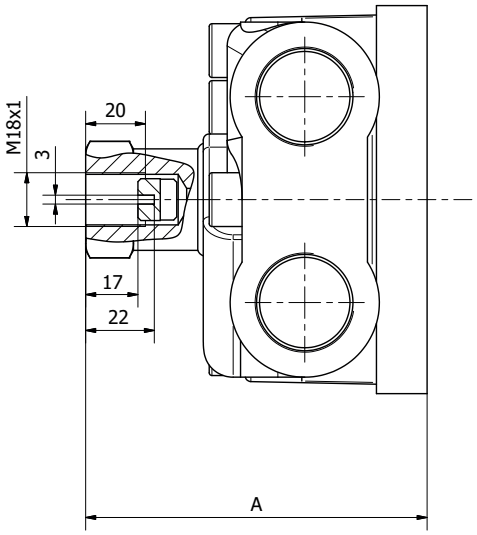


Rotate set screw clockwise
to increase relief setting

TACHOMETERS

TA

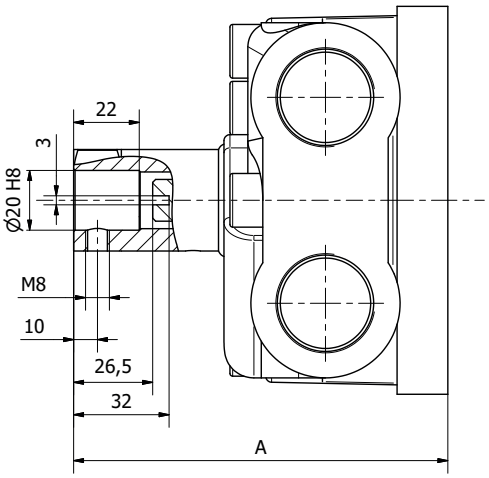
Tachometer predisposition



DISTRIBUTOR TYPE	A
D4XXX	114,5
D3XXX	102,5
D90	146

TB

Tachometer predisposition

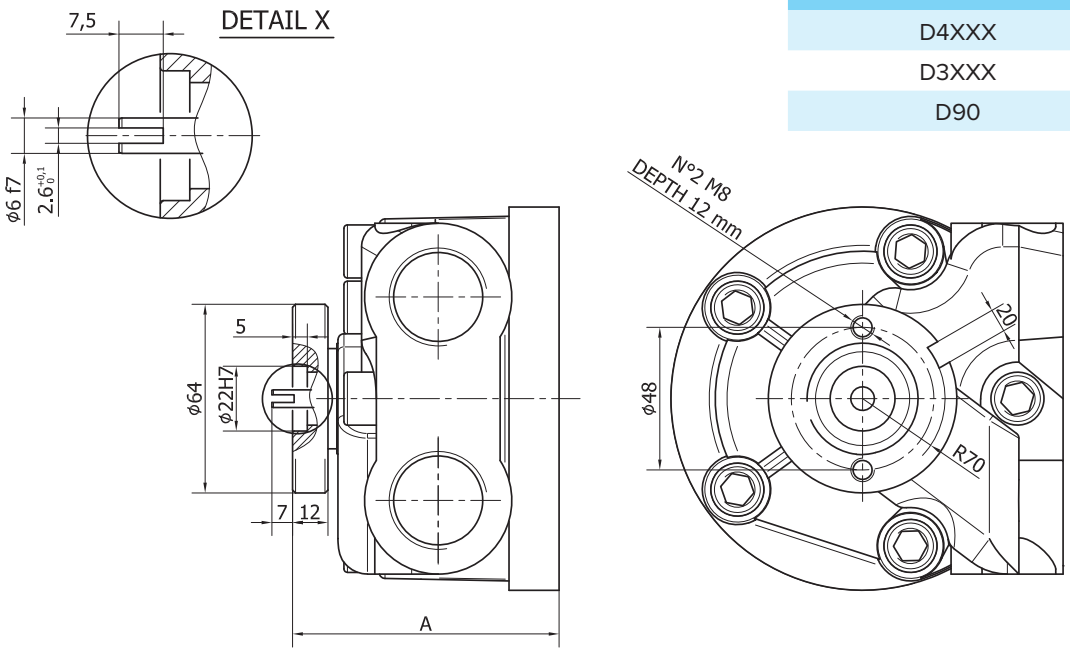


DISTRIBUTOR TYPE	A
D4XXX	125,5
D3XXX	113,5
D90	157

TT1

Tachometer predisposition

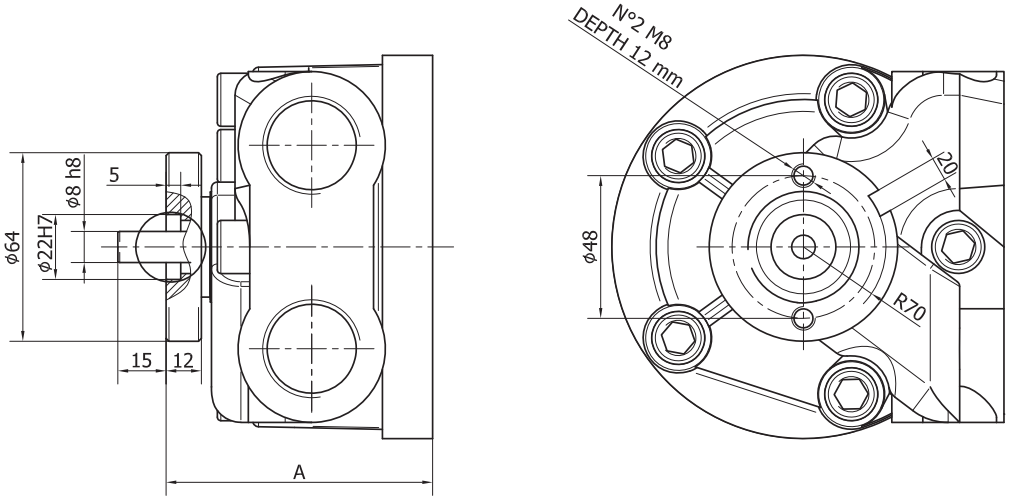
DISTRIBUTOR TYPE	A
D4XXX	90,5
D3XXX	78,5
D90	122



TQ1

Tachometer predisposition

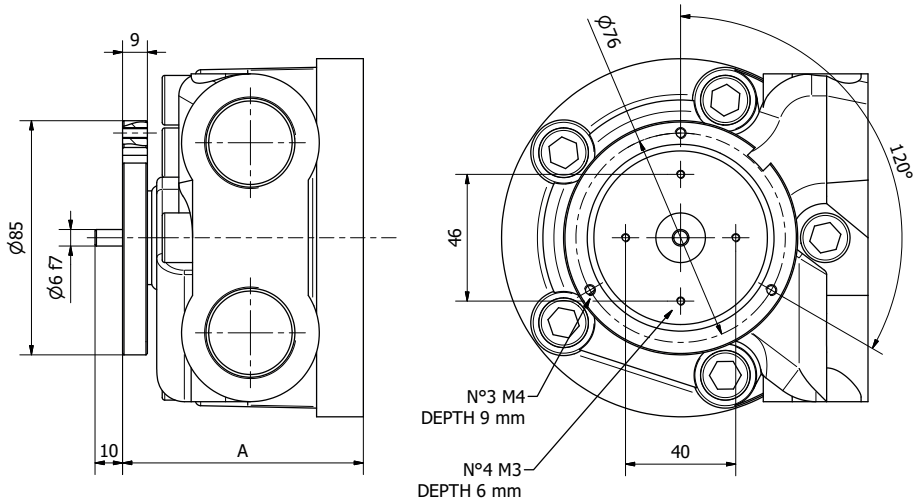
DISTRIBUTOR TYPE	A
D4XXX	90,5
D3XXX	78,5
D90	122



TACHOMETERS

EST

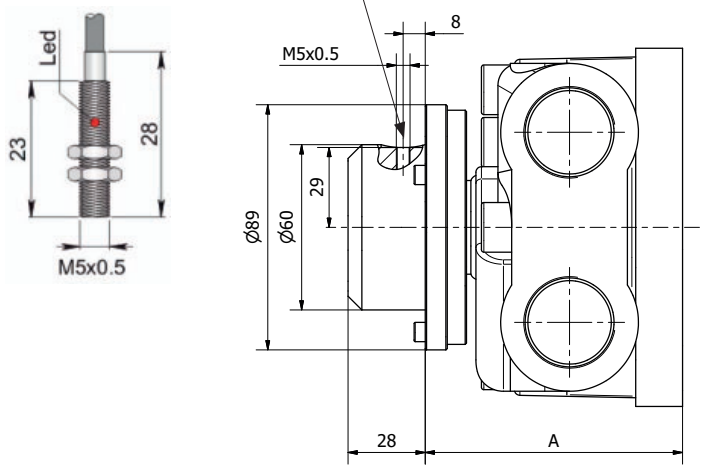
Tachometer predisposition



DISTRIBUTOR TYPE	A
D4XXX	87,5
D3XXX	75,5
D90	119

Sensor detail - supplied assembled

EST 30 - EST30/28 - EST30/32



DISTRIBUTOR TYPE	A
D4XXX	93,5
D3XXX	81,5
D90	125

EST 30 ELECTRIC DATA (**)	
POWER SUPPLY	10 - 30 VDC
IMPULSE / REV	30
PROTECTION DEGREE	IP67
OUTPUT	NPN / PNP (*)

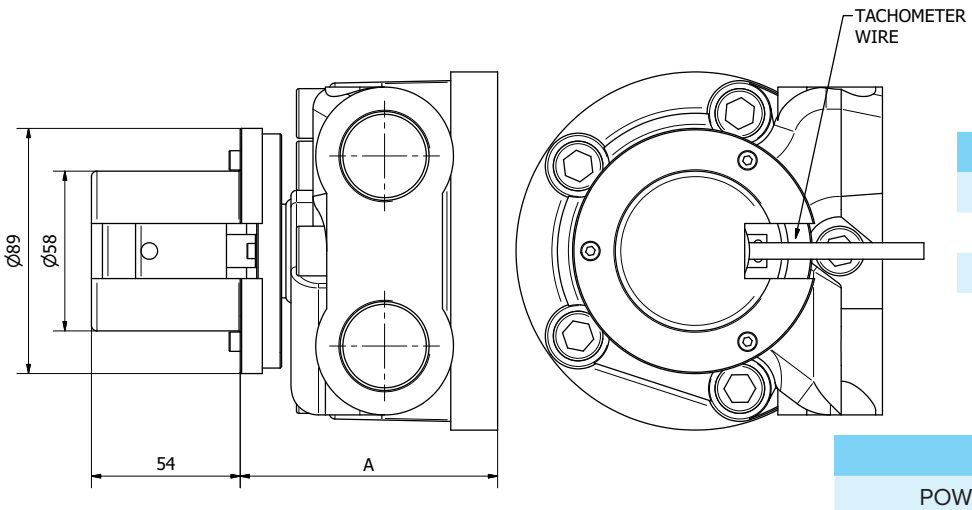
EST 30/28 ELECTRIC DATA	
POWER SUPPLY	10 - 30 VDC
IMPULSE / REV	28
PROTECTION DEGREE	IP67
OUTPUT	NPN / PNP (*)

EST 30/32 ELECTRIC DATA	
POWER SUPPLY	10 - 30 VDC
IMPULSE / REV	32
PROTECTION DEGREE	IP67
OUTPUT	NPN / PNP (*)

(**) Preferred type. Usually in stock.

NPN supplied as standard
PNP version must be specified
(e.g. EST30 PNP)

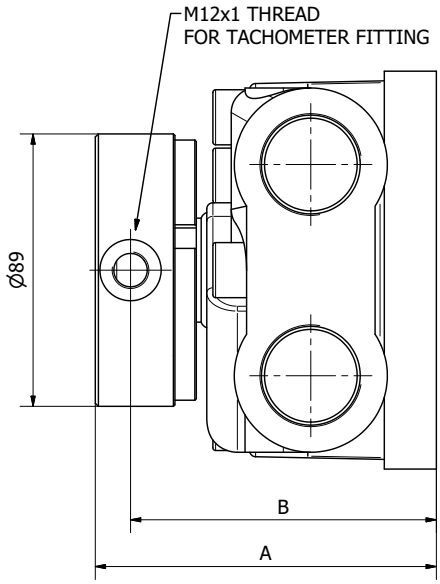
EST 31 (encoder included)



DISTRIBUTOR TYPE	A
D4XXX	93,5
D3XXX	81,5
D90	125

EST 31 ELECTRIC DATA	
POWER SUPPLY	8 - 24 VDC
IMPULSE / REV	500
PROTECTION DEGREE	IP65
OUTPUT	PUSH-PULL

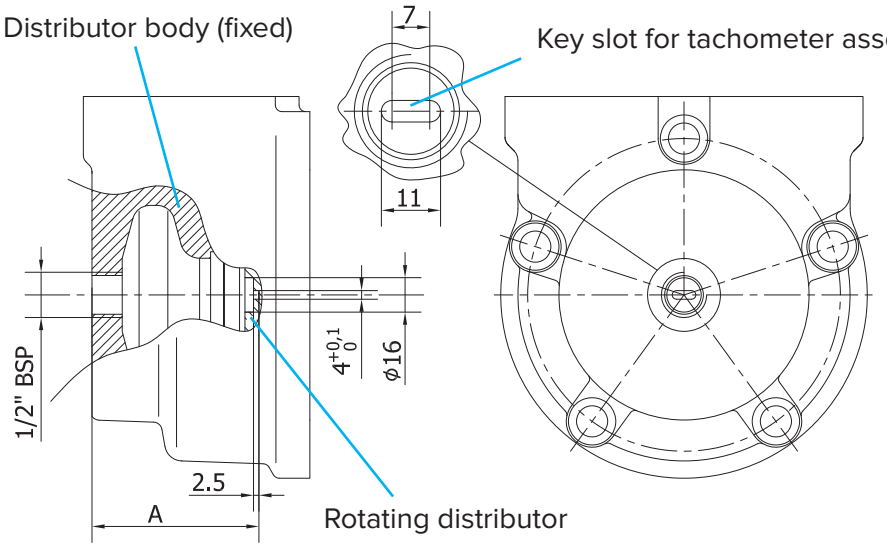
EST 33 (sensor not included)



DISTRIBUTOR TYPE	A	B
D4XXX	99,5	88
D3XXX	87,5	76
D90	131	119,5

TACHOMETERS

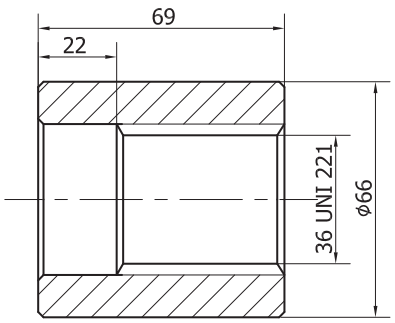
J Tachometer predisposition



DISTRIBUTOR TYPE	A
D4XXX	57,4
D3XXX	45,4
D90	81,5

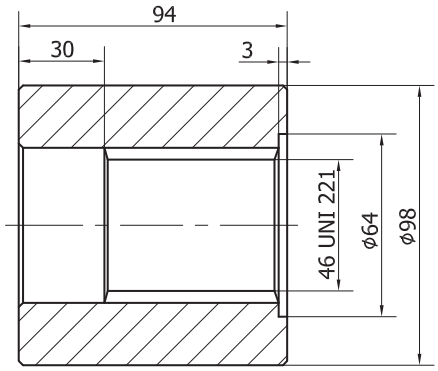
SPLINED BILLETS

SB3



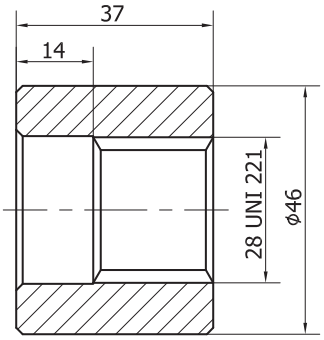
For: HC2 A0
HC2/S2 A0
HC3 A0
HC3/G2 A0

SB5



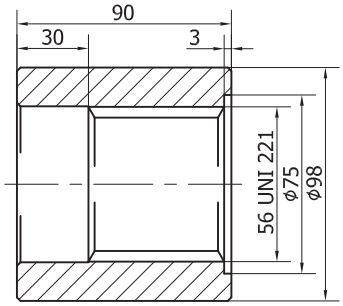
For: HC2 A01
HC2/S2 A0
HC3 A0
HC3/G2 A0

SB14



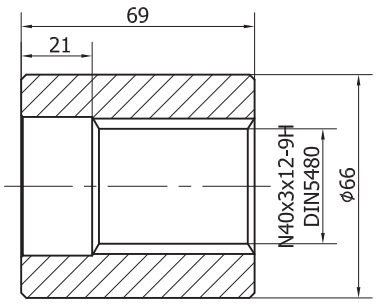
For: HC05 A0
HC1 A0

SB17



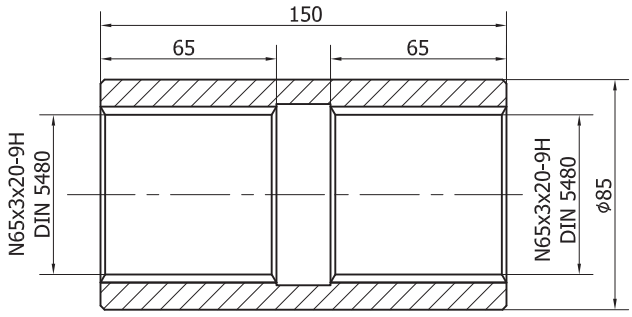
For: HC3/G4 A0
HC4 A0
HC5 A0
HC5/G4 A0

SB22



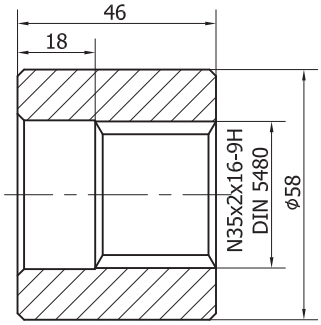
For: HC2 A1
HC2/S2 A1
HC3 A1
HC3/G2 A1

SB23



For: HC3/G4 A1
HC4 A1
HC5 A1
HC5/G4 A1

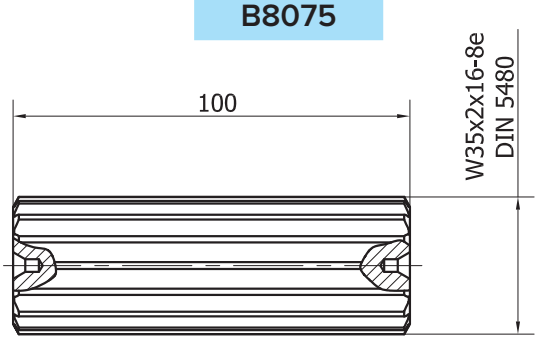
SB32



For: HC05 A1
HC1 A1

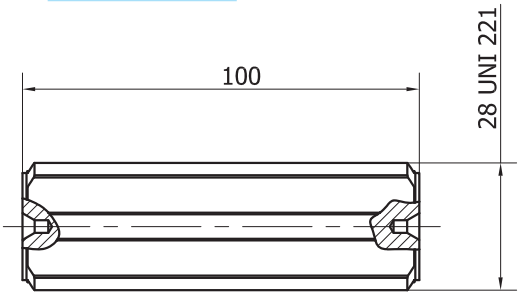
SPLINED BARS

B8075



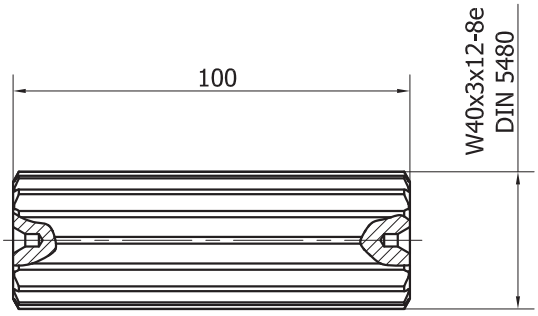
For: HC05 A3
HC1 A3
HC1/C190 A3

B8076



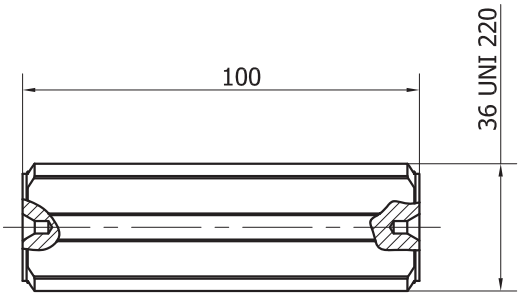
For: HC2 A3
HC2/S2 A3
HC3 A3
HC3/G2 A3

B8077



For: HC05 A31
HC1 A31

B8078



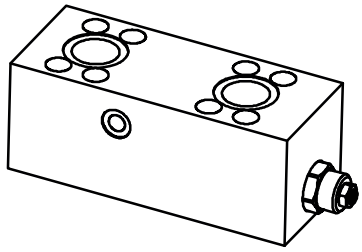
For: HC2 A31
HC2/S2 A31
HC3 A31
HC3/G2 A31

HC - VALVES

SINGLE OVERCENTER - OVSA 160	Pag. 112
DOUBLE OVERCENTER - OVDA 160	Pag. 113
FLUSHING - AP 40	Pag. 114
DOUBLE RELIEF - RVDA 80	Pag. 115
ANTICAVITATION - AC 80	Pag. 116
DOUBLE RELIEF AND ANTICAVITATION - RVDAC 80	Pag. 117
DOUBLE RELIEF AND FLUSHING - RVDAP 80	Pag. 118
SINGLE RELIEF AND ANTICAVITATION - RVSAC 200	Pag. 119
DOUBLE OVERCENTER - OVDA 300	Pag. 120
DOUBLE RELIEF - RVDA 200	Pag. 121
SINGLE RELIEF AND OVERCENTER - ORVSA 200	Pag. 122
DOUBLE RELIEF AND SINGLE OVERCENTER - DRVSO200EP	Pag. 123
DOUBLE OVERCENTER - OVDA 480	Pag. 124
DOUBLE RELIEF - RVDA 380	Pag. 125
SINGLE RELIEF AND OVERCENTER - ORVSA 480	Pag. 126
DOUBLE RELIEF AND FLUSHING - RVDAP 90	Pag. 127
VALVES ORDERING CODE	Pag. 128

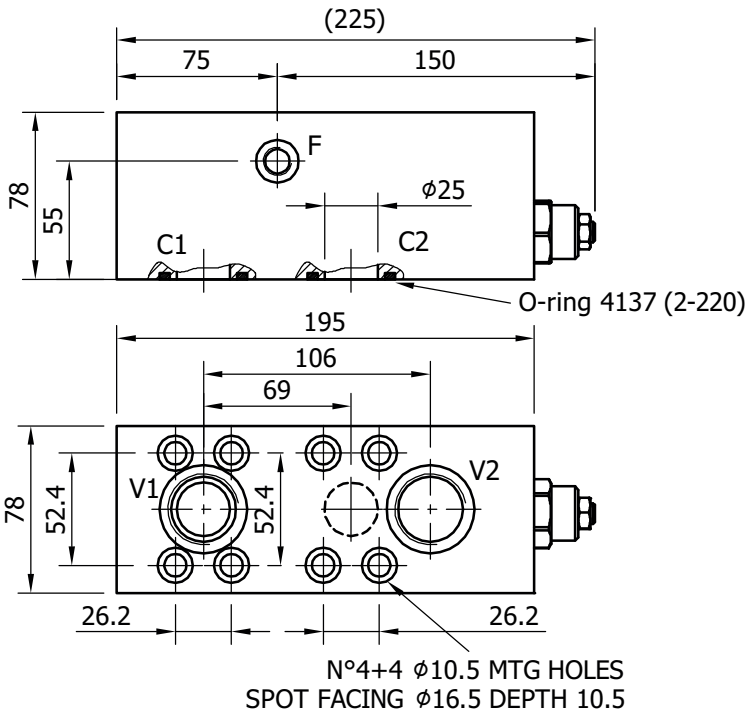
SINGLE OVERCENTER - OVSA 160

DISTRIBUTOR FITTING:
D47



PORTS DIMENSION	
V1, V2	1" BSP
F	1/4" BSP
C1, C2	O-Ring 4137 Parker code 2-220

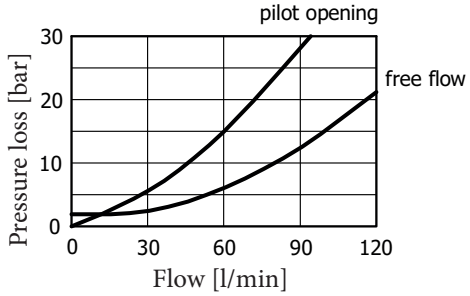
BLOCK MATERIAL:
STEEL



TECHNICAL DATA

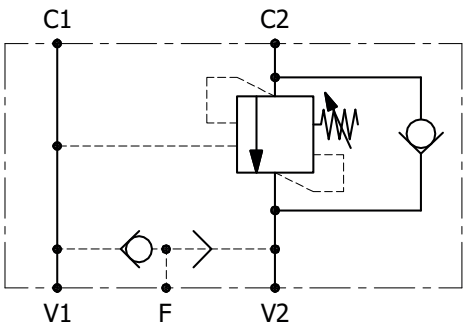
		OVSA.160.1.D47	OVSA.160.2.D47	OVSA.160.3.D47
NOMINAL FLOW	[l/min]	120	120	120
MAXIMUM FLOW	[l/min]	160	160	160
MAXIMUM PRESSURE	[bar]	350	350	350
PILOT RATIO	[]	1 (3:1)	2 (4.5:1)	3 (10:1)
RELIEF VALVE SETTING RANGE	[bar]	70-280	140-350	140-350
STANDARD RELIEF SETTING	[bar]	210	210	210
SET SCREW SETTING ADJUST-MENT	[bar/rev]	56	56	56

Cartridge characteristic



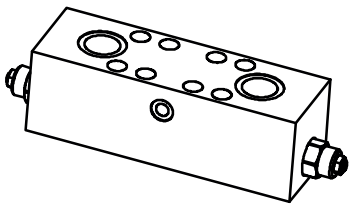
Rotate set screw counter-clockwise to increase relief setting

Hydraulic circuit



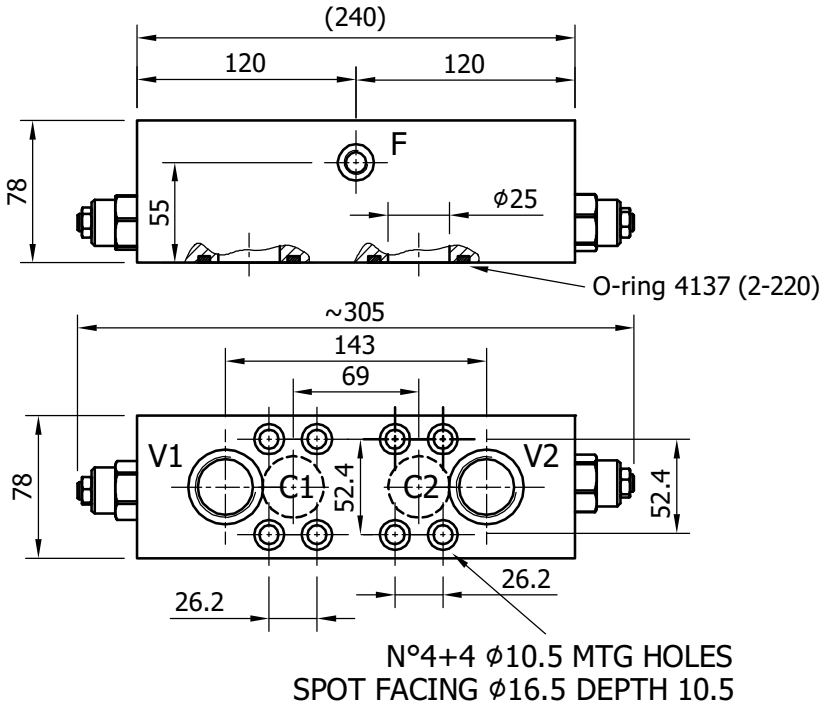
DOUBLE OVERCENTER - OVDA 160

DISTRIBUTOR FITTING:
D47



PORTS DIMENSION	
V1, V2	1" BSP
F	1/4" BSP
C1, C2	O-Ring 4137 Parker code 2-220

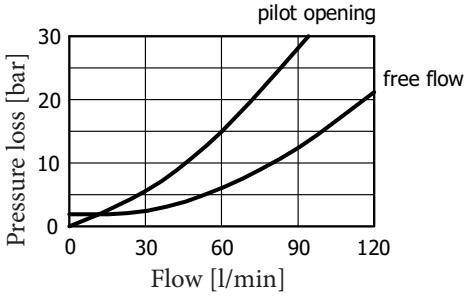
BLOCK MATERIAL:
STEEL



TECHNICAL DATA

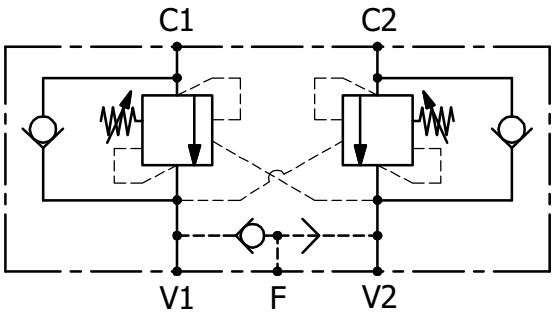
		OVDA.160.1.D47	OVDA.160.2.D47	OVDA.160.3.D47
NOMINAL FLOW	[l/min]	120	120	120
MAXIMUM FLOW	[l/min]	160	160	160
MAXIMUM PRESSURE	[bar]	350	350	350
PILOT RATIO	[]	1 (3:1)	2 (4.5:1)	3 (10:1)
RELIEF VALVE SETTING RANGE	[bar]	70-280	40-350	140-350
STANDARD RELIEF SETTING	[bar]	210	210	210
SET SCREW SETTING ADJUST-MENT	[bar/rev]	56	56	56

Cartridge characteristic



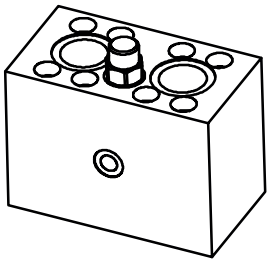
Rotate set screw counter-clockwise
to increase relief setting

Hydraulic circuit



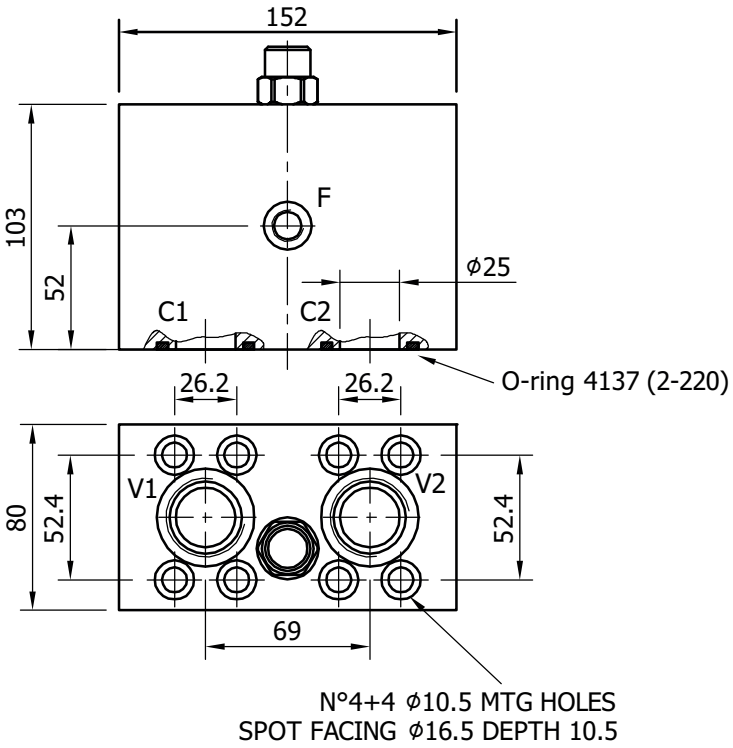
FLUSHING - AP 40

DISTRIBUTOR FITTING:
D47



PORTS DIMENSION	
V1, V2	1" BSP
F	1/4" BSP
C1, C2	O-Ring 4137 Parker code 2-220

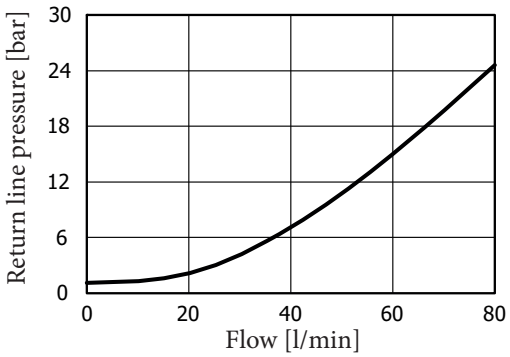
BLOCK MATERIAL:
STEEL



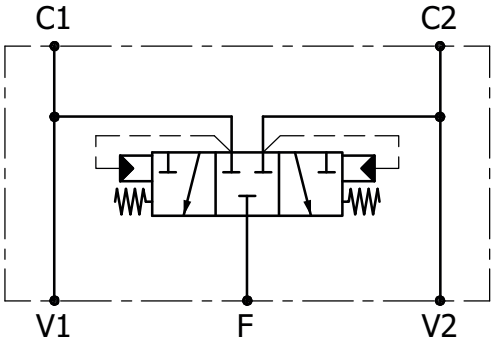
TECHNICAL DATA

		AP40.D47
MAXIMUM FLUSHING FLOW	[l/min]	80
MAXIMUM PRESSURE	[bar]	350

Cartridge characteristic

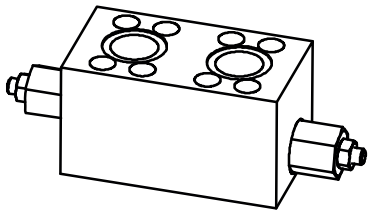


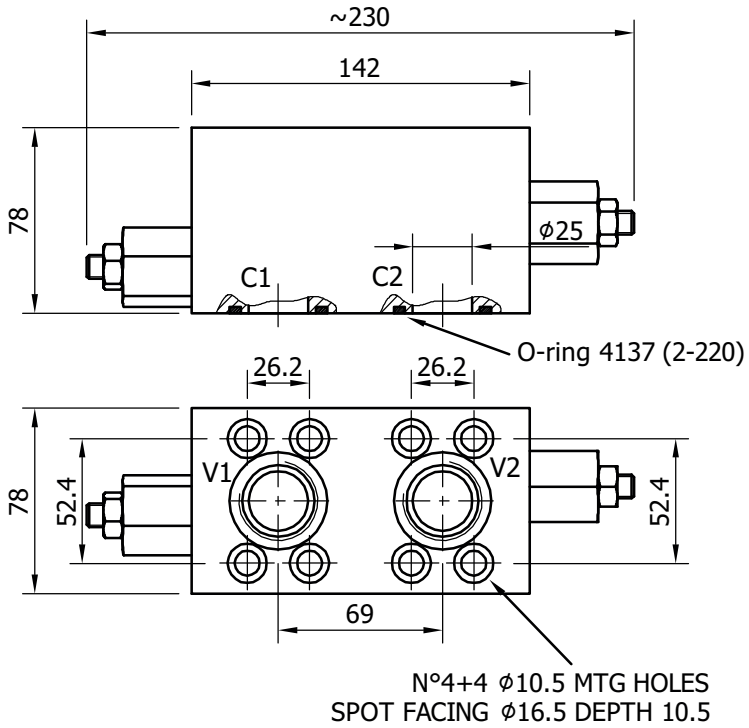
Hydraulic circuit



DOUBLE RELIEF - RVDA 80

DISTRIBUTOR FITTING:
D47





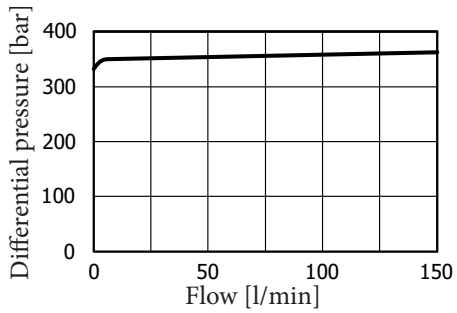
PORTS DIMENSION	
V1, V2	1" BSP
C1, C2	O-Ring 4137 Parker code 2-220

BLOCK MATERIAL:
STEEL

TECHNICAL DATA

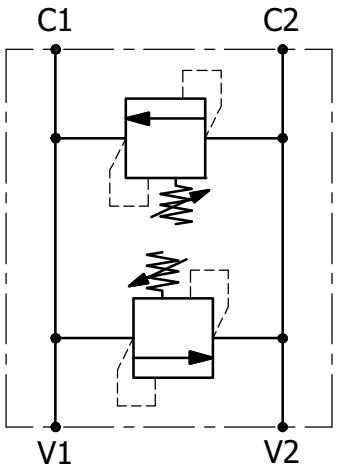
		RVDA.80.C.D47
NOMINAL FLOW	[l/min]	150
MAXIMUM FLOW	[l/min]	200
MAXIMUM PRESSURE	[bar]	350
RELIEF VALVE SETTING RANGE	[bar]	C (20-350)
STANDARD RELIEF SETTING	[bar]	20
SET SCREW SETTING ADJUSTMENT	[bar/rev]	120

Cartridge typical pressure rise



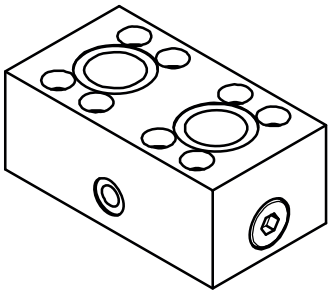
Rotate set screw clockwise
to increase relief setting

Hydraulic circuit



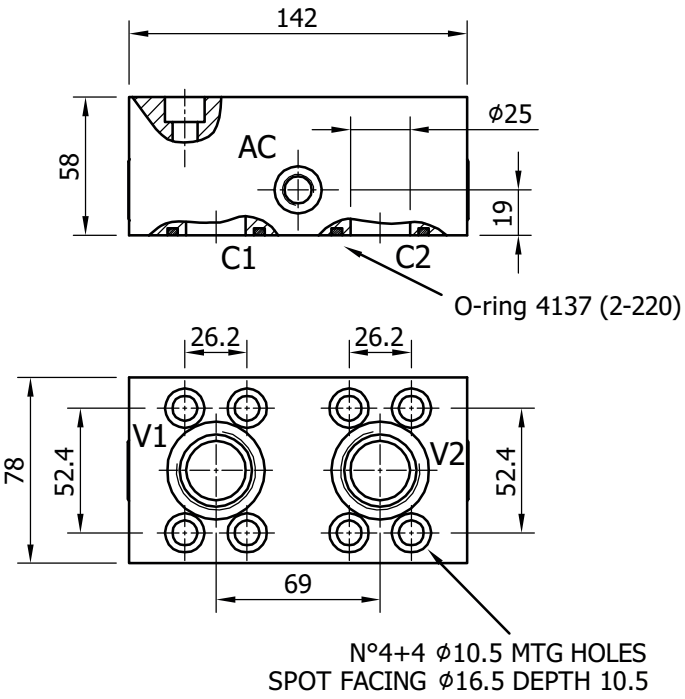
ANTICAVITATION - AC 80

DISTRIBUTOR FITTING:
D47



PORTS DIMENSION	
V1, V2	1" BSP
AC	1/4" BSP
C1, C2	O-Ring 4137 Parker code 2-220

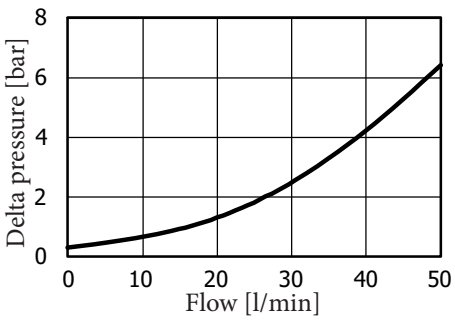
BLOCK MATERIAL:
STEEL

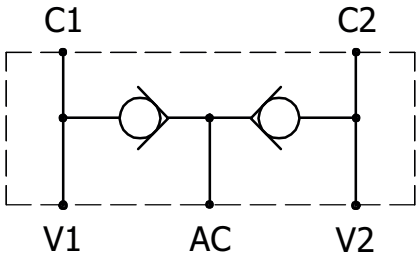


TECHNICAL DATA

		AC80.D47
NOMINAL FLOW	[l/min]	150
MAXIMUM FLOW	[l/min]	200
MAXIMUM PRESSURE	[bar]	350
MAXIMUM ANTICAVITATION FLOW (FROM AC TO C1 OR C2)	[l/min]	50

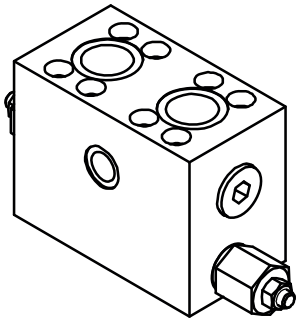
Check valve flow/pressure curve





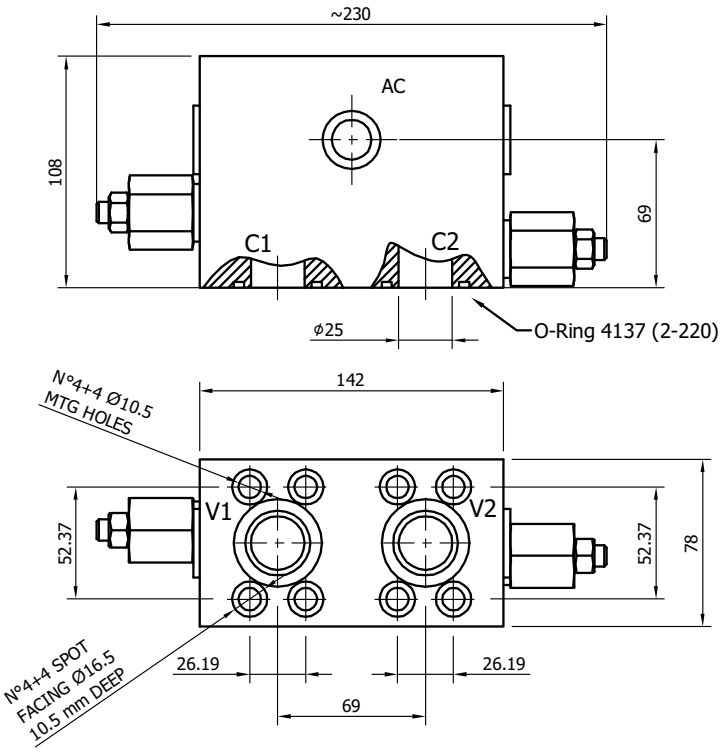
RELIEF & ANTICAVITATION - RVDAC80

DISTRIBUTOR FITTING:
D47



PORTS DIMENSION	
V1, V2	1" BSP
AC	1/2" BSP
C1, C2	O-Ring 4137 Parker code 2-220

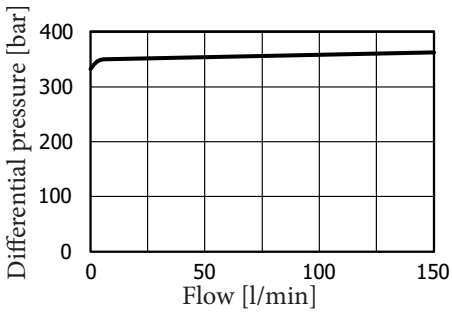
BLOCK MATERIAL:
STEEL



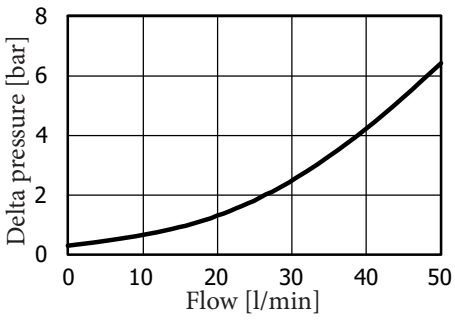
TECHNICAL DATA

		RVDAC80.C.D47
NOMINAL FLOW	[l/min]	150
MAXIMUM FLOW	[l/min]	200
MAXIMUM PRESSURE	[bar]	350
RELIEF VALVE SETTING RANGE	[bar]	C (20-350)
STANDARD RELIEF SETTING	[bar]	20
SET SCREW SETTING ADJUSTMENT	[bar/rev]	120
MAXIMUM ANTICAVITATION FLOW (FROM AC TO C1 OR C2)	[l/min]	50

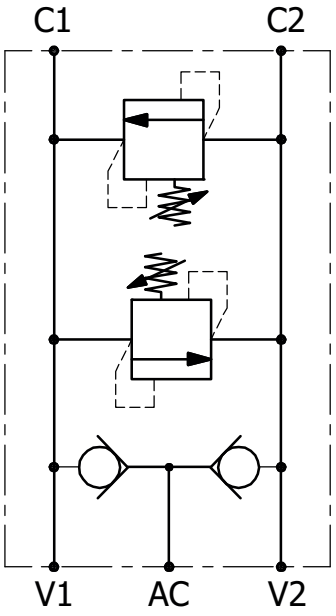
Relief cartridge typical pressure rise



Check valve flow/pressure curve

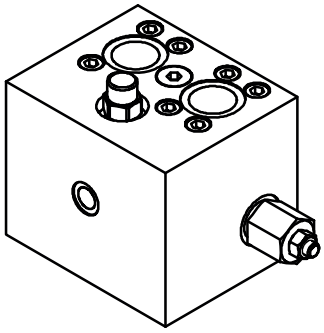


Rotate set screw clockwise
to increase relief setting



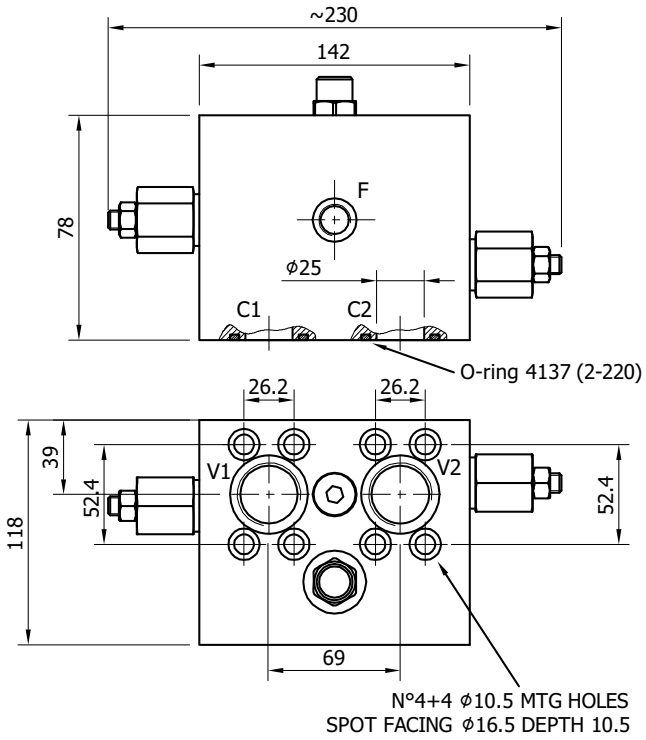
RELIEF & FLUSHING - RVDAP80

DISTRIBUTOR FITTING:
D47



PORTS DIMENSION	
V1, V2	1" BSP
F	1/4" BSP
C1, C2	O-Ring 4137 Parker code 2-220

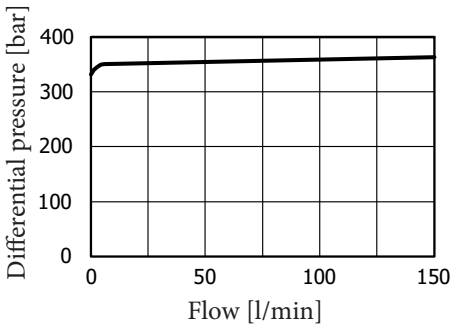
BLOCK MATERIAL:
STEEL



TECHNICAL DATA

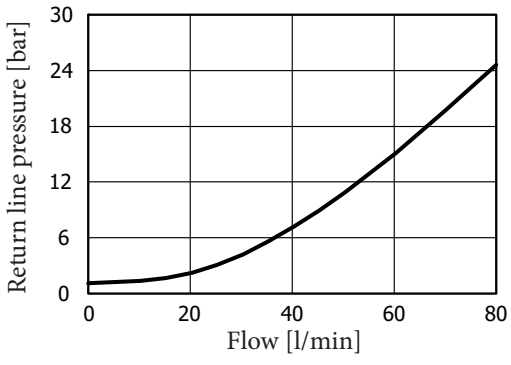
		RVDAP80.C.D47
RELIEF VALVE MAXIMUM FLOW	[l/min]	200
RELIEF VALVE SETTING RANGE	[bar]	C (20-350)
STANDARD RELIEF SETTING	[bar]	70
MAXIMUM FLUSHING FLOW	[l/min]	80
MAXIMUM PRESSURE	[bar]	350
SET SCREW SETTING ADJUSTMENT	[bar/rev]	120

Relief cartridge typical pressure rise

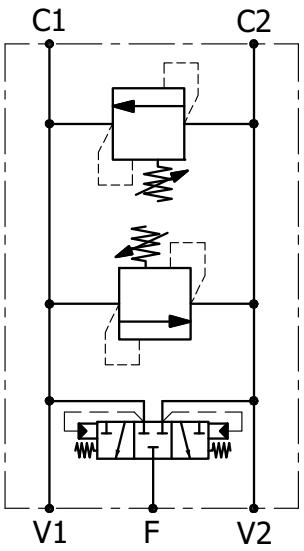


Rotate set screw clockwise
to increase relief setting

Flushing valve characteristic

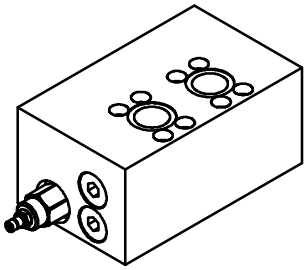


Hydraulic circuit



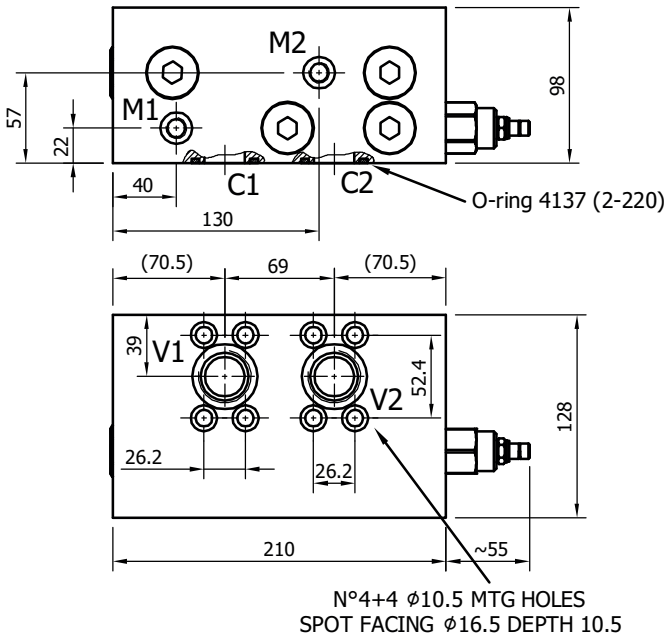
RELIEF & ANTICAVITATION - RVSAC200

DISTRIBUTOR FITTING:
D47



PORTS DIMENSION	
V1, V2	1" BSP
M1, M2	1/4" BSP
C1, C2	O-Ring 4137 Parker code 2-220

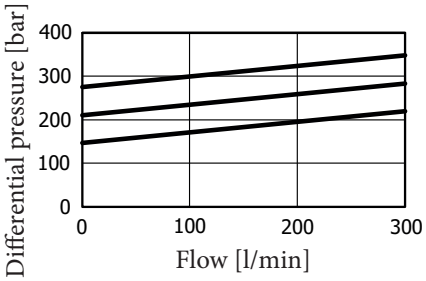
BLOCK MATERIAL:
STEEL



TECHNICAL DATA

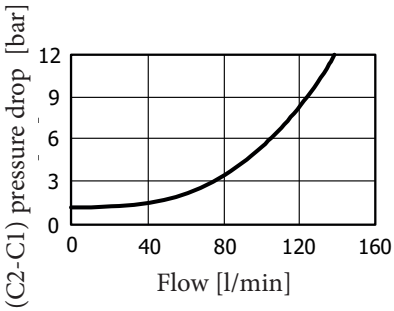
		RVSAC200.C.D47
RELIEF VALVE MAXIMUM FLOW	[l/min]	200
MAXIMUM PRESSURE	[bar]	350
RELIEF VALVE SETTING RANGE	[bar]	C (70-420)
STANDARD RELIEF SETTING	[bar]	70
SET SCREW SETTING ADJUSTMENT	[bar/rev]	60
CHECK VALVE MAXIMUM FLOW	[l/min]	160

Relief cartridge typical pressure rise

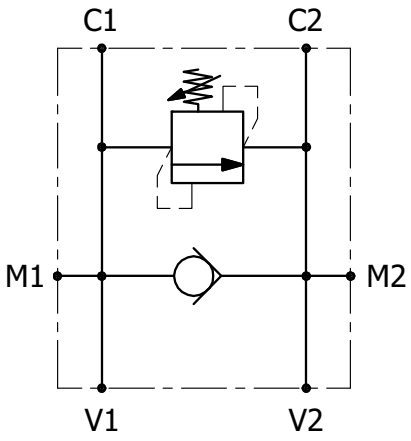


Rotate set screw clockwise
to increase relief setting

Oil supply flow (from C2 to C1)

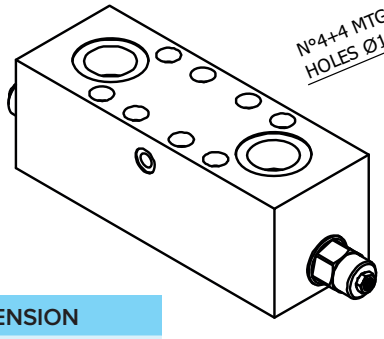


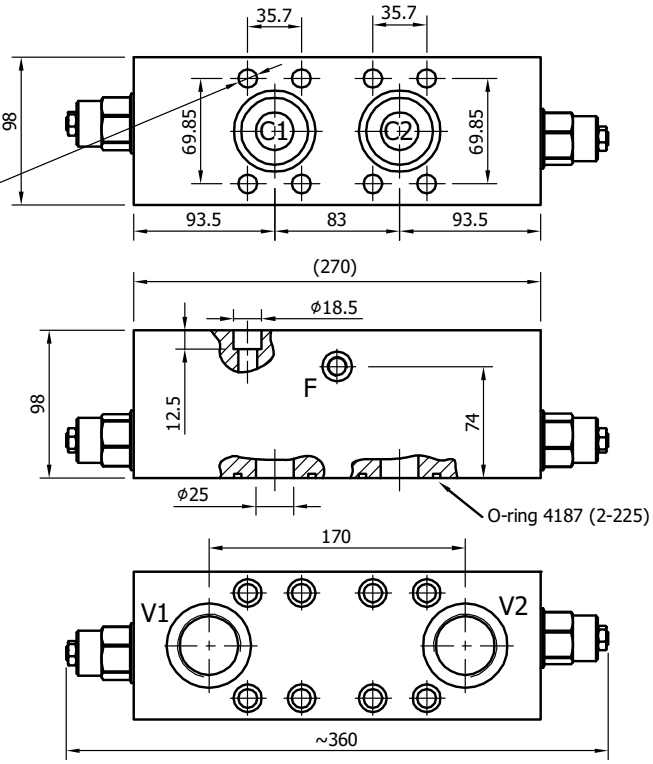
Hydraulic circuit



DOUBLE OVERCENTER - OVDA 300

DISTRIBUTOR FITTING:
D75





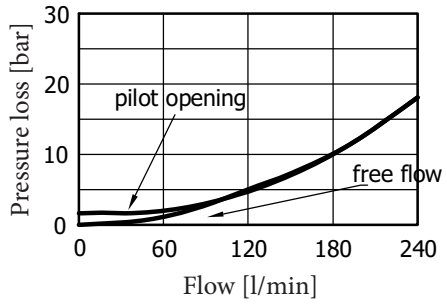
PORTS DIMENSION	
V1, V2	1"1/4 BSP
F	1/4" BSP
C1, C2	O-Ring 4187 Parker code 2-225

BLOCK MATERIAL:
STEEL

TECHNICAL DATA

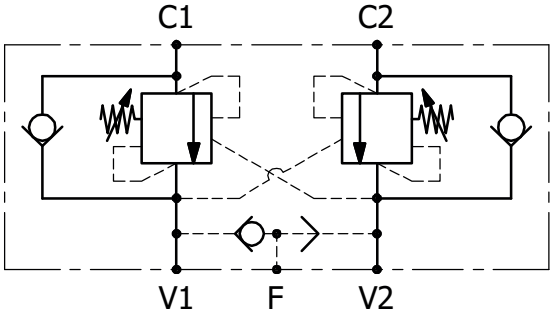
		OVDA.300.1.D75	OVDA.300.4.D75	OVDA.300.2.D75
NOMINAL FLOW	[l/min]	240	240	240
MAXIMUM FLOW	[l/min]	300	300	300
MAXIMUM PRESSURE	[bar]	350	350	350
PILOT RATIO	[]	1 (3:1)	4 (10:1)	2 (4.5:1)
RELIEF VALVE SETTING RANGE	[bar]	70-280	140-350	140-350
STANDARD RELIEF SETTING	[bar]	210	210	210
SET SCREW SETTING ADJUSTMENT	[bar/rev]	56	56	56

Cartridge characteristic



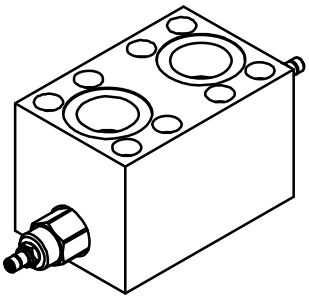
Rotate set screw counter-clockwise
to increase relief setting

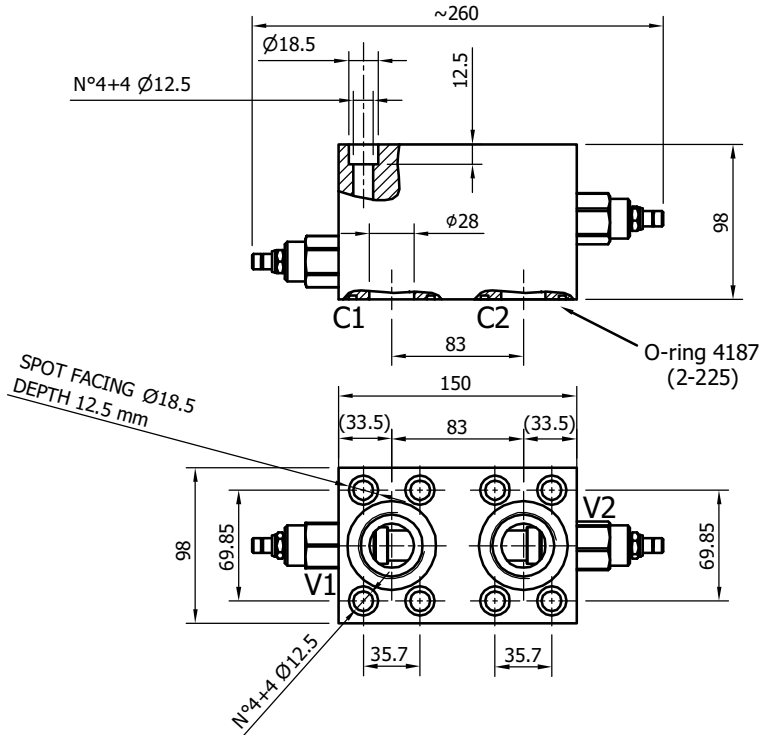
Hydraulic circuit



DOUBLE RELIEF - RVDA 200

DISTRIBUTOR FITTING:
D75





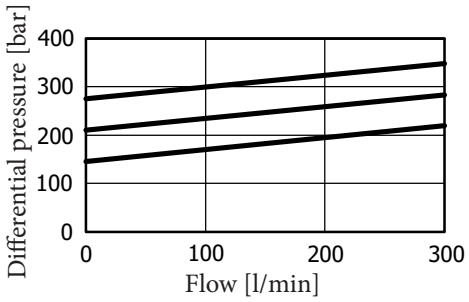
PORTS DIMENSION	
V1, V2	1"1/4 BSP
C1, C2	O-Ring 4187 Parker code 2-225

BLOCK MATERIAL:
STEEL

TECHNICAL DATA

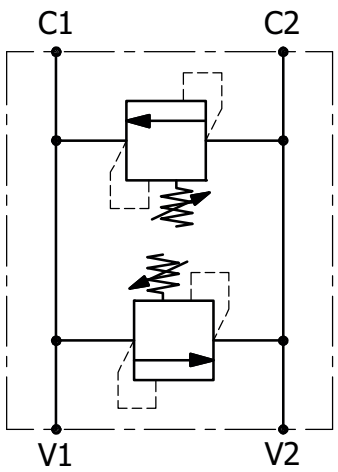
		RVDA.200.C.D75
RELIEF VALVE MAXIMUM FLOW	[l/min]	200
MAXIMUM PRESSURE	[bar]	350
RELIEF VALVE SETTING RANGE	[bar]	C (70-420)
STANDARD RELIEF SETTING	[bar]	70
SET SCREW SETTING ADJUSTMENT	[bar/rev]	60

Cartridge typical pressure rise



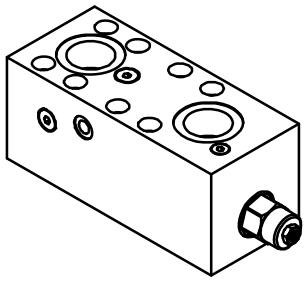
Rotate set screw clockwise
to increase relief setting

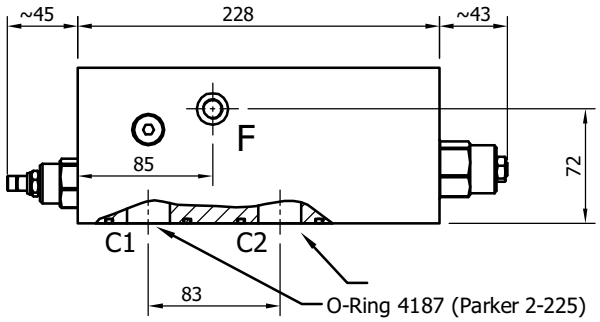
Hydraulic circuit

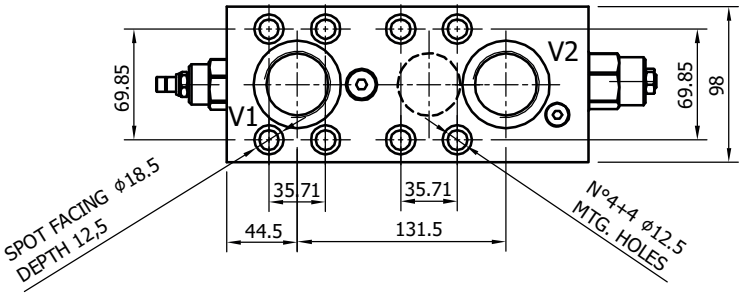


RELIEF & OVERCENTER - ORVSA 200

DISTRIBUTOR FITTING:
D75







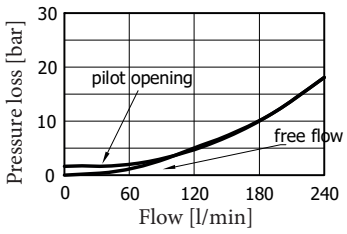
PORTS DIMENSION	
V1, V2	1"1/4 BSP
F	1/4" BSP
C1, C2	O-Ring 4187 Parker code 2-225

BLOCK MATERIAL:
STEEL

TECHNICAL DATA

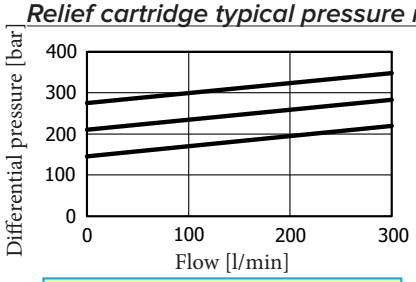
		ORVSA.200.1.C.D75	ORVSA.200.4.C.D75	ORVSA.200.2.C.D75
NOMINAL FLOW	[l/min]	240	240	240
MAXIMUM FLOW	[l/min]	300	300	300
MAXIMUM PRESSURE	[bar]	350	350	350
PILOT RATIO	[]	1 (3:1)	4 (10:1)	2 (4.5:1)
OVC RELIEF VALVE SETTING RANGE	[bar]	70-280	140-350	140-350
OVC STANDARD RELIEF SETTING	[bar]	210	210	210
OVC SET SCREW SETTING ADJUSTMENT	[bar/rev]	56	56	56
RELIEF VALVE SETTING RANGE	[bar]	C (70-420)	C (70-420)	C (70-420)
RELIEF STANDARD SETTING	[bar]	70	70	70
RELIEF SET SCREW SETTING ADJUSTMENT	[bar/rev]	60	60	60

OVC cartridge characteristic

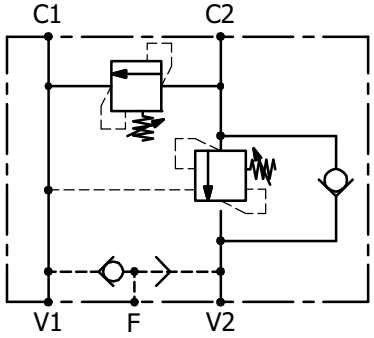


Rotate set screw counter-clockwise
to increase relief setting

Relief cartridge typical pressure rise

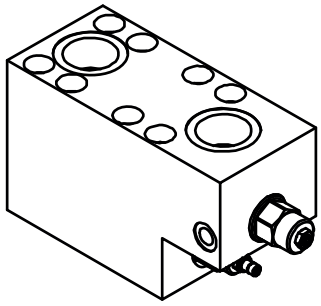


Rotate set screw clockwise
to increase relief setting



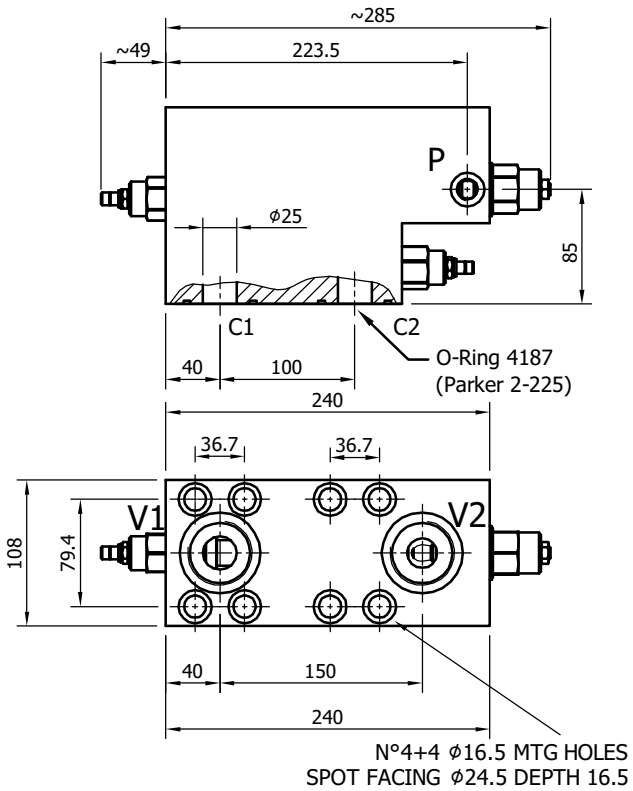
RELIEF & OVERCENTER - DRVSO200EP

DISTRIBUTOR FITTING:
D90



PORTS DIMENSION	
V1, V2	1"1/4 BSP
P	1/4" BSP
C1, C2	O-Ring 4137 Parker code 2-220

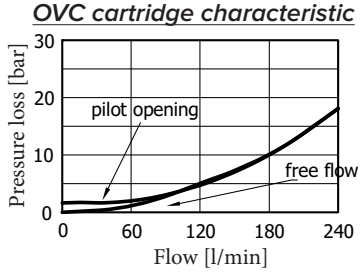
BLOCK MATERIAL:
STEEL



TECHNICAL DATA

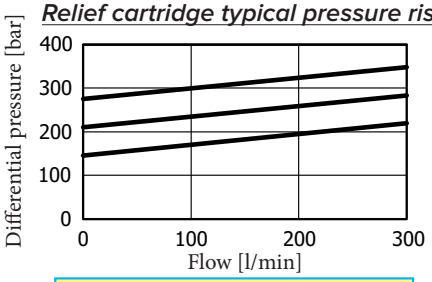
		DRVSO200EP.1.C.D75	DRVSO200EP.4.C.D75	DRVSO200EP.2.C.D75
NOMINAL FLOW	[l/min]	240	240	240
MAXIMUM FLOW	[l/min]	300	300	300
MAXIMUM PRESSURE	[bar]	350	350	350
PILOT RATIO	[]	1 (3:1)	4 (10:1)	2 (4.5:1)
OVC RELIEF VALVE SETTING RANGE	[bar]	70-280	140-350	140-350
OVC STANDARD RELIEF SETTING	[bar]	210	210	210
OVC SET SCREW SETTING ADJUSTMENT	[bar/rev]	56	56	56
RELIEF VALVE SETTING RANGE	[bar]	C (70-420)	C (70-420)	C (70-420)
RELIEF STANDARD SETTING	[bar]	70	70	70
RELIEF SET SCREW SETTING ADJUSTMENT	[bar/rev]	60	60	60

OVC cartridge characteristic

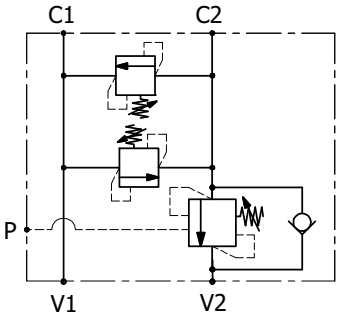


Rotate set screw counter-clockwise
to increase relief setting

Relief cartridge typical pressure rise

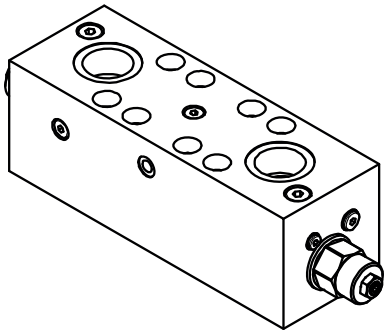


Rotate set screw clockwise
to increase relief setting



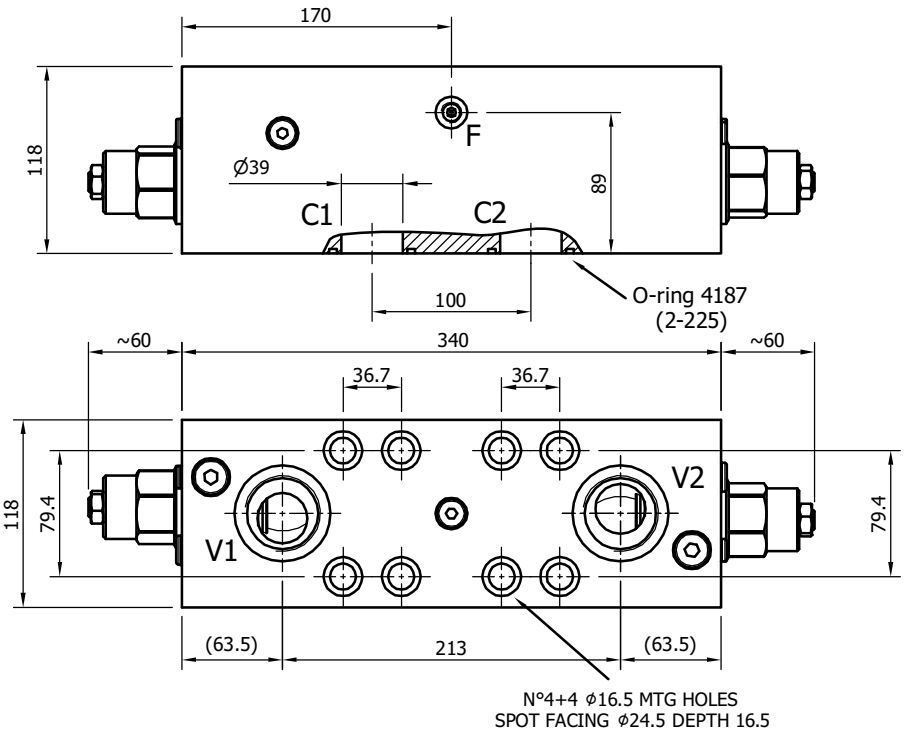
DOUBLE OVERCENTER - OVDA 480

DISTRIBUTOR FITTING:
D90



PORTS DIMENSION	
V1, V2	1"1/2 BSP
F	1/4" BSP
C1, C2	O-Ring 4187 Parker code 2-225

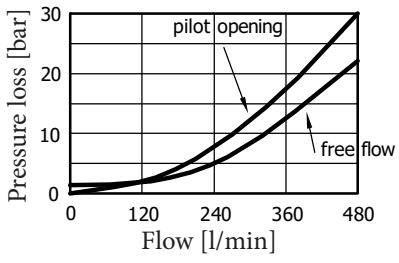
BLOCK MATERIAL:
STEEL



TECHNICAL DATA

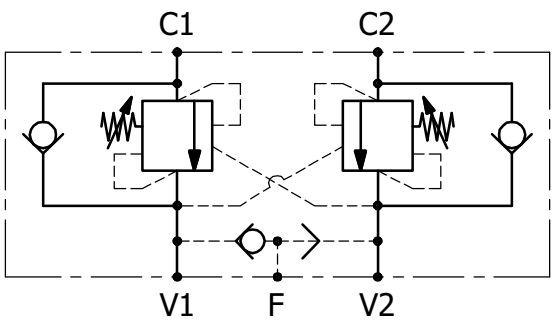
		OVDA.480.1.D90	OVDA.480.4.D90	OVDA.480.2.D90
NOMINAL FLOW	[l/min]	480	480	480
MAXIMUM FLOW	[l/min]	600	600	600
MAXIMUM PRESSURE	[bar]	350	350	350
PILOT RATIO	[]	1 (3:1)	4 (10:1)	2 (4.5:1)
RELIEF VALVE SETTING RANGE	[bar]	70-280	140-350	140-350
STANDARD RELIEF SETTING	[bar]	210	210	210
SET SCREW SETTING ADJUSTMENT	[bar/rev]	56	56	56

Cartridge characteristic



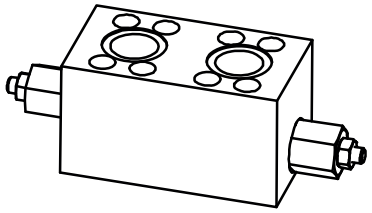
Rotate set screw counter-clockwise
to increase relief setting

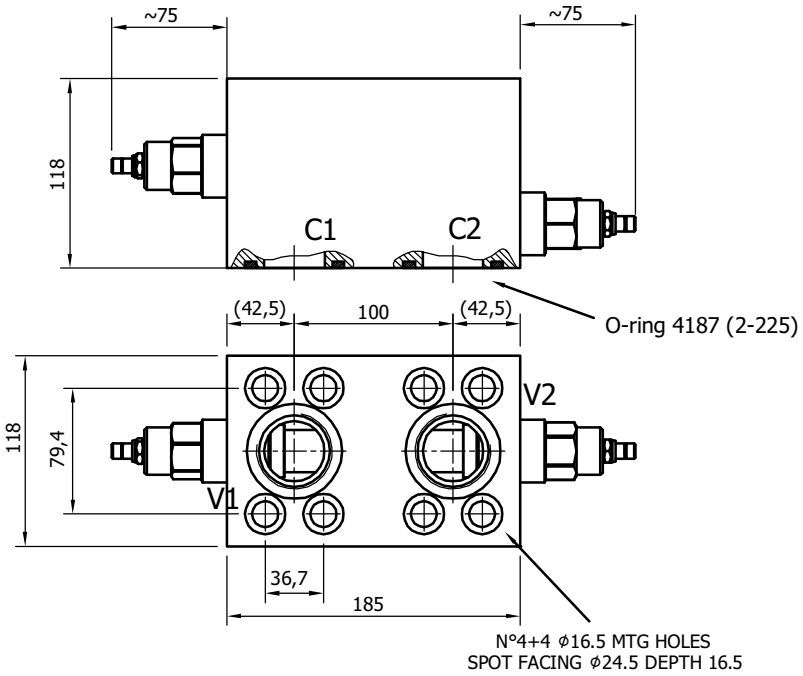
Hydraulic circuit



DOUBLE RELIEF - RVDA 380

DISTRIBUTOR FITTING:
D90





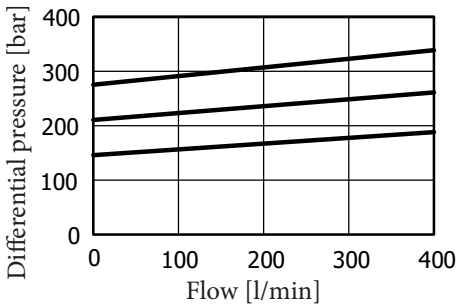
PORTS DIMENSION	
V1, V2	1"1/2 BSP
C1, C2	O-Ring 4187 Parker code 2-225

BLOCK MATERIAL:
STEEL

TECHNICAL DATA

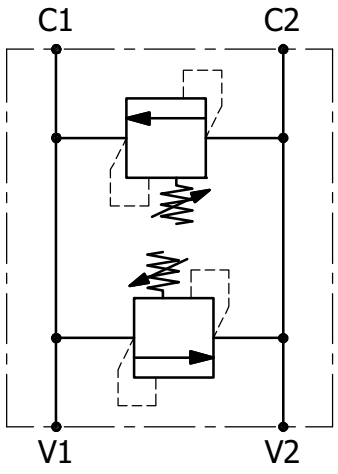
		RVDA.380.C.D90
RELIEF VALVE MAXIMUM FLOW	[l/min]	380
MAXIMUM PRESSURE	[bar]	350
RELIEF VALVE SETTING RANGE	[bar]	C (70-420)
STANDARD RELIEF SETTING	[bar]	70
SET SCREW SETTING ADJUSTMENT	[bar/rev]	60

Cartridge typical pressure rise



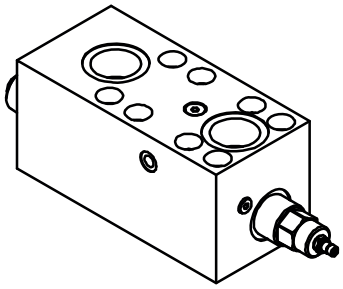
Rotate set screw clockwise
to increase relief setting

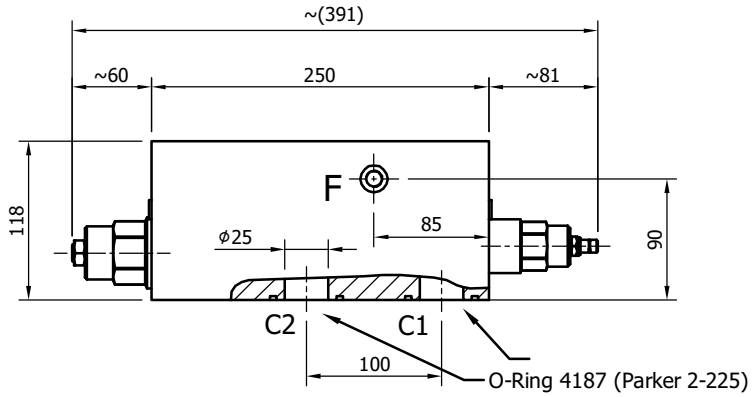
Hydraulic circuit



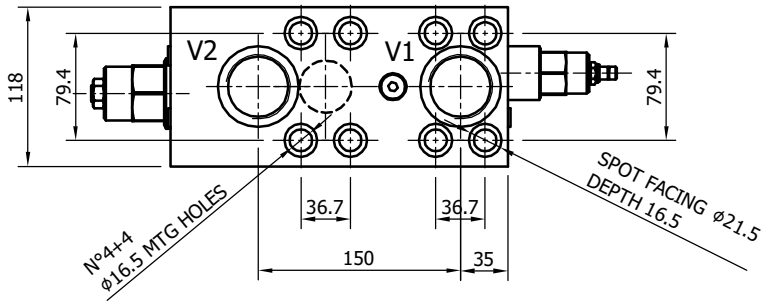
RELIEF & OVERCENTER - ORVSA 480

DISTRIBUTOR FITTING:
D90





PORTS DIMENSION	
V1, V2	1"1/2 BSP
F	1/4" BSP
C1, C2	O-Ring 4187 Parker code 2-225

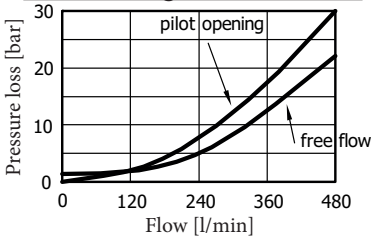


BLOCK MATERIAL:
STEEL

TECHNICAL DATA

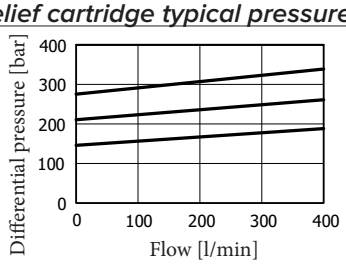
		ORVSA.480.1.D90	ORVSA.480.4.D90	ORVSA.480.2.D90
NOMINAL FLOW	[l/min]	480	480	480
MAXIMUM FLOW	[l/min]	600	600	600
MAXIMUM PRESSURE	[bar]	350	350	350
PILOT RATIO	[]	1 (3:1)	4 (10:1)	2 (4.5:1)
OVC RELIEF VALVE SETTING RANGE	[bar]	70-280	140-350	140-350
OVC STANDARD RELIEF SETTING	[bar]	210	210	210
OVC SET SCREW SETTING ADJUSTMENT	[bar/rev]	56	56	56
RELIEF VALVE SETTING RANGE	[bar]	C (70-420)	C (70-420)	C (70-420)
RELIEF STANDARD SETTING	[bar]	70	70	70
RELIEF SET SCREW SETTING ADJUSTMENT	[bar/rev]	60	60	60

OVC cartridge characteristic

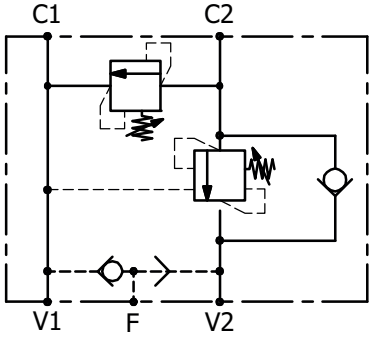


Rotate set screw counter-clockwise
to increase relief setting

Relief cartridge typical pressure rise

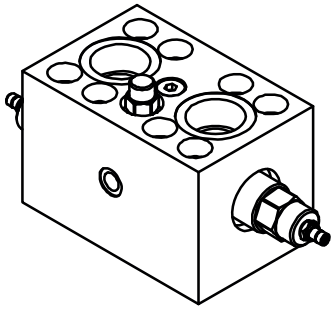


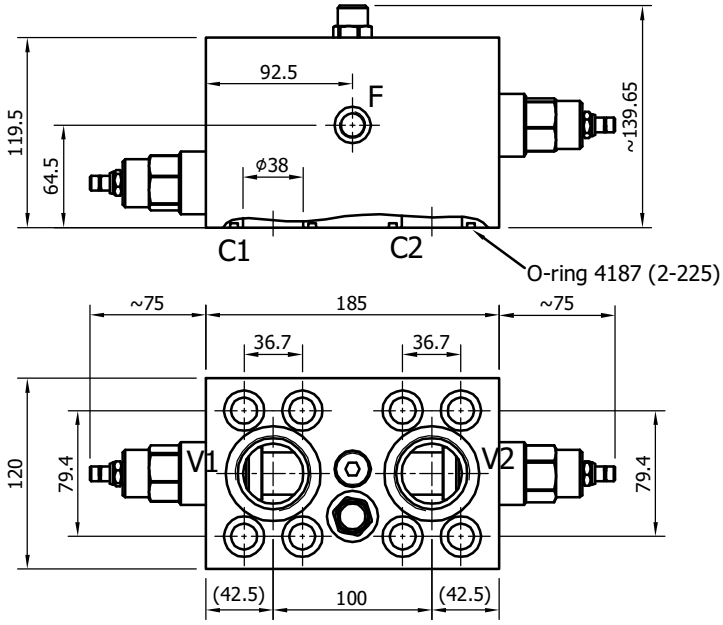
Rotate set screw clockwise
to increase relief setting



RELIEF & FLUSHING - RVDAP 90

DISTRIBUTOR FITTING:
D90





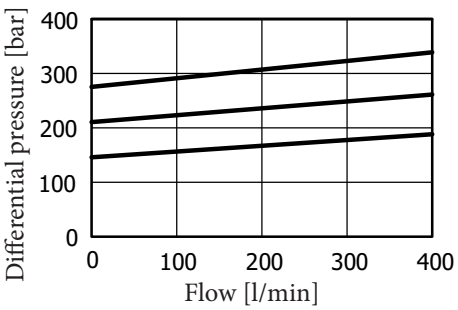
PORTS DIMENSION	
V1, V2	1" BSP
F	3/8" BSP
C1, C2	O-Ring 4187 Parker code 2-225

BLOCK MATERIAL:
STEEL

TECHNICAL DATA

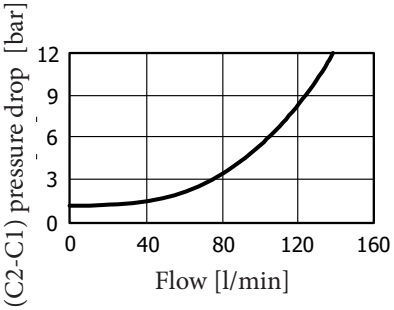
		RVDAP90.C.D90
RELIEF VALVE MAXIMUM FLOW	[l/min]	380
RELIEF VALVE SETTING RANGE	[bar]	C (70-420)
STANDARD RELIEF SETTING	[bar]	70
MAXIMUM FLUSHING FLOW	[l/min]	80
MAXIMUM PRESSURE	[bar]	350
SET SCREW SETTING ADJUSTMENT	[bar/rev]	60

Relief cartridge typical pressure rise

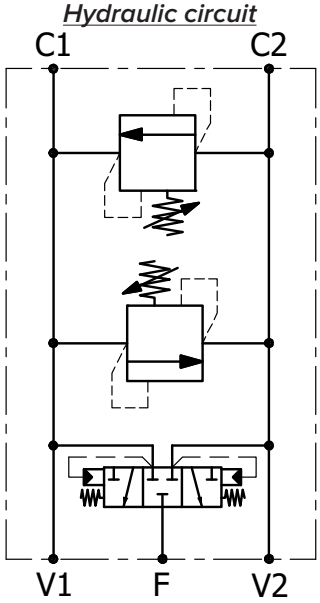


Rotate set screw clockwise
to increase relief setting

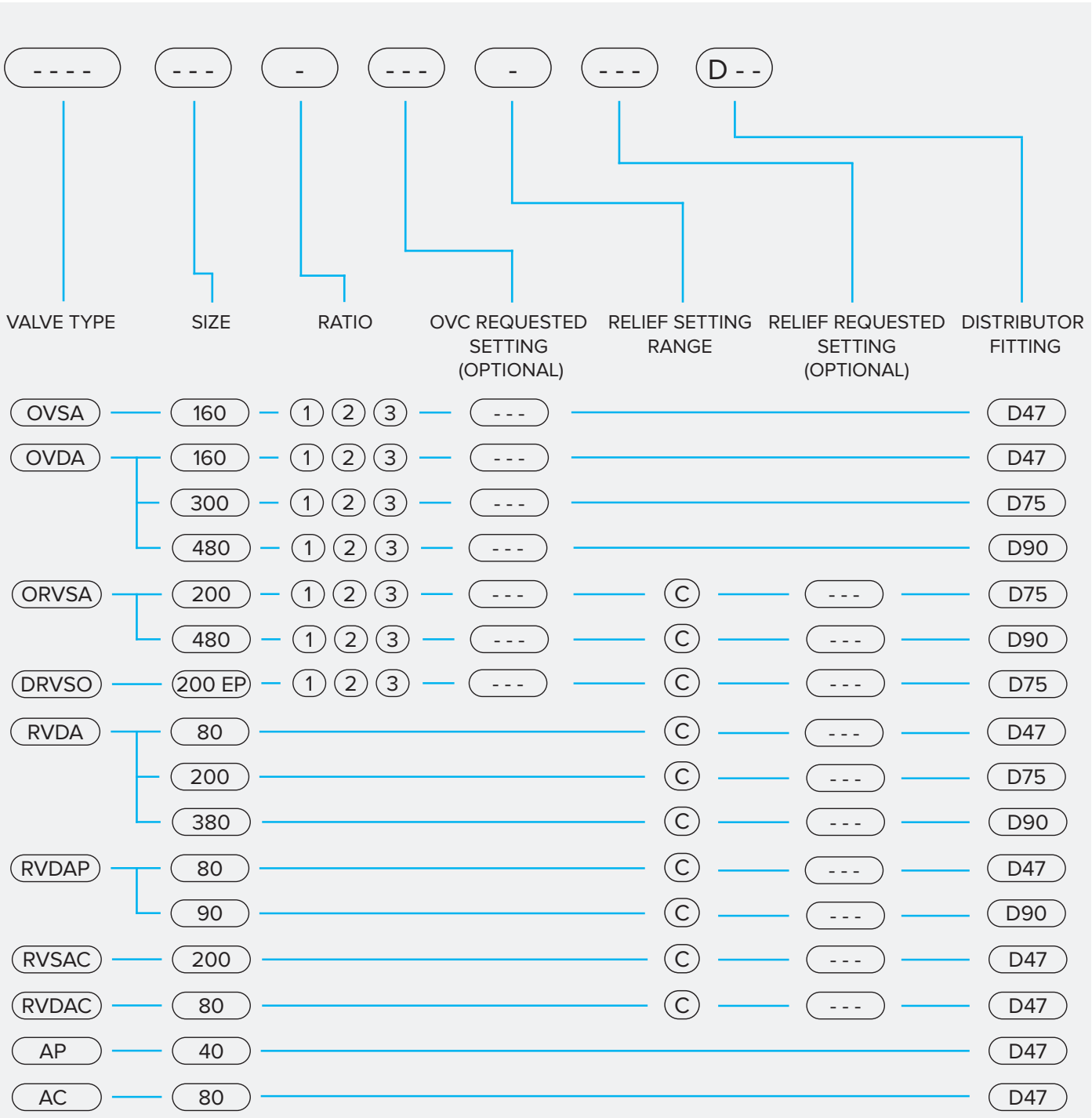
Oil supply flow (from C2 to C1)



Hydraulic circuit



VALVES - ORDERING CODE



EXAMPLES:

OVDA 160 1 200 D47
AP 40 D47
ORVSA 480 3 250 C 200 D90
ORVSA 200 1 C D75

CONTACT US

CONTACT US

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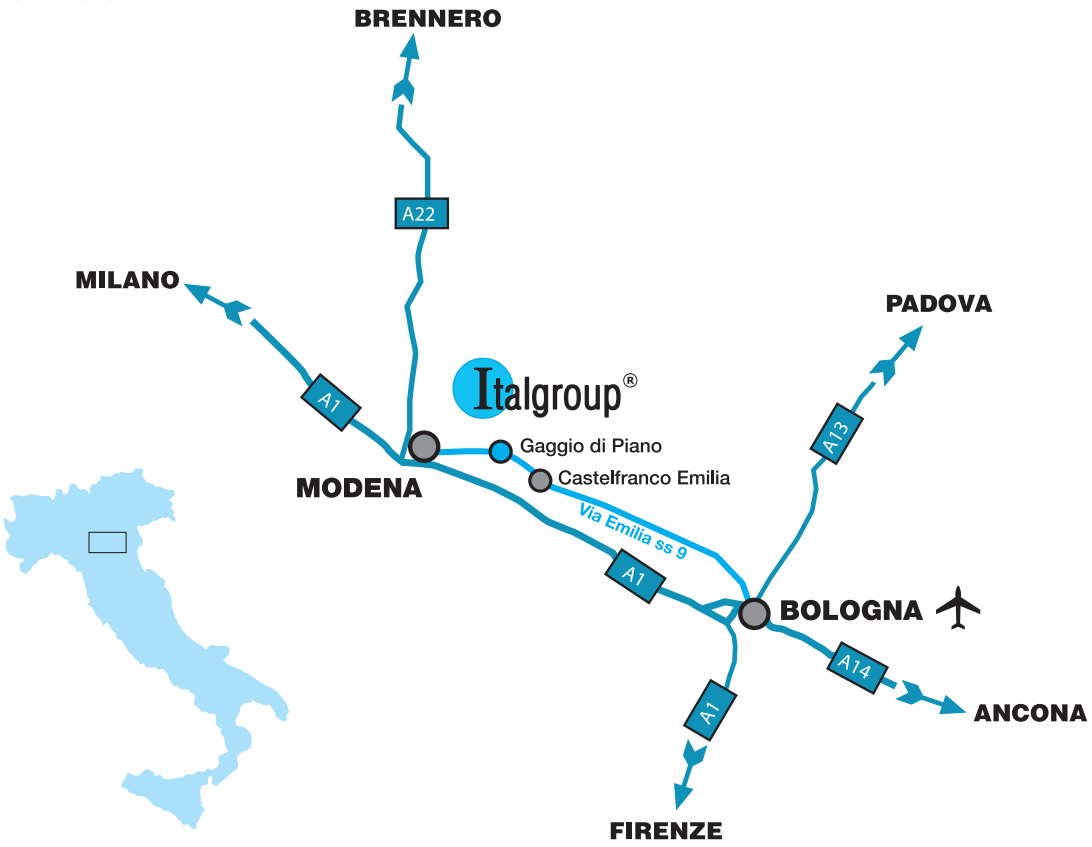
REACH US



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- Germany
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