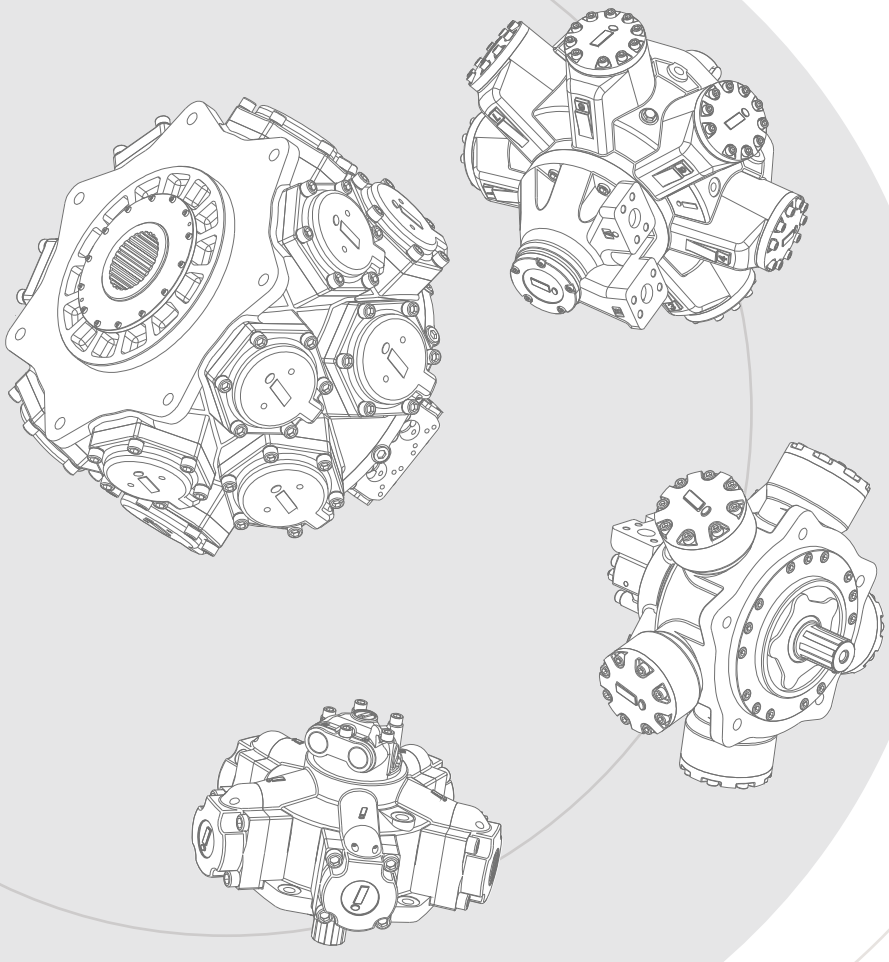
intermot® NHM® 英特姆®

afaq TAF Management System Certification MS012 中意合资 Sino-Italian JV

CATALOGUE
HYDRAULIC MOTORS



NINGBO OIL CONTROL HYDRAULIC CO., LTD.
NINGBO INTERMOT HYDRAULIC MOTOR CO., LTD.

intermot

ABOUT US

NINGBO OIL CONTROL HYDRAULIC CO., LTD. is originated from NINGBO INTERMOT HYDRAULIC MOTOR CO., LTD., a Sino-Italian Joint venture established in 1992, by the Chinese partner, INTERMOT S.r.l. (Italy), R&D S.r.l. (Italy) and SAI S.p.a. (Italy). NINGBO OIL CONTROL has been specializing in the development and manufacture of hydraulic motors, inheriting the European classics while focusing on quality development.Relying on the advanced hydraulic technologies and rigorous manufacturing expertise from Italy, the company is committed to creating value for customers. We persist in developing modern corporate cultures whereas continuous innovation remains the constant pursuit of the company. Our product range covers a vast variety of applications throughout the world and the brand ' intermot 'is renowned for its outstanding price for value within the industry.

In the past 30 years, the strong technical genes and blood has been driving us to become a competitive professional hydraulic motor manufacturer with the most comprehensive varieties of product portfolio to fulfill customer demands. As the high market shareholder, Ningbo Oil Control has been qualified as the National High-tech Innovation enterprise for 20+ consecutive years and possesses more than 60 intellectual patents including inventions and utility models, and we are the <Low Speed High Torque Hydraulic Motor> National Industry Standard Drafting Entity. Moreover, as the S.R.D.I. innovative enterprise of Zhejiang province, we have a provincial level high-tech R&D center namely - Transmission and Control Engineering R&D Center. As a long-term strategic partner with many first-tier international brands, Ningbo Oil Control always maintains an in-depth cooperative relationship with Zhejiang University and other competitive institutes, our R&D personnel accounts for about 40% of the total staff headcount, over 50% of the employees have 10+ years of professional service experience with the company, the strong R&D team with the stable staff team sets the technology and quality of the enterprise.

In 2022, we successfully integrated MES, ERP, PLM management systems, and introduced WMS intelligent storage and other digital production system to build up a new 5G+ industrial Internet digital green factory, which contributes significantly to the improvement of production efficiency and consistency. At the present, Oil control has a modern production workshop of over 20,000 square meters，and owns many high-quality equipments imported from Japan and Europe such as fully automatic comprehensive machining centers and CNC machine tools, i.e. DMG MORI flexible machining system, Yamazaki Mazak, Doosan, etc. The company has passed the ISO9001:2015 quality system certification and product inspection certification of CCS, BV, NK, Lloyds ,ABS, DNV, international Classification Societies. By providing high-quality and cost-effective products of domestic alternatives to help customers reduce costs.

Our main product range includes: NHM series, GHM series, CM series, FMB (fixed disp.) / FMC(dual-disp.) series of low- speed high-torque hydraulic motor, RM (Swivel cylinder crankshaft) series, PMS (Radial Cam-ring) series LSHT hydraulic motor, OILW travel gearbox, OILP planetary gearbox, OILH hydraulic winch, and EPMZ orbit hydraulic motor. Meanwhile, we are also the distributor of the hydraulic products such as 'M+S' orbit motor of Bulgaria and orbit motor of Eaton Jining. Our products application field covers engineering, hoisting and transportation，metallurgic and heavy duty machinery, oil extraction, coal mining, marine applications, machine tools, plastic molding machines, geological prospecting and other hydraulic transmission systems. Our products are particularly suitable for driving injection moulding machine, lifting screw drives, driving winch and various rolling drums, as well as other transmission mechanics like track and wheel machines.

Confronting with the challenge of the demanding market, we adhere to the corporate creed of 'Take responsibility for our products and services, while fulfilling the actual demands of our customers'. Ningbo Oil Control seeks sustainable development through continuous internal reforms, with the application of intelligent manufacturing technologies, to keep abreast of the development of leading enterprises in injection molding machinery and the marine industries. To embrace the future, Oil Control is playing an active role in the industrial electrification transformation, and is committed to converting tangible products into intangible power. Our vision is not simply to be the Pioneer of Hydraulic Motor industry, but also to create a brilliant future of Hydraulic Motors and to be the most competitive hydraulic motor manufacturer in China.

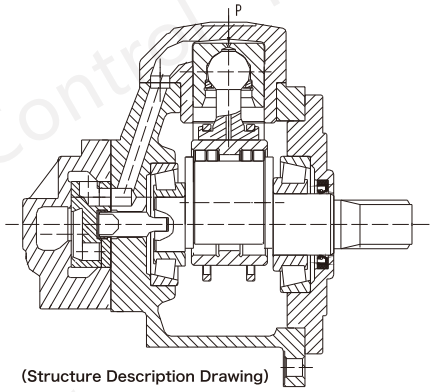
CONTENTS

NHM(S) Series Technical Catalogue

Hydraulic Motor with Roller-bearing Crankshaft & Connecting-rods

NHM SERIES HYDRAULIC MOTOR

PRODUCT FEATURE



(Structure Description Drawing)

NHM Series crankshaft connecting rod type low-speed high-torque hydraulic motor is produced in accordance with the technology and design from Italy. On this basis , continuous improvements have been made in technologies according to the local market demands to suit the needs of customers.
Main features of the design include:
1. Low noise output due to the eccentric shaft and five-piston structure with lower vibration frequency characteristics;
2.The high start-up torque and low-speed stability resulting in thesmooth running of the motor at low speed;
3.Strong reliability and less leakage due to the patented plate compensational oil distributor design. Special sealing ring between piston and cylinder guarantees high volumetric efficiency;
4.High mechanical efficiency due to the roller design between the crankshaft and connecting rod;
5.With the reversible direction of rotation, the output shaft can endure certain external radial and axial forces;
6.High power-mass ratio relatively small volume and weight.

INTRODUCTION OF DESIGN

Hydraulic fluid enters into the swivel cylinder cavity through the oil distribution valve and generates thrust on the pistons. Such thrust acts directly on the center of the spherical crankshaft. As the force and direction of the thrust generated by each piston is different, the crankshaft rotates under the combined forces and drives the oil distribution valve to rotate synchronously with the connecting rotation mechanism. When a typical piston reaches the bottom dead center, the piston is connected to the oil circuit (return port) through the oil distribution valve, and the piston is thereby pushed up by the crankshaft. At this moment, the pressurized hydraulic fluid after work returns to the oil tank through the oil distributor. Each piston is alternately connected with high and low pressure hydraulic oil at each work cycle, and the driving torque generated by each piston to the crankshaft center is superimposed in the same direction, so that the motor output shaft obtains continuous and stable turning torque. When the direction of oil flow is reversed, the direction in which the motor rotates will then be reversed. Alternatively, if the oil distribution valve plate is assembled by turning 180°, the motor shaft rotation direction will also be reversed.

CALCULATIONS & FORMULAS

1. The actual output torque of the hydraulic motor: $M=0.159\,(P1-P2)\,V\cdot\eta_m\,(N.m)$

Where: P1、P2---------- ----------Inlet and outlet pressure (MPa)
V ---------- ---------- Displacement (ml/r)
η_m ---------- ---------- Mechanical efficiency (%)

2. Output power of the hydraulic motor:

$$N=\frac{M\cdot n}{9550}\ (kW) \qquad N=\frac{q\ (P1-P2)}{60000}\ (kW)$$

Where: n ---------- ---------- Rotation speed (r/min)
q ---------- ---------- Input flow (ml/min)
η_v ---------- ----------Volumetric efficiency (%)

3.Rotating speed of the hydraulic motor

$$n=\frac{q}{V}\eta_v\ (r/min)$$

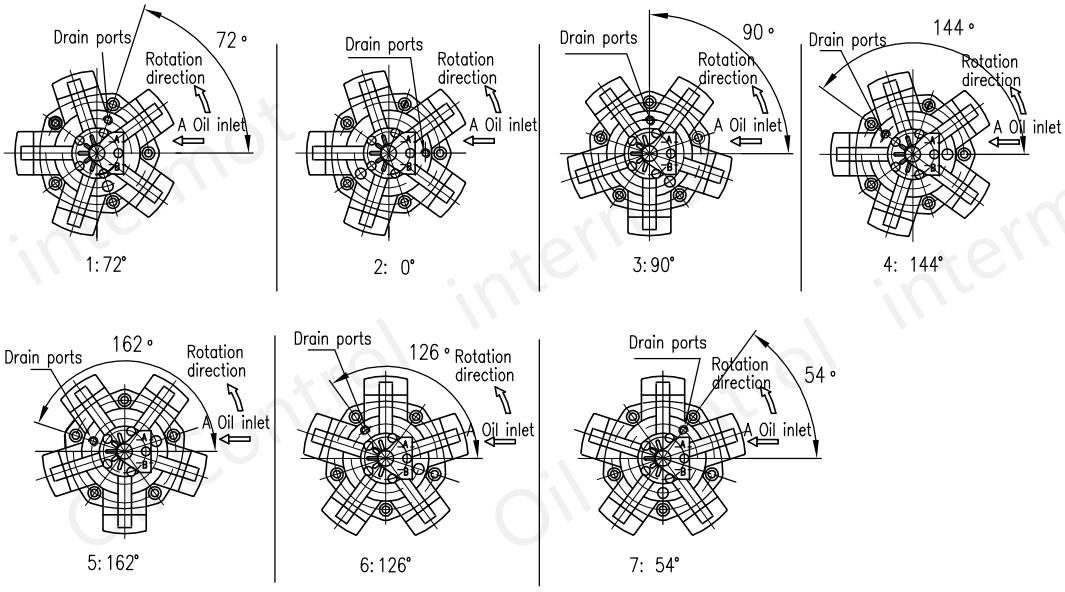
INSTRUCTIONS & ADVICES

1.Filtration: The recommended filtration precision for normal industrial application is 25 um, and allowable precision is 75 um under low-pressure low-speed or interval working conditions.
2.Viscosity: The optimum performance could only be obtained in the good viscosity condition and therefore in most conditions, the viscosity of the motor should be within the range of 15-1000 cst.
3.Before the first time start-up, the hydraulic motor must be filled with hydraulic oil to prevent damage.
4.Leakage:The drain port should be separately connected to the tank. Oil drain pipe should be installed below the oil level surface of the tank. Normally, the allowable maximum pressure for the motor body is 0.1 MPa.
5.The highest horizontal level of the drain pipe should be higher than the highest horizontal position of the motor housing to prevent the emptying oil storage.
6.The hydraulic motor can be installed in any position with rigid support. During the installation, ensure that the drive shaft of the hydraulic motor and the output shaft of the hydraulic motor are concentric.
7.Strictly ensure the cleanliness of the oil port connection, and keep away any solid particles.
8.Release both the radial and axial loads of the output shaft to enable the longer life of the motor.
9.The type of motor cannot work as a pump.

ORDERING CODE

1 2 3 4 5 6

Omit-mounting hole position inlet and drain port (for five-cylinder):



Unless specified, the standard configuration is applied (see installation connection dimension drawing of motor, refer to page A20)

Form of an output shaft
Standard rectangular spline shaft without letters (Centering with the outer diameter).
"B"represents a Parallel key shaft, and the footnote numbers indicate the same installation dimensions of the corresponding models of the same Orbit motor orother brand hydraulic motors (with flange)
"I"represents internal spline (centering with the interior diameter), and the footnotenumbers indicate the same installation dimensions of QJM series (with flange)
"GM" and "SL" represent the installation connection dimensions are the same asthose of SAI Italy M series,Lseries and GM series hydraulic motors, and the footnotenumber refers to the relevant installation dimensions
(For more detailed data & dimensions, please consult our engineer)

Nominal displacement (ml/r)

Serial Code

NHM Series Identifier: (Intermot crankshaft connecting radial piston hydraulic motor)
NHMS Series special edition with enhanced rotation speed performance

MODEL EXAMPLE:

NHM6-450B-D31 (G3/4")\72

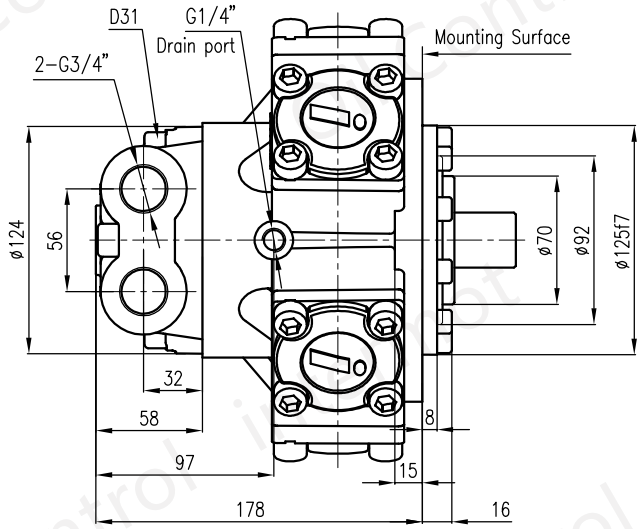
Represents NHM6 series radial piston hydraulic motor with crankshaft connecting-rod structure, displacement:450 ml/r, output shaft: B(Parallel Key),and oil distributor: D31(G3/4") , the relative mounting position of oil inlet anddrain port is 72° .

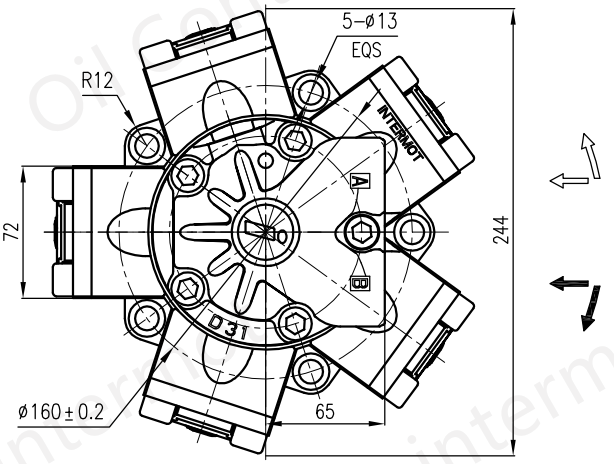
TECHNICAL PERFORMANCE PARAMETERS

Type	Displacement (ml/r)	Rated Pressure (MPa)	Max. Pressure (MPa)	Rated Torque (N.m)	Unit Torque (N.m/MPa)	Speed (r/min)	Weight (kg)
NHM1-63	77	25	32	284	11	15~900	21
NHM1-80	91	25	32	335	13	15-850	
NHM1-100	96	25	32	355	14	15-800	
NHM1-110	113	25	32	419	17	15-800	
NHM1-125	126	20	25	371	19	15-800	
NHM1-140	138	20	25	410	20	15-800	
NHM1-160	159	16	20	376	24	15-700	
NHM1-175	181	16	20	428	27	15-630	
NHM1-200	196	16	20	464	29	15-630	
NHM2-100	113	25	32	419	17	15-800	28
NHM2-150	159	25	32	588	24	15-700	
NHM2-175	180	20	25	532	27	15-600	
NHM2-200	207	20	25	611	31	8-600	
NHM2-250	235	16	20	556	35	8-600	
NHM2-280	276	16	20	653	41	8-500	
NHM3-175	181	25	32	670	27	8-600	35
NHM3-200	201	25	32	743	30	8-600	
NHM3-250	254	20	25	752	38	8-500	
NHM3-300	289	20	25	856	43	6-450	
NHM3-350	340	16	20	804	50	6-400	
NHM3-400	380	16	20	899	56	6-350	
NHM6-400	397	25	32	1469	59	5-500	57
NHM6-450	452	25	32	1672	67	5-500	
NHM6-500	491	20	25	1451	73	5-400	
NHM6-600	594	20	25	1756	88	4-400	
NHM6-700	683	16	20	1616	101	4-350	
NHM6-750	754	16	20	1785	112	4-320	
NHM8-600	617	25	32	2282	91	4-450	66
NHM8-700	710	25	32	2626	105	4-400	
NHM8-800	810	20	25	2396	120	4-350	
NHM8-900	889	20	25	2629	131	3-350	
NHM8-1000	1000	16	20	2366	148	3-300	
NHM11-700	707	25	32	2612	104	4-350	88
NHM11-800	784	25	32	2899	116	4-350	
NHM11-900	894	25	32	3306	132	4-350	
NHM11-1000	981	20	25	2902	145	3-320	
NHM11-1100	1104	20	25	3265	163	3-320	
NHM11-1200	1234	16	20	2919	182	3-320	
NHM11-1300	1301	16	20	3079	192	3-250	
NHM16-1400	1413	25	32	5224	209	2-250	150
NHM16-1500	1528	20	25	4520	226	2-250	
NHM16-1600	1648	20	25	4874	244	2-250	
NHM16-1800	1815	20	25	5367	268	2-250	
NHM16-2000	2035	16	20	4814	301	2-230	
NHM16-2200	2267	16	20	5364	335	2-200	
NHM16-2400	2444	16	20	5783	361	2-200	
NHM31-2400	2375	20	25	7023	351	2-200	324
NHM31-2500	2553	25	32	9438	378	2-200	
NHM31-2800	2683	20	25	7935	397	1-180	
NHM31-3000	3063	20	25	9057	453	1-180	
NHM31-3150	3218	20	25	9518	476	1-160	
NHM31-3500	3462	16	20	8190	512	1-160	
NHM31-4000	4153	16	20	9825	614	1-140	
NHM31-4500	4522	16	20	10698	669	1-140	
NHM70-4600	4604	20	25	13617	681	1-120	500
NHM70-5000	4946	20	25	14626	731	1-120	
NHM70-5400	5452	20	25	16125	806	1-120	

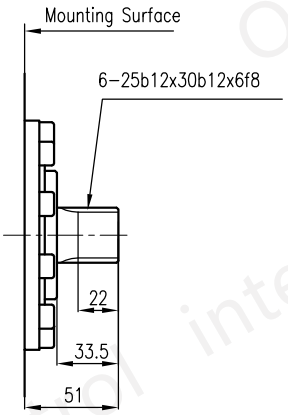
The above data are measured and obtained under specific actual experimental conditions, and only for product description purposes. The data should not be interpreted as warranted characteristics in legal term. Ningbo intermot(Ningbo Oil Control Hydraulic Co. Ltd.)reserves the rights to implement modifications without notice. All Partial or total reproduction and copy of such data without formal authorization is strictly forbidden.

NHM(S)1-63~200 INSTALLATION DIMENSIONS

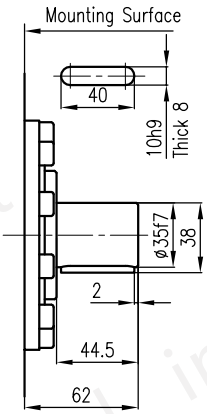




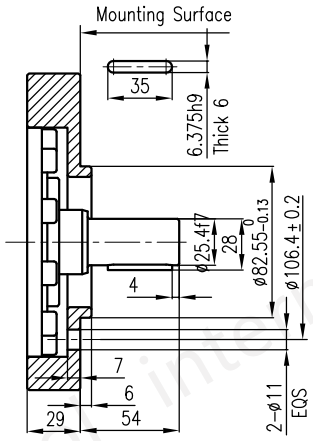
Standard Spline : NHM1-**



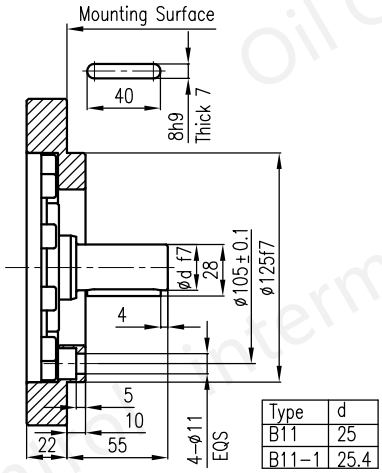
Standard Parallel Key : NHM1-**B



NHM1-**B3



NHM1-**B11、B11-1



Type	d
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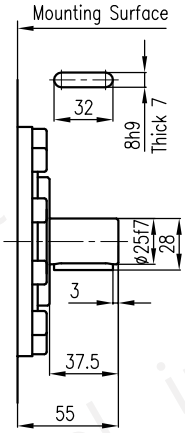
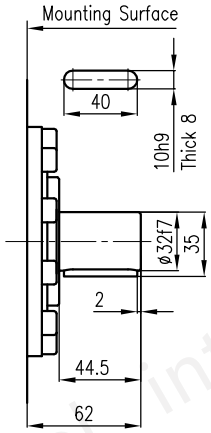
B11-1	25.4

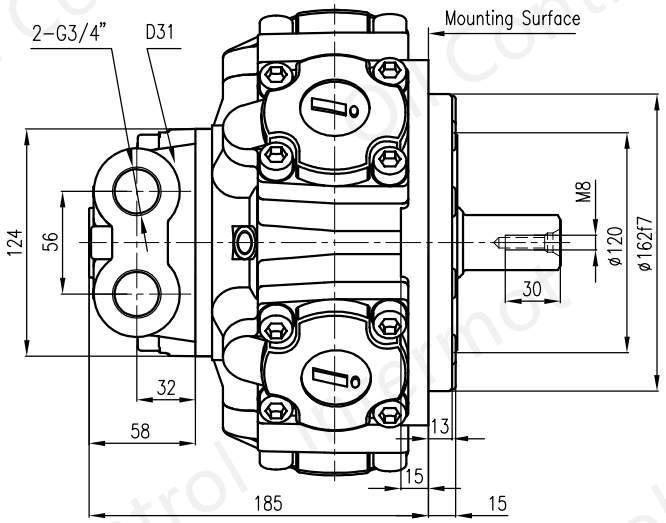
NHM1-**B28

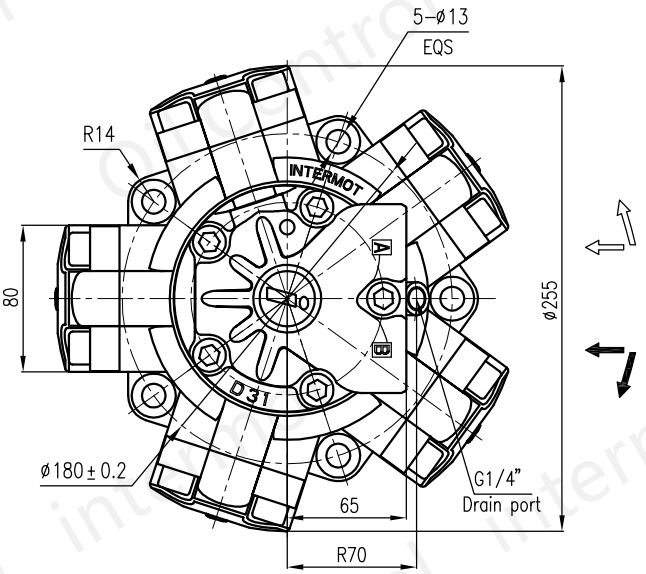


NHM1-**B31

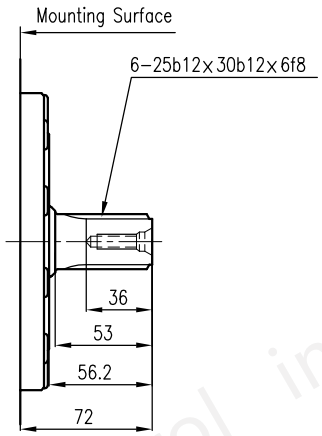


NHM(S)2-100~280 INSTALLATION DIMENSIONS

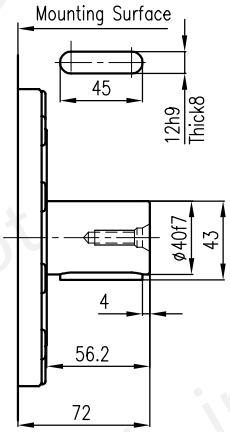




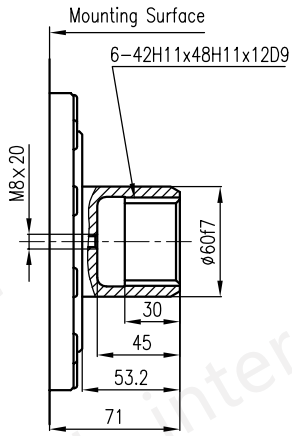
Standard Spline : NHM2-**



Standard Parallel Key : NHM2-**B



Standard Internal : NHM2-**I



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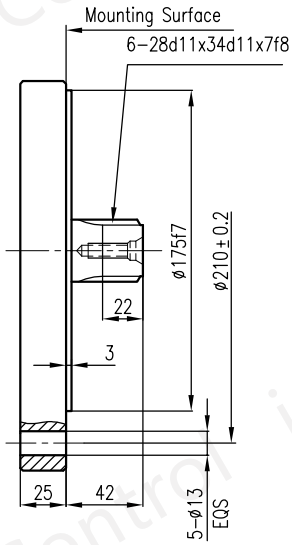

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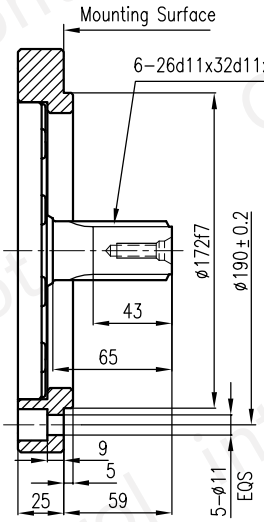

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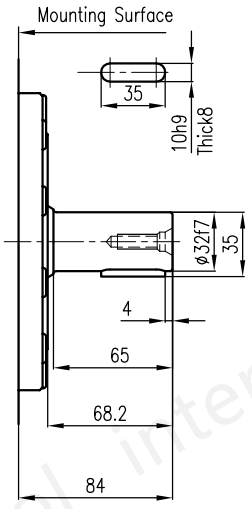
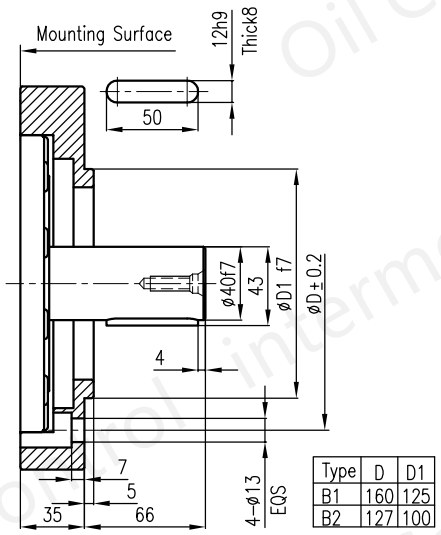


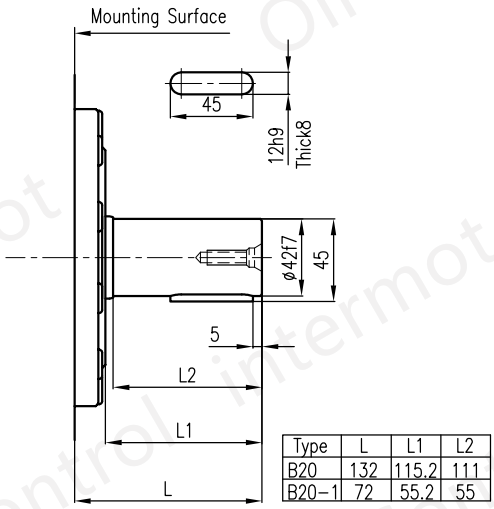
NHM(S)2-100~280 INSTALLATION DIMENSIONS

NHM2-**B1、B2



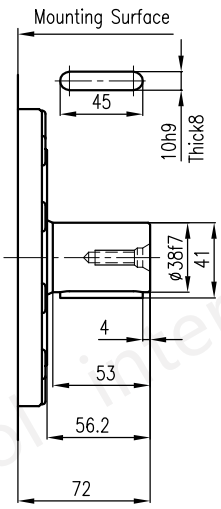
Type	D	D1
B1	160	125
B2	127	100

NHM2-**B20、B20-1



Type	L	L1	L2
B20	132	115.2	111
B20-1	72	55.2	55

NHM2-**B21



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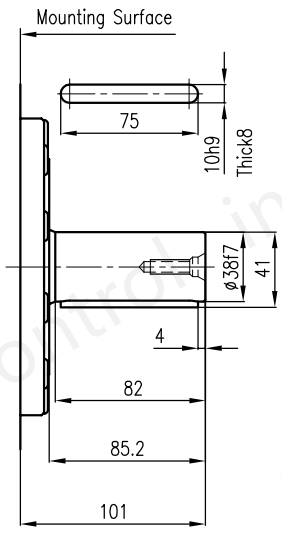

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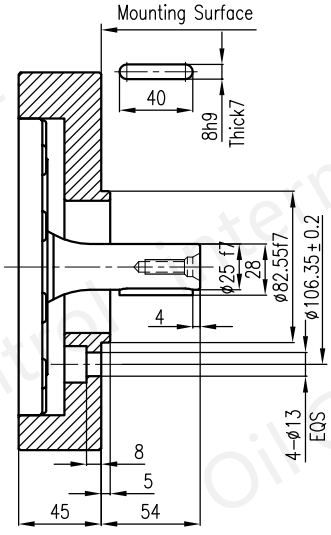

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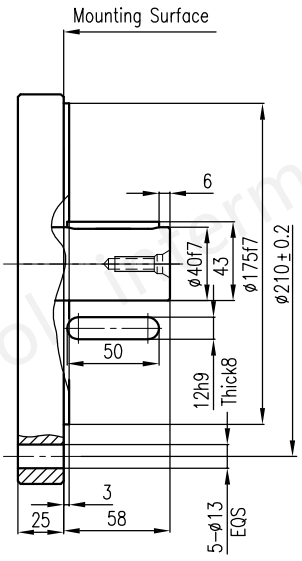
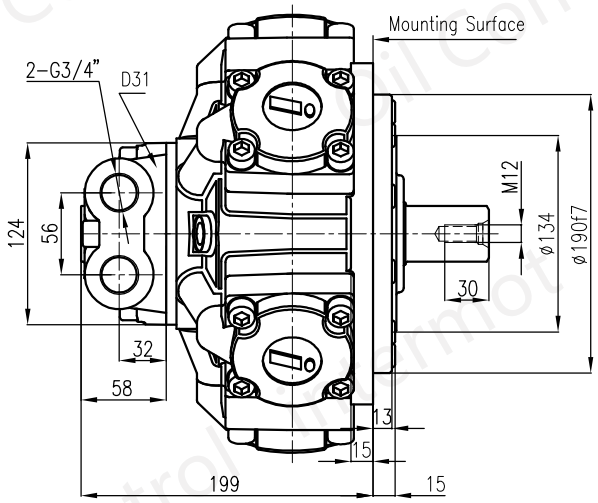
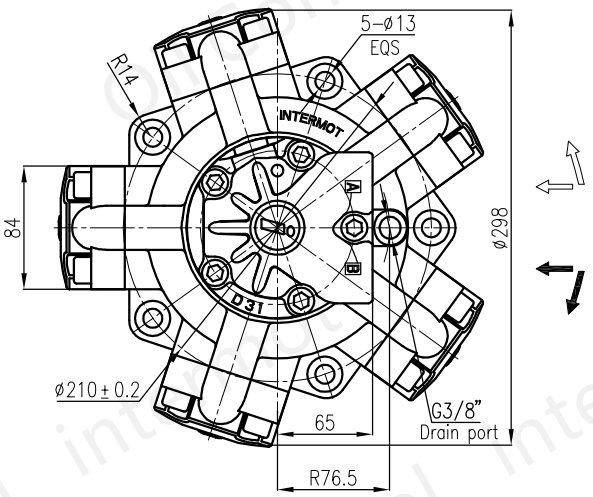


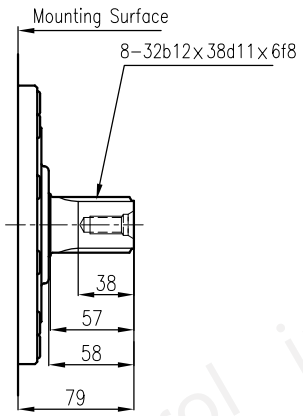
INTERMOT
HYDRAULIC MOTOR

NHM(S)3-175~400 INSTALLATION DIMENSIONS

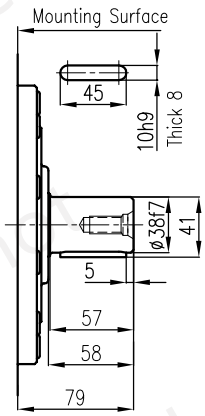




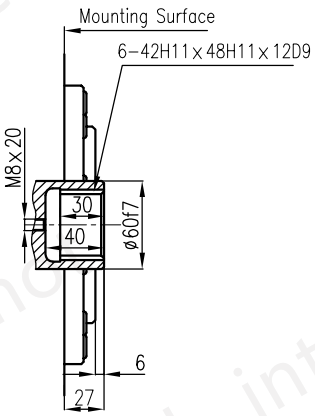
Standard Spline : NHM3-**



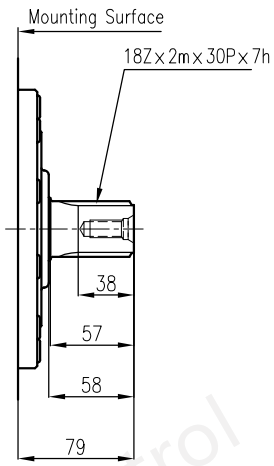
Standard Parallel Key : NHM3-**B



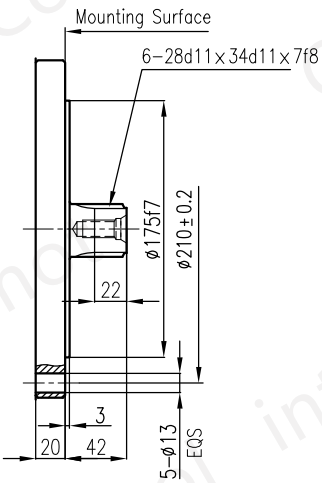
Standard Internal : NHM3-**I



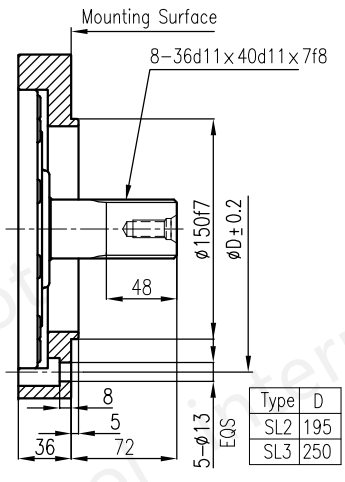
NHM3-**A



NHM3-**SL1

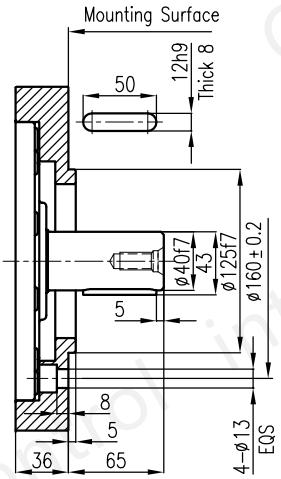


NHM3-**SL2、SL3

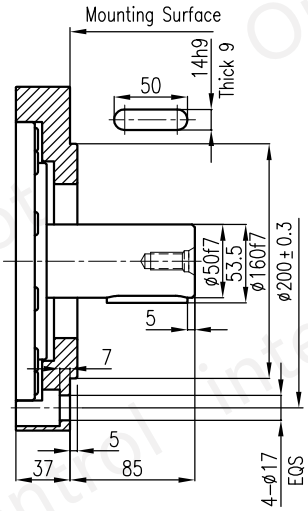


NHM(S)3-175~400 INSTALLATION DIMENSIONS

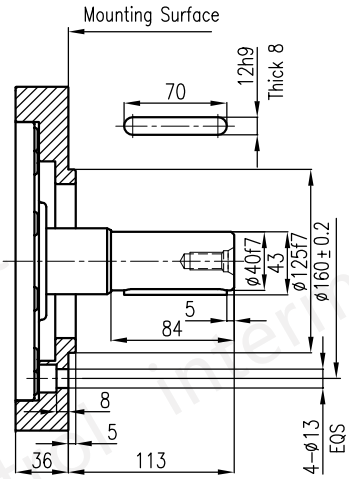
NHM3-**B1



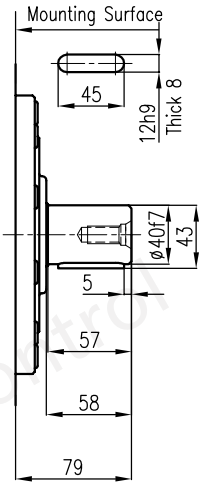
NHM3-**B2



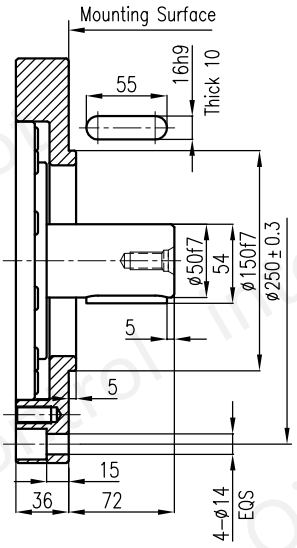
NHM3-**B5



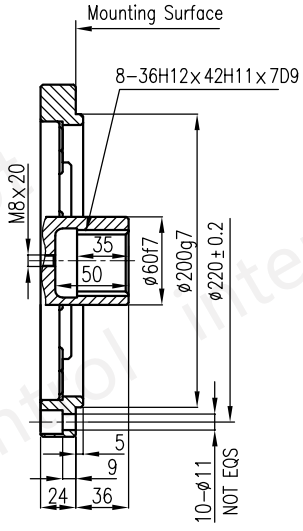
NHM3-**B32



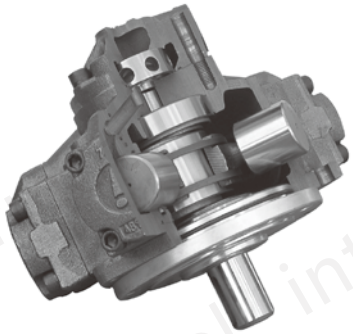
NHM3-**B44



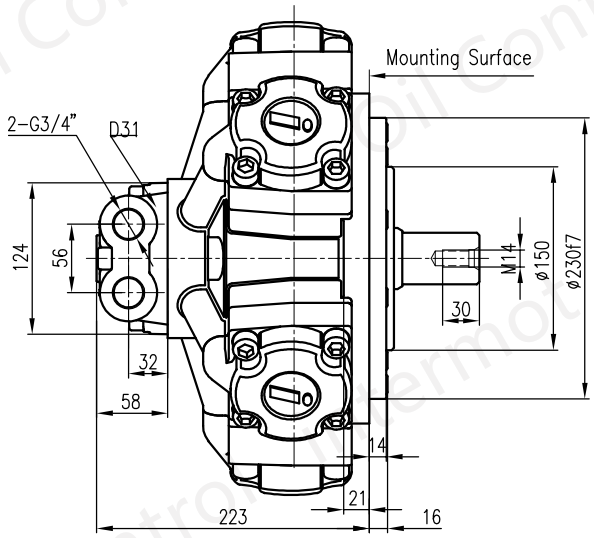
NHM3-**I1A1

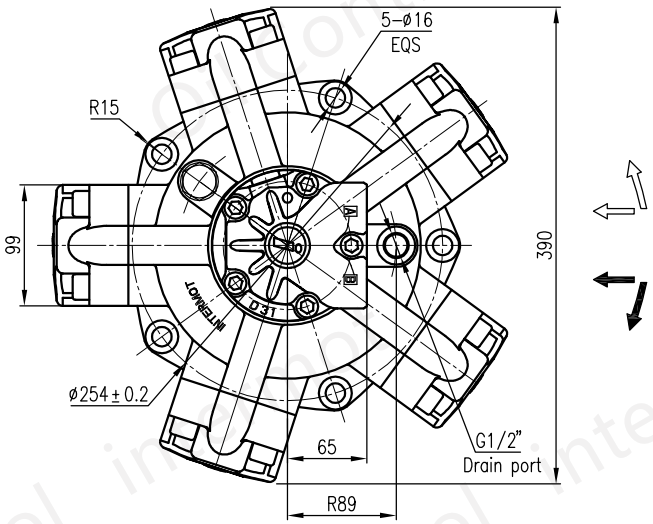


INTERMOT
HYDRAULIC MOTOR

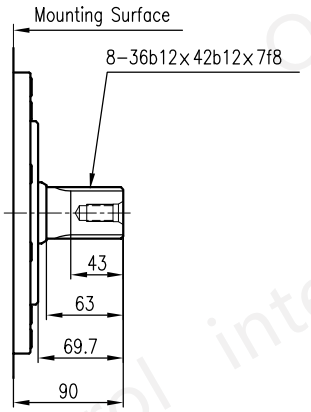


NHM(S)6-400~750 INSTALLATION DIMENSIONS

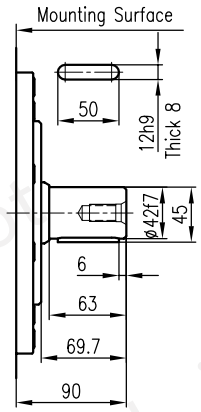




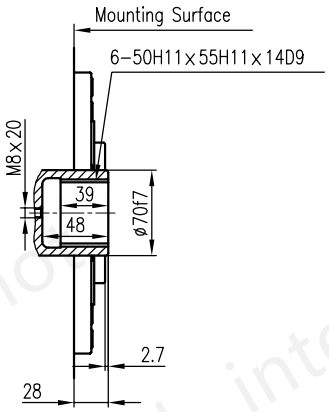
Standard Spline : NHM6-**



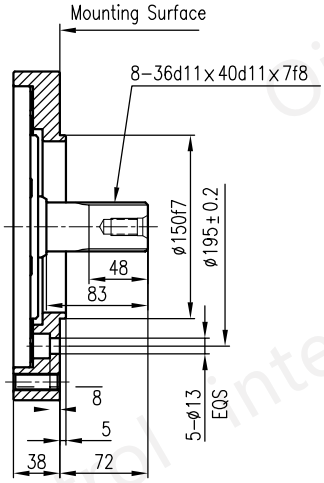
Standard Parallel Key : NHM6-**B



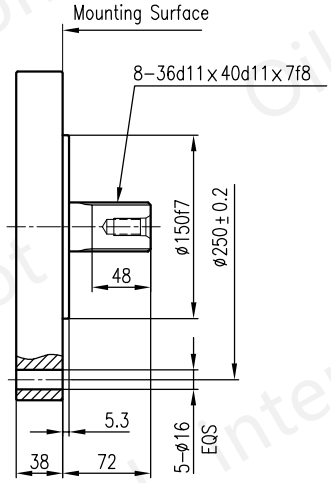
Standard Internal : NHM6-**I1



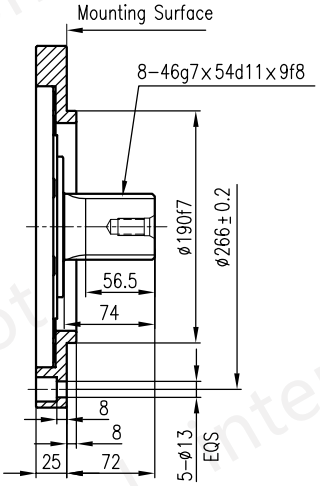
NHM6-**SL2



NHM6-**SL3

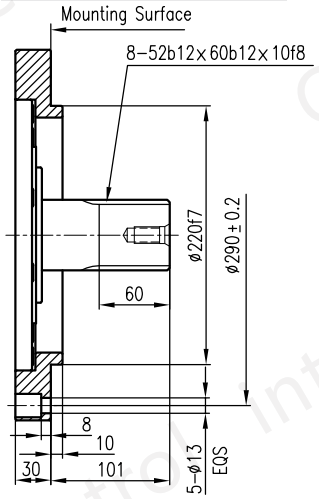


NHM6-**N

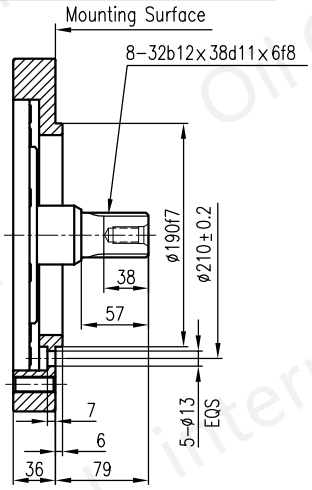


NHM(S)6-400~750 INSTALLATION DIMENSIONS

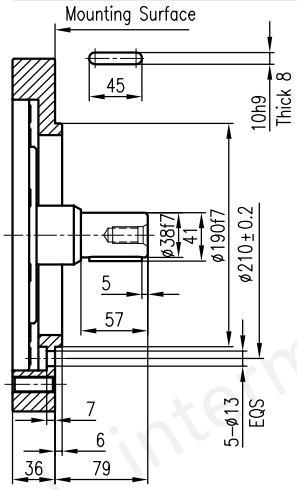
NHM6-**N1



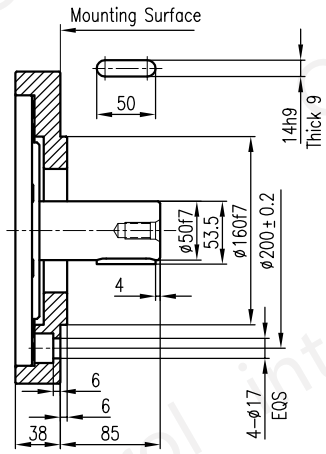
NHM6-**-3M



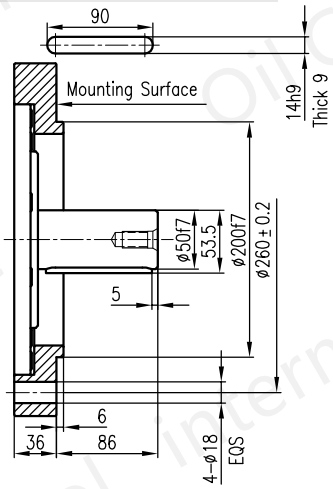
NHM6-**B-3M



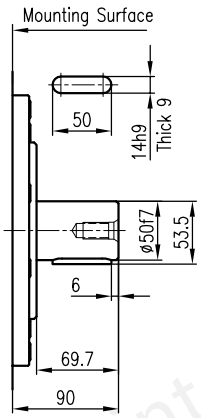
NHM6-**B2



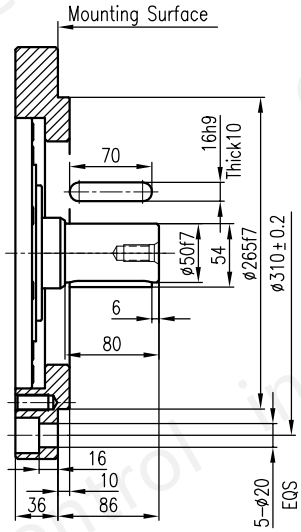
NHM6-**B13



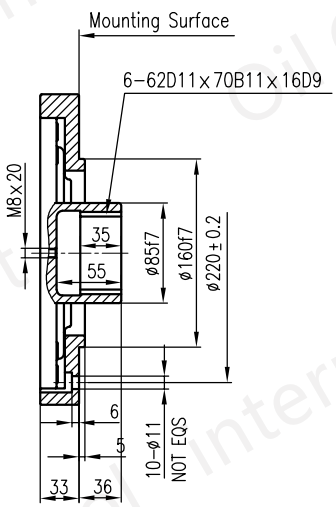
NHM6-**B33



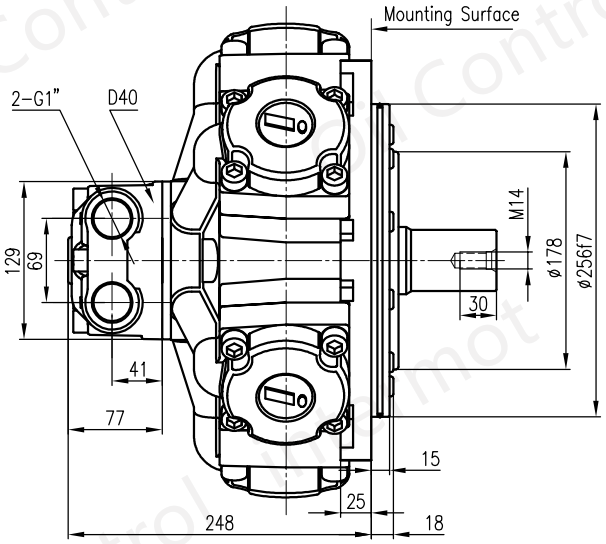
NHM6-**B45

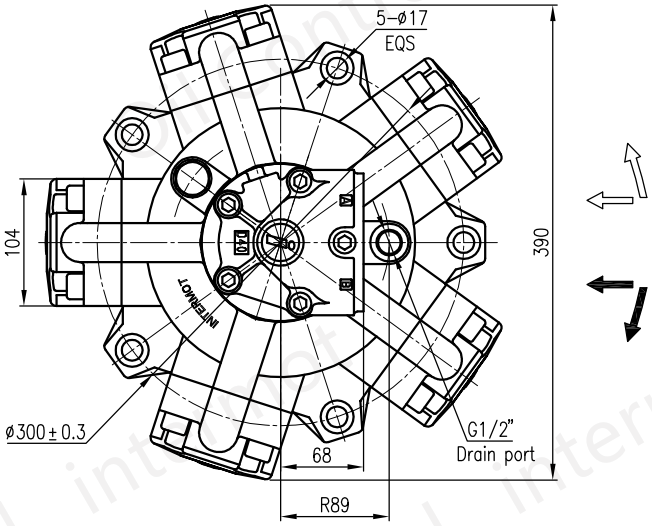


NHM6-**I11

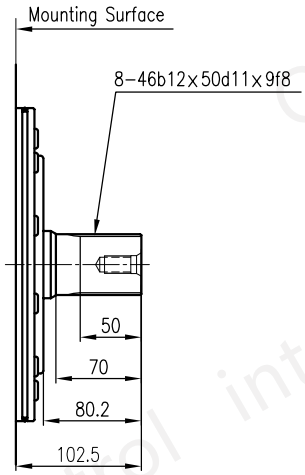


NHM(S)8-600~1000 INSTALLATION DIMENSIONS

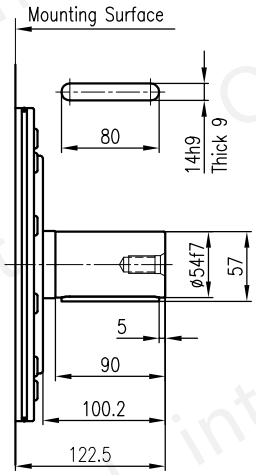




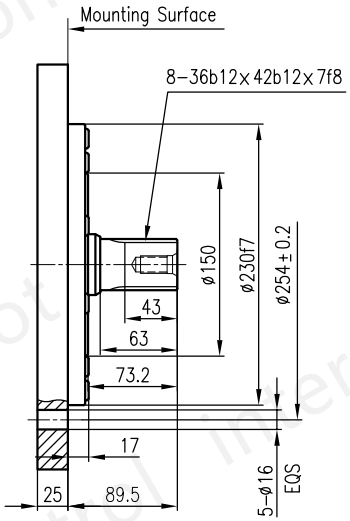
Standard Spline : NHM8-**



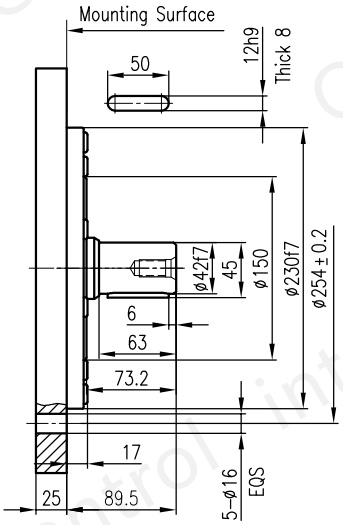
Standard Parallel Key : NHM8-**B



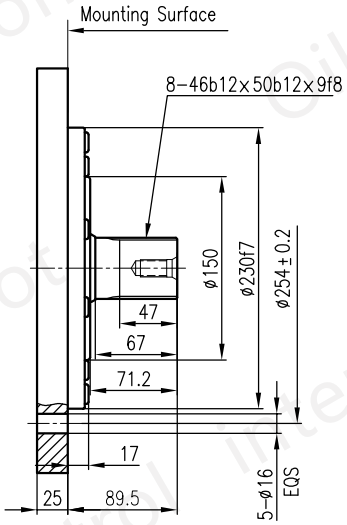
NHM8-**-6M



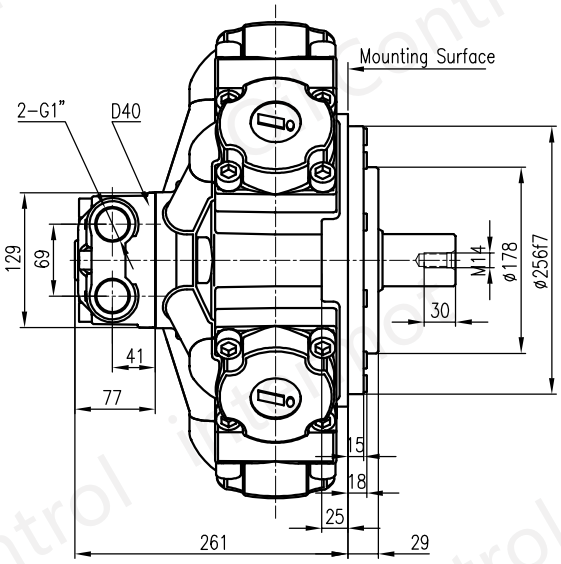
NHM8-**B-6M

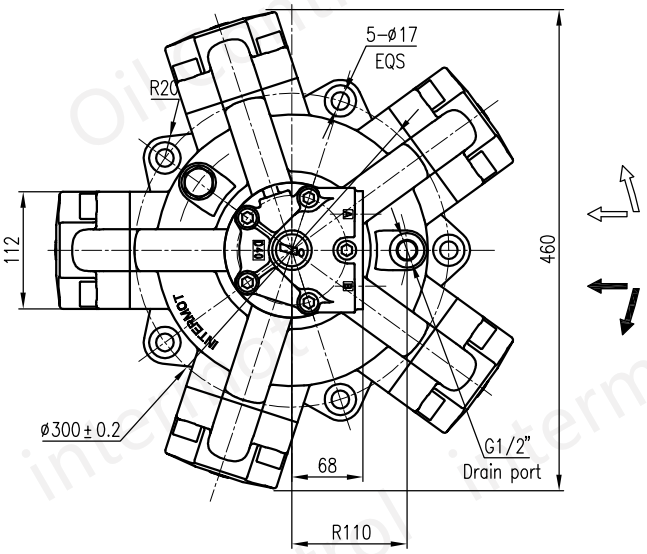


NHM8-**A2

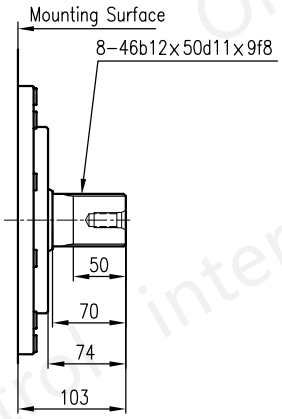


NHM(S)11-700~1300 INSTALLATION DIMENSIONS



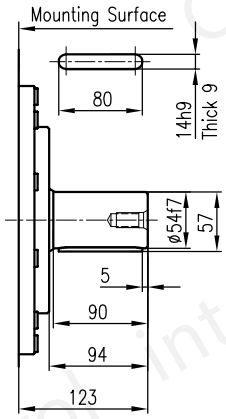


Standard Spline : NHM11-**



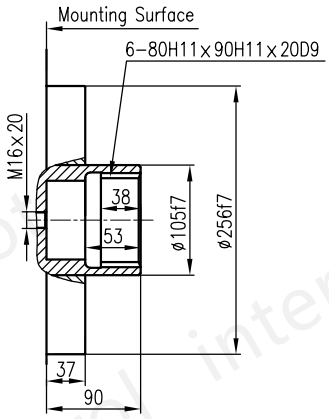
NHM11-**SL3

Standard Parallel Key : NHM11-**B

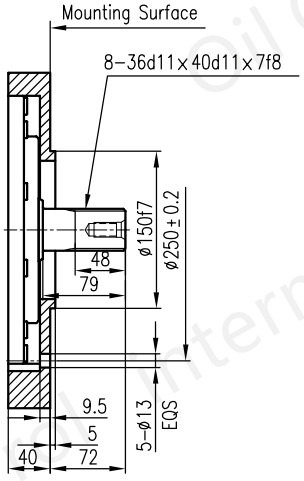


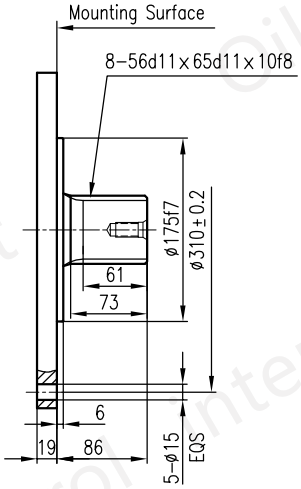
NHM11-**SL4

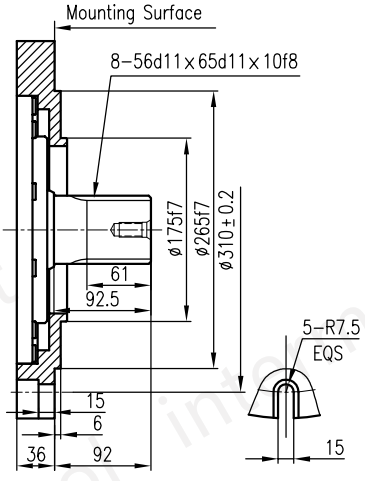
Standard Internal : NHM11-**I



NHM11-**SL5

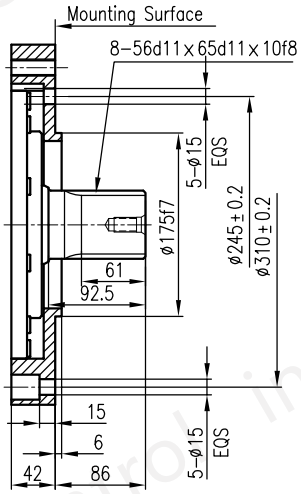




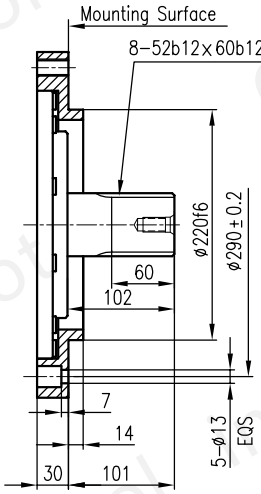


NHM(S)11-700~1300 INSTALLATION DIMENSIONS

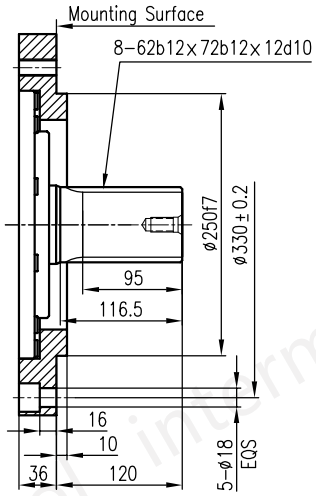
NHM11-**SM4



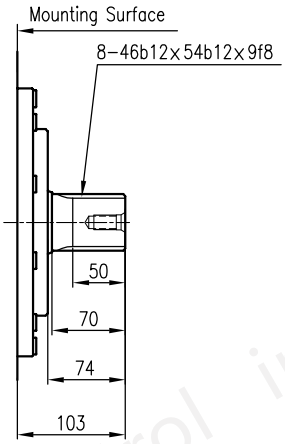
NHM11-**N1K2



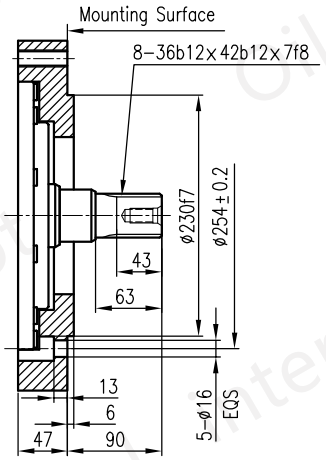
NHM11-**K



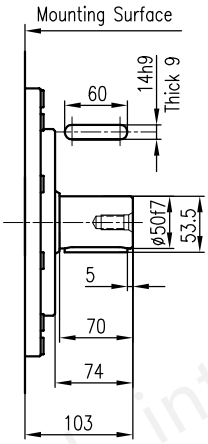
NHM11-**A1



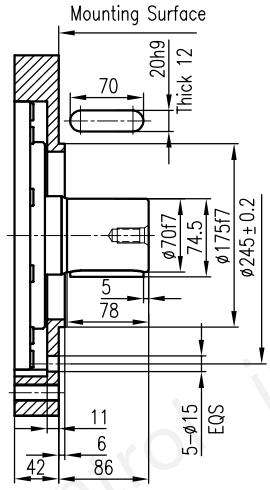
NHM11-**6M



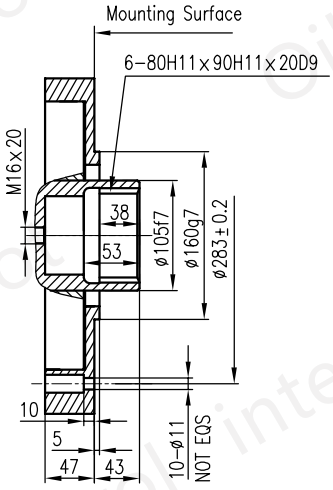
NHM11-**H4B



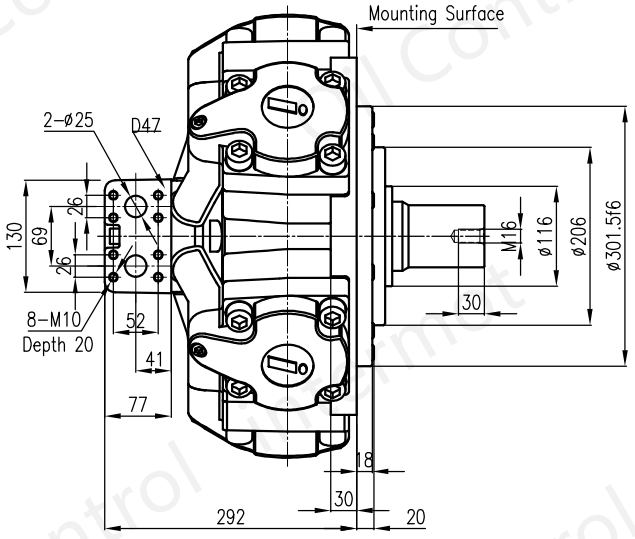
NHM11-**SM4B

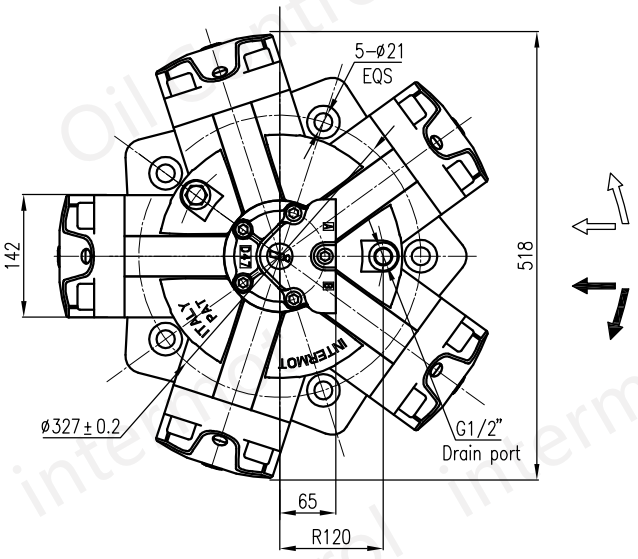


NHM11-**I21

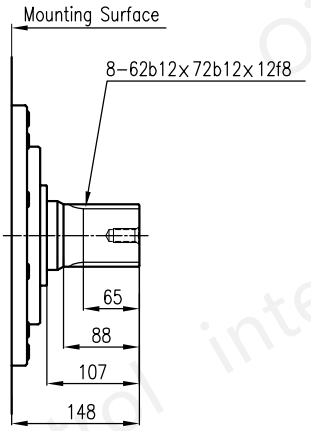


NHM(S)16-1400~2400 INSTALLATION DIMENSIONS

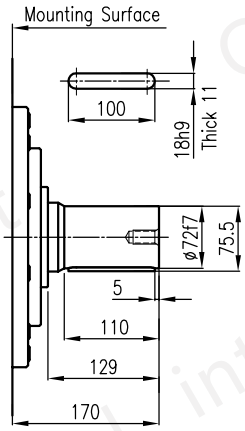




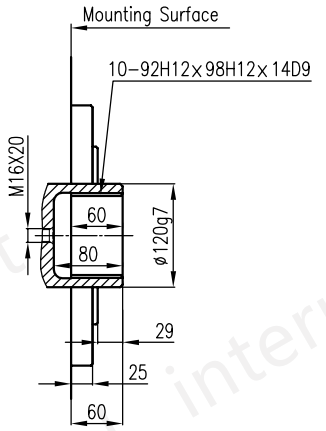
Standard Spline : NHM16-**



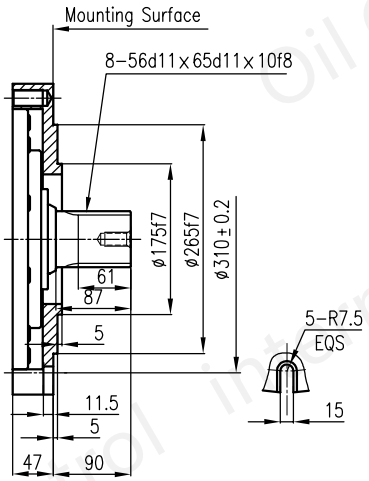
Standard Parallel Key : NHM16-**B



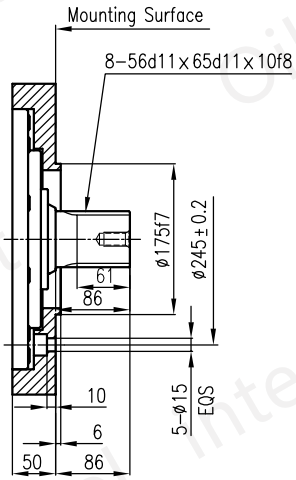
Standard Internal : NHM16-**I



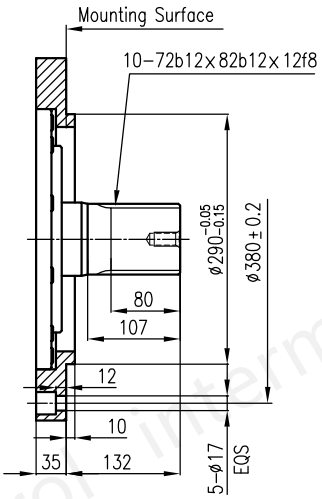
NHM16-**SL5



NHM16-**SM4

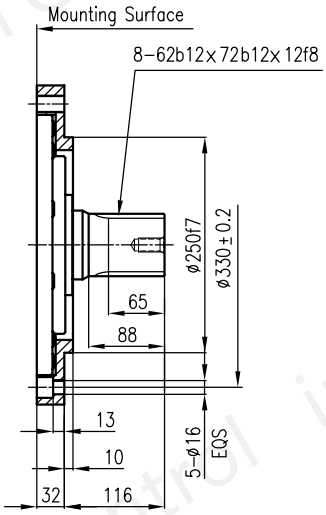


NHM16-**N

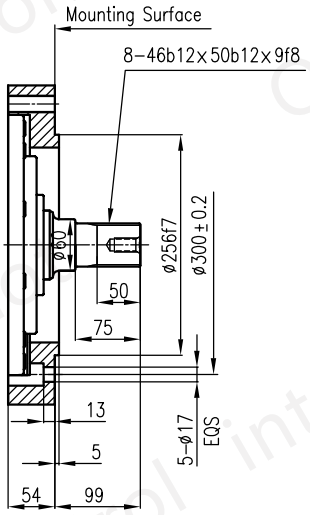


NHM(S)16-1400~2400 INSTALLATION DIMENSIONS

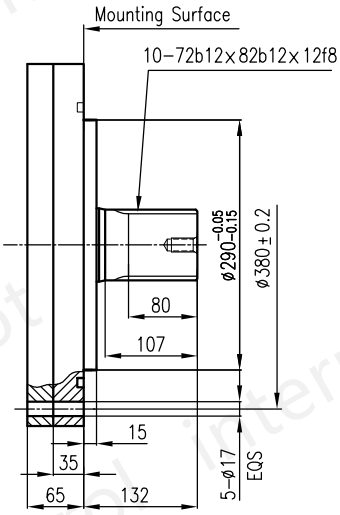
NHM16-**K



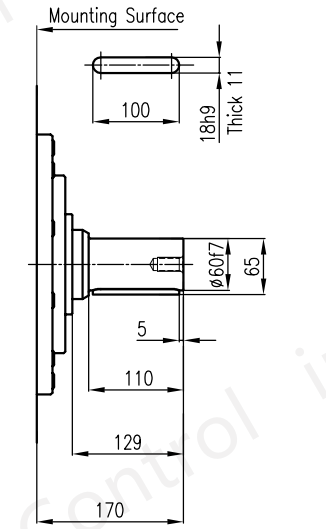
NHM16-**11M



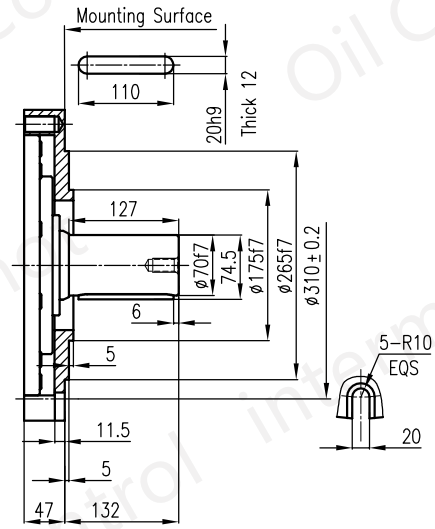
NHM16-**H5C1



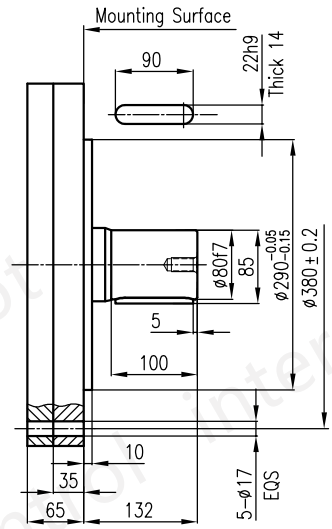
NHM16-**B19



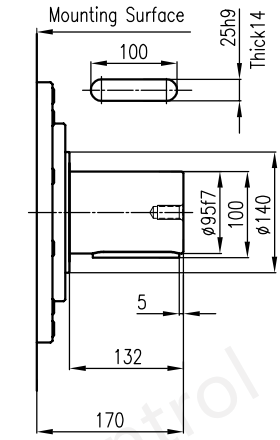
NHM16-**SL5B



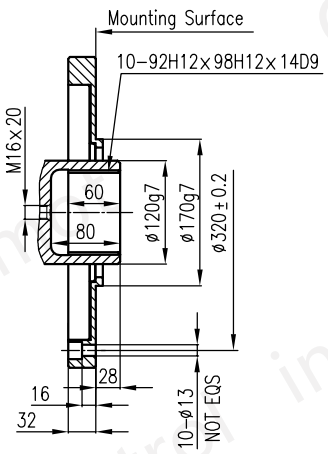
NHM16-**H5CB



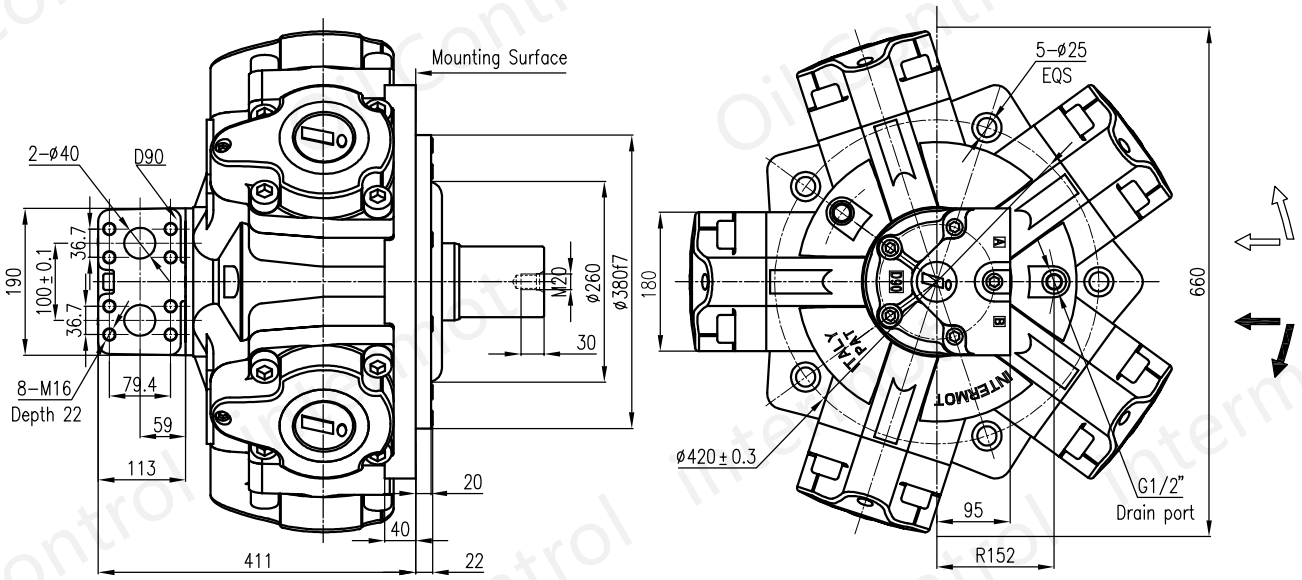
NHM16-**B30



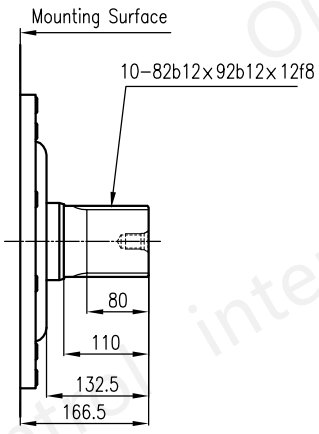
NHM16-**I42



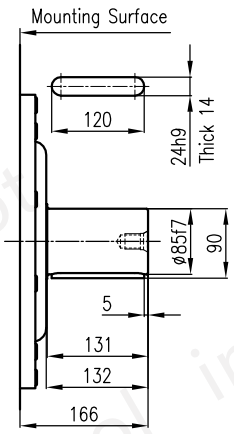
NHM(S)31-2400~4500 INSTALLATION DIMENSIONS



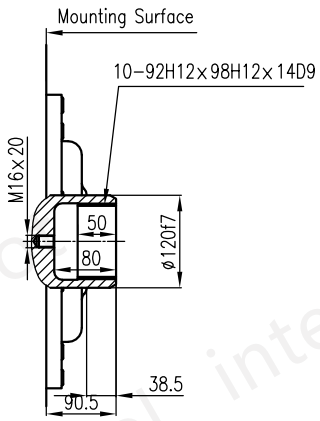
Standard Spline : NHM31-**



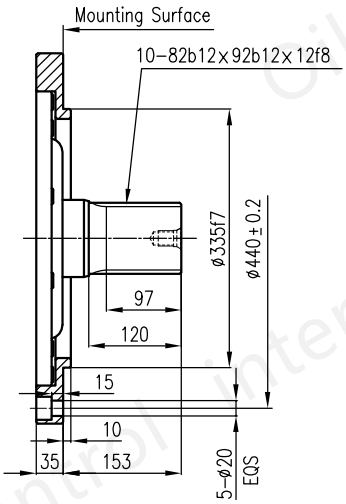
Standard Parallel Key : NHM31-**B



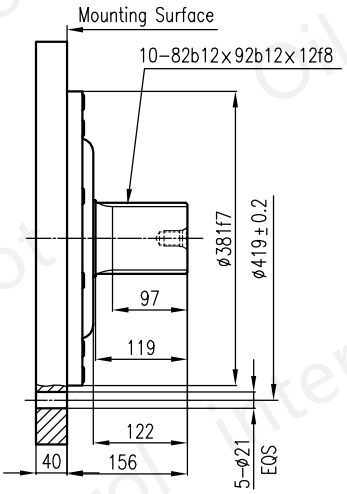
Standard Internal : NHM31-**I



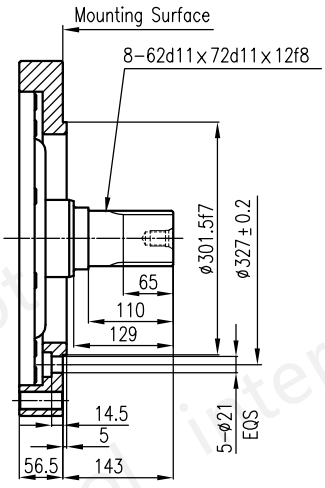
NHM31-**N2



NHM31-**H6

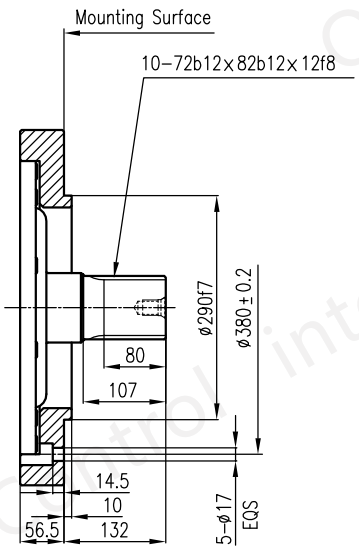


NHM31-**-16M

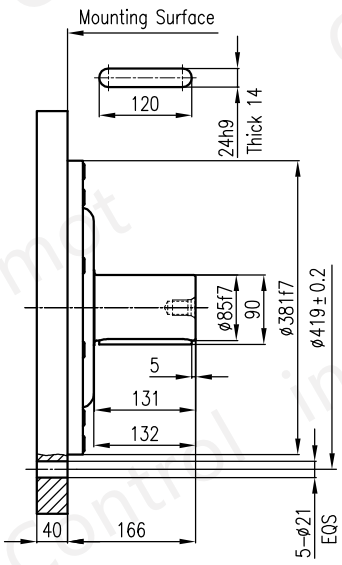


NHM(S)31-2400~4500 INSTALLATION DIMENSIONS

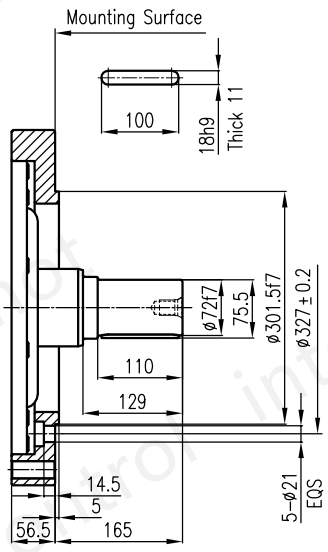
NHM31-**H5C



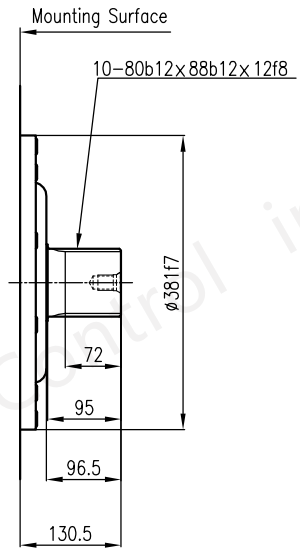
NHM31-**H6B



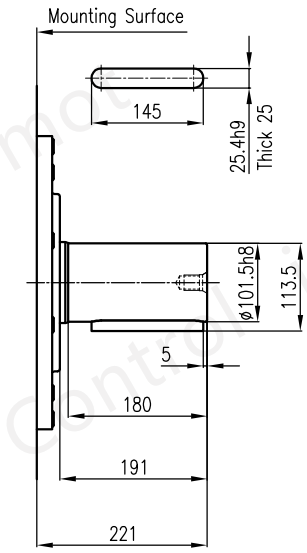
NHM31-**B0-16M



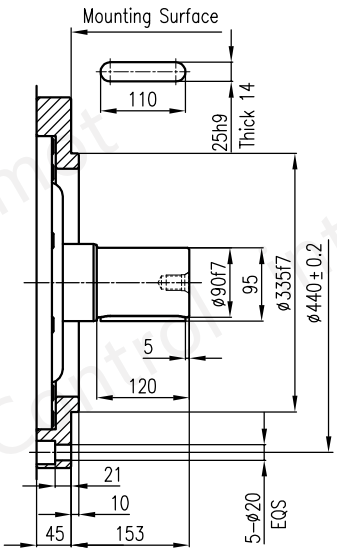
NHM31-**SL7



NHM31-**B10

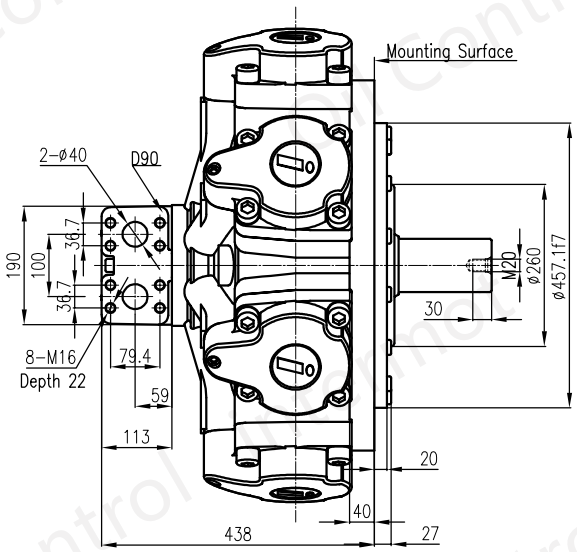


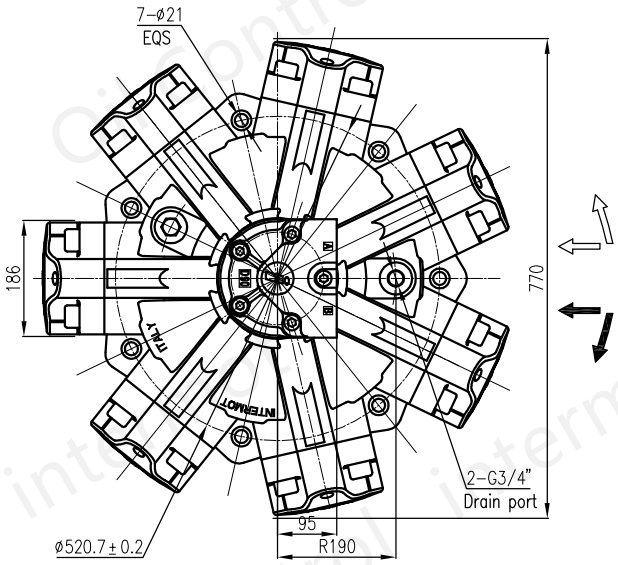
NHM31-**B49



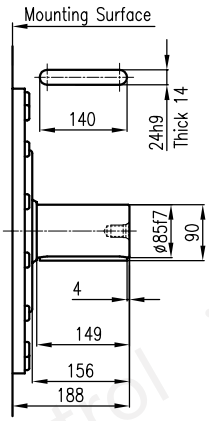
INTERMOT
HYDRAULIC MOTOR

NHM(S)70-4600~5400 INSTALLATION DIMENSIONS

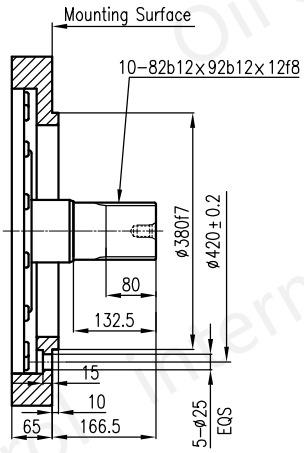




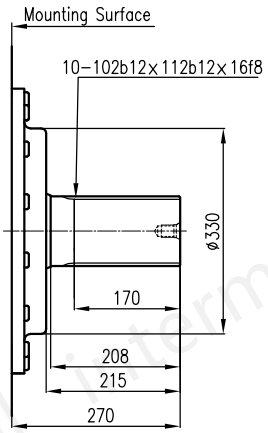
Standard Parallel Key : NHM70-**B



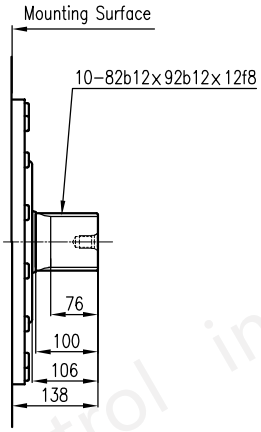
NHM70-**A1



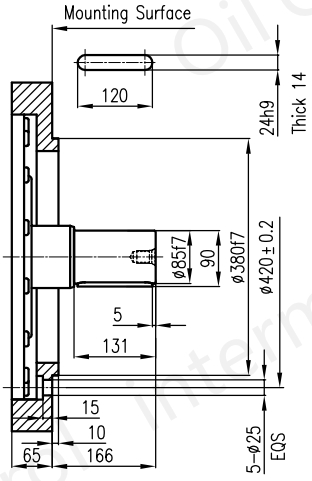
NHM70-**A3



NHM70-**A6



NHM70-**B1

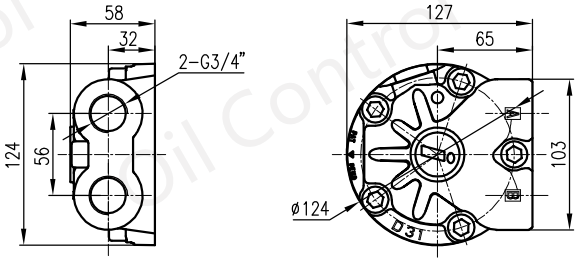


DISTRIBUTOR

STANDARD DISTRIBUTOR

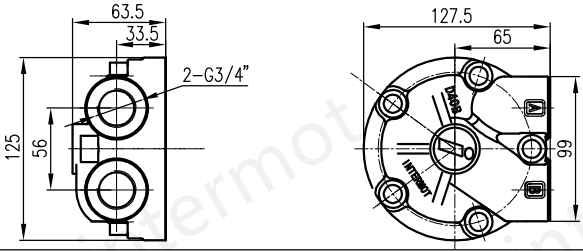
D31

Distributor with G3/4"ports for NHM1\NHM2 \NHM3\NHM6 series motors



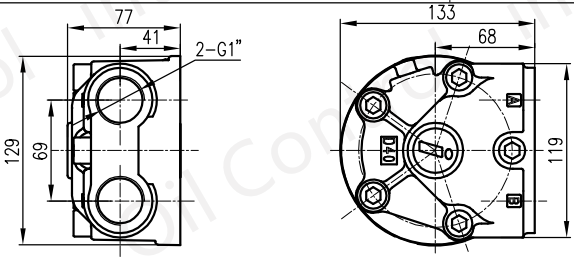
D40B

Distributor with G3/4"ports for NHM1\NHM2 \NHM3\NHM6 series motorsin the condition of high speed



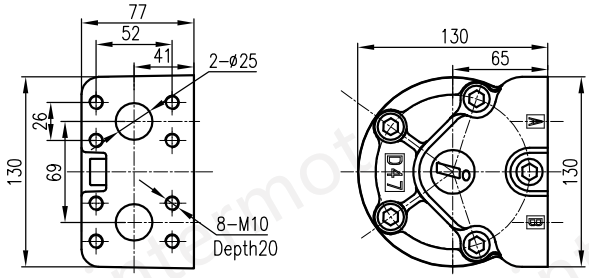
D40

Standard distributor with G1"ports for NHM8\NHM11



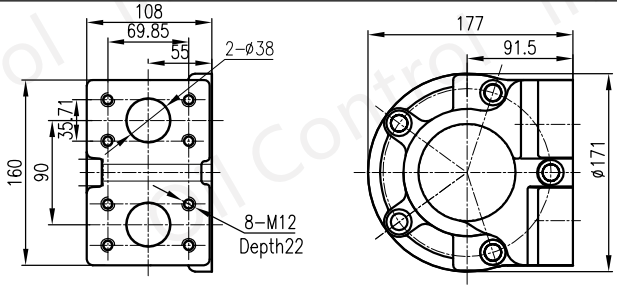
D47

Distributor with ø25 flanges for NHM16 series motor



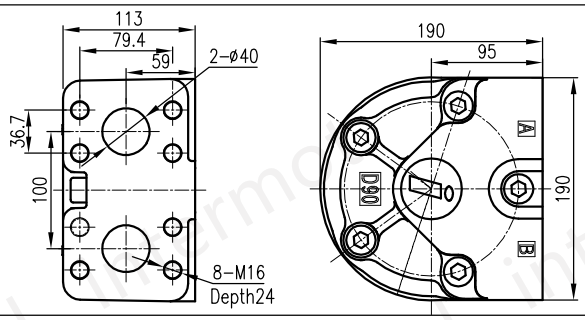
D75

Distributor with ø38 flanges for GHM15 series motor



D90

Large flow distributor for NHM31\NHM70 series motors

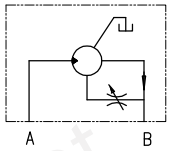


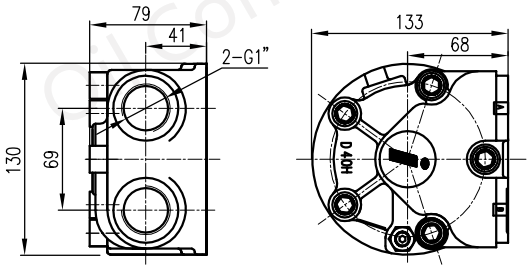
*In case of long hour continuous working of the motor at a high speed condition, oil distributor with fushing settings is recommended, or consult our engineer for more details.
*Various options of distributors can be applied to the different models of the series according to the actual application requirements, for more information please consult our engineer.

DISTRIBUTOR WITH FLUSHING

D40H

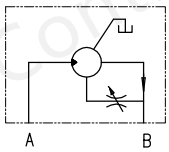
Distributor with G1"thread connection for GHM6\NHMH6 \NHMH8\NHMH11\NHMH16 series motor
(suitable only for one-way rotation conditions when as oil inlet port A.)

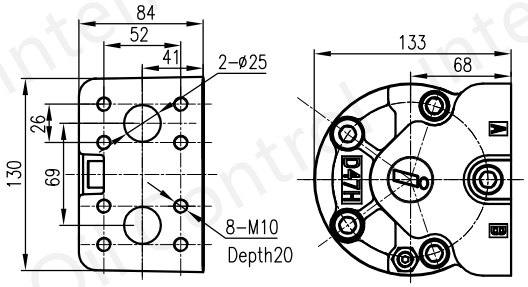




D47H

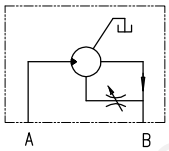
Distributor with ø25 flanges for GHM6\NHMH6 \NHMH8\NHMH11\NHMH16 series motor
(Only for one-way rotation)

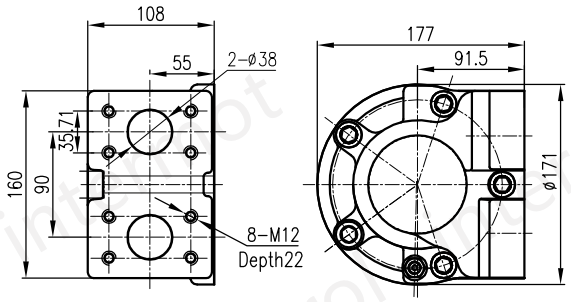




D75H

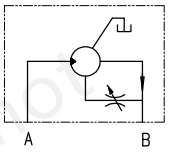
Distributor with ø38 flanges for GHM15 series motor
(Only for one-way rotation)

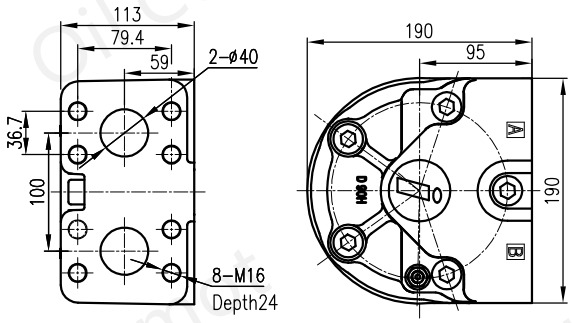




D90H

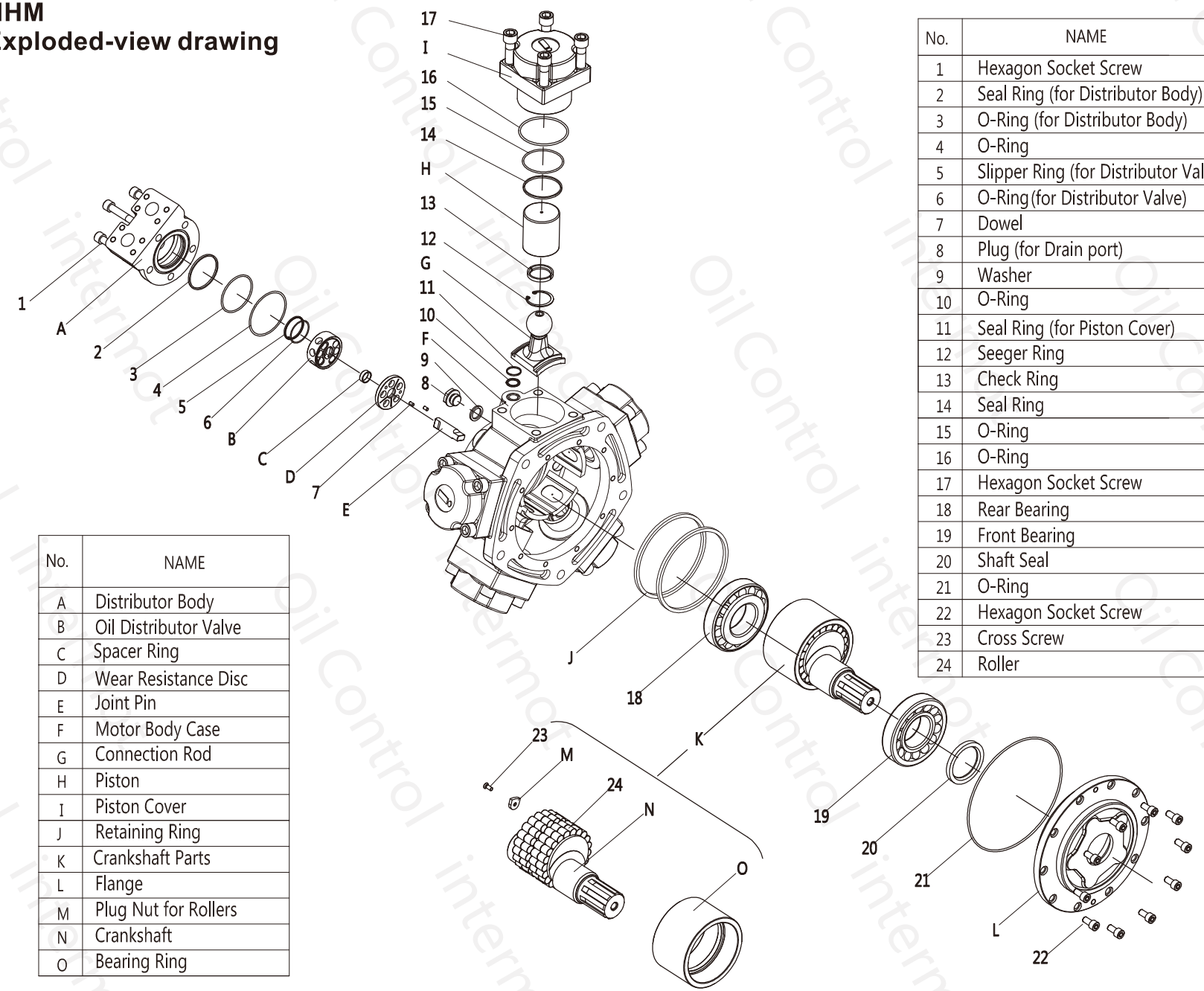
Large flow distributor for GHM28\GHM30\NHMH31\ NHMH70 series motors
(Only for one-way rotation)





*In case of long hour continuous working of the motor at a high speed condition, oil distributor with fushing settings is recommended, or consult our engineer for more details.
*Various options of distributors can be applied to the different models of the series according to the actual application requirements, for more information please consult our engineer.

NHM
Exploded-view drawing



No.	NAME
A	Distributor Body
B	Oil Distributor Valve
C	Spacer Ring
D	Wear Resistance Disc
E	Joint Pin
F	Motor Body Case
G	Connection Rod
H	Piston
I	Piston Cover
J	Retaining Ring
K	Crankshaft Parts
L	Flange
M	Plug Nut for Rollers
N	Crankshaft
O	Bearing Ring

No.	NAME
1	Hexagon Socket Screw
2	Seal Ring (for Distributor Body)
3	O-Ring (for Distributor Body)
4	O-Ring
5	Slipper Ring (for Distributor Valve)
6	O-Ring (for Distributor Valve)
7	Dowel
8	Plug (for Drain port)
9	Washer
10	O-Ring
11	Seal Ring (for Piston Cover)
12	Seeger Ring
13	Check Ring
14	Seal Ring
15	O-Ring
16	O-Ring
17	Hexagon Socket Screw
18	Rear Bearing
19	Front Bearing
20	Shaft Seal
21	O-Ring
22	Hexagon Socket Screw
23	Cross Screw
24	Roller

VER: OIL-25-01/1009

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