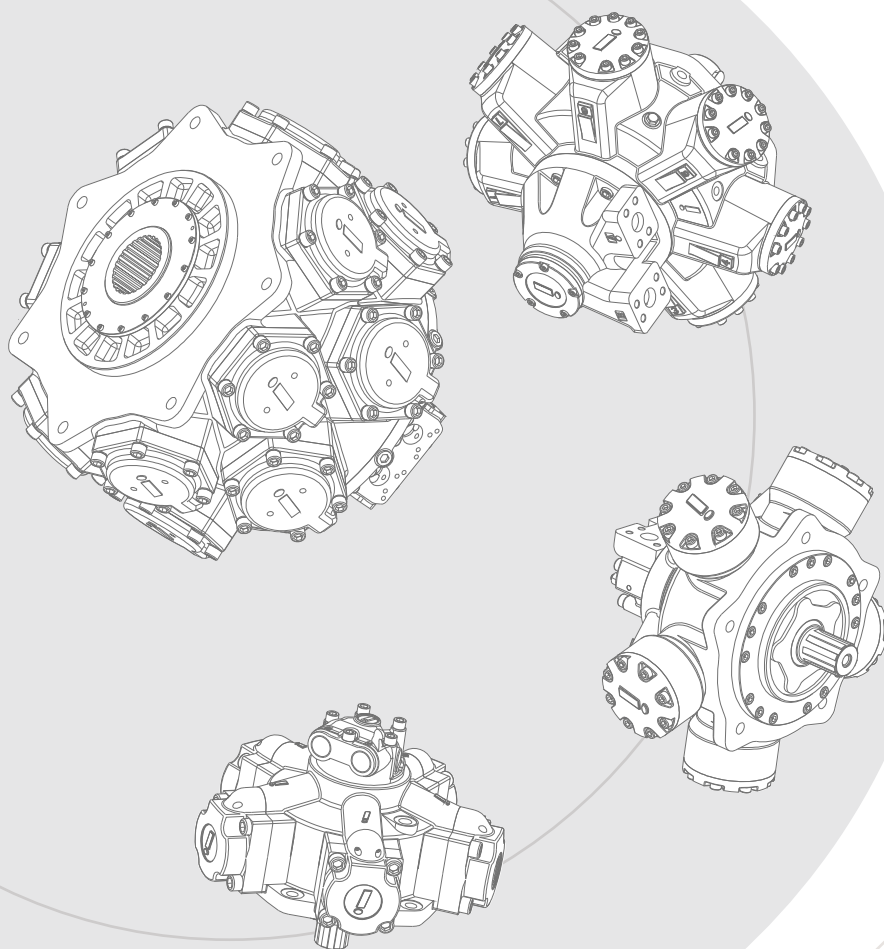




CATALOGUE

HYDRAULIC MOTORS



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

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.





Series Technical Catalogue

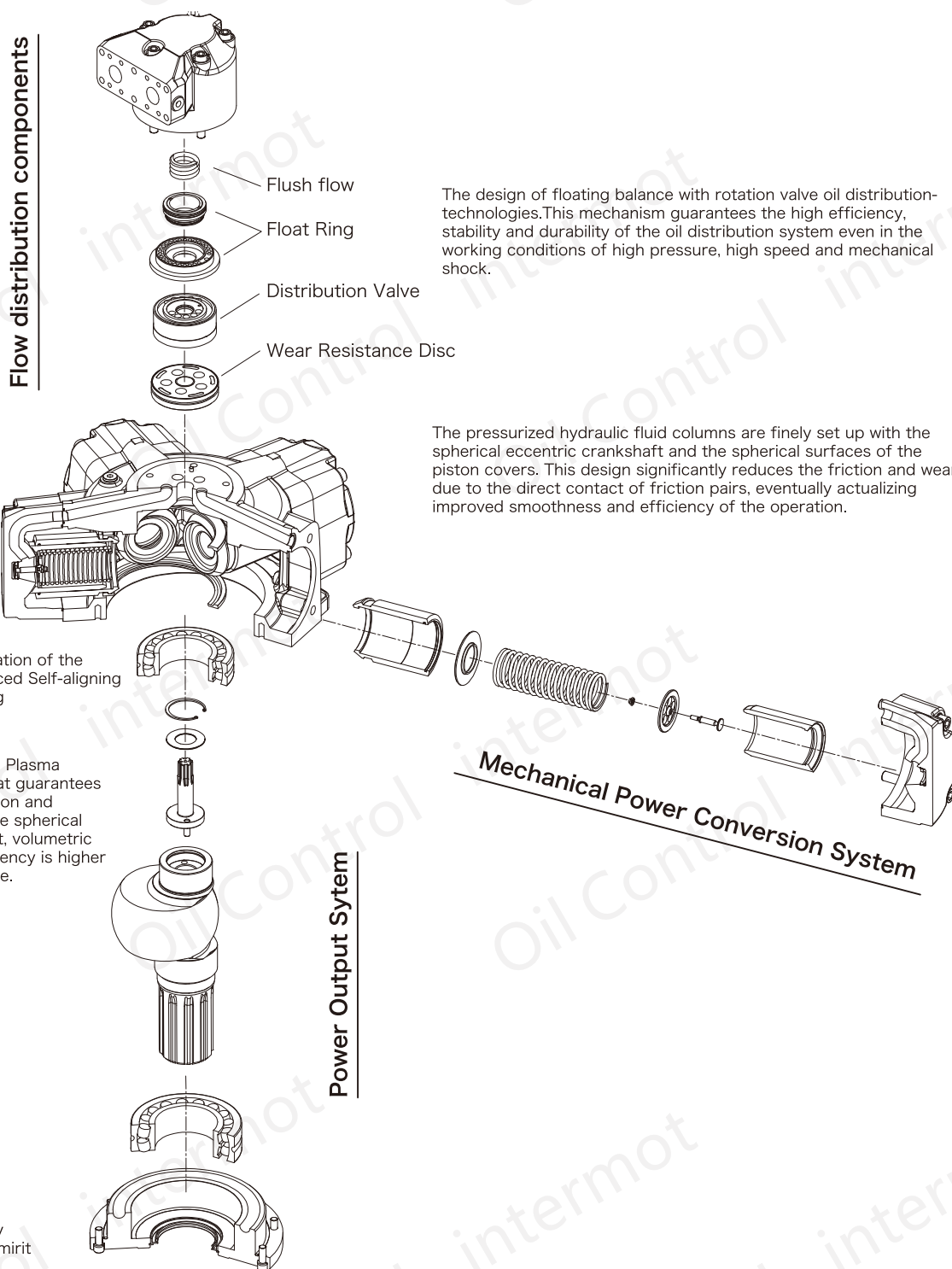
1.Product Features	E02
2.Calculations & Formulas	E03
3.Ordering Code	E03
4.Instructions & Advices	E04
5.Technical Performance Parameters	E06
6.Dimensions	
CM16-1600~2250	E07
CM24-2400~3100	E09
CM54-3600~5400	E10
CM82-6500~8200	E11
CM90-9000~10800	E13
CM100-11300~14560/CM160-16450	E15
CM230-19500~23000	E17



**Advanced Motor with
Spherical-Crankshaft & Swivel Cylinder**

PRODUCT FEATURE

CM series hydraulic motors are new structural hydraulic motors introduced by our company. These motors have the advantages of high reliability, high efficiency, long life, low noise, large displacement and wide speed range, so that they can be widely used in the hydraulic transmission systems in a number of industries such as marine, plastic machinery, mining, construction, metallurgy, petroleum, and geological prospecting, etc..



NHM

GHM

FMB

FMC

CM

EPMZ

CALCULATIONS & FORMULAS

Actual output torque of hydraulic motor:

$$M = 0.159 \times (P_1 - P_2) \times V \times \eta_m \text{ (N.m)}$$

Output power of hydraulic motor:

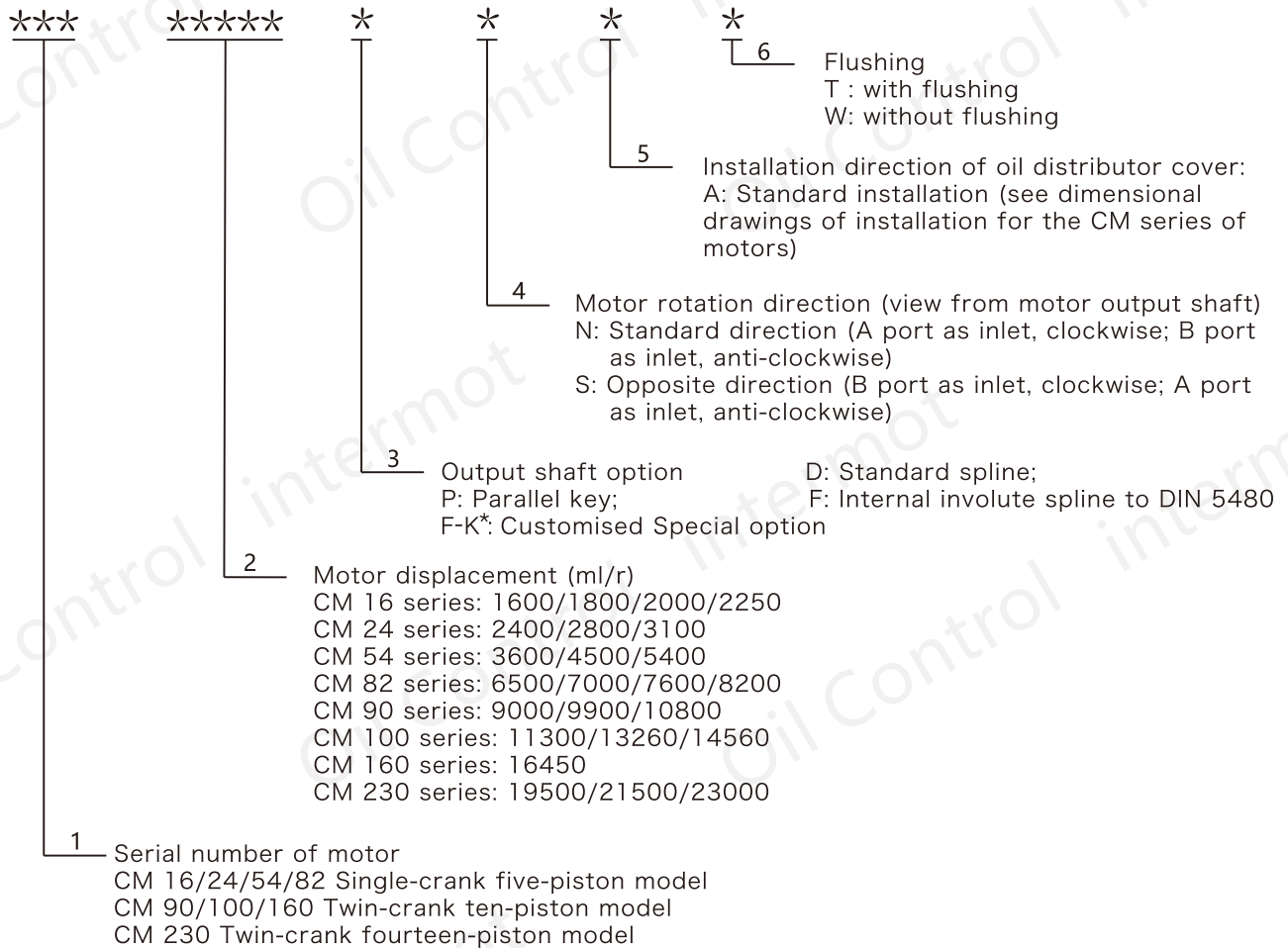
$$N = \frac{M \times n}{9550} \text{ (kW)}$$

$$N = \frac{q \times (P_1 - P_2)}{60000} \eta_m \times \eta_v \text{ (kW)}$$

Where:

- P_1 — Pressure at inlet of hydraulic motor (Mpa)
- P_2 — pressure at outlet of hydraulic motor (Mpa)
- V — Displacement of hydraulic motor (ml/r)
- η_m — Mechanical efficiency of hydraulic motor
- n — Rotation speed of hydraulic motor (r/min)
- q — Flow of hydraulic motor (ml/min)
- η_v — Volumetric efficiency of hydraulic motor

ORDERING CODE



Examples:

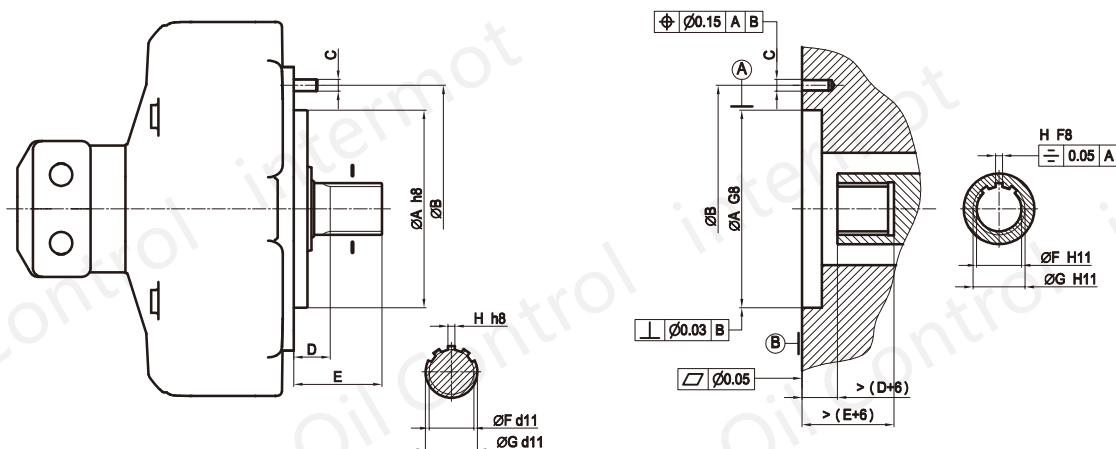
CM54-5400DNAT refers to CM54 single-crank five-piston model hydraulic motor, nominal displacement is 5400ml/r, Shaft type is D, Motor rotation direction is N, Installation direction of oil distributor cover is A, With flushing.

INSTRUCTIONS & ADVICES

1.INSTALLATION

Before installing the motor, please check carefully for any defects or damages due to transportation and/or storage. For mounting dimensions please refer to the corresponding series catalogue for details. The motor must be installed using the proper screw size (we recommend the use of 10.9 and 12.9 class resistance level fixing screws) and must be firmly fixed onto a structure that is capable of correctly supporting the motor during operation. For this reason the structure must be sturdy enough to not only support the motor weight but also to assure the absence of vibration during operation and must bear the reaction forces generated by the working torque.

Please refer to the below indications for the correct installation of the motor.

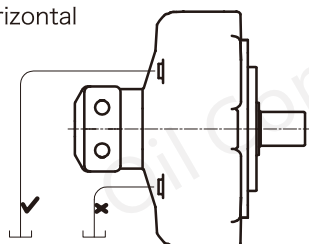


2.PREPARATION BEFORE START-UP

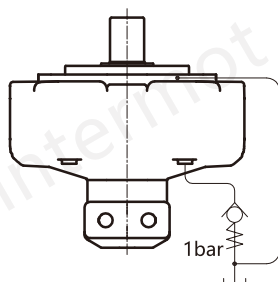
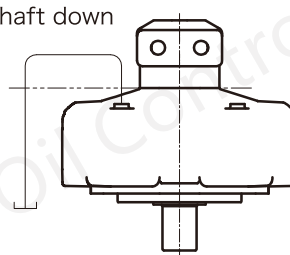
Motor case and pistons must be completely filled with hydraulic fluid before starting. Do not load motor to maximum working pressure instantly. In the case of cold start-up, please avoid high-speed operation until the system has reached the normal working temperature. Please ensure the drain port is directly connected to tank in the proper way, and avoid excessive drain line pressure losses (the continuous drain port pressure must not exceed 5 bar if higher motor case pressure is needed, please consult our engineer in advance). The drain port of the motor case must be positioned on the highest point of the installation to ensure that the motor case is filled up with hydraulic oil at all times.

See below the drain recommendations for more details:

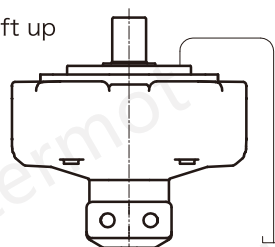
Motor axis horizontal



Axis vertical, shaft down



Axis vertical, shaft up



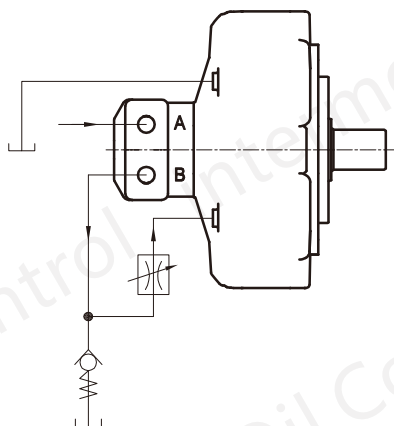
3.FLUSHING

In pursuit of the optimized operation and service life of the CM series of motors, a properly set up Flushing circuit is recommended for.

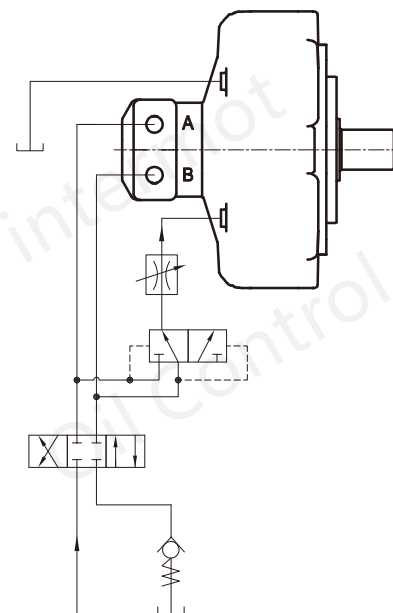
Improved bearing life due to the more effective cooling and lubrication to the bearings;

- Increased over all efficiency of the motor as a result of the optimized cooling and lubrication of the friction pairs of the parts;
- Impurities and metal particles effectively removed with the flushing mechanism to avoid damages to the parts.
- Please refer to the flushing link installation diagram

Port A Inlet, in single directional rotation application



Port A Inlet, in bidirectional rotation application



Recommended flush flow

Type	Flush flow
CM16 、 CM24	8 L/min
CM54 、 CM82	10 L/min
CM90 、 CM100、 CM160	15 L/min
CM230	20 L/min

4.HYDRAULIC OIL

The normal range of hydraulic oil viscosity for optimal performance is between 30-50cst. The ideal oil temperature is between 30°C-50°C, despite the allowed temperature range of -20°C-70°C.Regular checks must be performed on the quality of hydraulic oil. Replace the hydraulic oil if the quality indices exceed the relevant standards (n general, hydraulic oil is replaced at least once a year t is strictly prohibited to use a mixture of different types of hydraulic oils, Recommended filtration is 25um for industrial application. Please perform regular checks on the filters, and subsequently, clean or replace the filters periodically.

5.OTHERS

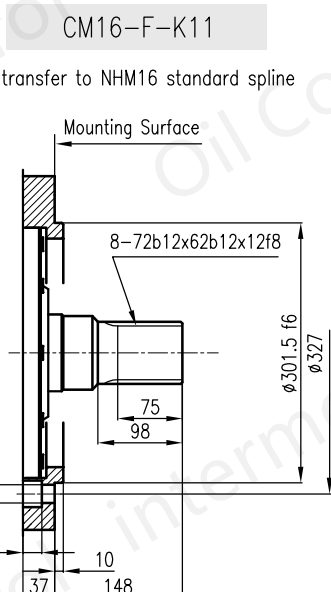
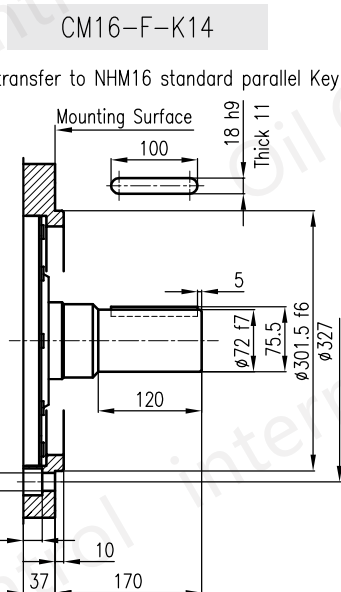
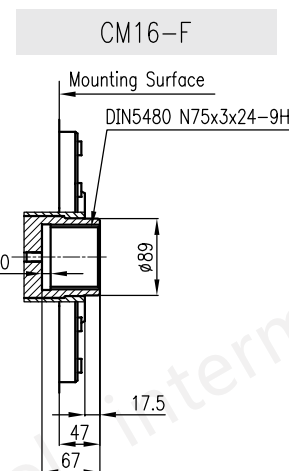
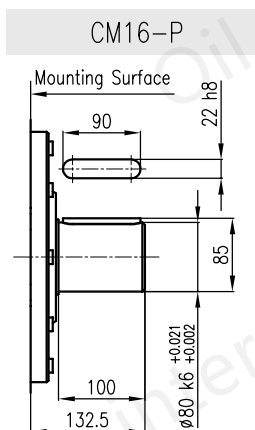
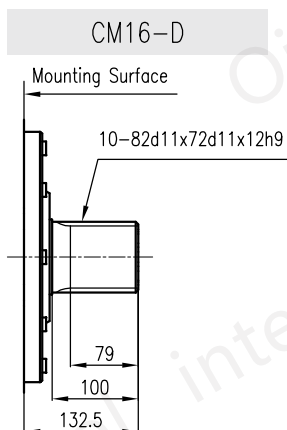
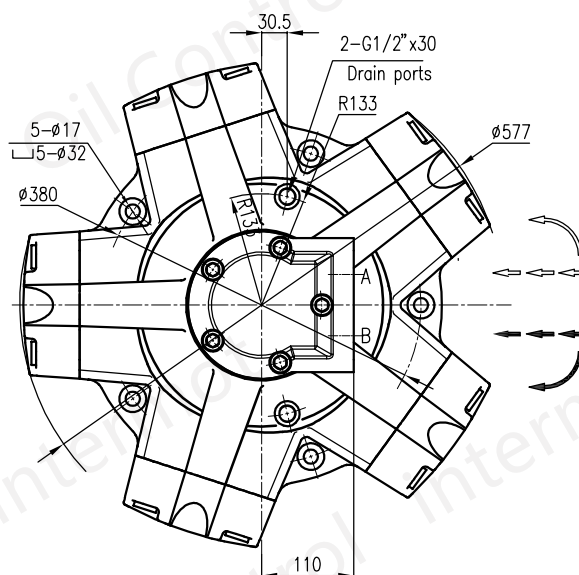
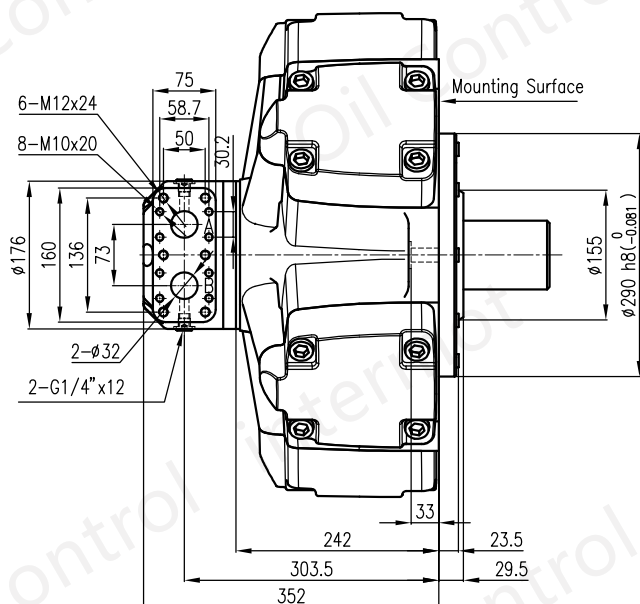
CM series hydraulic motors cannot operate as a pump, otherwise the normal service life will be negatively affected.After operating for the first 150 hours, please check and remove all the impurities or particles inside the motor and maintain regular checks at least every year. Please check to ensure all the mounting bolts are properly fastened every 150 hours.

TECHNICAL PERFORMANCE PARAMETERS

Type	Displacement (ml/rev)	Unit Torque (N.m/Bar)	Rated Pressure (Bar)	Max. Pressure (Bar)	Max.Power (KW)	Rated Torque (NM)	Rated Speed (without flushing) (r/min)	Max. Speed (with flushing) (r/min)	Weight (kg)
CM16									
CM16-1600	1646	24.9	210	250	110	5221	210	240	220
CM16-1800	1816	27.4	210	250	115	5760	205	235	220
CM16-2000	2043	30.9	210	250	120	6480	200	230	220
CM16-2250	2213	33.4	210	250	125	7020	190	220	220
CM24									
CM24-2400	2476	37.4	210	250	155	7854	190	210	330
CM24-2800	2808	42.4	210	250	170	8907	180	200	330
CM24-3100	3104	46.9	210	250	185	9846	170	190	330
CM54									
CM54-3600	3635	54.9	210	250	185	11530	145	175	550
CM54-4500	4518	68.2	210	250	210	14331	130	145	550
CM54-5400	5401	81.6	210	250	210	17132	110	130	550
CM82									
CM82-6500	6506	98.3	210	250	250	20637	110	130	780
CM82-7000	7030	106.2	210	250	250	22300	100	120	780
CM82-7600	7628	115.2	210	250	250	24196	95	115	780
CM82-8200	8226	124.3	210	250	250	26093	90	110	780
CM90									
CM90-9000	9037	136.5	210	250	270	28666	110	130	820
CM90-9900	9868	149.1	210	250	285	31302	100	120	820
CM90-10800	10802	163.2	210	250	300	34264	90	110	820
CM100									
CM100-11300	11548	174.4	210	250	310	36631	90	110	1050
CM100-13260	13273	200.5	210	250	320	42103	80	100	1050
CM100-14560	14601	220.5	210	250	335	46315	70	90	1050
CM160									
CM160-16450	16453	248.5	210	250	335	52190	60	75	1080
CM230									
CM230-19500	19684	297.3	210	250	350	62439	60	65	1480
CM230-21500	21778	329.0	210	250	360	69081	55	60	1480
CM230-23000	23034	347.9	210	250	375	73065	50	55	1480

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.

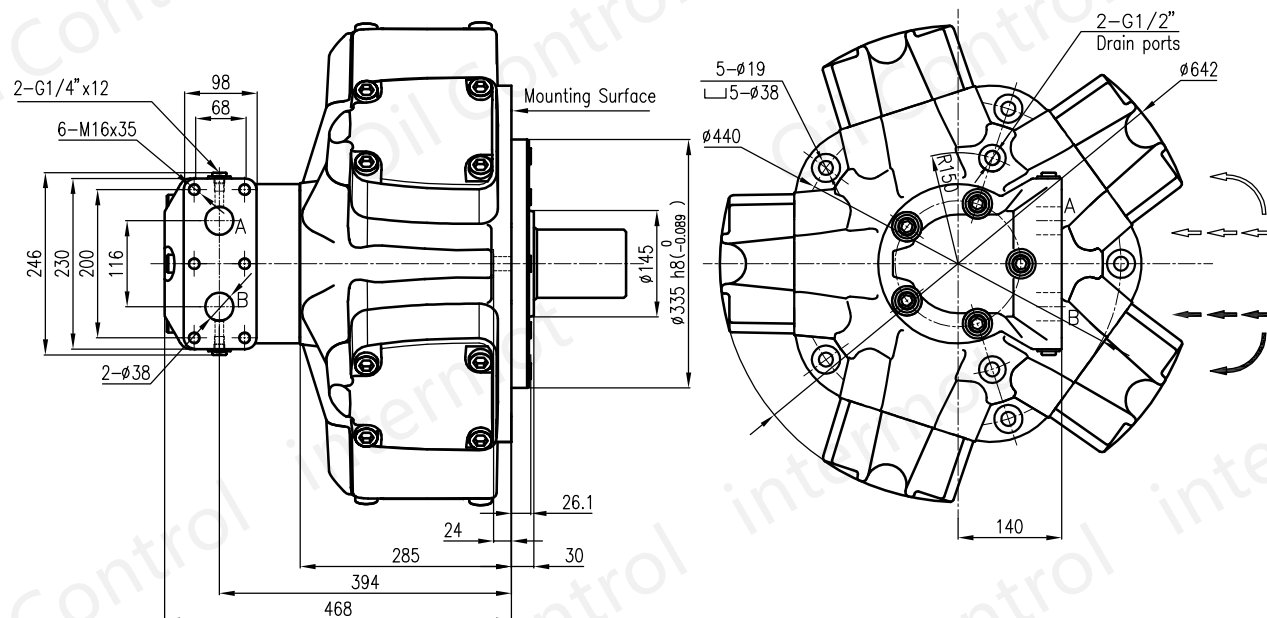
CM16-1600~2250 INSTALLATION DIMENSIONS



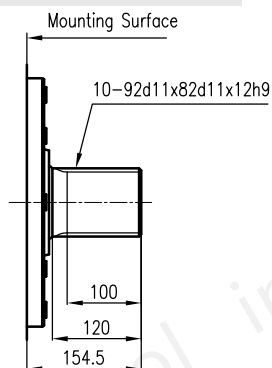
transfer to NHM16 standard parallel Key

transfer to NHM16 standard spline

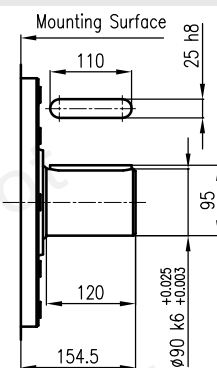
CM24-2400~3100 INSTALLATION DIMENSIONS



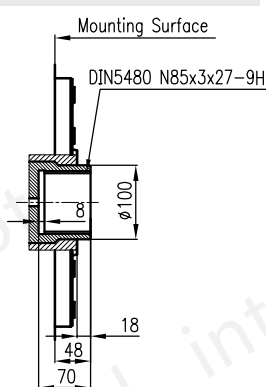
CM24-D



CM24-P

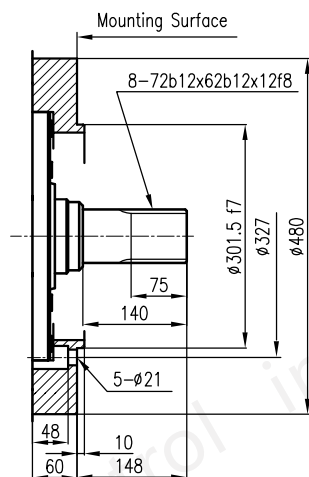


CM24-F



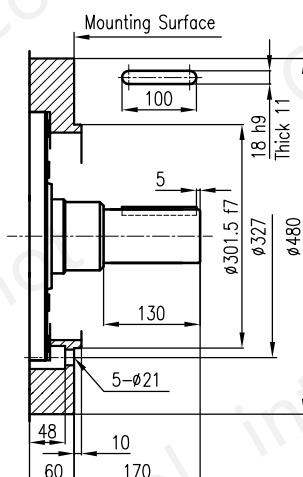
CM24-F-K04

transfer to IAM H5 A0 or NHM16 standard spline



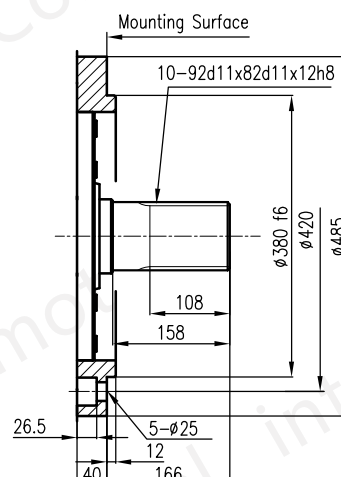
CM24-F-K02

transfer to NHM16 standard parallel Key



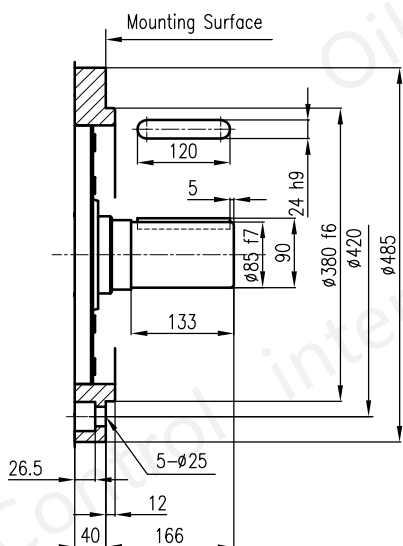
CM24-F-K06

transfer to NHM31 standard spline



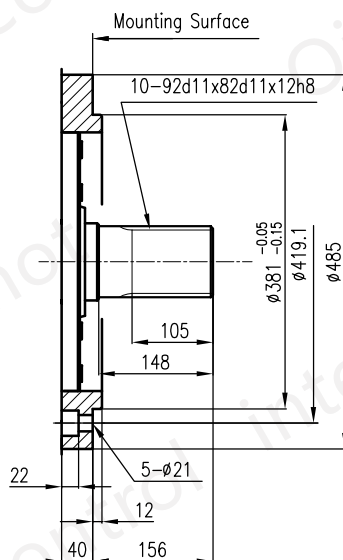
CM24-F-K07

transfer to NHM31 standard parallel Key



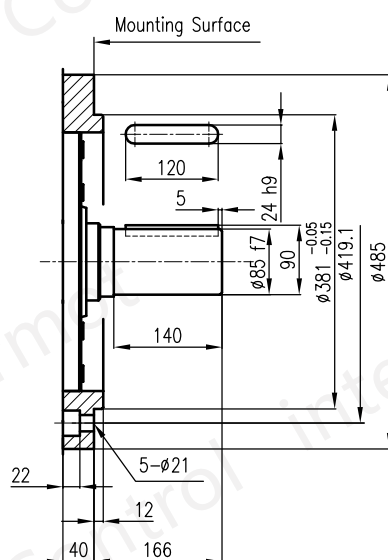
CM24-F-K05

transfer to IAM H6 A0&NHM31-H6



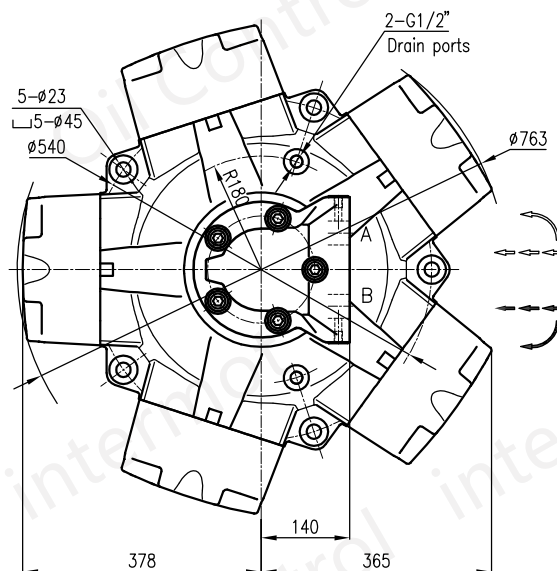
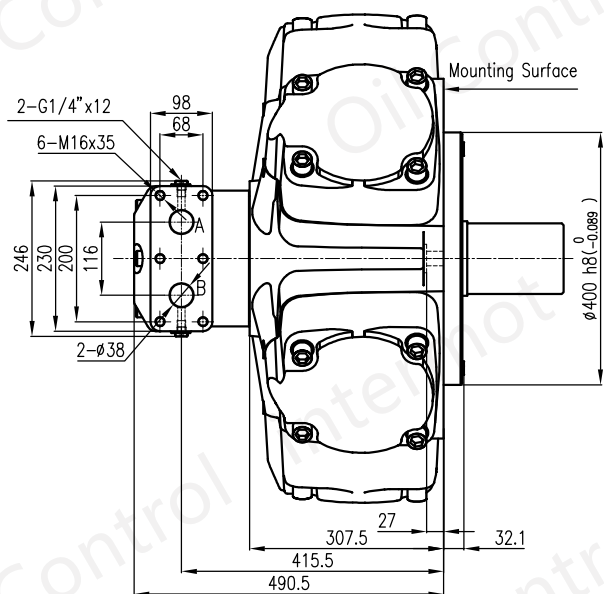
CM24-F-K01

transfer to IAM H6 A2&HMB200-P1&NHM31-H6B

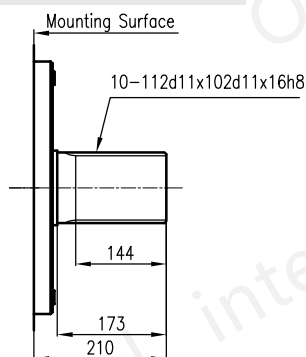


INTERMOT
HYDRAULIC MOTOR

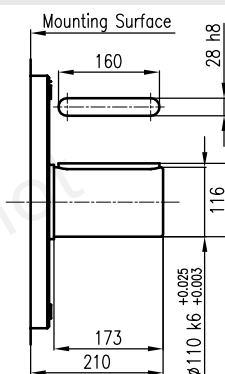
CM54-3600~5400 INSTALLATION DIMENSIONS



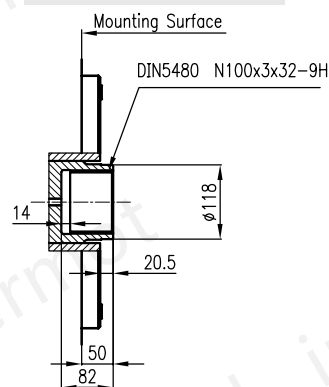
CM54-D



CM54-P

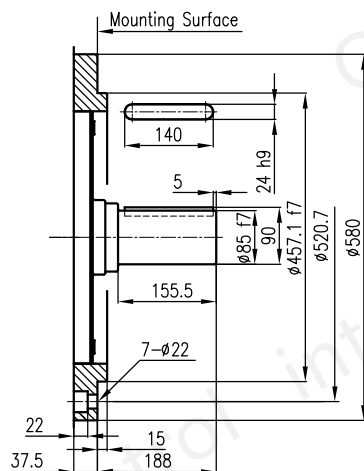


CM54-F



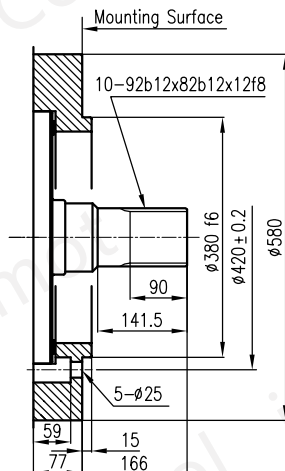
CM54-F-K31

transfer to HMB270/325 P1&IAM H7 A2&NHM70-B



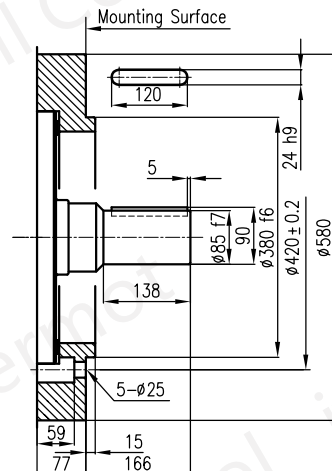
CM54-F-K32

transfer to NHM31 standard spline

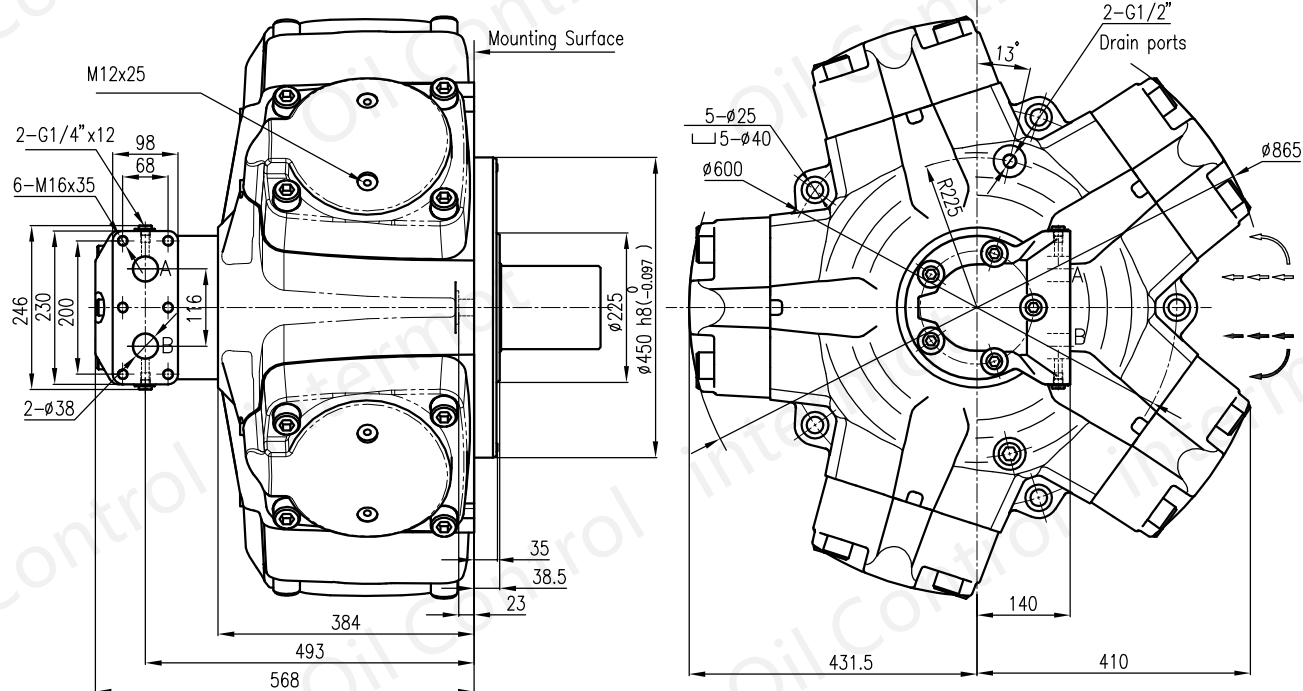


CM54-F-K33

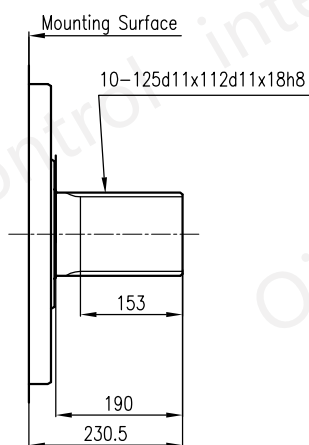
transfer to NHM31 standard parallelspline



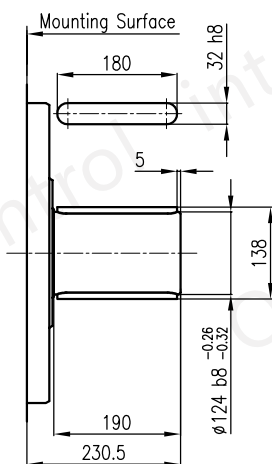
CM82-6500~8200 INSTALLATION DIMENSIONS



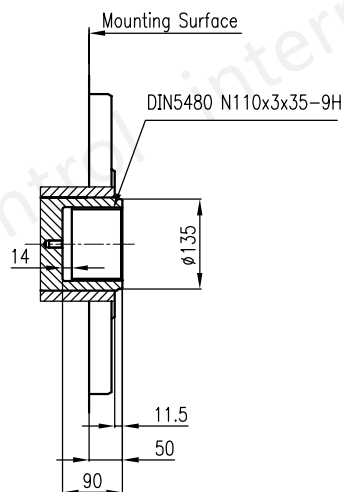
CM82-D



CM82-P



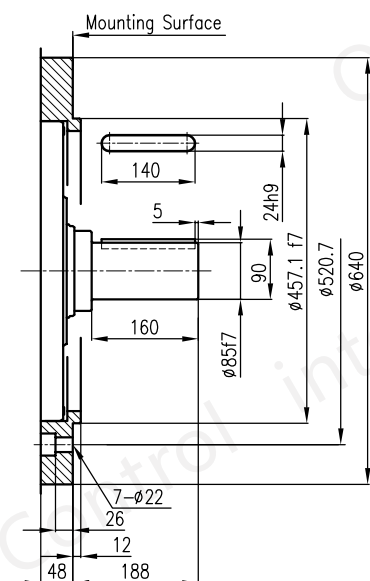
CM82-F



INTERMOT
HYDRAULIC MOTOR

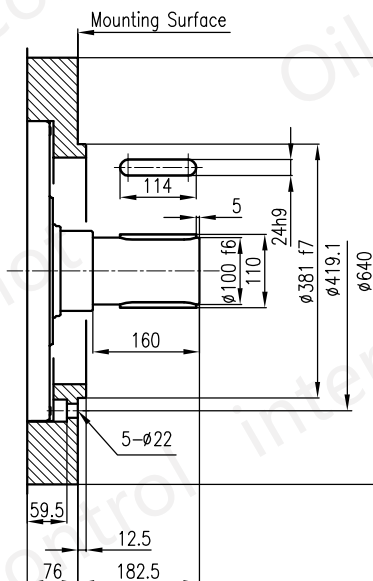
CM82-F-K61

transfer to HMB270/325 P1&IAM H7 A2&NHM70-B



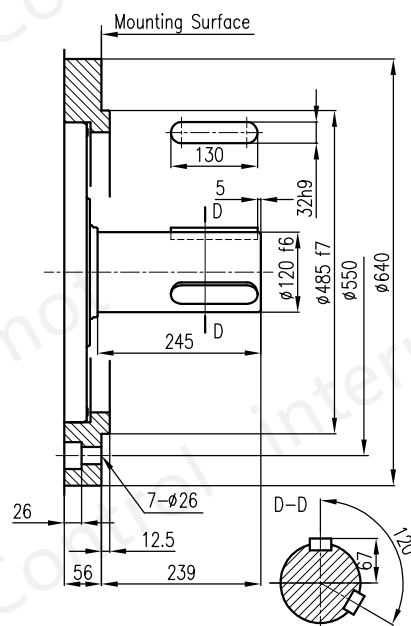
CM82-F-K62

transfer to HMB400-P&F68-B



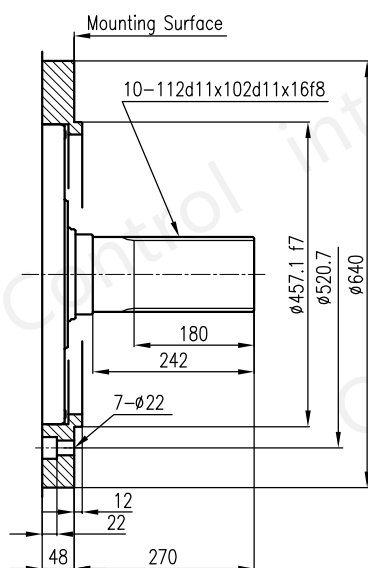
CM82-F-K64

transfer to F100-B



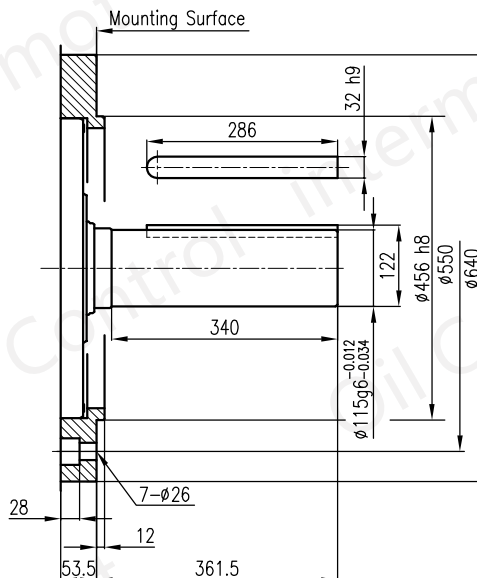
CM82-F-K65

transfer to NHM70-A3



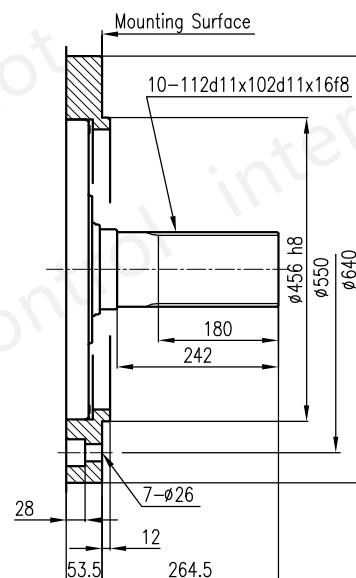
CM82-F-K67

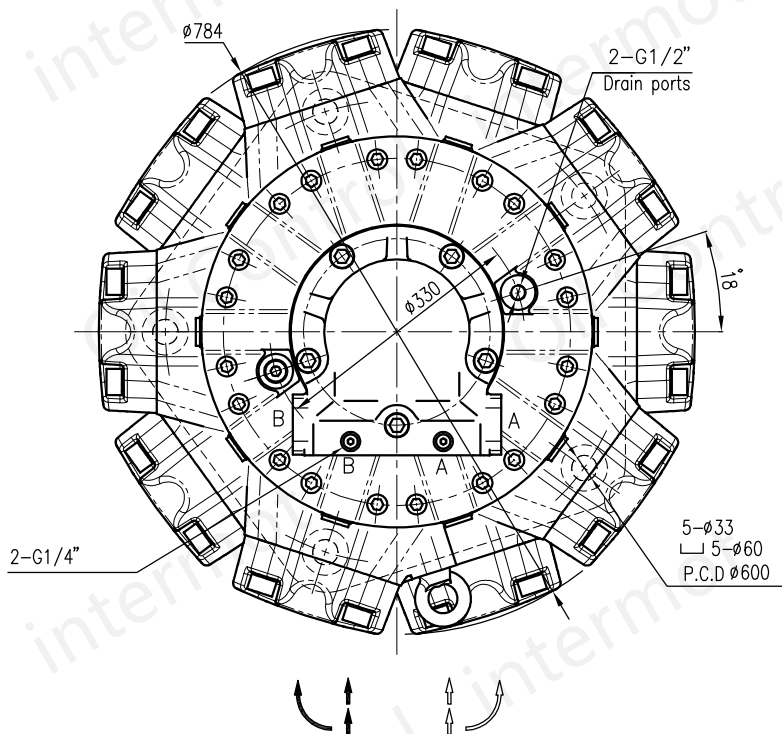
transfer to KYB MR-8600-P



CM82-F-K68

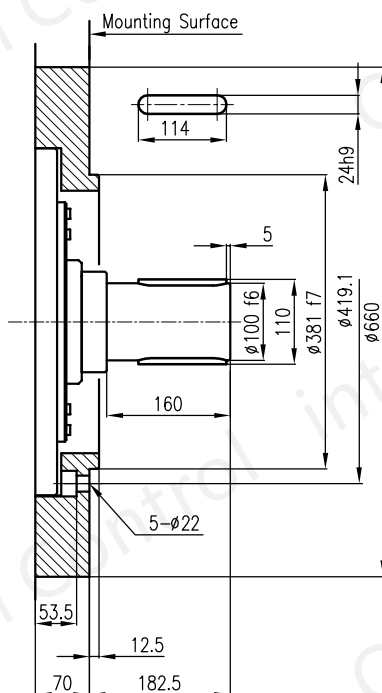
transfer to KYB MR-8600-B





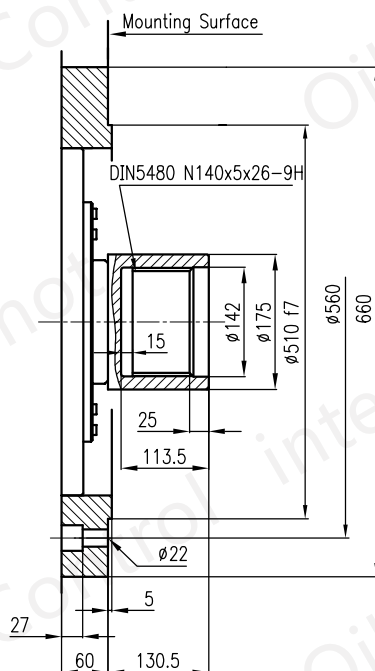
CM90-F-K83

transfer to HMB400-P or F68-B



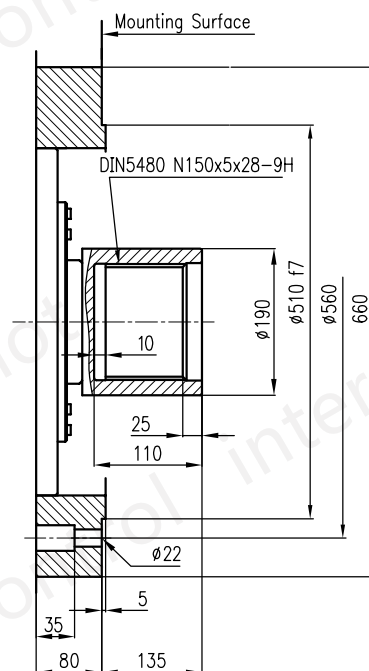
CM90-F-H140

transfer to CA140



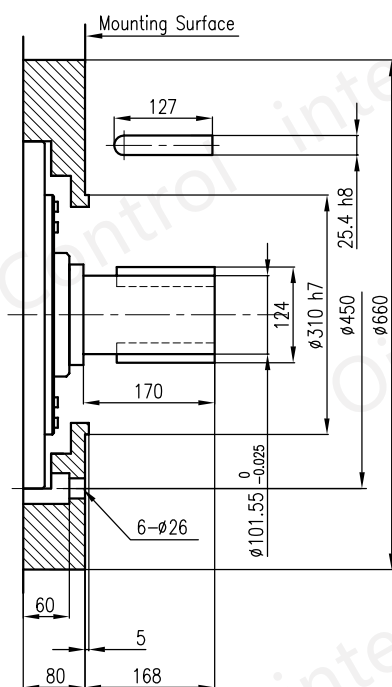
CM90-FH

transfer to CA210



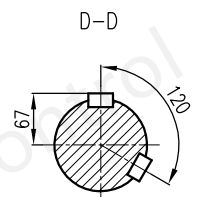
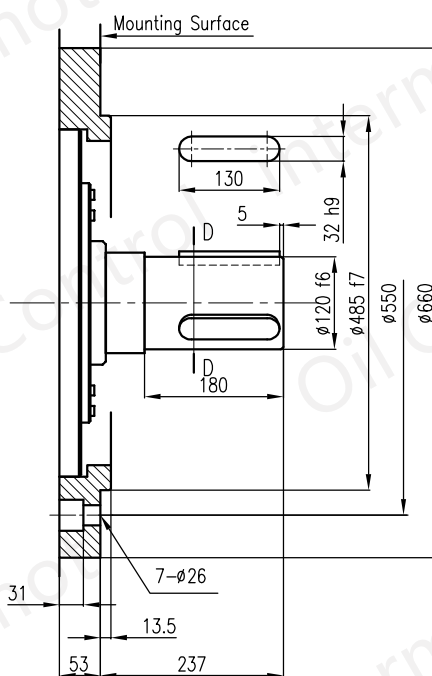
CM90-F-K81

transfer to MHT750



CM90-F-K82

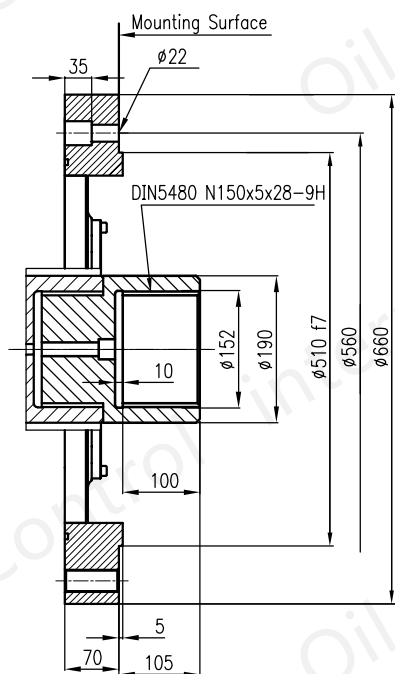
transfer to F100-B





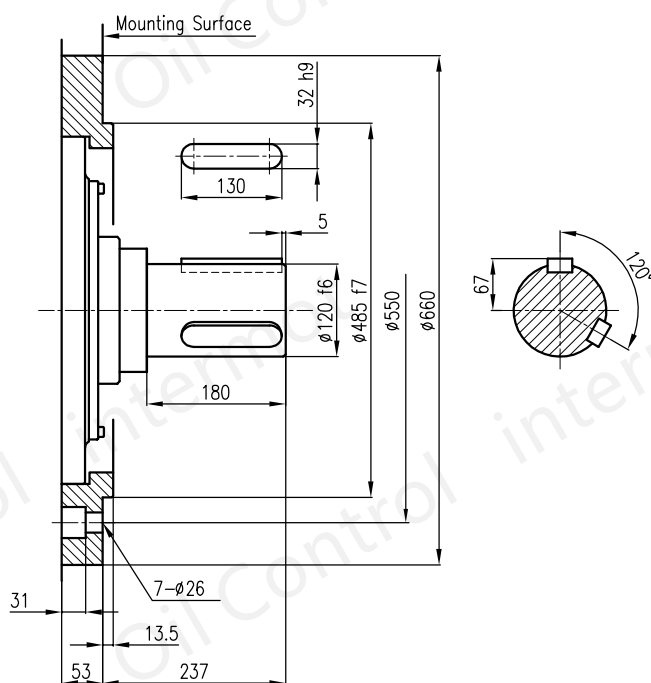
CM100/160 -FH

transfer to CA210



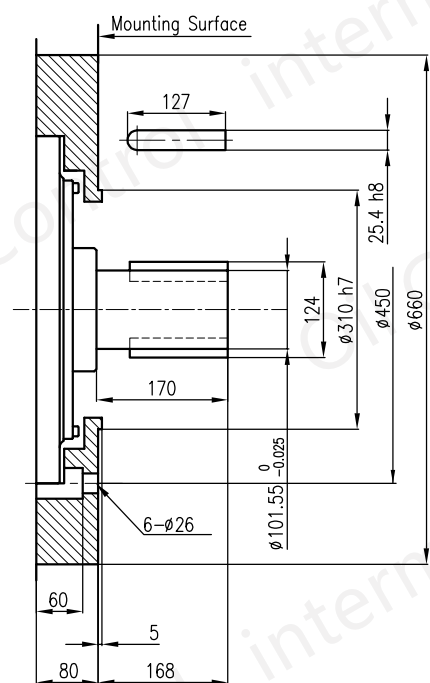
CM100/160 -F-K92

transfer to F100-B



CM100/160 -F-K94

transfer to MHT1000



NHM

GHM

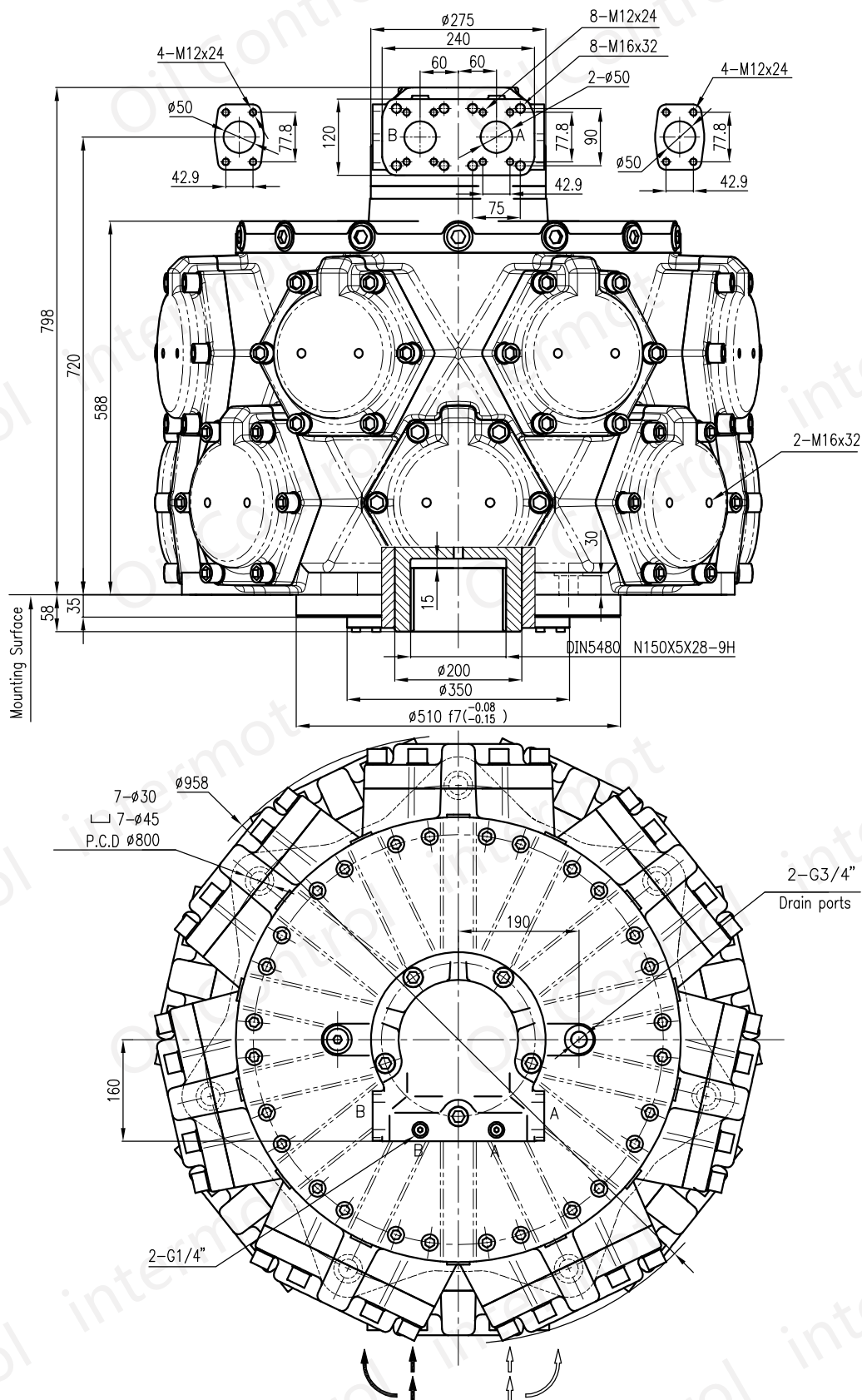
FMB

FMC

CM

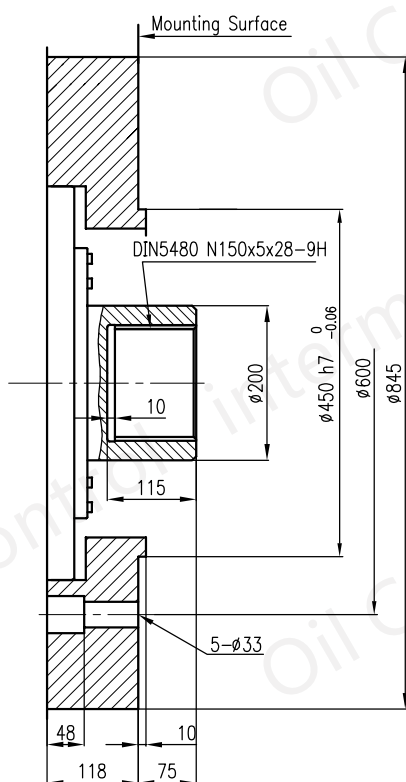
EPMZ

CM230-19500~23000 INSTALLATION DIMENSIONS



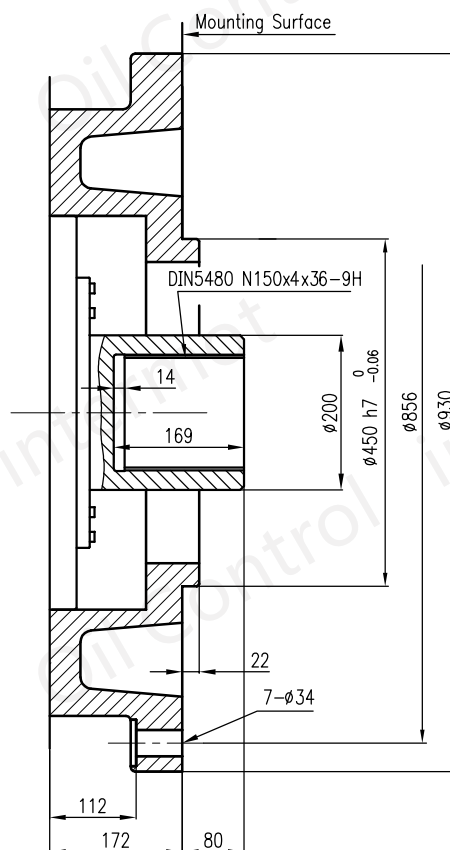
CM230 -F-K101

transfer to CM160



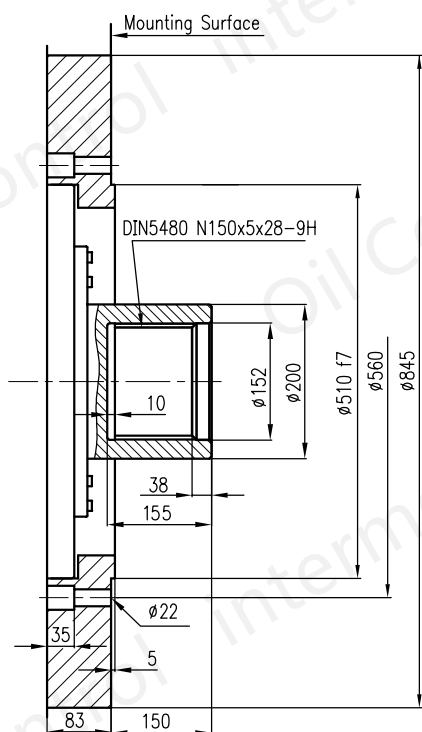
CM230 -F-K102

transfer to MRTE23000



CM230 -FH

transfer to CA210+CA210



NHM

GHM

FMB

FMC

CM

EPMZ

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