# NHM Series Hydraulic Motor

Product Feature:

NHM series of low–speed and high–torque hydraulic motors with crankshaft and connecting rod are produced according to the technology and standard provided by Italy. On such a foundation, we also have constant technological improvement according to market demand, so as to improve the performance of the products.

The main features include:

1. Low noise due to an eccentric crankshaft and low excitation frequency of five–piston design;

2. Revolve steadily under very low speed due to high starting torque and good low–speed stability;

3. Good reliability and less leakage due to the patented flat compensation distributor, special sealing between piston and plunger bushing guarantees higher volumetrical effvciency;

4. High mechanical efficency due to roller bearing between crankshaft and connecting rod;

5. Reversible rotation, and the output shaft can bear certain extermal force from both radial and axial diredtions;

6. High power–mass ratio, small volume and light weight.

(Structure Graph)
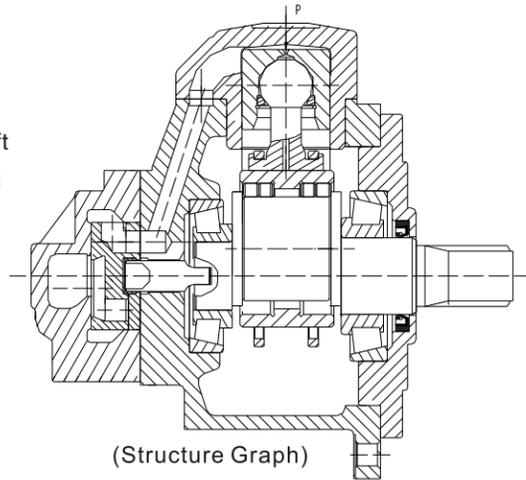
Calculation:

1. Actual output torque： $M=0.159 (P_1 - P_2) V \cdot \eta_m$ （N.m）

    where： P_1、P_2 ---------（MPa） inlet and outlet pressure （MPa）

    V --- ---- displacement（ml/r）

    η_m --mechanical efficiency （%）

2. Output power： $N=\dfrac{M \cdot n}{9550}$ （kW） $N=\dfrac{q (P_1 - P_2)}{60000} \eta_m \eta_v$（kW）

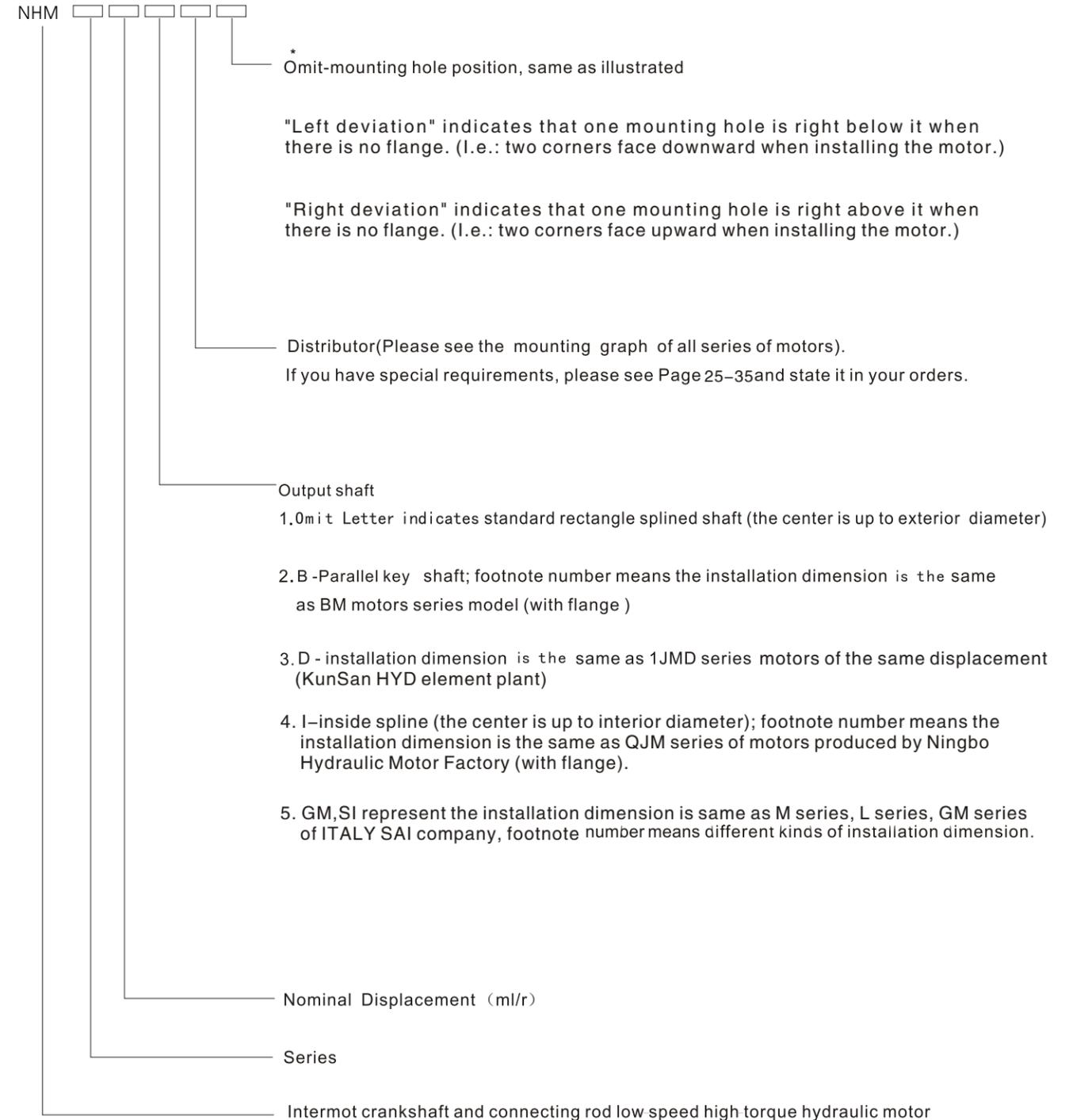   where： n --- speed (r/min)

    q --- input flow (ml/min)

    η_v -- volumetrical efficiency （%）

3. Speed： $n=\dfrac{q}{V} \eta_v$（r/min）

Note:

1. Filtration: the recommended filtration precision for normal industrial use is 25μm, and allowable precision low pressure, low speed or intervall is 75μm.

2. Oil viscosity: the optimum performance could only be obtained under proper oil viscosity between 15–1000cst.

3. Before the first start–up, it must fill hydraulic oil in the hydraulic motor body, to avoid the damage.

4. Leakage: drain port should be connected separately to the tank. Normally the maximum pressure for the motor body is 0.1 Mpa, and it could also be improved to bear 3–5 Mpa, to meet special requirements.

5. The top line of the drain pipe should be higher than that of the motor body, in case empting oil storage.

6. Installation: motor can be installed in any position with rigid support, When installed, shafts of the motor and its transmission should be concentric.

7. Cleanness: Strictly maintain the cleanness of the oil port, and keep any solid particles away.

8. Release both the radial and axial loads of the output shaft to enable longer life of the motor.

9. NHM motor could not work as a pump.

Order Code

NHM ☐ ☐ ☐ ☐ ☐

*Omit-mounting hole position, same as illustrated

"Left deviation" indicates that one mounting hole is right below it when there is no flange. (I.e.: two corners face downward when installing the motor.)

"Right deviation" indicates that one mounting hole is right above it when there is no flange. (I.e.: two corners face upward when installing the motor.)

Distributor(Please see the mounting graph of all series of motors). If you have special requirements, please see Page 25–35 and state it in your orders.

Output shaft

1. Omit Letter indicates standard rectangle splined shaft (the center is up to exterior diameter)

2. B -Parallel key shaft; footnote number means the installation dimension is the same as BM motors series model (with flange)

3. D - installation dimension is the same as 1JMD series motors of the same displacement (KunSan HYD element plant)

4. I–inside spline (the center is up to interior diameter); footnote number means the installation dimension is the same as QJM series of motors produced by Ningbo Hydraulic Motor Factory (with flange).

5. GM,SI represent the installation dimension is same as M series, L series, GM series of ITALY SAI company, footnote number means different kinds of installation dimension.

Nominal Displacement （ml/r）

Series

Intermot crankshaft and connecting rod low speed high torque hydraulic motor

"Left deviation" and "Right deviation" are only applicable for NHM2–NHM11 series of motors, and oil inlet and outlet are horizontal. (Same as illustrated)

Technical specification:

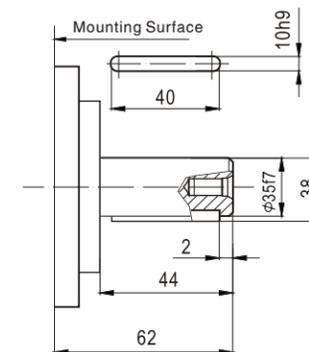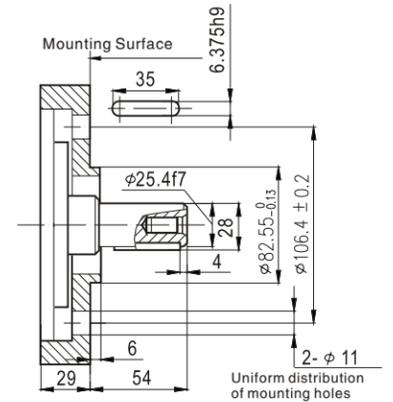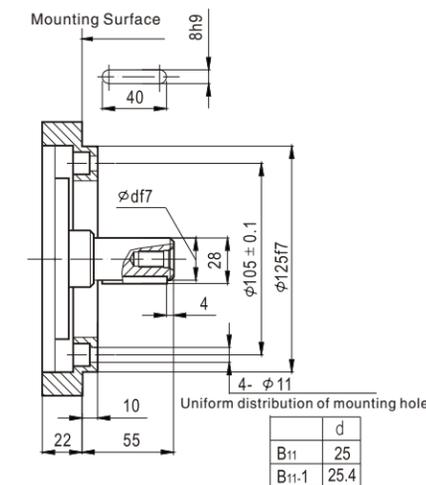| Type NHM	Displacement (ml/r)	Pressure (MPa)		Torque (N.m)		Speed Range (r/min)	Weight (kg)
		(Rated Pressure)	(Max Pressure)	Rated Torque	(N.m/MPa) Theoric Specific Torque		
NHM1-63	77	25	32	284	11	15~1500	20
NHM1-80	91	25	32	335	13	15-1250	
NHM1-100	96	25	32	355	14	15-1000	
NHM1-110	113	25	32	419	17	15-1000	
NHM1-125	126	20	25	371	19	15-1000	
NHM1-140	138	20	25	410	20	15-1000	
NHM1-160	159	16	20	376	24	15-1000	
NHM1-200	196	16	20	464	29	15-800	
NHM2-100	113	25	32	419	17	15-1250	27
NHM2-125	138	25	32	512	20	15-1250	
NHM2-150	159	25	32	588	24	15-1000	
NHM2-175	180	20	25	532	27	15-1000	
NHM2-200	207	20	25	611	31	8-800	
NHM2-250	235	16	20	556	35	8-630	
NHM2-280	276	16	20	653	41	8-500	
NHM3-175	181	25	32	670	27	8-1000	35
NHM3-200	201	25	32	743	30	8-800	
NHM3-220	222	25	32	819	33	8-800	
NHM3-250	254	20	25	752	38	8-630	
NHM3-300	289	20	25	856	43	6-500	
NHM3-350	340	20	25	1000	50	6-400	
NHM3-400	380	18	22.5	1008	56	6-350	
NHM6-400	397	25	32	1469	59	5-630	57.5
NHM6-450	452	25	32	1672	67	5-630	
NHM6-500	491	20	25	1451	73	5-500	
NHM6-600	594	20	25	1756	88	4-500	
NHM6-700	683	16	20	1616	101	4-400	
NHM6-750	754	16	20	1785	112	4-320	
NHM8-600	617	25	32	2282	91	4-500	72
NHM8-700	710	25	32	2626	105	4-400	
NHM8-800	810	20	25	2396	120	4-400	
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	4-400	94
NHM11-800	784	25	32	2899	116	4-400	
NHM11-900	894	25	32	3306	132	4-400	
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	2-400	170
NHM16-1600	1648	20	25	4874	244	2-400	
NHM16-1800	1815	20	25	5367	268	2-350	
NHM16-2000	2035	18	22.5	5416	301	2-350	
NHM16-2400	2267	16	20	5364	335	2-250	
NHM31-2500	2553	25	32	9438	378	2-200	298
NHM31-2800	2683	20	25	7935	397	1-200	
NHM31-3000	3063	20	25	9057	453	1-200	
NHM31-3150	3218	20	25	9518	476	1-160	
NHM31-3500	3561	20	25	10530	527	1-160	
NHM31-4000	4153	18	22.5	11053	614	1-160	
NHM31-4500	4522	16	20	10698	669	1-160	
NHM31-5000	4828	16	20	11423	714	1-160	
NHM70-5000	4968	20	25	14626	731	1-160	550
NHM70-5400	5452	20	25	16125	806	1-160	
NHM70-6000	5984	20	25	17697	885	0.5-125	
NHM70-6300	6540	18	22.5	17408	967	0.5-125	
NHM70-7000	7122	16	20	16849	1053	0.5-125	

NHM1-63~200 Mounting Data
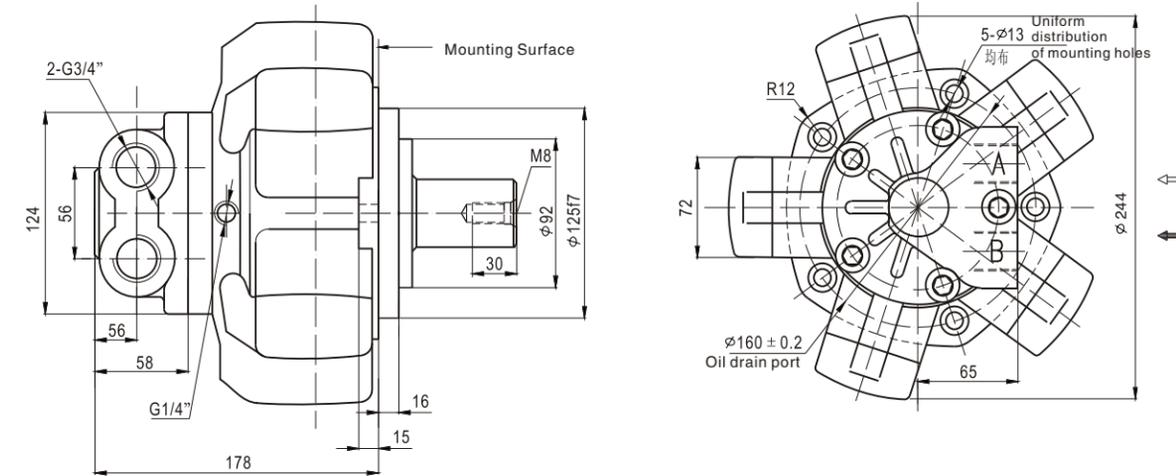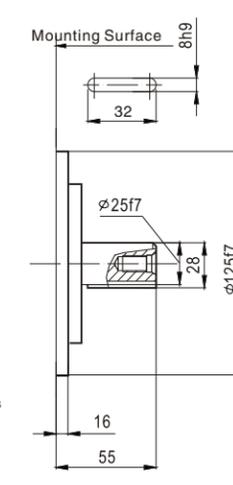

Standard outside spline NHM1-**
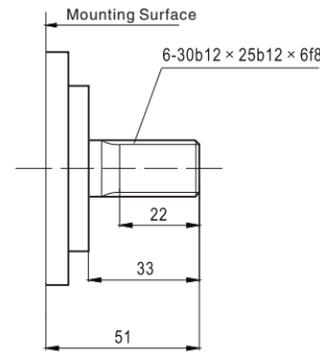
Standard parallel key NHM1-**B

NHM1-**B₃

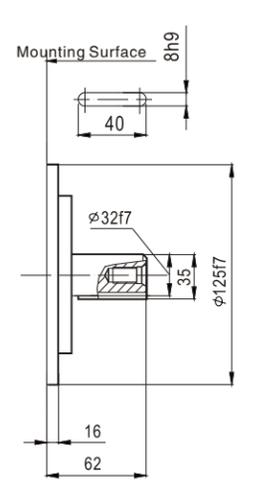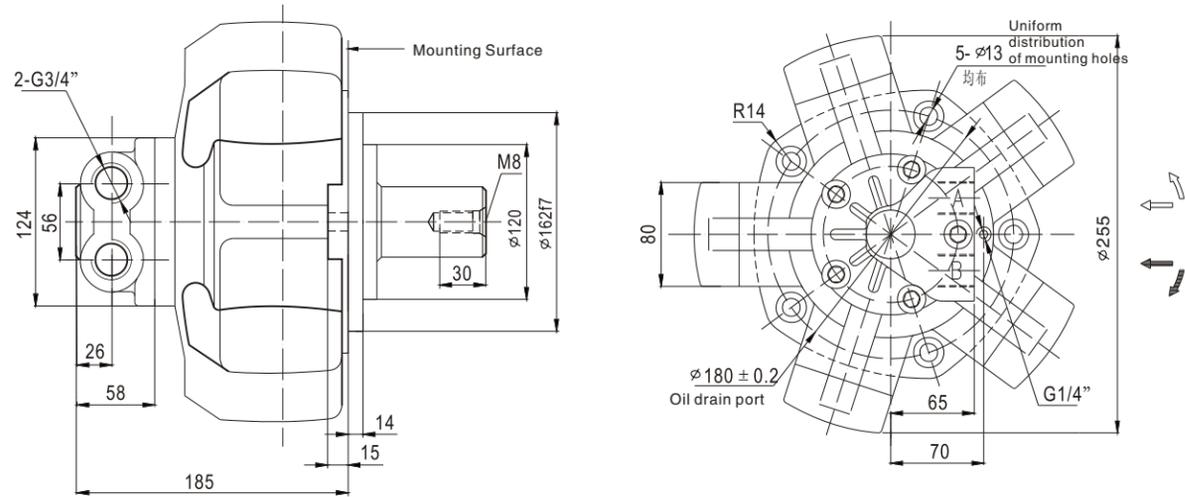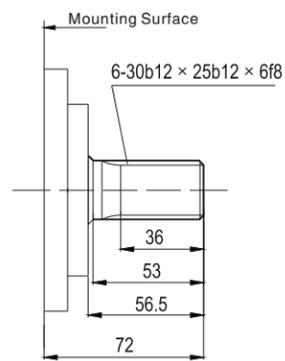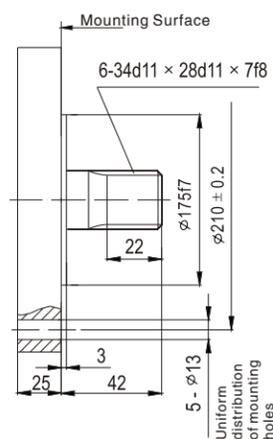NHM1-**B₁₁ B₁₁-1

NHM1-**B₂₈

NHM1-**B₃₁

	d
B11	25
B11-1	25.4

NHM2-100~280 Mounting Data

2-G3/4"

124
56
26
58
185
14
15
30
M8
∅120
∅162r7

Mounting Surface

5- ∅13
Uniform distribution of mounting holes
均布
R14
80
∅255
∅180 ± 0.2
Oil drain port
65
70
G1/4"

Standard outside spline NHM2-**

Mounting Surface

6-30b12 × 25b12 × 6f8
36
53
56.5
72

Standard parallel key NHM2-**B

Mounting Surface

45
12h9
∅40f7
43
4
56.5
72

Standard inside spline NHM2-**I

Mounting Surface

6-48H11 × 42H11 × 12D9
30
45
∅60f7
53.2
71

NHM2-**SL₁

Mounting Surface

6-34d11 × 28d11 × 7f8
22
∅175f7
∅210 ± 0.2
3
25
42
5 - ∅13
Uniform distribution of mounting holes

NHM2-**H₁

Mounting Surface

6-32d11 × 25d11 × 6f8
43
∅172f7
∅190 ± 0.2
5
25
59
5 - ∅11
Uniform distribution of mounting holes

NHM2-**B₁、B₂

Mounting Surface

50
12h9
∅40f7
∅Df7
43
4
∅D ± 0.2
35
66
5
4 - ∅13
Uniform distribution of mounting holes

₀	D	D₁
B₁	160	125
B₁	127	100

NHM2-**B₃

Mounting Surface

35
6.375h9
∅25.4f7
28
3
42.4
∅125f7
∅160 ± 0.2
5
35
51
4-∅13
Uniform distribution of mounting holes

NHM2-**B₅

Mounting Surface

70
12h9
∅40f7
43
5
∅125f7
∅160 ± 0.2
5
35
114
4-∅13
Uniform distribution of mounting holes

NHM2-**B₁₄

Mounting Surface

35
8h9
∅31.75f7
35.1
∅130f7
∅160 ± 0.2
6
45.3
20.2
5-∅13
Uniform distribution of mounting holes

NHM2-**B₂₄

Mounting Surface

40
8h9
∅25f7
28
4
∅82.55f7
∅106.35 ± 0.2
5
45
54
4-∅13
Uniform distribution of mounting holes

NHM2-**B₄₃

Mounting Surface

50
12h9
∅40f7
43
6
∅175f7
∅210 ± 0.2
3
25
58
5-∅13
Uniform distribution of mounting holes

NHM2-**I₀₁I₀₂

Mounting Surface

6-48H11 × 42H11 × 12D9
30
45
∅60f7
∅130g7
∅165 ± 0.2
5
30
41
10-∅9
mounting holes
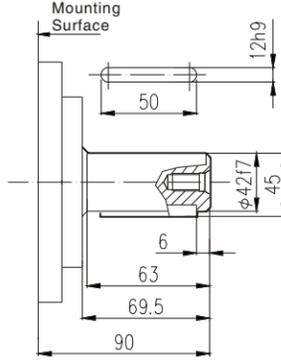

INTERMOT
HYDRAULIC MOTOR

NHM3-175~400   Mounting Data

2-G3/4"
124
56
26
58
199
14
15
30
M12
ø134
ø190f7
Mounting Surface

5-ø13 Uniform distribution of mounting holes
R14
84
ø298
ø210 ± 0.2
65
76.5
G3/8" Oil drain port

Standard outside spline NHM3-**

Mounting Surface
8-38b12 × 32b12 × 6f8
38
57
58
79

Standard parallel key NHM3-**B

Mounting Surface
10h9
45
5
57
58
79
ø38f7
41

Standard inside spline NHM3-**I

Mounting Surface
6-48H11 × 42H11 × 12D9
30
40
6
27
ø60f7

Spline key shaft NHM3-**A

Mounting Surface
18Z × 2m × 30P × 7h
38
57
58
79

NHM3-**SL₁

Mounting Surface
6-34d11 × 28d11 × 7f8
ø175f7
ø210 ± 0.2
22
20
3
42
5-ø13 Uniform distribution of mounting holes

NHM3-**SL₂, SL₃

Mounting Surface
8-40d11 × 36d11 × 7f8
ø150f7
øD ± 0.2
48
36
5
72
5-ø13 Uniform distribution of mounting holes

Type	D
SL₂	195
SL₃	250

NHM3-**B₁

Mounting Surface
50
12h9
ø40f7
43
4
ø125f7
ø160 ± 0.2
36
65
5
4-ø13 Uniform distribution of mounting holes

NHM3-**B₂

Mounting Surface
50
14h9
ø50f7
53.5
4
ø160f7
ø200 ± 0.2
37
85
5
2-ø17 Uniform distribution of mounting holes

NHM3-**B₅

Mounting Surface
70
12h9
ø40f7
43
5
ø125f7
ø160 ± 0.2
36
113
5
4-ø13 Uniform distribution of mounting holes

NHM3-**B₃₂

Mounting Surface
45
12h9
ø40f7
43
57
58
79
5

NHM3-**B₄₄

Mounting Surface
55
16h9
ø50f7
54
5
ø150f7
ø250±0.2
36
72
5
5-ø14 Uniform distribution of mounting holes

NHM3-**I₁ₐ₁

Mounting Surface
8-42H11×36H11×7D9
35
50
ø60f7
ø209f7
ø220 ± 0.2
24
36
5
10-ø11 Uniform distribution of mounting holes

INTERMOT
HYDRAULIC MOTOR

NHM6-400~750   Mounting Data

2-G3/4"

M14

Mounting Surface

5-ø16
Uniform distribution of mounting holes

R15

φ150
φ230j7
30

φ389

A

φ254 ±0.2

65

90

G1/2"
Oil drain port

124
56
26
58
16
21
223

99

Standard outside spline NHM6-**

Mounting Surface

8-42b12x36b12x7f8

43
63
69.5
90

Standard parallel key NHM6-**B

Mounting Surface

50
12h9

φ42f7
45
6
63
69.5
90

Standard inside spline NHM6-**I

Mounting Surface

6-55H11x50H11x14D9

40
54
φ70f7
7
28

NHM6-**SL₂

Mounting Surface

8-40d11x36d11x7f8

φ150f7
φ195± 0.2
48
5
38
72
5- φ13
Uniform distribution of mounting holes

NHM6-**SL₃

Mounting Surface

8-40d11x36d11x7f8

φ150f7
φ250±0.2
48
5.3
38
72
5- φ16
Uniform distribution of mounting holes

NHM6-**N

Mounting Surface

8-54d11x46g7x9f8

φ190f7
φ266±0.2
56.5
8
25
72
5- φ13
Mounting holes

NHM6-**N₁

Mounting Surface

8-60b12x52b12x10f8

φ220f6
φ290± 0.2
60
30
101
10
5- φ13
Uniform distribution of mounting holes

NHM6-**B₂

Mounting Surface

50
14h9

φ50f7
φ160f7
φ200 ± 0.2
53.5
4
38
85
6
4- φ17
Uniform distribution of mounting holes

NHM6-**B₄

Mounting Surface

70
14h9

φ50f7
φ152.4g8
φ229 ± 0.2
53.5
5
43
91
5
3- φ 21
Mounting holes

NHM6-**B₅

Mounting Surface

70
12h9

φ40f7
φ125f7
φ160 ± 0.2
43
5
45
89
5
4- φ13
Uniform distribution of mounting holes

NHM6-**B₁₃

Mounting Surface

90
12h9

φ50f7
$\phi 200^{-0.017}_{-0.059}$
φ260 ± 0.2
53.5
5
36
86
6
5- φ18
Uniform distribution of mounting holes

NHM6-**B₃₃

Mounting Surface

50
14h9

φ50f7
53.5
6
63
69.5
90

NHM6-**B₄₅

Mounting Surface

70
16h9

φ50f7
φ265f7
φ310 ± 0.2
54
6
36
86
10
5- φ20
Uniform distribution of mounting holes

NHM6-**I₁₁

Mounting Surface

6-70H11x62H11x16D9

35
55
φ85f7
φ160f7
φ220± 0.2
5
33
36
10- φ11
Mounting holes

NHM8-600~1000　Mounting Data
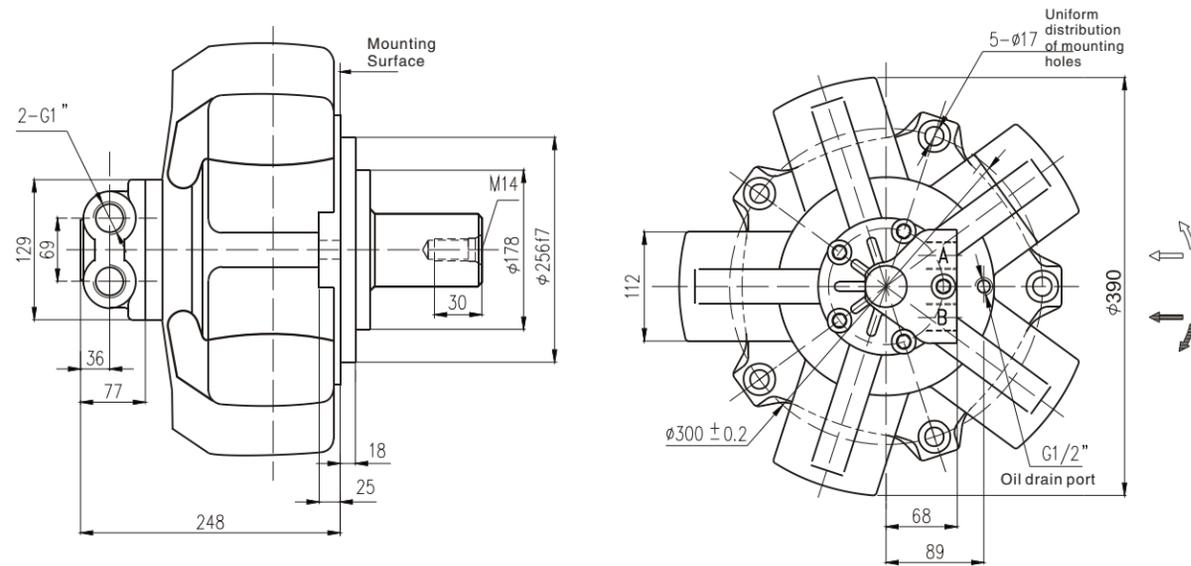
Standard outside spline NHM8-**

8-50b12x46b12x9f8
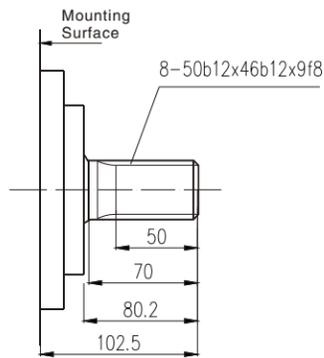
Standard parallel key NHM8-**B

parallel shaft NHM8-**6M

8-42b12x36b12x7f8

NHM8-**6MB

NHM8-**a2

8-50b12x46b12x9f8
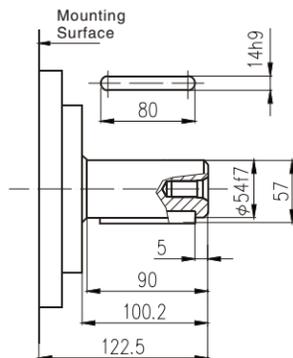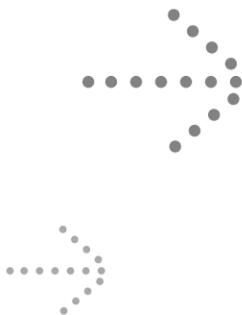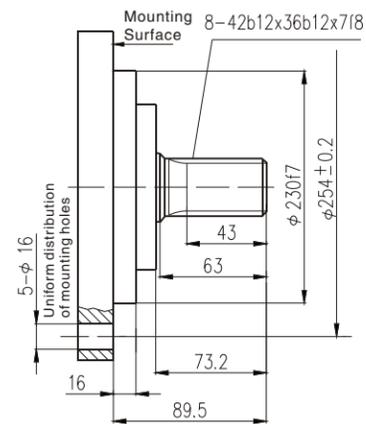
NHM11-700~1300　Mounting Data

Standard outside spline NHM11-**

8-50b12x46b12x9f8

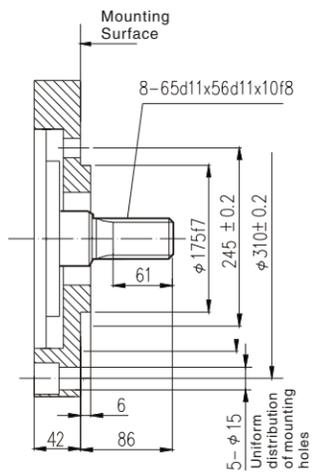### Standard parallel key NHM11-**B

Standard inside spline NHM11-**I

6-90H11x80H11x20D9

NHM11-**SL₃

8-40d11x36d11x7f8

NHM11-**SL₄

8-65d11x56d11x10f8

NHM11-**SL₅

8-65d11x56d11x10f8

NHM11-700~1300   Mounting Data

NHM11-**SM₄

Mounting Surface

8-65d11x56d11x10f8

$\phi 175f7$
245 ± 0.2
$\phi 310 \pm 0.2$

61
6
42   86

5-$\phi 15$ Uniform distribution of mounting holes

NHM11-**N

Mounting Surface

8-60d11x52g6x10f8

$\phi 272^{-0.017}_{-0.025}$
$\phi 294 \pm 0.2$

53
8
33   62

5-$\phi 18$ Uniform distribution of mounting holes

NHM11-**N₁

Mounting Surface

8-60b12x52b12x10f8

$\phi 220f6$
$\phi 292 \pm 0.2$

60
15
30   101

5-$\phi 13$ Uniform distribution of mounting holes

NHM11-**K

Mounting Surface

8-72b12x62b12x12d10

$\phi 250f6$
$\phi 330 \pm 0.2$

95
10
36   120

5-$\phi 18$ Uniform distribution of mounting holes

NHM11-**B₄

Mounting Surface

14h9

70

$\phi 50f7$
53.5
5
$\phi 152.4f8$
$\phi 229 \pm 0.2$

82
12
50   96

4-$\phi 21$ Uniform distribution of mounting holes

NHM11-**B₆

Mounting Surface

18h9

95

$\phi 60f7$
64
$\phi 152.4f8$
$\phi 229 \pm 0.2$

12
50   123

4-$\phi 21$ Uniform distribution of mounting holes

NHM11-**B₃₅

Mounting Surface

20h9

80

$\phi 70f7$
74.5
5
$\phi 250f6$
$\phi 330 \pm 0.2$

10
36   117

5-$\phi 18$ Uniform distribution of mounting holes

NHM11-**B₄₆

Mounting Surface

20h9

80

$\phi 70f7$
74.5
5
$\phi 265f6$
$\phi 310 \pm 0.2$

10
63   90

5-$\phi 20$ Uniform distribution of mounting holes

NHM11-**I₂₁

Mounting Surface

6-90H11x80H11x20D9

38
53
$\phi 105f7$
$\phi 160g7$
$\phi 283 \pm 0.2$

5
47   43

10-$\phi 11$ Mounting holes

NHM16-1400~2400   Mounting Data

Mounting Surface

2-$\phi 25$
130
69
26
52
36
77
292

8-M10
Depth 20

M16
$\phi 206$
$\phi 301.5f6$

30
20
30

5-$\phi 21$ Uniform distribution of mounting holes
R22
142
$\phi 518$
$\phi 327 \pm 0.2$
G1/2" Oil drain port
65
120

Standard outside spline NHM16-**

Mounting Surface

8-72b12x62b12x12f8

65
88
107
148

Standard parallel key NHM16-**B

Mounting Surface

18h9

100

$\phi 72f7$
75.5
5
110
129
170

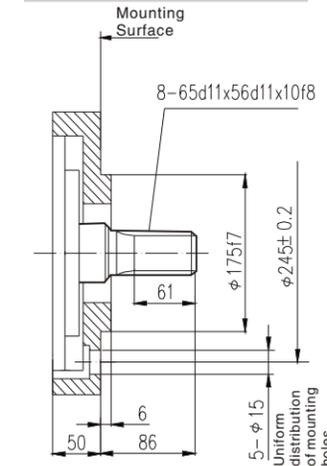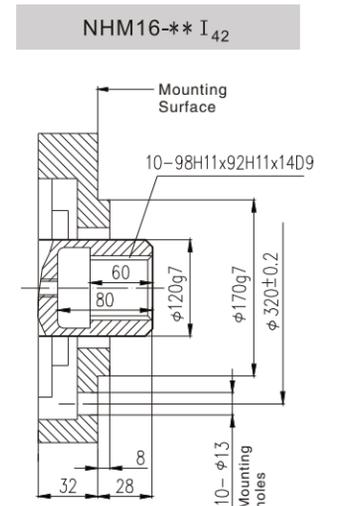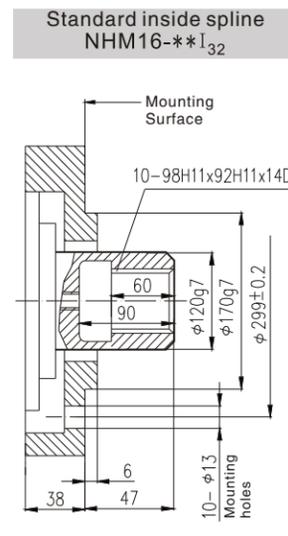### Standard inside spline NHM16-**I

Mounting Surface

10-98H11x92H11x14D9

60
80
$\phi 120g7$
24.5
29
60

NHM16-**SL₅

Mounting Surface

8-65d11x56d11x10f8

$\phi 175f6$
$\phi 265f7$
$\phi 310 \pm 0.2$

61
5
85
47   90

5-$\phi 15$ Uniform distribution of mounting holes

NHM16-**SM₄

Mounting Surface

8-65d11x56d11x10f8

$\phi 175f7$
245 ± 0.2

61
6
50   86

5-$\phi 15$ Uniform distribution of mounting holes

NHM16-**N

Mounting Surface

10-82b12x72b12x12f8

80
$\phi 290^{-0.05}_{-0.15}$
$\phi 380 \pm 0.2$
107

10
35   132

5-$\phi 17$ Uniform distribution of mounting holes

NHM16-1400~2400　Mounting Data

NHM16-**B₆

Mounting Surface

18h9
95
φ60f7
65
5
φ152.417
φ229±0.2
123
6
4-φ21
Uniform distribution of mounting holes
50　131

NHM16-**B₁₇

Mounting Surface

24h9
110
φ80l7
88
φ31817
φ339±0.2
65
5
8
41　115
5-φ18
Uniform distribution of mounting holes

NHM16-**B₁₉

Mounting Surface

18h9
100
φ60f7
65
5
110
129
170

Standard outside spline NHM16-**D

Mounting Surface

2-20h9
100
φ75m7
84
φ330h8
φ360±0.2
5
10
35　148
5-φ22
Uniform distribution of mounting holes

Standard parallel key NHM16-**B₃₀

Mounting Surface

25h9
100
φ9517
5
129
170

Standard inside spline NHM16-**I₃₂

Mounting Surface

10-98H11x92H11x14D9
60
90
φ120g7
φ170g7
φ299±0.2
6
38　47
10-φ13
Mounting holes

NHM16-**I₄₂

Mounting Surface

10-98H11x92H11x14D9
60
80
φ120g7
φ170g7
φ320±0.2
8
32　28
10-φ13
Mounting holes

INTERMOT
HYDRAULIC MOTOR

NHM31-2500~5000　Mounting Data

Mounting Surface
2-φ40
36.7
190
100
8-M16
Depth22
79.4
54
113
M20
30
φ260
φ38017
22
40
411

Uniform distribution of mounting holes
5-φ25
R20
176
φ655
φ420±0.2
95
152
G1/2"
Oil drain port

Standard outside spline NHM31-**

Mounting Surface

10-92b12x82b12x12f8
80
110
132.5
166.5

Standard parallel key NHM31-**B

Mounting Surface

24h9
120
φ8517
90
5
131
132
166

Standard inside spline NHM31-**I

Mounting Surface

10-98H11x92H11x14D9
50
80
φ120l7
38.5
90.5

NHM31-**SL₇

Mounting Surface

10-88b12x80b12x12f8
φ3818
72
95
96.5
130.5

NHM31-**NST

Mounting Surface

10-82b12x72b12x12f8
φ3818
φ419±0.3
9
40　130
5-φ21
Uniform distribution of mounting holes

NHM31-**B₈

Mounting Surface

25.4h9
145
φ101.6±0.05
φ225f8
113.5
5
φ460±0.3
9
80　117
6-φ22
Uniform distribution of mounting holes

NHM31-2500~5000   Mounting Data

NHM31-**B₁₀


```
Mounting Surface
25.4h9
145
φ101.5 ⁰₋₀.₀₅₃
113.5
5
180
187
221
```

NHM31-**B₂₁


```
Mounting Surface
24h9
90
φ85f7
φ38l7
91
3
φ419 ± 0.3
10
40    130
5− φ20
Uniform distribution of mounting holes
```

NHM31-**B₂₂


```
Mounting Surface
24h9
140
φ85f7
91
3
149
457 ⁺⁰·¹⁵₋₀.₀₇
φ457 ± 0.3
φ520.7 ± 0.3
10
40    190
7− φ20
Uniform distribution of mounting holes
```

NHM31-** H6


```
Mounting Surface
5− φ21
Uniform distribution of mounting holes
10−92b12x82b12x12f8
φ38l7
φ419 ± 0.3
97
119.5
156
```

NHM31-**I₅₃₂


```
Mounting Surface
10−98H11x92H11x14D9
50
80
φ120l7
φ320±0.2
φ340l8
14
40    50.5
12− φ13
Mounting holes
```

NHM31-**I₅₂


```
Mounting Surface
10−120H11x112H11x18D9
50
80
φ150l7
φ315l8
φ360±0.2
φ420l8
10
53    35.5
12− φ22
Mounting holes
```

INTERMOT
HYDRAULIC MOTOR

NHM70-5000~7000   Mounting Data


```
2−φ40
79.4
36.7
190
100
8−M16
Depth 22
54
113    325
M20
φ260
30
20
40
188
φ457.1l7
```



```
7−φ21
Uniform distribution of mounting holes
R30
186
A
B
φ520.7±0.2
2−G3/4"
Oil drain port
95
190
770
```

Standard parallel key NHM70-**B


```
Mounting Surface
24h9
140
φ85f7
90
4
149
188
```

NHM70-**a₁


```
Mounting Surface
10−92b12x82b12x12f8
φ38l7
φ420± 0.2
80
132.5
10
65    166.5
5− φ25
Uniform distribution of mounting holes
```

NHM70-**a₃


```
Mounting Surface
10−102b12x112b12x16f8
170
35
270
```

NHM70-**B₁


```
Mounting Surface
24h9
120
φ85f6
φ38l7
90
5
131
10
65    166
5− φ25
Uniform distribution of mounting holes
φ420± 0.
```

NHM70-**B₂


```
Mounting Surface
32h9
160
φ120l7
φ50l16
127
5
φ580±0.2
188
10
58    240
5− φ33
Uniform distribution of mounting holes
```

Standard parallel key NHM70-**BC


```
Mounting Surface
2−24h9
140
φ85f7
95
4
149
188
```