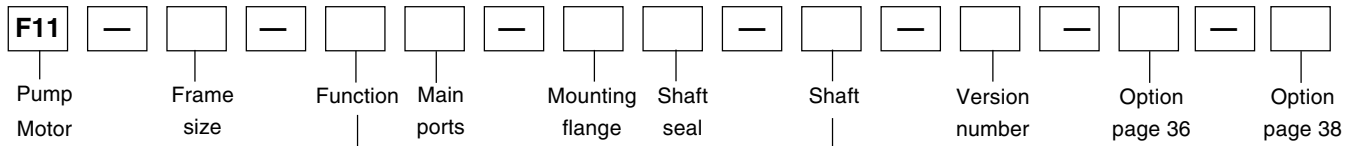


Ordering codes



F11-CETOP

Frame size	
Code	Displacem. (cm ³ /rev)
5	4.9
10	9.8
14	14.3
19	19.0
150	150.0

Version number
(assigned for special versions)

Option
None

Frame size	5	10	14	19	150
Code					
Function					
M Motor	x	x	-	x	x
H Motor, high pressure	x	x	x	x	x
Q Motor, silent	(x)	(x)	-	(x)	(x)
J Motor, clockwise rot'n ¹⁾	(x)	(x)	-	(x)	(x)
G Motor, counter clockw. ¹⁾	(x)	(x)	-	(x)	(x)
R Pump, clockwise rot'n	x	x	x	x	x
L Pump, counter clockw.	x	x	x	x	x

Frame size	5	10	14	19	150
Code					
Shaft					
K Metric key	x	x	x	x	x
D Spline, DIN 5480	(x)	(x)	(x)	(x)	(x)

Frame size	5	10	14	19	150
Code					
Main ports					
B BSP threads	x	x	x	x	-
R With anti-cavitation valve; clockwise rot'n ²⁾	-	x	x	x	-
L With anti-cavitation valve; counter clockw. ²⁾	-	x	x	x	-
U SAE, UN threads	(x)	(x)	-	(x)	-
F SAE 6000 psi flange	-	-	-	-	x

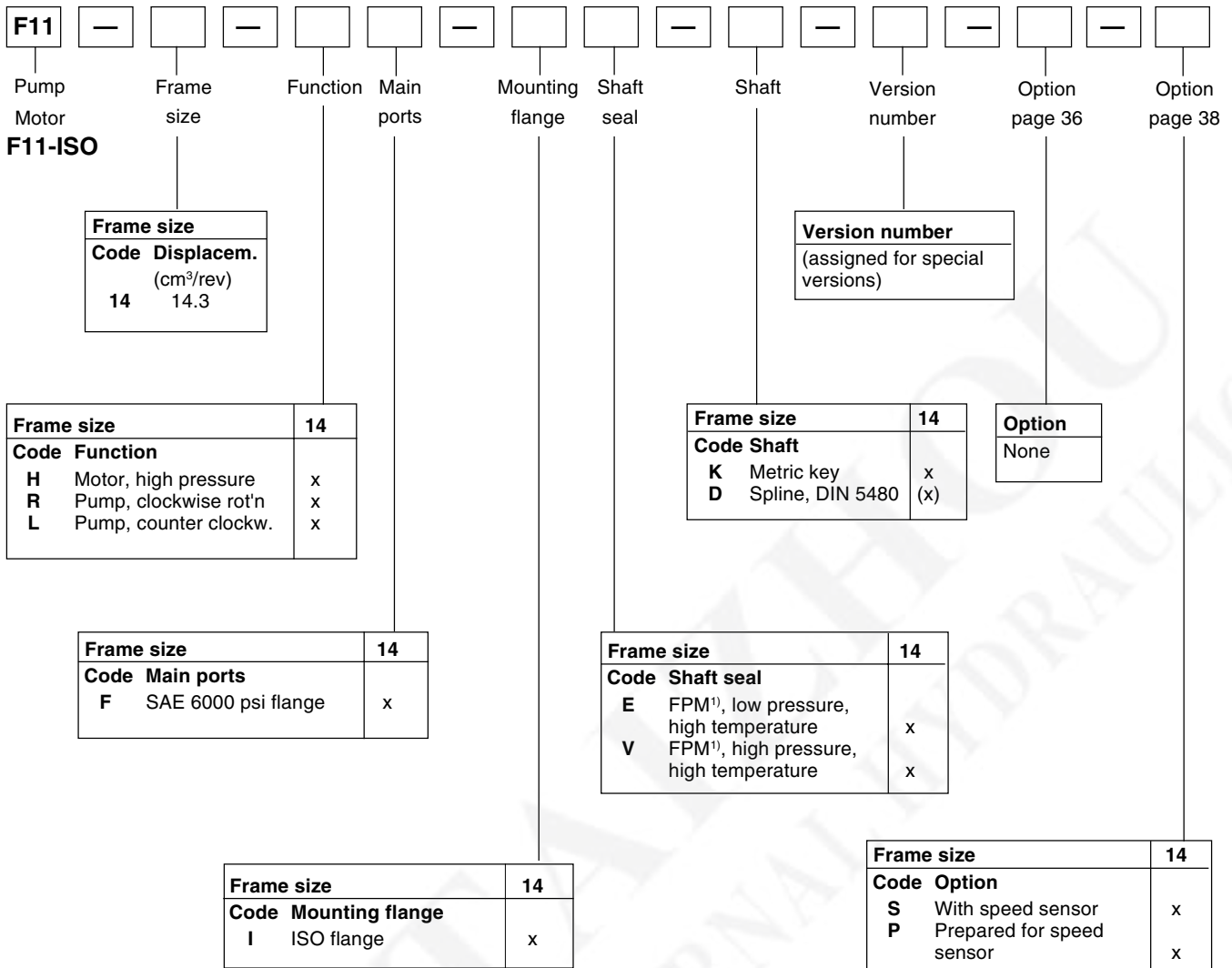
Frame size	5	10	14	19	150
Code					
Shaft seal					
N NBR ³⁾ , low pressure	x	x	-	x	x
H NBR ³⁾ , high pressure	x	x	-	x	x
E FPM ⁴⁾ , low pressure, high temperature	x	x	x	x	x
V FPM ⁴⁾ , high pressure, high temperature	-	x	x	x	-

Frame size	5	10	14	19	150
Code					
Mounting flange					
C CETOP flange	x	x	x	x	x
W Saw motor flange	-	x	x	x	-

Frame size	5	10	14	19	150
Code					
Option					
S With speed sensor	-	-	x	x	-
P Prepared for speed sensor	-	-	x	x	-

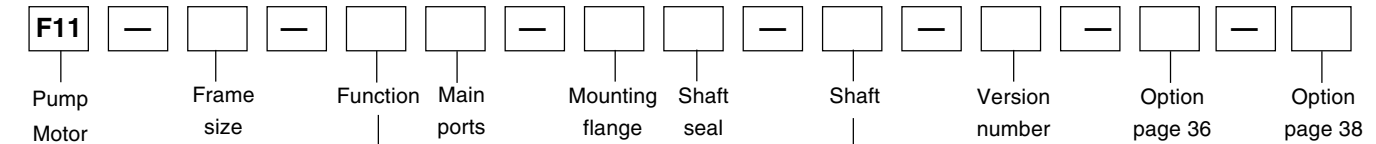
- x: Available (x): Optional - : Not available
- Internal drain
 - BSP threads
 - NBR - Nitrile rubber
 - FPM - Fluor rubber

Ordering codes



x: Available (x): Optional - : Not available
1) FPM - Fluor rubber

Ordering codes



F11-SAE

Frame size	
Code	Displacem. (cm ³ /rev)
14	14.3
19	19.0
150	150.0
250	242.0

Version number
(assigned for special versions)

Option
None

Frame size		14	19	150	250
Code	Function				
M	Motor	-	x	x	-
H	Motor, high pressure	x	x	x	-
Q	Motor, silent	-	(x)	(x)	x
J	Motor, clockwise rot'n ¹⁾	-	(x)	(x)	-
G	Motor, counter clockw. ¹⁾	-	(x)	(x)	-
R	Pump clockwise rot'n	x	x	x	x
L	Pump counter clockw.	x	x	x	x

Frame size		14	19	150	250
Code	Shaft				
T	SAE key	x	x	x	-
S	SAE spline	(x)	(x)	(x)	(x)
K	Metric key	-	-	-	x
F	SAE spline	-	-	-	(x)

Frame size		14	19	150	250
Code	Main ports				
U	SAE, UN threads	x	x	-	-
B	BSP threads	-	(x)	-	-
F	SAE 6000 psi flange ²⁾	-	-	x	x
R	With anti-cavitation valve; clockwise rot'n ³⁾	x	x	-	-
L	With anti-cavitation valve; counter clockw. ³⁾	x	x	-	-

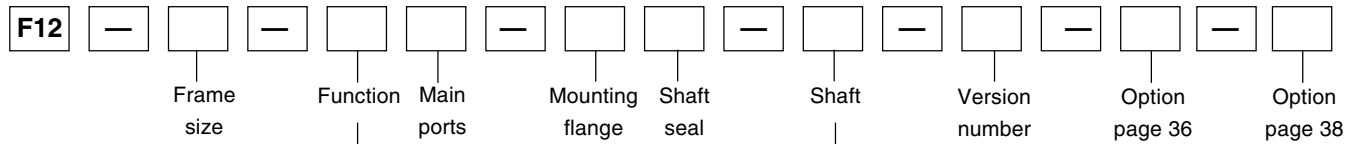
Frame size		14	19	150	250
Code	Shaft seal				
N	NBR ⁴⁾ , low pressure	-	x	x	x
H	NBR ⁴⁾ , high pressure	-	x	x	x
E	FPM ⁵⁾ , low pressure, high temperature	x	x	x	x
V	FPM ⁵⁾ , high pressure, high temperature	x	x	-	-

Frame size		14	19	150	250
Code	Mounting flange				
S	SAE flange	x	x	x	x

Frame size		14	19	150	250
Code	Option				
S	With speed sensor	x	x	-	-
P	Prepared for speed sensor	x	x	-	-

- x: Available (x): Optional - : Not available
- 1) Internal drain
 - 2) Metric thread
 - 3) BSP threads
 - 4) NBR - Nitrile rubber
 - 5) FPM - Fluor rubber

Ordering codes



F12-ISO

Frame size	
Code	Displacem. (cm ³ /rev)
30	30.0
40	40.0
60	59.8
80	80.4
110	110.1

Version number
(assigned for special versions)

Frame size		30	40	60	80	110
Code Shaft						
D	DIN spline Standard	x	x	x	x	x
Z	Optional	(x)	(x)	-	(x)	-
K	Metric key Standard	x	x	x	x	x
P	Optional	(x)	-	-	-	-

Frame size		30	40	60	80	110
Code Function						
M	Motor	x	x	x	x	x
Pump:						
L	counter clockw.	x	x	x	x	x
R	clockwise	x	x	x	x	x

Frame size		30	40	60	80	110
Code Option						
L01	Integr. flushing valve	x	x	x	x	- ³⁾

Frame size		30	40	60	80	110
Code Main ports						
F	ISO flange	x	x	x	x	x

Frame size		30	40	60	80	110
Code Option						
S	With speed sensor	x	x	x	x	x
P	Prepared for speed sensor	x	x	x	x	x

Frame size		30	40	60	80	110
Code Mounting flange						
I	ISO flange	x	x	x	x	x

Frame size		30	40	60	80	110
Code Shaft seal						
H	NBR ¹⁾ , high pressure	x	x	x	x	x
N	NBR ¹⁾ , low pressure	x	x	x	x	x
V	FPM ²⁾ , high temperature, high pressure	x	x	x	x	x

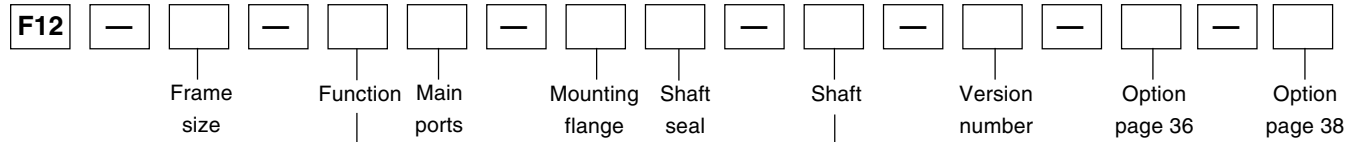
x: Available (x): Optional -: Not available

1) NBR - Nitrile rubber

2) FPM - Fluor rubber

3) F12-110: Accessory valve block (page 36)

Ordering codes



F12-Cartridge

Frame size	
Code	Displacem. (cm ³ /rev)
30	30.0
40	40.0
60	59.8
80	80.4
110	110.1

Version number	
(assigned for special versions)	

Frame size	30	40	60	80	110
Code Shaft					
C DIN spline Standard	x	x	x	x	x
K Metric key Standard	x	-	x	x	-
X " " Optional	-	(x)	-	-	-

Frame size	30	40	60	80	110
Code Function					
M Motor	x	x	x	x	x

Frame size	30	40	60	80	110
Code Option					
L01 Integr. flushing valve	x	x	x	x	- ³⁾

Frame size	30	40	60	80	110
Code Main ports					
F ISO flange	x	x	x	x	x

Frame size	30	40	60	80	110
Code Option					
S With speed sensor	x	x	x	x	x
P Prepared for speed sensor	x	x	x	x	x

Frame size	30	40	60	80	110
Code Mounting flange					
C Cartridge	x	x	x	x	x

Frame size	30	40	60	80	110
Code Shaft seal					
H NBR ¹⁾ , high pressure	x	x	x	x	x
N NBR ¹⁾ , low pressure	x	x	x	x	x
V FPM ²⁾ high temperature, high pressure)	x	x	x	x	x

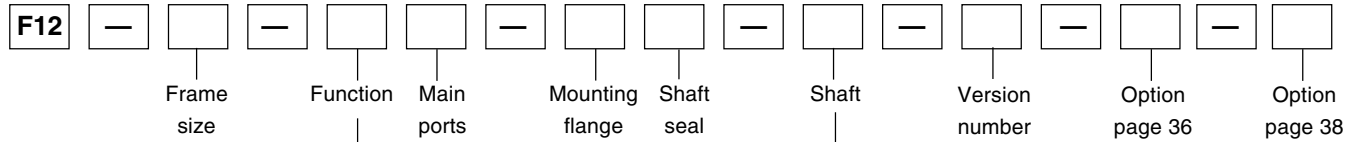
x: Available (x): Optional -: Not available

1) NBR - Nitrile rubber

2) FPM - Fluor rubber

3) F12-110: Accessory valve block (page 36)

Ordering codes



F12-SAE

Frame size	
Code	Displacem. (cm ³ /rev)
30	30.0
40	40.0
60	59.8
80	80.4
110	110.1

Version number
(assigned for special versions)

Frame size	30	40	60	80	110
Code Shaft					
S SAE spline Standard	x	x	x	x	x
U " " Optional	-	-	-	(x)	-
T SAE key Standard	x	x	x	x	x

Frame size	30	40	60	80	110
Code Function					
M Motor	x	x	x	x	x
Pump:					
L counter clockw.	x	x	x	x	x
R clockwise	x	x	x	x	x

Frame size	30	40	60	80	110
Code Option					
L01 Integr. flushing valve	x	x	x	x	- ³⁾

Frame size	30	40	60	80	110
Code Main ports					
S SAE flange	x	x	x	x	x
U SAE, UN threads	(x)	(x)	(x)	-	(x)

Frame size	30	40	60	80	110
Code Option					
S With speed sensor	x	x	x	x	x
P Prepared for speed sensor	x	x	x	x	x

Frame size	30	40	60	80	110
Code Mounting flange					
S SAE 4 bolt	x	x	x	x	x
T SAE 2 bolt	x	x	x	-	-

Frame size	30	40	60	80	110
Code Shaft seal					
H NBR ¹⁾ , high pressure	x	x	x	x	x
N NBR ¹⁾ , low pressure	x	x	x	x	x
V FPM ²⁾ , high temperature, high pressure	x	x	x	x	x

x: Available (x): Optional - : Not available

1) NBR - Nitrile rubber

2) FPM - Fluor rubber

3) F12-110: Accessory valve block (page 36)

Ordering codes

Preferred versions F11/F12 catalogue

F11

Ordering Codes	Part number
F11-005-MB-CN-K	3703665
F11-005-MB-CH-K	3707249
F11-005-HU-CH-K	3707308
F11-010-MB-CN-K	3703603
F11-010-MB-CH-K	3706030
F11-010-HU-CH-K	3707310
F11-014-HB-CE-K	3783201
F11-014-HB-CV-K	3782830
F11-019-MB-CN-K	3703516
F11-019-MB-CH-K	3707893
F11-150-MF-CN-K	3703468
F11-150-MF-CH-K	3707008
F11-150-HF-SH-S	3707325
F11-250-QF-SH-F	3706440
F11-250-QF-SH-K	3795858

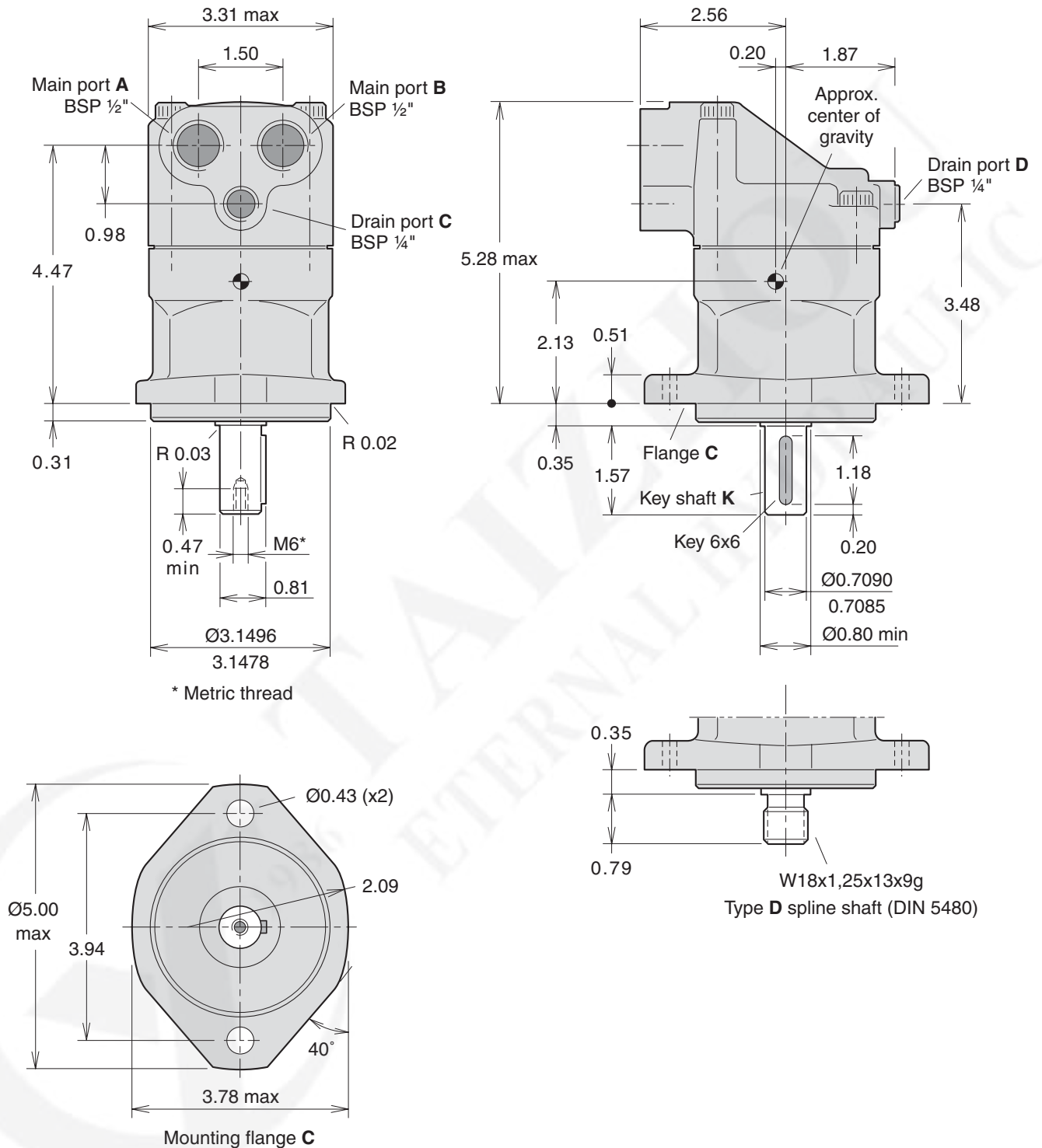
F12

Ordering Codes	Part number
F12-30-MF-IH-D	3799843
F12-30-MF-IH-K	3799844
F12-30-MS-SH-S	3799851
F12-30-MS-TH-S	3799616
F12-40-MF-IH-D	3799525
F12-40-MF-IH-K	3799526
F12-40-MS-SH-S	3799532
F12-40-MS-SH-T	3799533
F12-40-MS-TH-S	3799617
F12-60-MF-IH-D	3799988
F12-60-MF-IH-K	3799989
F12-60-MS-SH-S	3799998
F12-60-MS-TH-S	3799618
F12-80-MF-IH-D	3780767
F12-80-MF-IH-K	3780772
F12-80-MS-SH-S	3780783
F12-110-MF-IH-D	3781530
F12-110-MF-IH-K	3781534
F12-110-MS-SH-S	3781542

Installation dimensions

F11-5

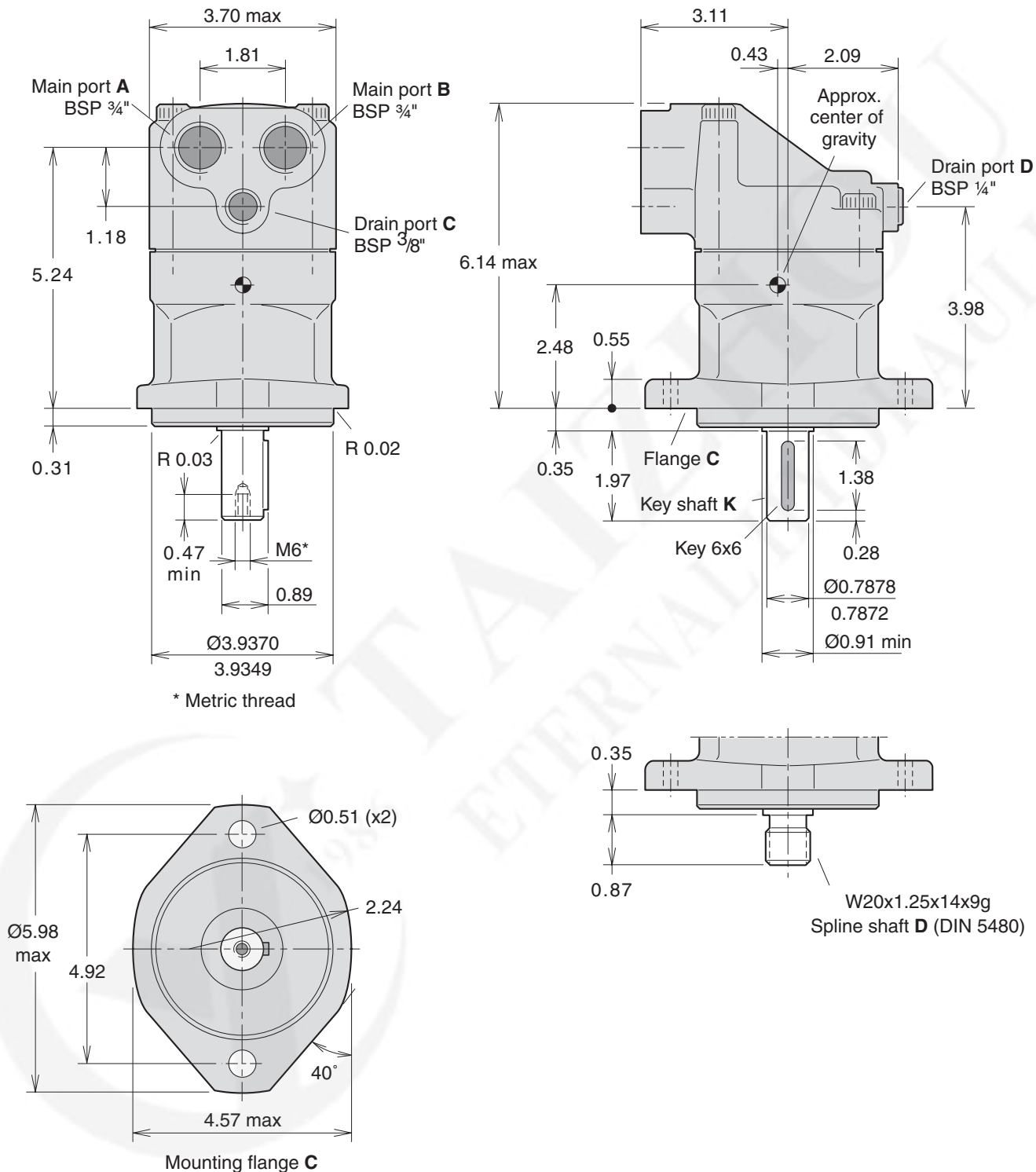
(CETOP versions)



Installation dimensions

F11-10

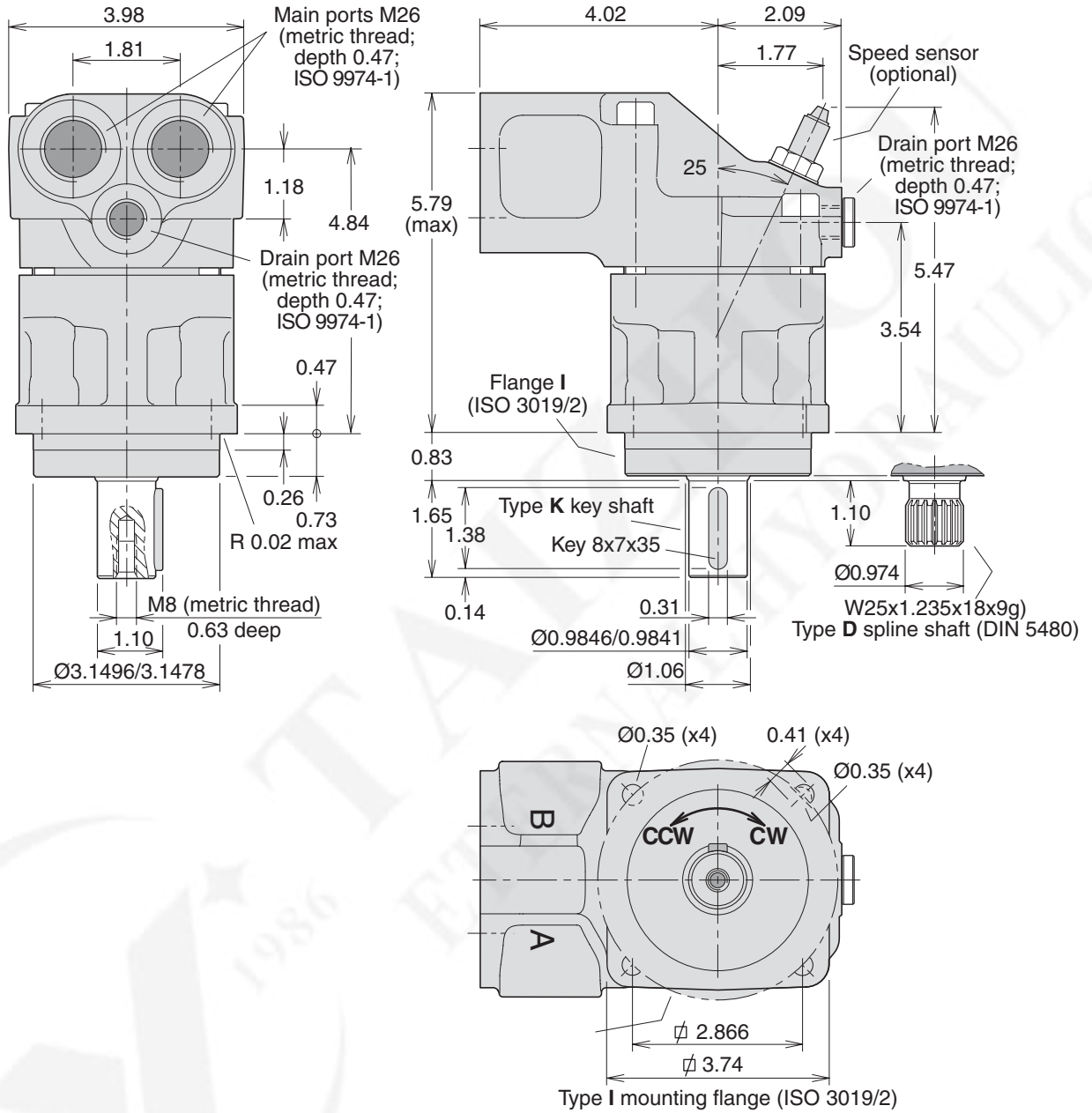
(CETOP versions)



Installation dimensions

F11-14

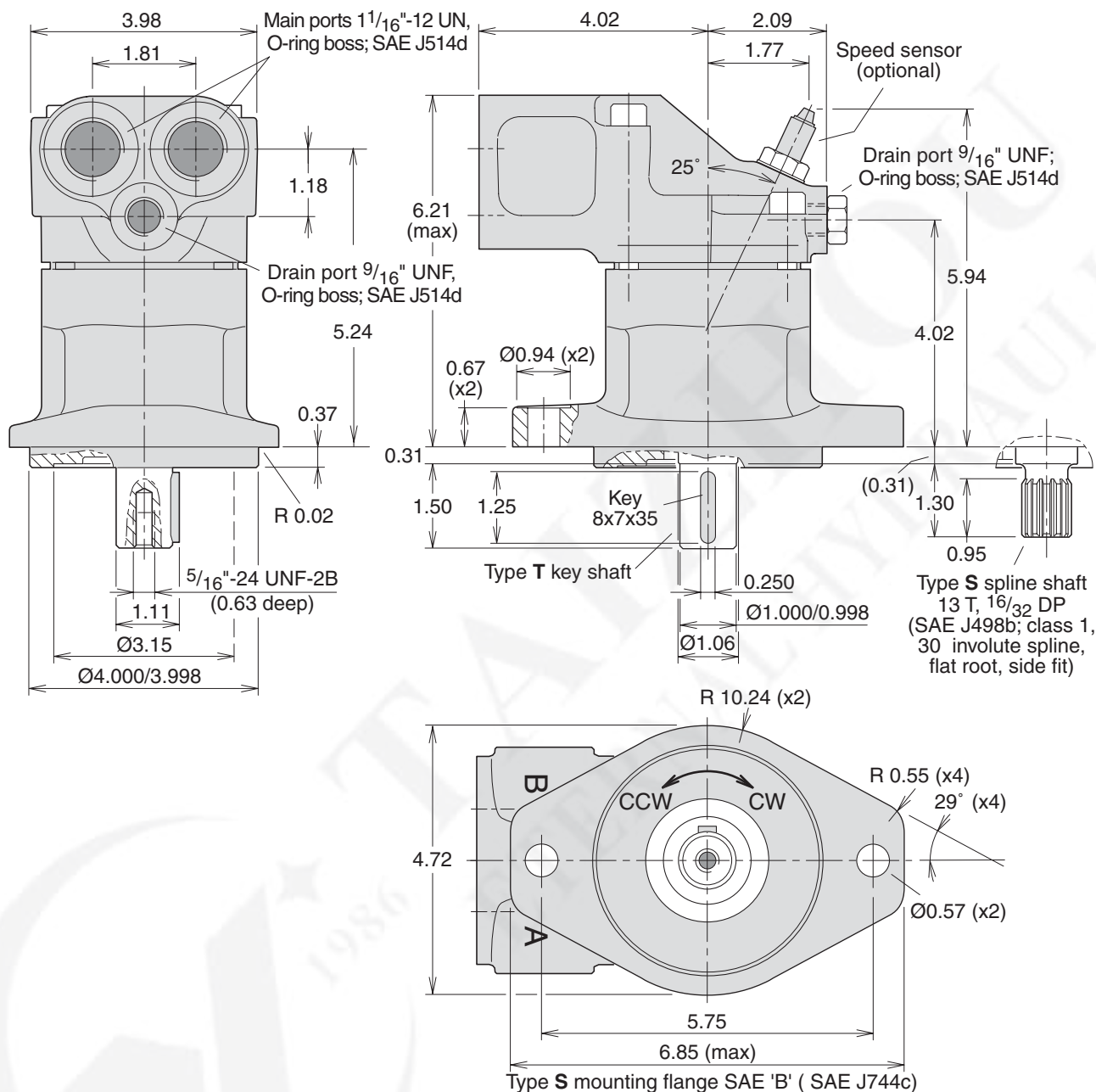
(ISO versions)



Installation dimensions

F11-14

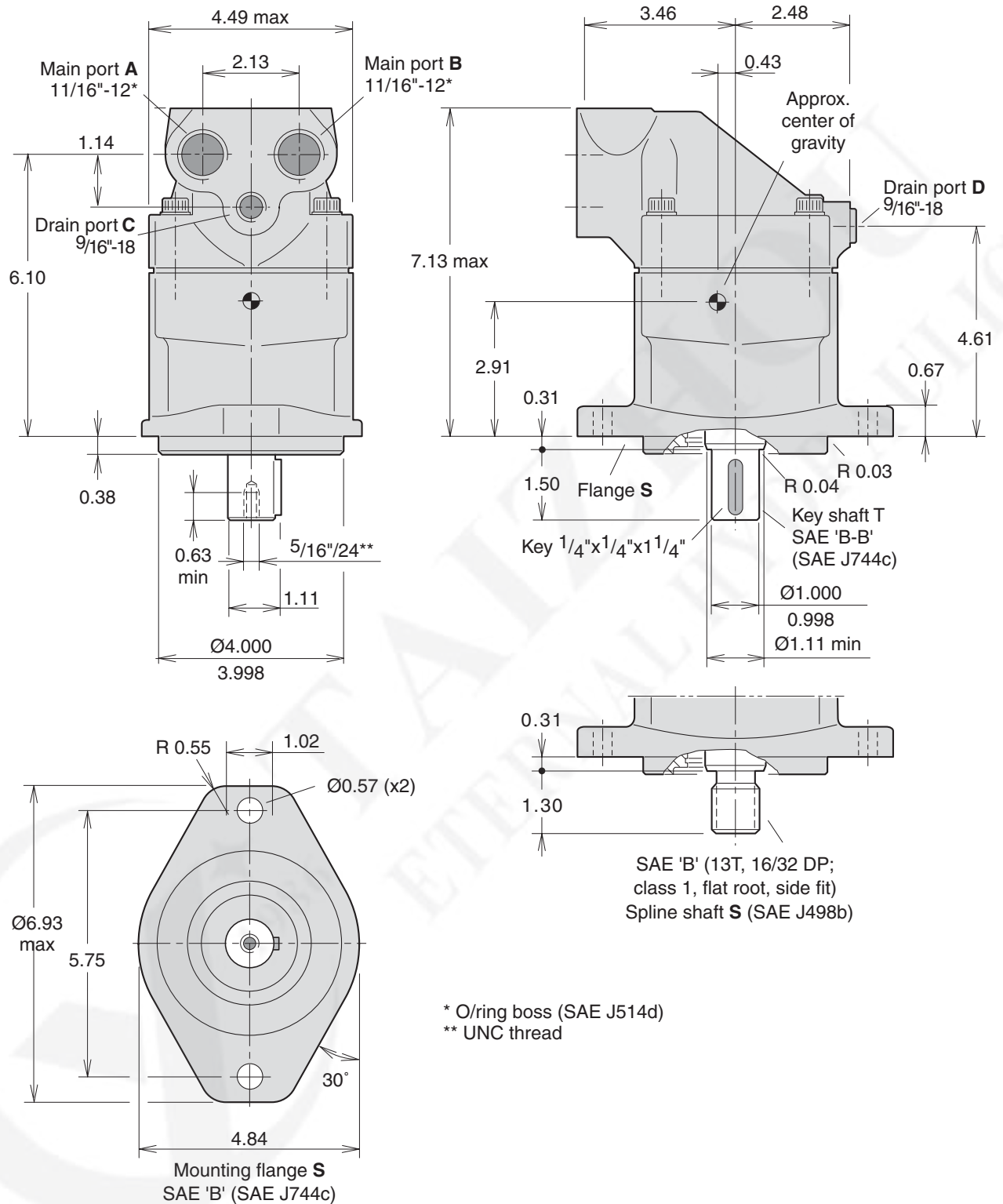
(SAE versions)



Installation dimensions

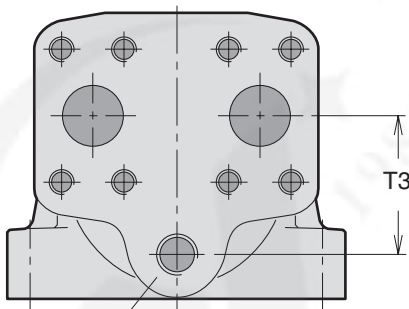
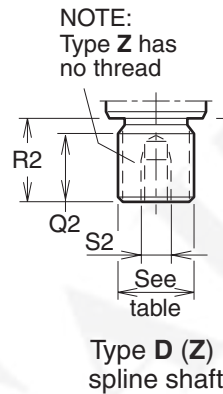
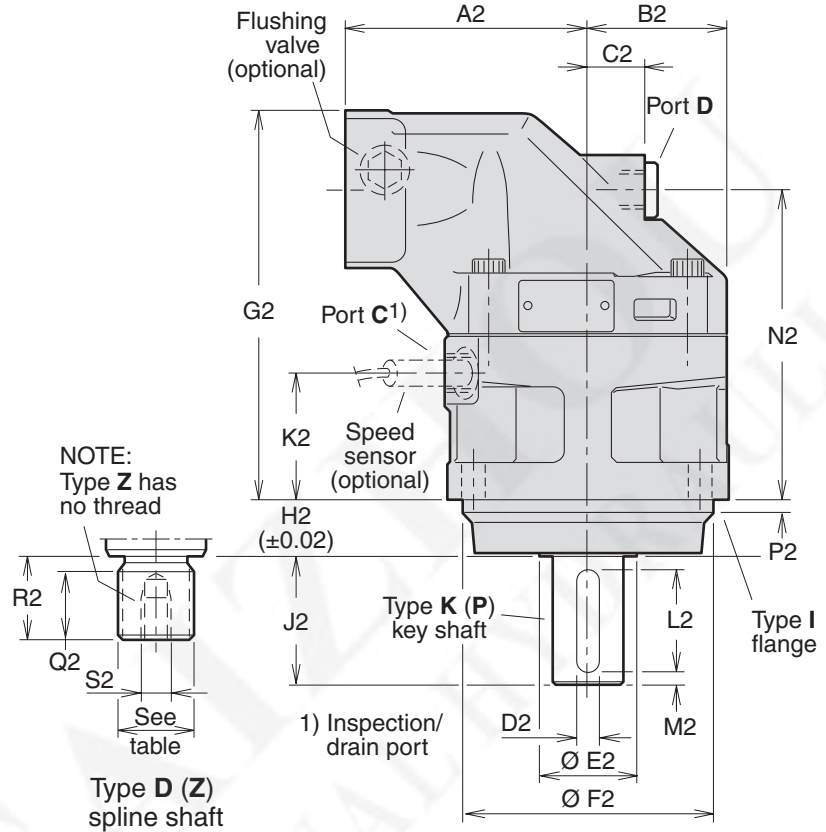
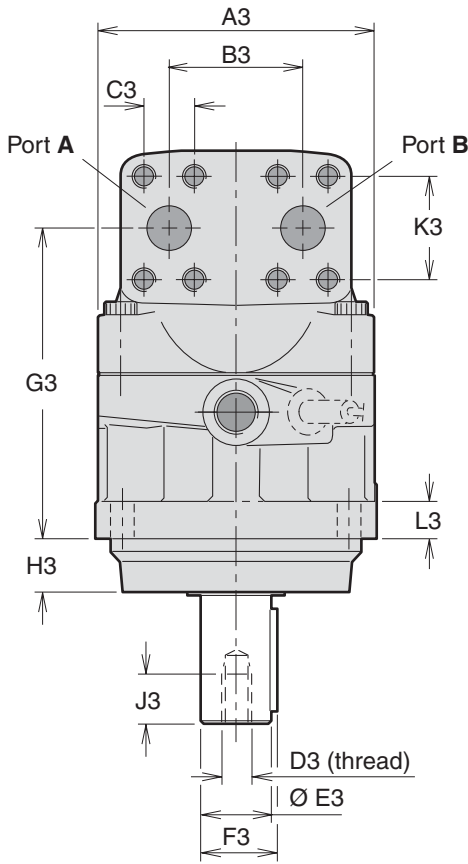
F11-19

(SAE version)



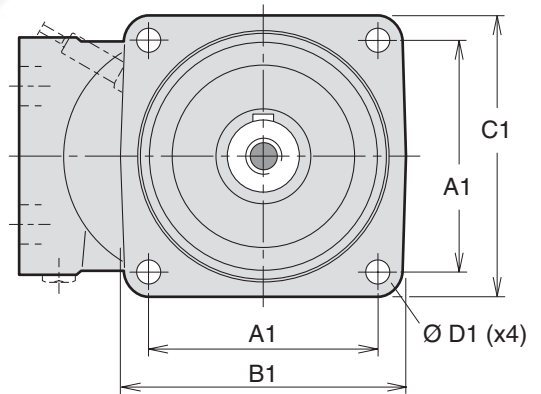
Installation dimensions

F12-30, -40, -60, -80 and -110
(ISO versions)



Port E (third drain port)
F12-110 barrel housing
(ISO/cartridge version)

Shown: F12-80



Type I mounting flange
(ISO 3019/2)

Installation dimensions

Dim.	F12-30	F12-40	F12-60	F12-80	F12-110
A1	3.48	4.46	4.46	5.01	5.57
B1	4.65	5.75	5.75	6.22	7.09
C1	4.65	5.59	5.67	6.10	7.09
D1	0.43	0.53	0.53	0.53	0.71
A2	3.94	4.33	4.92	5.32	5.71
B2	2.32	2.56	2.76	3.05	3.35
C2	0.98	1.02	0.87	1.26	1.50
D2	0.32	0.32	0.39	0.47	0.55
E2	1.30	1.65	1.65	2.05	2.26
F2	3.9370/ 3.9349	4.9213/ 4.9188	4.9213/ 4.9188	5.5118/ 5.5093	6.2992/ 6.2967
G2	6.77	6.81	7.48	8.50	9.09
H2	1.00	1.28	1.28	1.28	1.59
J2 ¹⁾	1.97	2.36	2.36	2.76	3.23
J2 ²⁾	1.97	-	-	-	-
K2	2.16	2.05	2.13	2.76	2.61
L2	1.58	1.97	1.97	2.21	2.76
M2	0.20	0.20	0.20	0.28	0.24
N2	5.37	5.39	6.06	6.79	7.05
P2	0.32	0.32	0.32	0.32	0.32
Q2	1.10	1.10	1.30	1.42	1.61
R2 ³⁾	1.38	1.38	1.61	1.77	1.97
R2 ⁴⁾	1.69	1.38	-	1.61	-
S2 ³⁾	M12 x24	M12 x24	M12 x28	M16 x36	M16 x36
A3	4.80	5.28	5.67	6.10	6.69
B3	2.60	2.60	2.60	2.95	3.29
C3	0.937	0.937	0.937	1.094	1.250
D3*	M12	M12	M12	M16	M16
E3	1.1817/ 1.1812	1.1817/ 1.1812	1.3787/ 1.3780	1.5755/ 1.5749	1.7724/ 1.7717
F3	1.30	1.30	1.50	1.69	1.91
G3	5.37	5.39	6.06	6.79	7.05
H3	0.93	1.20	1.20	1.20	1.52
J3	0.95	0.95	1.10	1.42	1.42
K3	2.000	2.000	2.000	2.250	2.626
L3	0.71	0.79	0.79	0.79	0.87
S3	0.63	0.63	0.63	1.02	-
T3	-	-	-	-	2.68

* Metric thread

- 1) Key shaft type K 3) Spline shaft type D
2) " " " P 4) " " " Z.

Ports	F12-30	F12-40	F12-60	F12-80	F12-110
A, B size	3/4"	3/4"	3/4"	1"	1 1/4"
Screw thread ¹⁾	M10 (0.79)	M10 (0.79)	M10 (0.79)	M12 (0.79)	M14 (1.02)
C, D thread ²⁾	M22 x1.5	M22 x1.5	M22 x1.5	M22 x1.5	M22 x1.5
E thread ²⁾	-	-	-	-	M22 x1.5

A, B: ISO 6162

1) Metric thread (depth in inches)


2) Metric thread x pitch in mm.

Spline shaft (DIN 5480; in mm)

	Type D (standard)	Type Z (optional)
F12-30	W30x2x14x9g	W25x1.25x18x9g
-40	W32x2x14x9g	W30x2x14x9g
-60	W35x2x16x9g	W32x2x14x9g
-80	W40x2x18x9g	W35x2x16x9g
-110	W45x2x21x9g	-

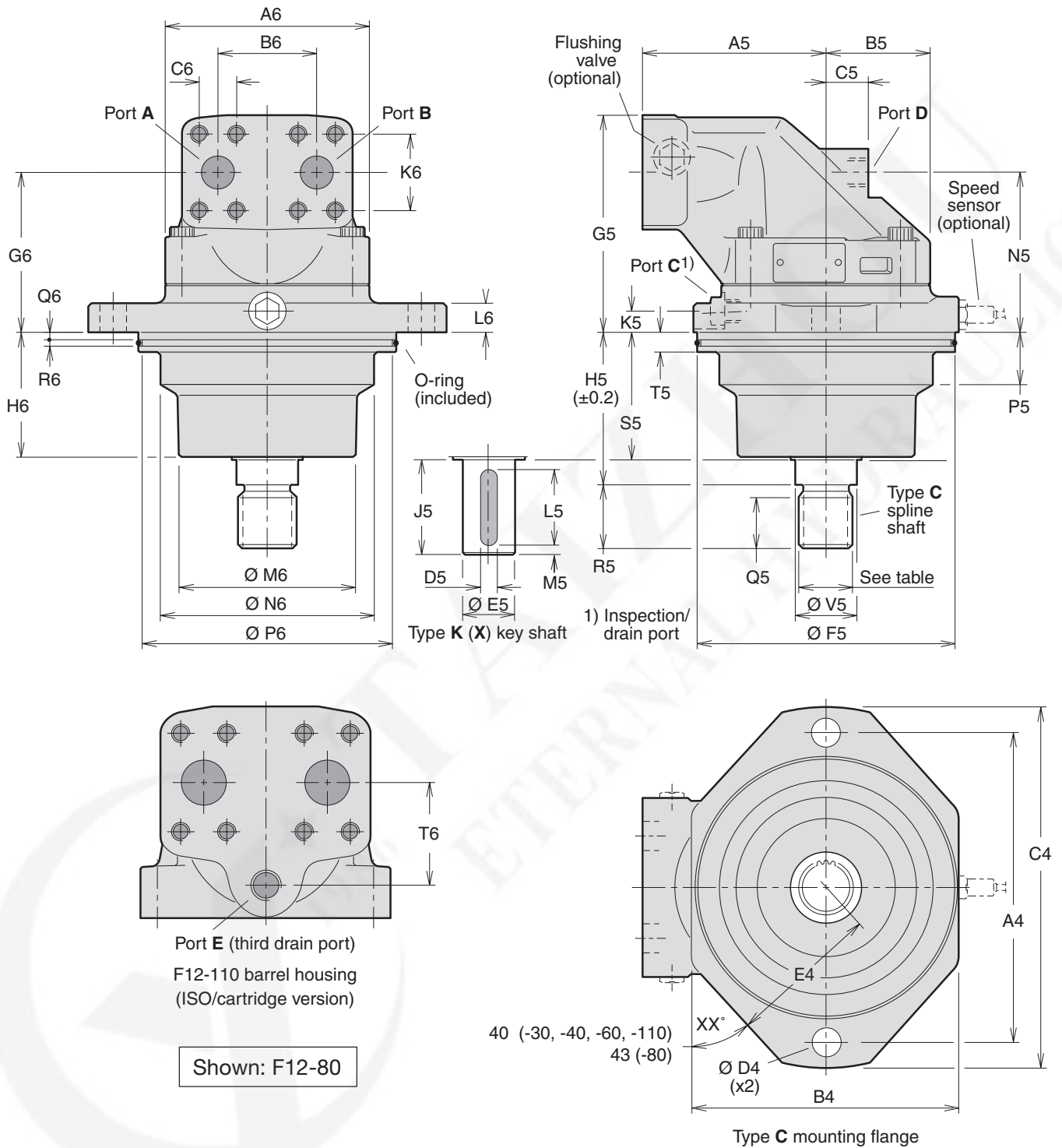
Metric key shaft (in mm)

	Type K (standard)	Type P (optional)
F12-30	30 dia.	25 dia.
-40	30 dia.	-
-60	35 dia.	-
-80	40 dia.	-
-110	45 dia.	-

 = Max 5 100 psi (350 bar) operating pressure.

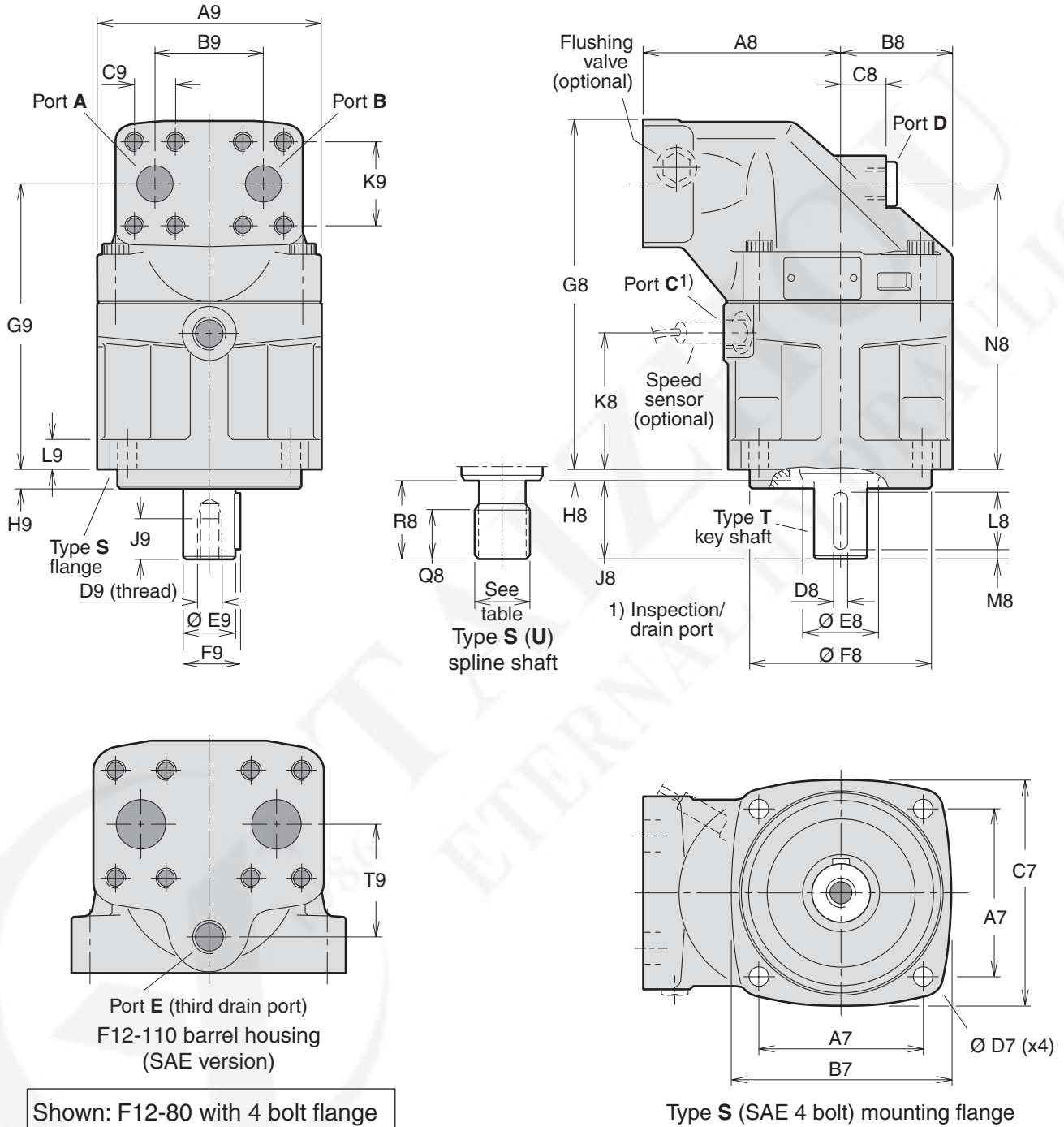
Installation dimensions

F12-30, -40, -60, -80 and -110
(Cartridge versions)



Installation dimensions

F12-30, -40, -60, -80 and -110
(SAE versions with 4 bolt flange)



Shown: F12-80 with 4 bolt flange

Installation dimensions

Dim.	F12-30	F12-40	F12-60	F12-80	F12-110
A7	3.54	4.51	4.51	4.51	6.36
B7	4.65	5.83	5.83	6.10	8.03
C7	4.65	5.67	5.67	6.10	7.87
D7	0.55	0.55	0.55	0.55	0.83
A8	3.94	4.33	4.92	5.31	5.71
B8	2.32	2.56	2.76	3.05	3.35
C8	0.98	1.02	0.87	1.26	1.50
D8	0.25	0.31	0.31	0.38	0.44
E8	1.30	1.65	1.65	2.05	2.26
F8	4.000/ 3.998	5.000/ 4.998	5.000/ 4.998	5.000/ 4.998	6.000/ 5.998
G8	7.46	7.76	8.43	9.45	10.39
H8	0.31	0.31	0.31	0.31	0.31
J8	1.50	1.89	1.89	2.13	2.64
K8	2.83	2.99	3.11	3.74	3.90
L8	1.25	1.50	1.50	1.75	2.13
M8	0.10	0.16	0.16	0.16	0.29
N8	6.04	6.34	7.02	7.76	8.35
Q8 ¹⁾	0.91	0.91	0.91	0.98	1.34
Q8 ²⁾	-	-	-	0.91	-
R8 ¹⁾	1.30	1.89	1.89	2.13	2.63
R8 ²⁾	-	-	-	1.88	-
A9	4.80	5.28	5.67	6.10	6.69
B9	2.60	2.60	2.60	2.95	3.27
C9	0.937	0.937	0.937	1.094	1.250
D9*	5/16"-24	3/8"-24	3/8"-24	1/2"-20	5/8"-18
E9	1.000/ 0.998	1.250/ 1.248	1.250/ 1.248	1.500/ 1.498	1.750/ 1.748
F9	1.11	1.39	1.39	1.67	1.94
G9	6.06	6.34	7.02	7.76	8.35
H9	0.38	0.50	0.50	0.50	0.50
J9	0.63	0.75	0.75	1.02	1.26
K9	2.000	2.000	2.000	2.250	2.626
L9	0.71	0.79	0.79	0.79	0.87
T9	-	-	-	-	2.68

* UNF-2B thread
1) Spline shaft type **S**
2) " " " " **U**

Main ports A and B, type U (optional)

F12-110	1 5/8" - 12 UN
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O-ring ports according to SAE J514d

Ports	F12-30	F12-40	F12-60	F12-80	F12-110
A, B size	3/4"	3/4"	3/4"	1"	1 1/4"
Screw thread ³⁾	3/8"-16 (0.87)	3/8"-16 (0.79)	3/8"-16 (0.87)	7/16"-14 (1.06)	1/2"-13 (0.98)
C thread	7/8"-14	7/8"-14	7/8"-14	7/8"-14	1 1/16"-12
D thread	3/4"-16	3/4"-16	7/8"-14	7/8"-14	1 1/16"-12
E thread	-	-	-	-	1 1/16"-12


A, B: ISO 6162; C, D, E: O-ring boss (SAE J514)
3) UN thread (depth in inches)

Mounting flange (SAE J744)

	S (standard)	X (optional)
F12-30	SAE 'B', 4 bolt	-
-40	SAE 'C', "	-
-60	SAE 'C', "	-
-80	SAE 'C', "	SAE 'D', 4 bolt
-110	SAE 'D', "	-

Spline shaft (SAE J498b, class 1, flat root, side fit)

	S (standard)	U (opt.)	X (optional)
F12-30	SAE 'B' 13T, 16/32 DP	-	-
-40	SAE 'C' 14T, 12/24 DP	-	-
-60	SAE 'C' 14T, 12/24 DP	-	-
-80	SAE 'C-C' 17T, 12/24 DP	SAE 'C' 14T, 12/24 DP	SAE 'D' 13T, 8/16 DP
-110	SAE 'D' 13T, 8/16 DP	-	-

 = Max 5100 psi (350 bar) operating pressure.

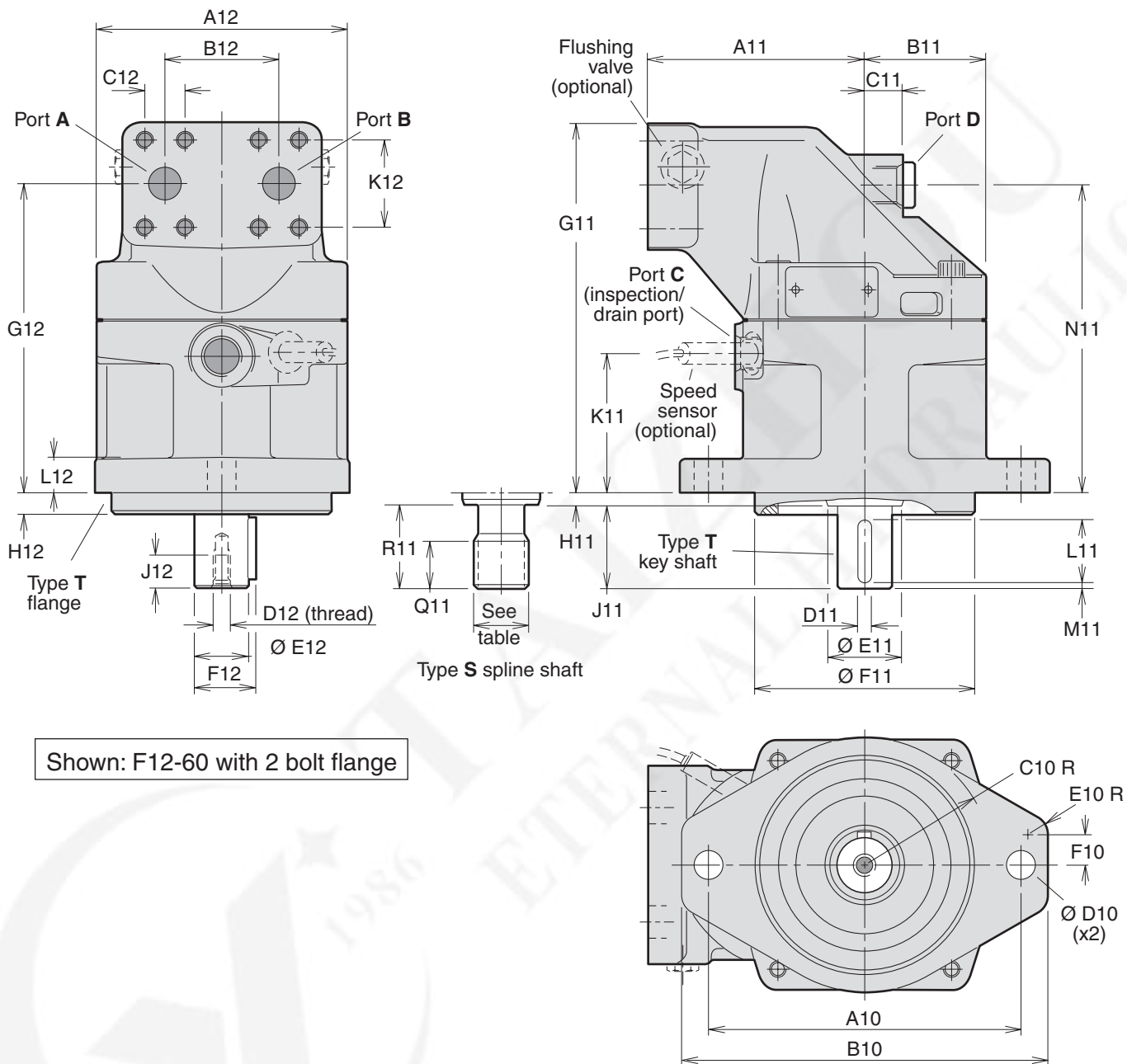
Key shaft (SAE J744)

	T (standard)	X (optional)
F12-30	SAE 'B-B' (1"/25.4 mm)	-
-40	SAE 'C' (1 1/4"/31.75 mm)	-
-60	SAE 'C' (1 1/4"/31.75 mm)	-
-80	SAE 'C-C' (1 1/2"/38.1 mm)	SAE 'D' (1 3/4"/44.45 mm)
-110	SAE 'D' (1 3/4"/44.45 mm)	-

Installation dimensions

F12-30, -40, and -60

(SAE versions with 2 bolt flange)



Installation dimensions

Dim.	F12-30	F12-40	F12-60
A10	5.75	7.13	7.13
B10	6.93	8.46	8.46
C10	2.48	2.91	2.91
D10	0.57	0.69	0.69
E10	0.39	0.63	0.63
F10	0.39	0.61	0.61
A11	3.94	4.33	4.92
B11	2.32	2.56	2.76
C11	0.98	1.02	0.87
D11	0.25	0.31	0.31
E11	1.30	1.65	1.65
F11	4.000/ 3.998	5.000/ 4.998	5.000/ 4.998
G11	7.46	7.76	8.43
H11	0.31	0.31	0.31
J11	1.50	1.89	1.89
K11	2.80	3.03	3.21
L11	1.25	1.50	1.50
M11	0.10	0.16	0.16
N11	6.06	6.34	7.03
Q11	1.02	1.06	1.06
R11	1.30	1.89	1.89
A12	4.80	5.28	5.67
B12	2.60	2.60	2.60
C12	0.937	0.937	0.937
D12*	5/16"-24	3/8"-24	3/8"-24
E12	1.000/ 0.998	1.250/ 1.248	1.250/ 1.248
F12	1.11	1.39	1.39
G12	6.06	6.34	7.03
H12	0.38	0.50	0.50
J12	0.63	0.75	0.75
K12	2.000	2.000	2.000
L12	0.71	0.79	0.79

* UNF-2B thread

Ports	F12-30	F12-40	F12-60
A, B size	3/4"	3/4"	3/4"
Screw thread ¹⁾	3/8"-16 (0.87)	3/8"-16 (0.79)	3/8"-16 (0.87)
C thread	3/4"-16	3/4"-16	7/8"-14
D thread	3/4"-16	3/4"-16	7/8"-14


A, B (main ports): SAE J518c (6000 psi)
C, D (drain ports): O-ring boss (SAE J514)

1) UN thread (depth in inches).

Main ports A and B, type U (optional)

F12-30	1 1/16" - 12 UN
-40	1 5/16" - 12 UN
-60	1 5/16" - 12 UN

O-ring ports according to SAE J514d

 = Max 350 bar operating pressure.

Mounting flange (SAE J744)

Type T

F12-30	SAE 'B', 2 bolt
-40	SAE 'C', 2 bolt
-60	SAE 'C', 2 bolt

Spline shaft (SAE J498b, class 1, flat root, side fit)

Type S

F12-30	SAE 'B' 13 T; 16/32 DP
-40	SAE 'C' 14 T; 12/24 DP
-60	SAE 'C' 14 T; 12/24 DP

Key shaft (SAE J744)

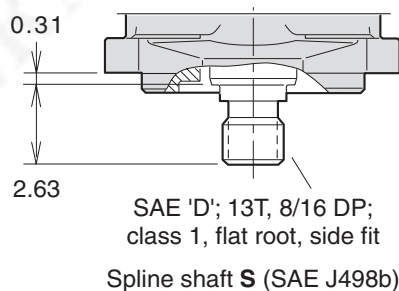
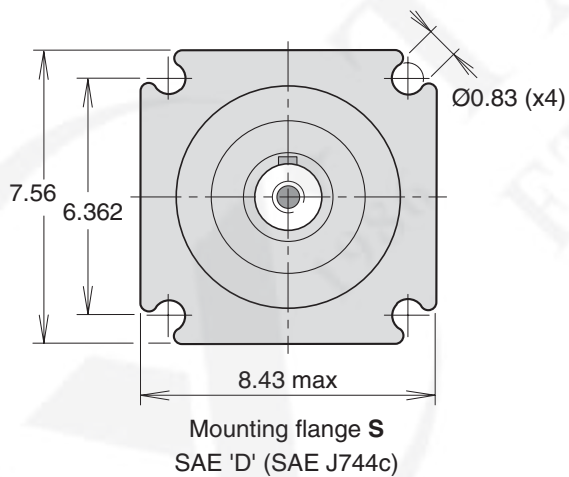
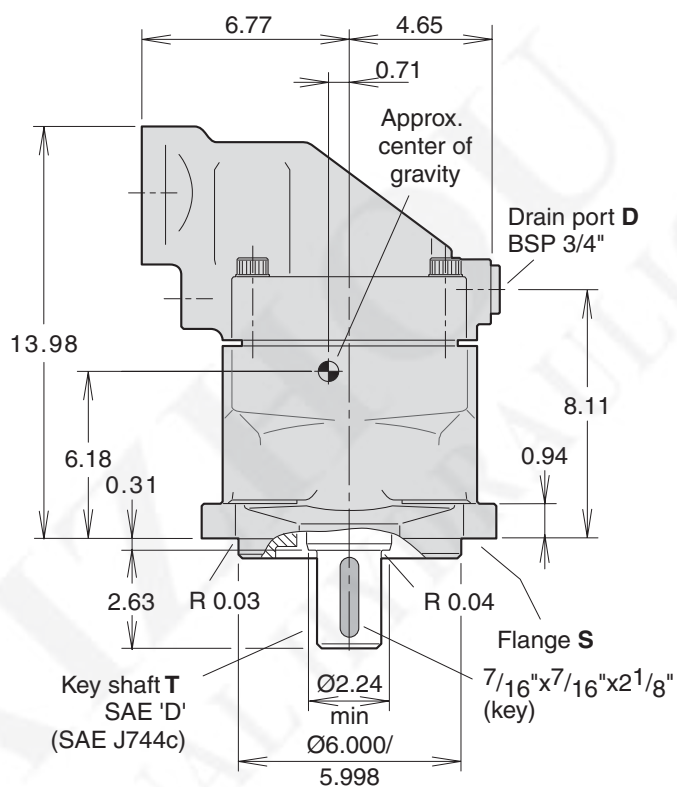
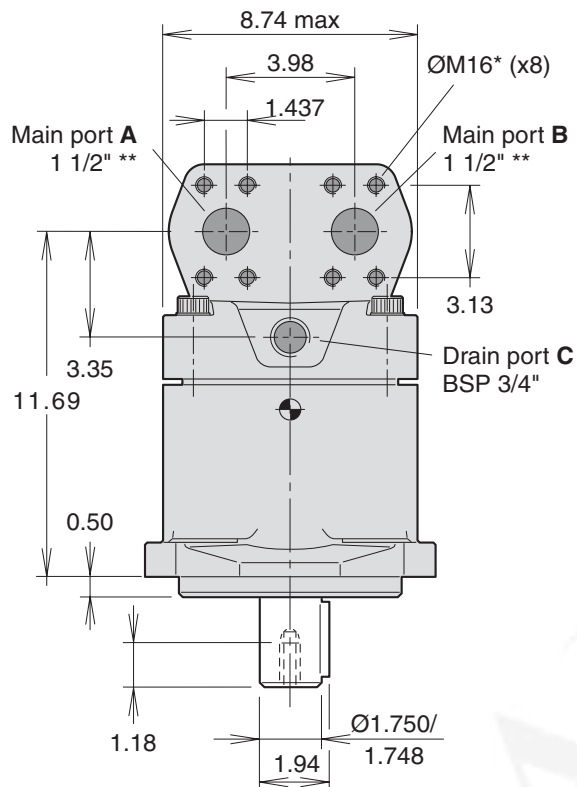
Type T

F12-30	1" dia. SAE 'B-B'
-40	1 1/4" dia. SAE 'C'
-60	1 1/4" dia. SAE 'C'

Installation dimensions

F11-150

(SAE version)

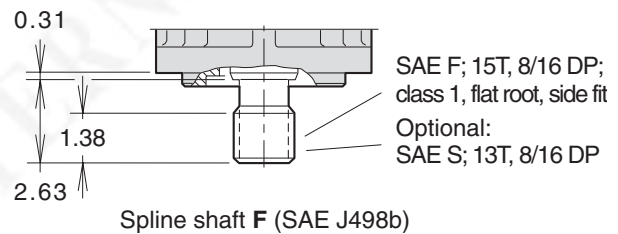
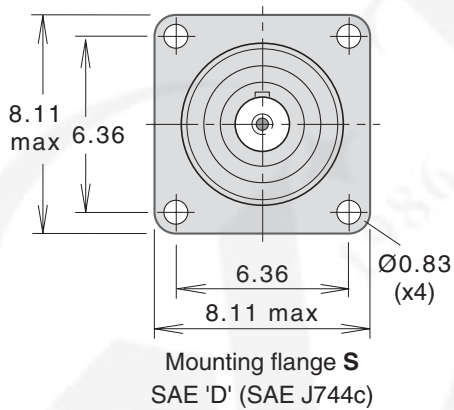
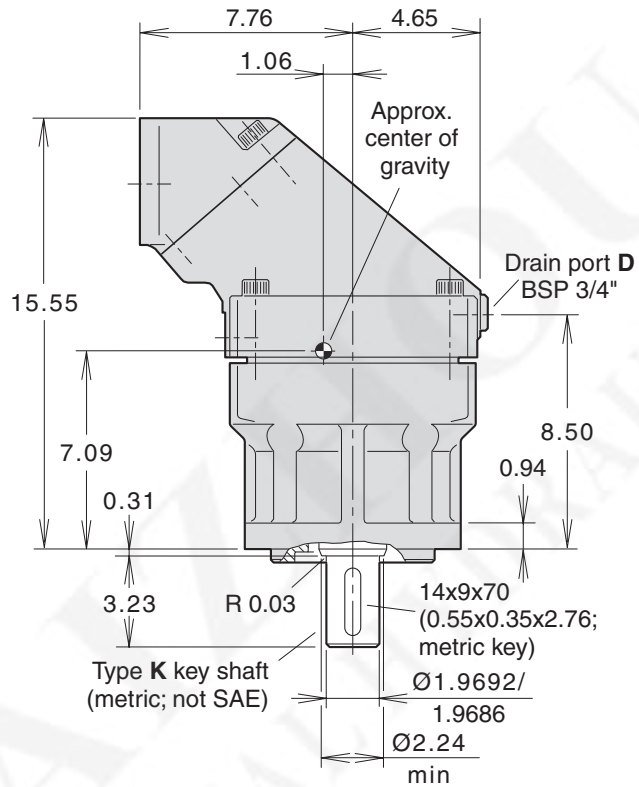
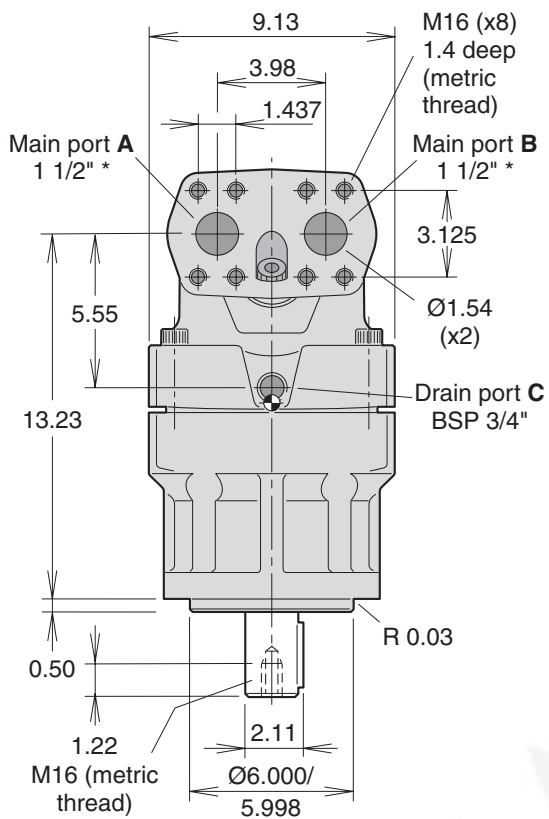


* Metric thread, deep 1.4
** 6000 psi flange (SAE J581c)

Installation dimensions

F11-250

(SAE version)



* 6000 psi flange (SAE J581c)