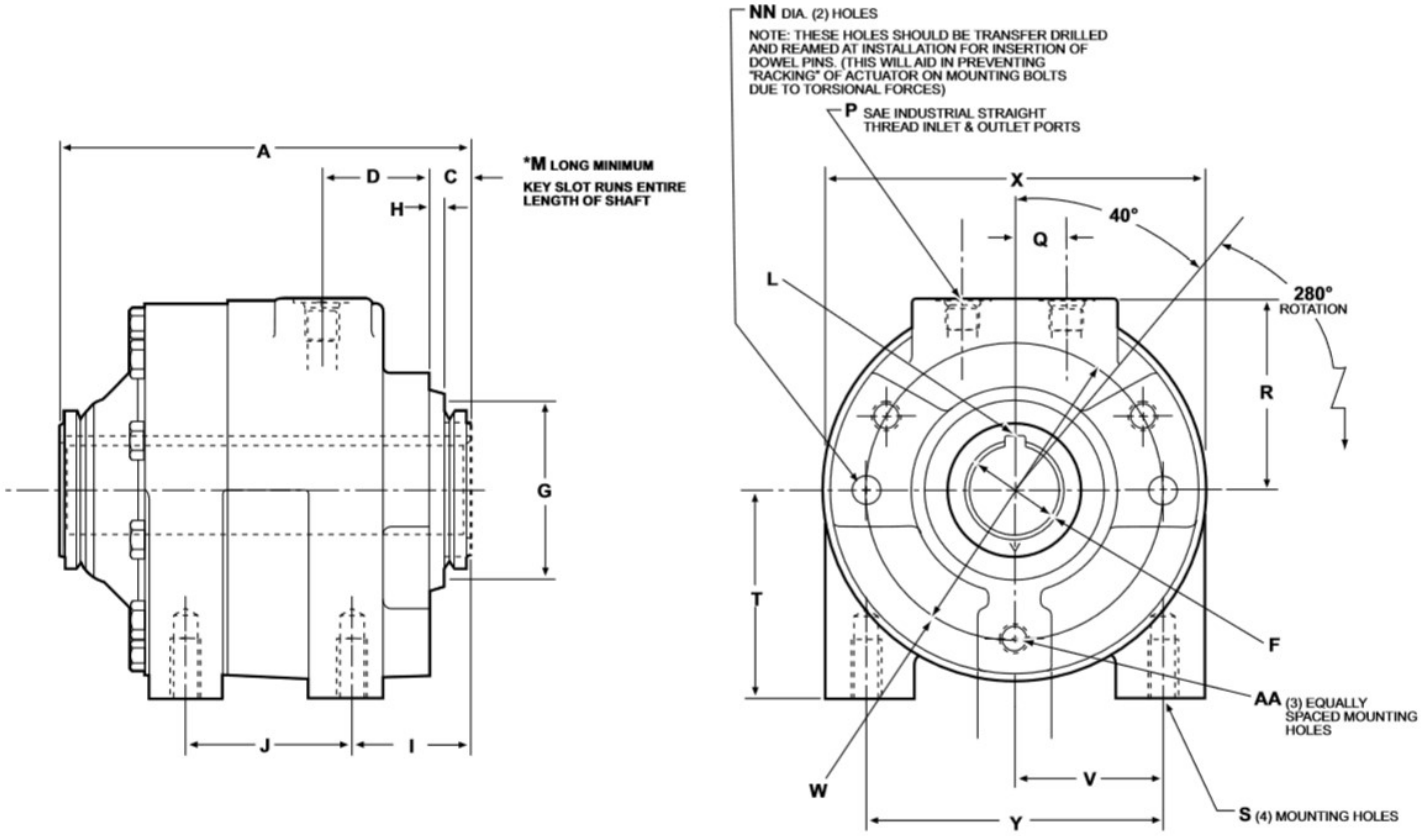
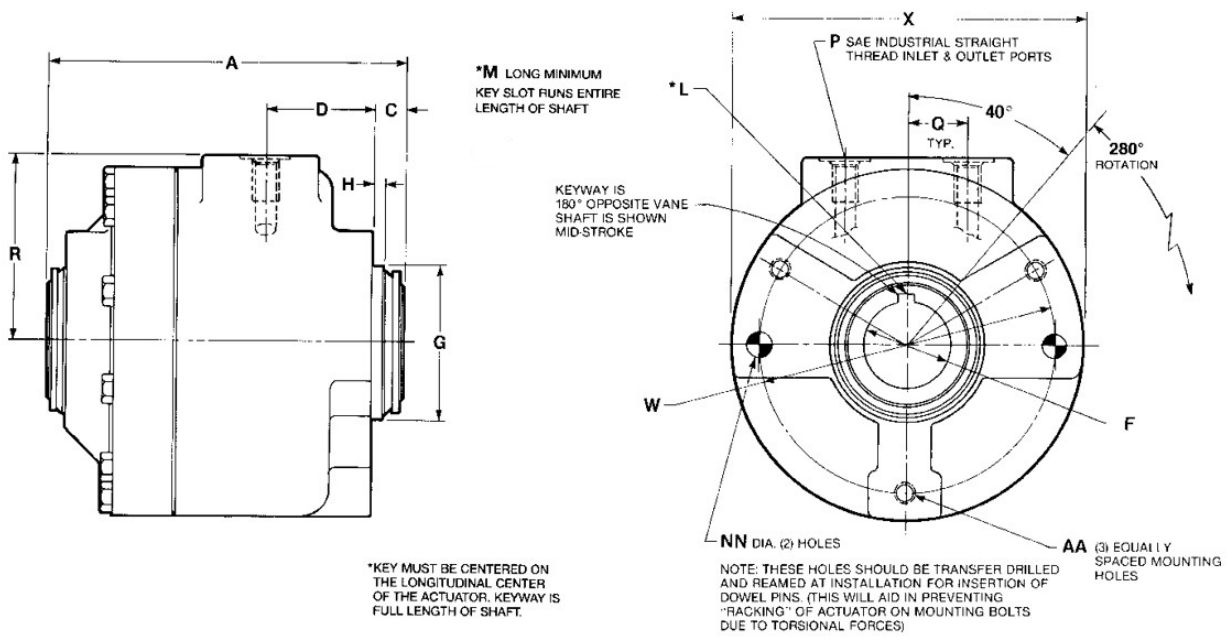
Rotac® Hyd-ro-ac® Products – Rotary Actuator: HS-1.5 THRU HS-015

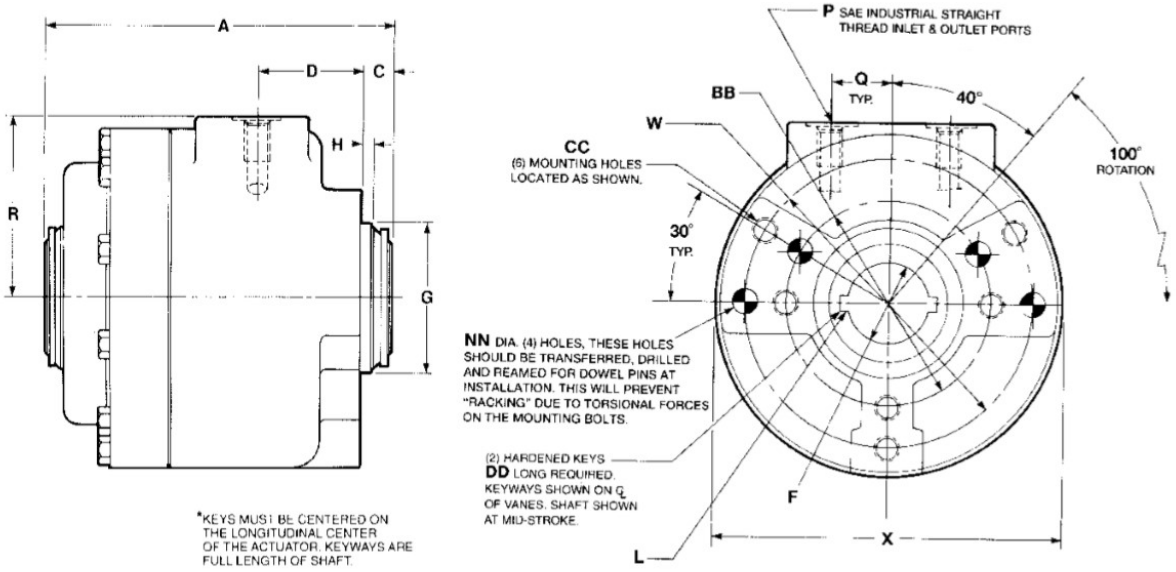
SINGLE VANE HS-1.5, HS-2.5, and HS-004



SINGLE VANE HS-006, HS-010, and HS-015



DOUBLE VANE HS-006, HS-010, and HS-015



IMPORTANT NOTES TO AVOID ACTUATOR DAMAGE AND VOIDED WARRANTY:

1. **2,000 psi maximum is recommended for severe duty applications, such as operating at maximum torque at high cycle rates for extended periods. Please consult factory for test applications beyond 2,000 psi. 3,000 psi can be used on intermittent shockless actuations.**
2. **Design considerations should be made to limit the axial and radial loading applied to the actuator. Contact factory if axial and/or radial loading must be applied to the actuator. Unapproved axial and/or radial loading will void the actuator's warranty.**
3. **External stops must be used to limit shaft rotation for most applications. Using the actuators internal components as rotational stops will cause damage and void the actuators warranty.**
4. **It is critical that the hydraulic system have pressure relief located in close proximity to the actuator to prevent pressure spikes from damaging the actuator. Micromatic offers Cross Port Relief (CPR) manifolds that can be used with the actuator if the customer's hydraulic system does not have pressure relief (contact factory for details). Hydraulic pressure spikes will rapidly cause damage and void the actuator's warranty.**
5. **It is recommended the hydraulic fluid be filtered to 5 microns or less (maximum of 10 microns).**

DIMENSION IN INCHES (MILLIMETERS)						
	HS-1.5	**HS-2.5**	**HS-004**	**HS-006**	**HS-010**	**HS-015**
A	6.12 (155.45)	6.92 (175.77)	8.12 (206.25)	7.25 (184.15)	8.25 (209.55)	9.97 (253.24)
C	0.69 (17.53)	0.69 (17.53)	0.69 (17.53)	0.69 (17.53)	0.69 (17.53)	0.69 (17.53)
D	1.81 (45.97)	1.81 (45.97)	1.81 (45.97)	2.50 (63.50)	2.50 (63.50)	2.50 (63.50)
F_1	1.5020 (38.151)	1.5020 (38.151)	1.5020 (38.151)	2.0025 (50.864)	2.0025 (50.864)	2.0025 (50.864)
G_2	Ø2.9990 (Ø76.175)	Ø2.9990 (Ø76.175)	Ø2.9990 (Ø76.175)	Ø3.6240 (Ø92.050)	Ø3.6240 (Ø92.050)	Ø3.6240 (Ø92.050)
H_1	.25 (6.35)	.25 (6.35)	.25 (6.35)	.25 (6.35)	.25 (6.35)	.25 (6.35)

I	2.00 (50.8)	2.00 (50.8)	2.00 (50.8)	-	-	-
J	2.00 (50.8)	2.80 (71.12)	4.00 (101.6)	-	-	-
L_3	5/16 X 5/32 (7.94 X 3.96)	5/16 X 5/32 (7.94 X 3.96)	5/16 X 5/32 (7.94 X 3.96)	3/8 X 3/16 (9.53 X 4.76)	3/8 X 3/16 (9.53 X 4.76)	3/8 X 3/16 (9.53 X 4.76)
M	1.38 (35.03)	2.25 (57.15)	3.50 (88.90)	3.00 (76.2)	4.50 (114.30)	7.00 (177.80)
P_4	9/16-18	9/16-18	9/16-18	3/4-16	3/4-16	3/4-16
Q	0.88 (22.352)	0.88 (22.352)	0.88 (22.352)	1.437 (36.50)	1.437 (36.50)	1.437 (36.50)
R	3.22 (81.79)	3.22 (81.79)	3.22 (81.79)	4.44 (112.78)	4.44 (112.78)	4.44 (112.78)
S	1/2-13 1.00 DP	1/2-13 1.00 DP	1/2-13 1.00 DP	-	-	-
T	3.50 (88.9)	3.50 (88.9)	3.50 (88.9)	-	-	-
V	2.50 (63.5)	2.50 (63.5)	2.50 (63.5)	-	-	-
W	5.00 (127.00)	5.00 (127.00)	5.00 (127.00)	7.00 (177.80)	7.00 (177.80)	7.00 (177.80)
X	6.25 (158.75)	6.25 (158.75)	6.25 (158.75)	8.50 (215.90)	8.50 (215.90)	8.50 (215.90)
Y	5.00 (127.00)	5.00 (127.00)	5.00 (127.00)	-	-	-
AA	1/2-13 1.00 DP (25.4)	1/2-13 1.00 DP (25.4)	1/2-13 1.00 DP (25.4)	1/2-13 1.00 DP (25.4)	1/2-13 1.00 DP (25.4)	1/2-13 1.00 DP (25.4)
BB	-	-	-	5.00 (127.0)	5.00 (127.0)	5.00 (127.0)
CC	-	-	-	5/8-11 1.13 DP (28.7)	5/8-11 1.13 DP (28.7)	5/8-11 1.13 DP (28.7)
DD	-	-	-	7.25 (184.15)	8.25 (209.55)	9.97 (253.24)
NN	0.468 (11.89) 1.25 DP (31.75)	0.468 (11.89) 1.25 DP (31.75)	0.468 (11.89) 1.25 DP (31.75)	0.593 (15.06) 1.25 DP (31.75)	0.593 (15.06) 1.25 DP (31.75)	0.593 (15.06) 1.25 DP (31.75)

1 TOLERANCE ± 0.001 (0.0254) (HS-1.5, HS-2.5, HS-004)
TOLERANCE ± 0.0015 (0.038) (HS-006, HS-010, HS-015)

2 TOLERANCE ± 0.001 (0.0254)

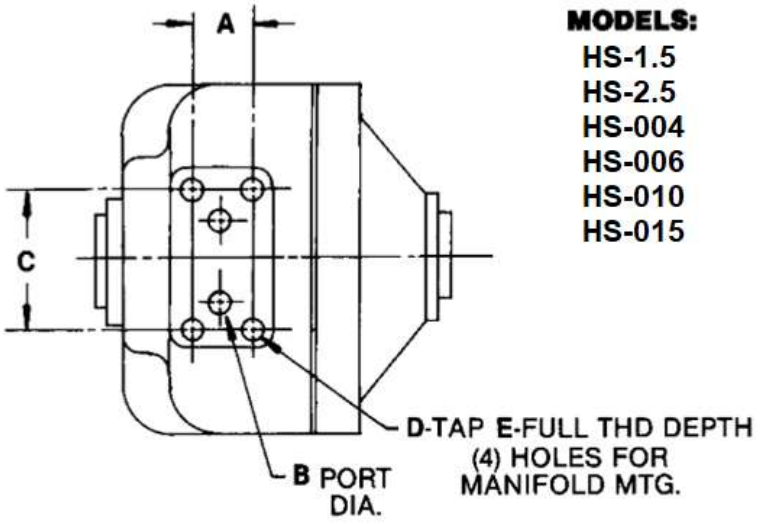
3 SEE BELOW FOR OPTIONAL SPLINE DATA

4 SEE BELOW FOR OTHER PORT OPTIONS

OPTIONAL SPLINE DATA FOR HS-006, 010, & 015								
MODEL	PITCH	TEETH	PRESSURE ANGLE	MAJOR DIAMETER (in)	MINOR DIAMETER (in)	PITCH DIAMETER (in)	LENGTH (in)	SPLINE STANDARD
HS-1.5 HS-2.5 HS-004	16/32	24	30°	1.5735 1.5625	1.4375 1.4425	1.5000	1.75	ASA B5.15-1960
HS-006 HS-010 HS-015	12/24	26	30°	2.2630 2.2500	2.0833 2.0883	2.1667	2.00	ASA B5.15-1960

OPTIONAL NPT AND BSPP PORTING		
MODEL	NATIONAL PIPE THREAD (NPT)	BRITISH STANDARD PIPE THREAD (BSPP)
HS-1.5 HS-2.5 HS-004	1/4-18 NPT	3/8-19 BSPP
HS-006 HS-010 HS-015	1/2-14 NPT	1/2-14 BSPP

Hollow Shaft Series



MODELS:
HS-1.5
HS-2.5
HS-004
HS-006
HS-010
HS-015

OPTIONAL MANIFOLD PORTING					
MODEL	A (in)	B (in)	C (in)	D (in)	E (in)
HS-1.5 HS-2.5 HS-004	1.000	1/4	2-3/4	¼-20 UNC	1/2
HS-006	1.375	7/16	3-3/8	3/8-16 UNC	3/4

HS-010 HS-015	1.750	7/16	4	1/2-13 UNC	1

SINGLE VANE 280° ROTATION (±5°)						
	TORQUE in-lbs (N-m)			**VOLUMETRIC DISPLACEMENT in^3 (cm^3)**		**APPROX. WEIGHT lb (kg)**
MODEL	**1000 psi (69.0 bar)**	**2000 psi (137.9 bar)**	**3000 psi (206.9 bar)**	**PER 280°**	**PER Radian**	
HS-1.5	1350 (152.55)	2700 (305.10)	4050 (457.65)	7.30 (119.64)	1.50 (24.58)	29 (13.15)
HS-2.5	2250 (254.25)	4500 (508.50)	6750 (762.75)	12.20 (199.95)	2.50 (40.97)	34 (15.42)
HS-004	3600 (406.80)	7200 (813.60)	10800 (1220.40)	19.54 (320.26)	4.00 (65.56)	41 (18.59)
HS-006	5720 (646.36)	11440 (1292.72)	17160 (1939.08)	31.05 (508.90)	6.36 (104.24)	58 (26.30)
HS-010	8600 (971.80)	17200 (1943.60)	25800 (2915.40)	46.59 (763.61)	9.54 (156.36)	67 (30.39)
HS-015	13500 (1525.50)	27000 (3051.00)	40500 (4576.50)	73.27 (1200.89)	15.00 (245.85)	83 (37.64)

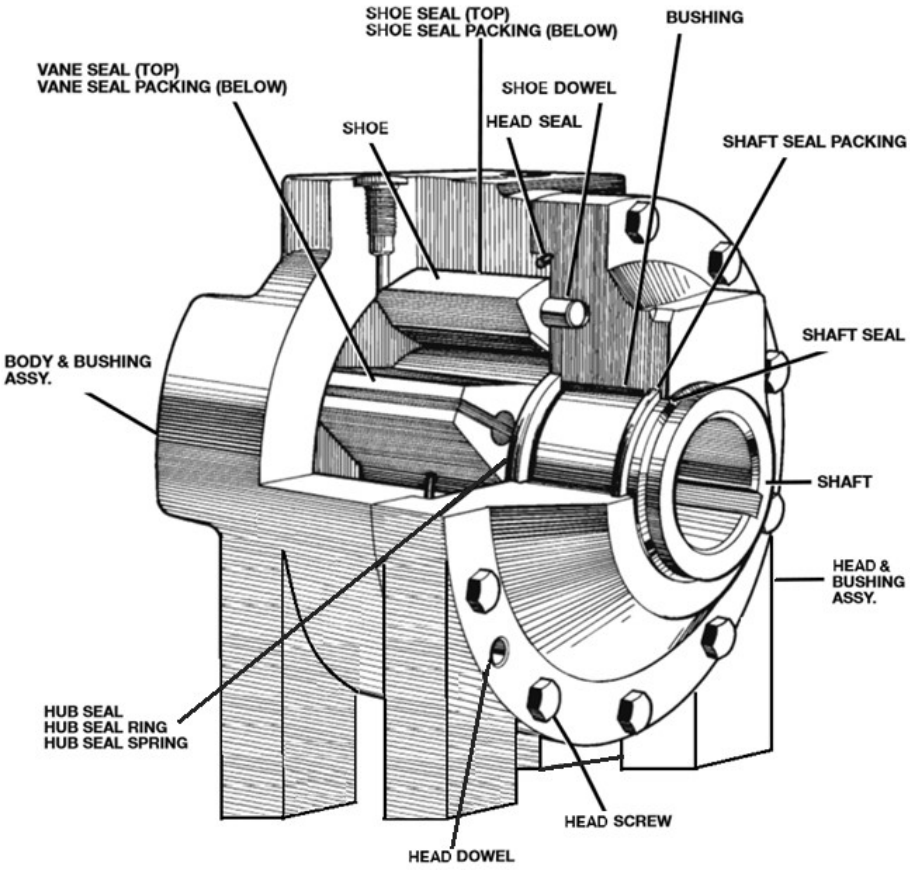
*2,000 psi maximum is recommended for severe duty applications, such as operating at maximum torque at high cycle rates for extended periods.

DOUBLE VANE 100° ROTATION (±5°)						
	TORQUE in-lbs (N-m)			**VOLUMETRIC DISPLACEMENT in^3 (cm^3)**		**APPROX. WEIGHT lb (kg)**
MODEL	**1000 psi (69.0 bar)**	**2000 psi (137.9 bar)**	**3000 psi (206.9 bar)**	**PER 100°**	**PER Radian**	
HS-1.5	-	-	-	-	-	-
HS-2.5	-	-	-	-	-	-
HS-004	-	-	-	-	-	-
HS-006	12080 (1365.04)	24170 (2731.21)	36250 (4096.25)	22.20 (363.86)	12.72 (208.48)	68 (30.84)
HS-010	18120 (2047.56)	36250 (4096.25)	54370 (6143.81)	33.29 (545.62)	19.08 (312.72)	76 (34.47)
HS-015	28500 (3220.50)	57000 (6441)	-	52.70 (863.75)	30.02 (492.03)	95 (43.08)

*2,000 psi maximum is recommended for severe duty applications, such as operating at maximum torque at high cycle rates for extended periods.

TEST PARAMETERS - OIL			
	MAX BREAK IN psi (bar)	BY-PASS LEAKAGE-MAX ALLOWABLE	
MODEL		in^3/min AT 3000 psi (206.9 bar)	cm^3/min AT 3000 psi (206.9 bar)
HS-1.5	80 (5.52)	5	82
HS-2.5	80 (5.52)	6	98
HS-004	80 (5.52)	7	115
HS-006	50 (3.44)	8	131
HS-010	50 (3.44)	9	148
HS-015	50 (3.44)	10	164

HOW TO ORDER HS-1.5, HS-2.5, HS-004



HOW TO ORDER

Please fill in ALL blocks in accordance with the KEY numbers and letters shown below.

EXAMPLE: HS - 004 - 1V - E/B - V - A - A - 7

BLOCK #	1	2	3	4	5	6	7	8
	☐	☐	☐	☐	☐	☐	☐	☐

Block 1 (MODEL)
HS Hollow Shaft

Block 2 (SIZE)
1.5
2.5
004

Block 3 (VANES)
1V Single Vane

Block 4 (MOUNTING)
E/B End/Base

Block 5 (SEALS)
B Buna "N" Standard Shaft Seal
V Viton Standard Shaft Seal
E Ethylene Propylene

Block 6 (SHAFT CONFIGURATION)
A Standard (Internal key for HS)
M Internal spline (HS)
Z Special

Block 7 (SHAFT MODIFICATION)
A Standard (No modifications)
Z Special

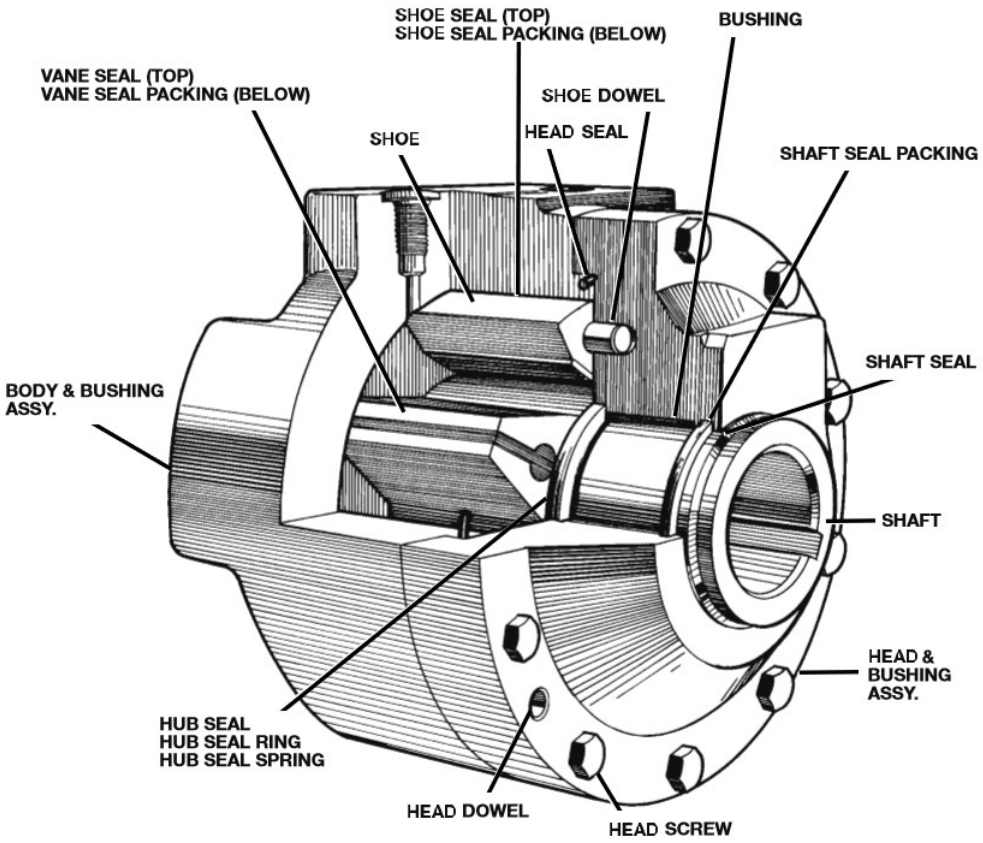
Block 8 (PORTING)
1 NPT
2 SAE Straight Threads (Standard)
****5** End Ports – NPT
****6** End Ports – SAE
7 Manifold Ports (See Optional Porting for details)
0 BSPP Straight Threads
Z Special

** "End Ports" for HS Series means on non-mounting end, parallel to shaft.

NOTE: All "Z" (non-standard feature request) requires a "Request a Quote" to be filled out for Micromatic to review requirements

Contact Micromatic Customer Service with special feature requests @ CustomerService@micromaticllc.com or 800.333.5752.

HOW TO ORDER HS-006, HS-010, HS-015



HOW TO ORDER

Please fill in ALL blocks in accordance with the KEY numbers and letters shown below.

EXAMPLE: HS - 006 - 2V - E - B - A - A - 2

__ - ___ - __ - ___ - _ - _ - _ - _

BLOCK # 1 2 3 4 5 6 7 8

Block 1 (MODEL)
- **HS** Hollow Shaft

Block 2 (SIZE)
- **006**
- **010**
- **015**

Block 3 (VANES)
- **1V** Single Vane
- **2V** Double Vane

Block 4 (MOUNTING)
- **E** End

Block 5 (SEALS)
- **B** Buna "N" Standard Shaft Seal
- **V** Viton Standard Shaft Seal
- **E** Ethylene Propylene

Block 6 (SHAFT CONFIGURATION)
- **A** Standard (Internal key for HS)
- **M** Internal spline (HS)
- **Z** Special

Block 7 (SHAFT MODIFICATION)
- **A** Standard (No modifications)
- **Z** Special

Block 8 (PORTING)
- **1** NPT
- **2** SAE Straight Threads (Standard)
- ****5** End Ports – NPT
- ****6** End Ports – SAE
- **7** Manifold Ports (See Optional Porting for details)
- **0** BSPP Straight Threads
- **Z** Special

** "End Ports" for HS Series means on non-mounting end, parallel to shaft. **NOT** available on 2V units.

NOTE: All "Z" (non-standard feature request) requires a "Request a Quote" to be filled out for Micromatic to review requirements

Contact Micromatic Customer Service with special feature requests @ CustomerService@micromaticllc.com or 800.333.5752.