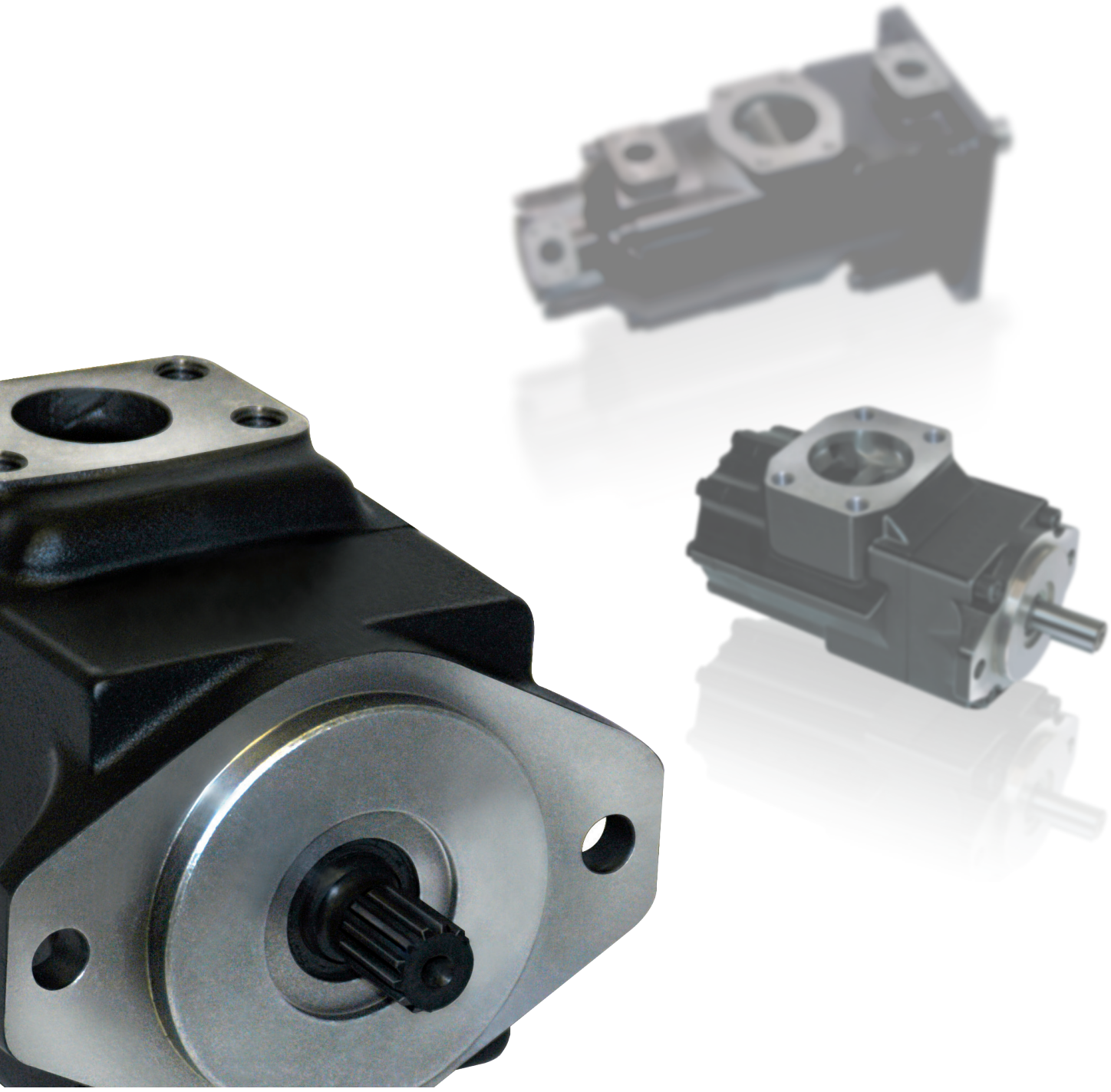


Industrial Hydraulic Pumps T7/T67/T6

Denison Vane Technology, fixed displacement

Parker

ENGINEERING YOUR SUCCESS.

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CHARACTERISTICS

These vane pumps have been specially designed for high/low circuits. The combination of different cartridges in double and triple pumps allows low flow at high pressure (300 bar max.) and high flow at lower pressure. This is a clever way to optimize your circuit design.
This pump feature will also allow a very fast pressure cycle change with a very precise flow repeatability.

GREATER FLOW

Size A : 5,8 to 40,0 ml/rev.
Size B : 5,8 to 50,0 ml/rev.
Size C : 10,8 to 100,0 ml/rev.
Size D : 44,0 to 158,0 ml/rev.
Size E : 132,3 to 268,7 ml/rev.

HIGHER PRESSURE

A : up to 300 bar max.
B : up to 320 bar max. (300 bar for multiple pump).
C : up to 275 bar max.
D : up to 280 bar max. (250 bar for multiple pump).
E : up to 240 bar max.

WIDE SPEED RANGE

Industrial pumps : Min. : 600 RPM - Max. up to 3600 RPM

BETTER EFFICIENCY

Increases productivity, reduces heating and reduces operation costs.

LOW NOISE LEVELS

Increases operator safety and eases machines acceptances.

MOUNTING FLEXIBILITY

Single pumps : 4 different positions.
Double pumps : 32 different positions.
Triple pumps : 128 different positions.

CARTRIDGE DESIGN

Provides for drop-in assemblies. They permit easy conversion and service.
A, B and D cartridges : bi-directional technology.
C and E cartridges : uni-directional technology.

WIDE RANGE OF ACCEPTABLE VISCOSITIES

Viscosities from 860 to 10 cSt permit colder starts and hotter running. The balanced design compensates for wear and temperature changes. At high viscosity or cold temperature, the rotor to side plates gap is well lubricated and improves mechanical efficiency.

FIRE RESISTANT FLUIDS AND BIODEGRADABLE FLUIDS

Phosphate esters, organic esters, chlorinated hydrocarbons, water glycols, rapeseed may be pumped at high pressures and with long service life by these pumps.

GENERAL APPLICATIONS INSTRUCTIONS

1. Check speed range, pressure, temperature, fluid quality, fluid viscosity and pump rotation.
2. Check inlet conditions of the pump, if it can accept the application requirements.
3. Check the type of shaft : if it will support the operating torque.
4. Check the coupling must be chosen to minimize pump shaft load (weight, misalignment).
5. Filtration : must be adequate for the lowest contamination level.
6. Check the environment of the pump : as to avoid noise reflection, pollution and shocks.

Model of pump	Series	Theoretical Displacement Vi	Minimum Speed	Maximum Speed [3]		Maximum Pressure					
				HF-0, HF-1 HF-2	HF-3, HF-4 HF-5	HF-0, HF-2		HF-1, HF-4, HF-5		HF-3	
						Int.	Cont.	Int.	Cont.	Int.	Cont.
		ml/rev.	RPM	RPM	RPM	bar	bar	bar	bar	bar	bar
T7**A**S[2]	**B06**	5,8	600	3600	1800	300	275	240	210	175	140
	B10	9,8									
	B11	11,0									
	B13	12,8									
	B17	17.2									
	B20	19,8									
	B22	22,5									
	B25	24,9		3000		275	240				
T7**A**SW[2]	**B26**	26,0	600	3600	1800	300	275	240	210	175	140
	B28	28,0									
	B30	30,0									
	B32	31,8									
	B34	34,0		3000		280	240				
	B36	36,0									
	B40	40,0									
T7**B** T7**B**S	**B02**	5,8	600	3600	1800	320[1]	290	240	210	175	140
	B03	9,8									
	B04	12,8									
	B05	15,9									
	B06	19,8									
	B07	22,5									
	B08	24,9									
	B09	28,0									
	B10	31,8									
	B11	35,0		3000		300	275				
	B12	41,0									
	B14	45,0									
	B15	50,0				280	240				
T6**C**	**B03**	10,8	600	2800	1800	275	240	210	175	175	140
	B05	17,2									
	B06	21,3									
	B08	26,4									
	B10	34,1									
	B12	37,1									
	B14	46,0									
	B17	58,3									
	B20	63,8									
	B22	70,3									
	B25	79,3		2500							
	B28	88,8				210	160		160		
	B31	100,0									

HF-0, HF-2 = Antiwear Petroleum Base - HF-1 = Non Antiwear Petroleum Base - HF-3 = Water in oil Invert Emulsions
HF-4 = Water Glycols Solutions - HF-5 = Synthetic Fluids

[1] Please consult Parker for application over 300 bar.
[2] Please be careful as these cartridge designation are now in ml/rev. (example : B22 = 22,5 ml/rev.)
[3] Please be sure that the inlet velocity is under 1,9 m/sec. (see page 12, start-up & check-up).

For further information, or if the performance characteristics outlined here above do not meet your particular requirements, please consult your local Parker office.

Model of pump	Series	Theoretical Displacement Vi	Minimum Speed	Maximum Speed [3]		Maximum Pressure					
				HF-0, HF-1 HF-2	HF-3, HF-4 HF-5	HF-0, HF-2		HF-1, HF-4, HF-5		HF-3	
						Int.	Cont.	Int.	Cont.	Int.	Cont.
		ml/rev.	RPM	RPM	RPM	bar	bar	bar	bar	bar	bar
T7**D** T7**D**S	**B14**	44,0	600	3000	1800	300	250	240	210	175	140
	B17	55,0									
	B20	66,0									
	B22	70,3									
	B24	81,1									
	B28	90,0									
	B31	99,2									
	B35	113,4		2800		280					
	B38	120,6									
	B42	137,5		2500		260	230				
	B45[1]	145,7		2200		240	210	210	175		
	B50[1]	158,0				210	160		160		
T7**E** [2] T7**E**S	**042**	132,3	600	2200	1800	240	210	210	175	175	140
	045	142,4									
	050	158,5									
	052	164,8									
	054	171,0									
	057	183,3									
	062	196,7									
	066	213,3									
	072	227,1									
	085	268,7		2000		90	75	75	75	75	75

HF-0, HF-2 = Antiwear Petroleum Base
HF-1 = Non Antiwear Petroleum Base
HF-3 = Water in oil Invert Emulsions
HF-4 = Water Glycols Solutions
HF-5 = Synthetic Fluids

[1] Ten vane technology.
[2] For T7E, below 10 bar, please contact Parker.
[3] Please be sure that the inlet velocity is under 1,9 m/sec. (see page 12, start-up & check-up).

For further information, or if the performance characteristics outlined here above do not meet your particular requirements, please consult your local Parker office.

Model of pump	Series	Theoretical Displacement Vi	Minimum Speed	Maximum Speed [3]		Maximum Pressure					
				HF-0, HF-1 HF-2	HF-3, HF-4 HF-5	HF-0, HF-2		HF-1, HF-4, HF-5		HF-3	
						Int.	Cont.	Int.	Cont.	Int.	Cont.
		ml/rev.	RPM	RPM	RPM	bar	bar	bar	bar	bar	bar
T7**BB**/S T67C**B** T7D**B**/S T7E**B**/S T7D**BB**/S T7DC**B**/S T7DD**B**/S T7ED**B**/S	**B02**	5,8	600	2200[2]	1800	T7BB T7BBS 320[1] Other pumps 300	T7BB T7BBS 290 Other pumps 275	240	210	175	140
	B03	9,8									
	B04	12,8									
	B05	15,9									
	B06	19,8									
	B07	22,5									
	B08	24,9									
	B09	28,0									
	B10	31,8									
	B11	35,0									
	B12	41,0									
	B14	45,0									
	B15	50,0				280	240				
T6**CC** T67**C**B T67D**C** T67E**C** T7D**C**B/S T7D**CC**/S T67DD**C**S T67ED**C**/S T7EE**C**/S	**B03**	10,8	600	2200[2]	1800	275	240	210	175	175	140
	B05	17,2									
	B06	21,3									
	B08	26,4									
	B10	34,1									
	B12	37,1									
	B14	46,0									
	B17	58,3									
	B20	63,8									
	B22	70,3									
	B25	79,3									
	B28	88,8				210	160		160		
	B31	100,0									
T7**D**B/S T67**D**C T7**DD**/S T7E**D**S T7**D**BB/S T7**D**CB/S T7**D**CC/S T7**DD**B/S T67**DD**CS T7E**D**B/S T67E**D**C/S	**B14**	44,0	600	2200[2]	1800	300	250	240	210	175	140
	B17	55,0									
	B20	66,0									
	B22	70,3									
	B24	81,1									
	B28	90,0									
	B31	99,2									
	B35	113,4				280					
	B38	120,6									
	B42	137,5				260	230				
	B45[1]	145,7				240	210	210	175		
	B50[1]	158,0				210	160		160		
T7**E**B/S T67**E**C T7**E**DS T7**EE**/S T7**EE**C/S T67**E**DB/S T67**E**DC/S	**042**	132,3	600	2200[2]	1800	240	210	210	175	175	140
	045	142,4									
	050	158,5									
	052	164,8									
	054	171,0									
	057	183,3									
	062	196,7									
	066	213,3									
	072	227,1									
	085	268,7		2000		90	75	75	75	75	75

HF-0, HF-2 = Antiwear Petroleum Base HF-1 = Non Antiwear Petroleum Base HF-3 = Water in oil Invert Emulsions
HF-4 = Water Glycols Solutions HF-5 = Synthetic Fluids

[1] Please consult Parker for application over 300 bar.

[2] Please consult Parker with higher speeds.

[3] Please be sure that the inlet velocity is under 1,9 m/sec. (see page 12, start-up & check-up).

For further information or if the performance characteristics outlined above do not meet your particular requirements, please consult your local Parker office.

Minimum allowable inlet pressure (bar absolute)

Cartridge		Speed RPM										Series
Size	Series	1200	1500	1800	2100	2200	2300	2500	2800	3000	3600	
AS	B06	0,80	0,80	0,80	0,80	0,80	0,80	0,80	0,80	0,80	0,80	B06
	B10											B10
	B11											B11
	B13											B13
	B17										0,88	B17
	B20										0,94	B20
	B22										1,00	B22
	B25									0,85		B25
ASW	B26	0,80	0,80	0,80	0,80	0,80	0,80	0,80	0,80	0,80	0,80	B26
	B28											B28
	B30											B30
	B32											B32
	B34										0,88	B34
	B36										0,94	B36
	B40										1,00	B40
B	B02	0,80	0,80	0,80	0,80	0,80	0,80	0,80	0,80	0,80	0,80	B02
	B03											B03
	B04											B04
	B05											B05
	B06									0,82	0,98	B06
	B07											B07
	B08									0,85	1,05	B08
	B09											B09
	B10									0,90	1,15	B10
	B11											B11
	B12											B12
	B14							0,84	0,99	1,13		B14
	B15											B15
C	B03	0,80	0,80	0,80	0,80	0,80	0,80	0,90	1,00			B03
	B05											B05
	B06											B06
	B08											B08
	B10											B10
	B12						0,85	0,92				B12
	B14							0,95				B14
	B17					0,85	0,90		1,03			B17
	B20											B20
	B22				0,85	0,90		0,98	1,05			B22
	B25				0,90	0,95	0,95	1,05				B25
	B28					0,98	0,98	1,08				B28
	B31				0,85	0,90	1,11	1,11				B31

Inlet pressure is measured at inlet flange with petroleum base fluids at viscosity between 10 and 65 cSt. The difference between inlet pressure at the pump flange and atmospheric pressure must not exceed 0,2 bar to prevent aeration.

Multiply absolute pressure by 1,25 for HF-3, HF-4 fluids.
by 1,35 for HF-5 fluid.
by 1,10 for ester or rapeseed base.

For double and triple pumps, prefer the cartridge requiring the highest absolute pressure.

Minimum allowable inlet pressure

T7/T67/T6C Industrial, Denison Vane Pumps

Cartridge		Speed RPM										Series
Size	Series	1200	1500	1800	2100	2200	2300	2500	2800	3000	3600	
D	B14	0,80	0,80	0,80	0,80	0,80	0,80	0,80	0,80	0,80		B14
	B17											B17
	B20								0,82	0,86		B20
	B22								0,83	0,88		B22
	B24								0,86	0,95		B24
	B28								0,88	1,00		B28
	B31								0,90	1,05		B31
	B35							0,84	0,97			B35
	B38							0,86	1,01			B38
	B42							0,90				B42
	B45			0,85	0,98	1,05						B45
	B50				1,02	1,09						B50
E	042	0,80	0,80	0,80	0,90	1,00						042
	045											045
	050											050
	052											052
	054											054
	057			0,85	0,95							057
	062											062
	066	0,85	0,85	0,95	1,00	1,09						066
	072			0,85		1,05						072
	085	0,90	0,90	1,00								085

Inlet pressure is measured at inlet flange with petroleum base fluids at viscosity between 10 and 65 cSt. The difference between inlet pressure at the pump flange and atmospheric pressure must not exceed 0,2 bar to prevent aeration.
Multiply absolute pressure by 1,25 for HF-3, HF-4 fluids.
by 1,35 for HF-5 fluid.
by 1,10 for ester or rapeseed base.
For double and triple pumps, prefer the cartridge requiring the highest absolute pressure.

Parker Hannifin
Pump & Motor Division Europe
Vierzon - France

FILTRATION RECOMMENDATIONS

NAS 1638 class 8 or better.
ISO 19 / 17 / 14 or better.
Inlet strainer : Parker does not recommend inlet strainers.
If requested, a 100 mesh (149 microns) is the finest mesh recommended.

RECOMMENDED FLUIDS

Petroleum based antiwear R & O fluids.
These fluids are the recommended fluids for pumps & motors. Maximum catalogue (UK version) ratings and performance datas are based on operation with these fluids. These fluids are covered by Denison HF-0 and HF-2 specifications.

ACCEPTABLE ALTERNATE FLUIDS

The use of fluids other than petroleum based antiwear R & O fluids requires that the maximum ratings of the pumps will be reduced. In some cases the minimum replenishment pressures must be increased. Consult specific sections for more details.

VISCOSITY

	Indutrial
Max. (cold start, low speed & pressure)	860 cSt - 3900 SUS
Max. (full speed & pressure)	108 cSt - 500 SUS
Optimum (max. life)	30 cSt - 140 SUS
Min. (full speed & pressure for HF-1, HF-3, HF-4 & HF-5 fluids)	18 cSt - 90 SUS
Min. (full speed & pressure for HF-0 & HF-2 fluids)	10 cSt - 60 SUS

VISCOSITY INDEX

90 min. Higher values extend the range of operating temperatures.

TEMPERATURES

The usual limitating factor of temperature (low or high) comes from the obtained viscosity. The seals are sometimes the limit : standard seals range from -30° C to 90° C (-9.4° F to 194° F).

Maximum fluid temperature (θ)	° C	° F
HF-0, HF-1, HF-2	+ 100	+ 212
HF-3, HF-4	+ 50	+ 122
HF-5	+ 70	+ 158
Biodegradable fluids (esters & rapeseed base)	+ 65	+ 149

Minimum fluid temperature (θ) (also depend on max. viscosity)	° C	° F
HF-0, HF-1, HF-2, HF-5	- 18	- 0.4
HF-3, HF-4	+ 10	+ 50
Biodegradable fluids (esters & rapeseed base)	- 18	- 0.4

Over or under these values, please contact Parker.

WATER CONTAMINATION IN THE FLUID

Maximum acceptable content of water :
• 0,10 % for mineral base fluids.
• 0,05 % for synthetic fluids, crankcase oils, biodegradable fluids.
If the amount of water is higher, then it must be drained off the circuit.

FLUID POWER FORMULAS

Pump input torque	N.m	$\frac{\text{pressure (bar) x displacement cm}^3\text{/rev}}{20\ \pi \text{ x mech. eff.}}$
Pump input power	kW	$\frac{\text{rpm x (cm}^3\text{/rev) x pressure (bar)}}{600000 \text{ x overall eff.}}$
Pump output flow	Lpm	$\frac{\text{rpm x (cm}^3\text{/rev) x volumetric eff.}}{1000}$
Fluid motor speed	rpm	$\frac{1000 \text{ x flow rate (Lpm) x volumetric eff.}}{\text{displacement (cm}^3\text{/rev.)}}$
Fluid motor torque	N.m	$\frac{\text{pressure (bar) x displacement (cm}^3\text{/rev) x mech. eff.}}{20\ \pi}$
Fluid motor power	kW	$\frac{\text{rpm x (cm}^3\text{/rev) x (bar) x overall eff.}}{600000}$

	Mounting standard	Weight without connector and bracket - kg	Moment of inertia $Kgm^2 \times 10^{-4}$	SAE 4 bolts - J518 - 1S0/DIS6162-1		
				Suction	Pressure	
				S	P1	
T7AS	SAE J744 SAE A	9,5	2,6	1"-SAE 4 bolts J518-ISO/DIS 6162-1	3/4"-SAE 4 bolts J518-ISO/DIS 6162-1	
				SAE 16-SAE threads 1.5/16"-12 UNF-2B	SAE 12-SAE threads 1.1/16"-12 UNF-2B	
				NPTF threads 1.1/4" NPTF	NPTF threads 3/4" NPTF	
				1" BSP	3/4" BSP	
T7ASW	SAE J744 SAE A	11,3	3,2	1.1/4"-SAE 4 bolts J518-ISO/DIS 6162-1	3/4"-SAE 4 bolts J518-ISO/DIS 6162-1	
				SAE 20-SAE threads 1.5/8"-12 UNF-2B	SAE 12-SAE threads 1.1/16"-12 UNF-2B	
				NPTF threads 1.1/4" NPTF	SAE 12-SAE threads 1.1/16"-12 UNF-2B	
				1.1/4" BSP	3/4" BSP	
T7B	ISO/3019-2 100 A2 HW	23,0	3,2	1.1/2"	1" or 3/4"	
T7BS	SAE J744 SAE B					
T6C	SAE J744 SAE B	15,7	7,5	1.1/2"	1"	
T7D	ISO 3019-2 125 A2 HW	26,0	19,6	2"	1.1/4"	
T7DS	SAE J744 SAE C					
T7E	ISO 3019-2 125 A2 HW	43,3	62,5	3"	1.1/2"	
T7ES	SAE J744 SAE C					
				S	**P1**	**P2**
T7BB	ISO 3019-2 100 A2 HW	32,6	6,7	2.1/2"	1" or 3/4"	3/4"
T7BBS	SAE J744 SAE B					
T6CC	SAE J744 SAE B	26,0	16,9	2.1/2" or 3"	1"	1" or 3/4"
T67CB	SAE J744 SAE B	26,0	11,4	2.1/2"	1"	3/4"
T7DB	ISO 3019-2 125 A2 HW	38,6	22,7	3"	1.1/4"	1" or 3/4"
T7DBS	SAE J744 SAE C					
T67DC	SAE J744 SAE C	38,6	26,3	3"	1.1/4"	1" or 3/4"
T7DD	ISO 3019-2 125 A2 HW 125 B4HW	56,0	36,3	4"	1.1/4"	1.1/4"
T7DDS	SAE J744 SAE C					
T7EB	ISO 3019-2 125 A2 HW	55,0	65,9	3.1/2"	1.1/2"	3/4"
T7EBS	SAE J744 SAE C					
T67EC	SAE J744 SAE C	55,0	70,8	3.1/2"	1.1/2"	1"
T7ED	ISO 3019-2 125 A2 HW	66,0	79,7	4"	1.1/2"	1.1/4"
T7EDS	SAE J744 SAE C					
T7EE	ISO 3019-2 250 B4 HW	95,0	97,4	4"	1.1/2"	1.1/2"
T7EES	SAE J744 SAE E					

Model No. **T7D* or T7DS - B42 - 1 R 00 - A 1 - M0 - ..**

T7D series - 125 A2 HW
ISO 2 bolts 3019-2 mounting flange
T7DS series - SAE C 2 bolts
J744 mounting flange
* Rear drive option available, please contact Parker

Displacement
Volumetric displacement (ml/rev.)

B14 = 44,0	B31 = 99,2
B17 = 55,0	B35 = 113,4
B20 = 66,0	B38 = 120,6
B22 = 70,3	B42 = 137,5
B24 = 81,1	B45 = 145,7
B28 = 90,0	B50 = 158,0

Type of shaft T7D - T7DS
5 = keyed (ISO 3019-2 - G32M)

Type of shaft T7DS
1 = keyed (SAE C) Ø 31,7
2 = keyed (non SAE)
3 = splined (SAE C) 14 teeth
4 = splined (non SAE)

Modifications

Mounting w/connection variables
4 bolts SAE flange J518

	P = 1.1/4" - S = 2"		
	Metric thread		UNC thread
T7D	M0		
T7DS	M0	Y0[1)]	00

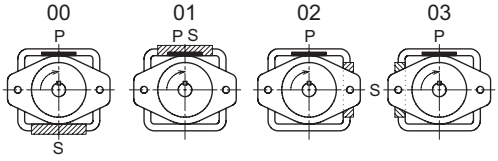
[1)] 250 bar max. int.

Seal class
1 = S1 BUNA N - 0,7 bar max. (for mineral oil)
4 = S4 EPDM - 7 bar max. (for fire resistant fluids)
5 = S5 VITON® - 7 bar max. (for mineral oil and fire resistant fluids)

Design letter

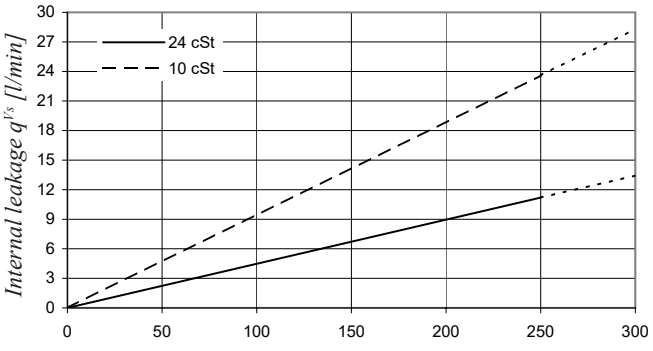
Porting combination
00 = standard

Direction of rotation (shaft end view)
R = Clockwise
L = Counter-clockwise



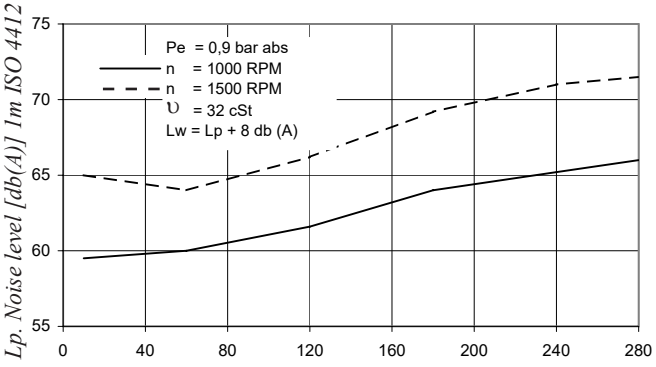
P = Pressure port
S = Suction port

INTERNAL LEAKAGE (TYPICAL)

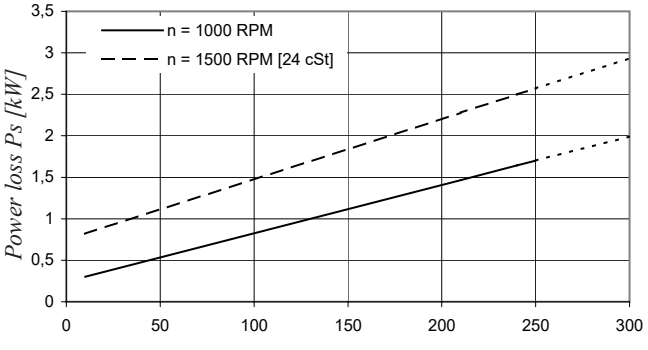


Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is higher than 50% of theoretical flow.

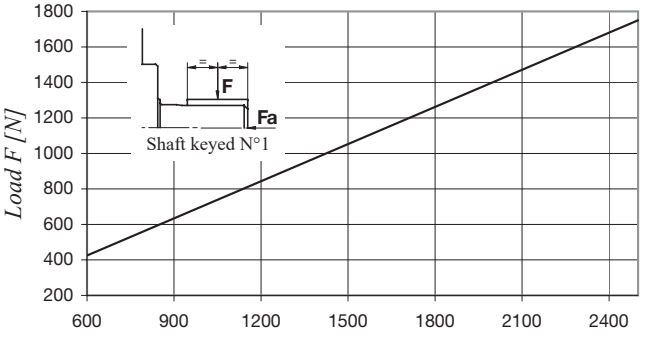
NOISE LEVEL (TYPICAL) - T7D - B31



POWER LOSS HYDROMECHANICAL (TYPICAL)

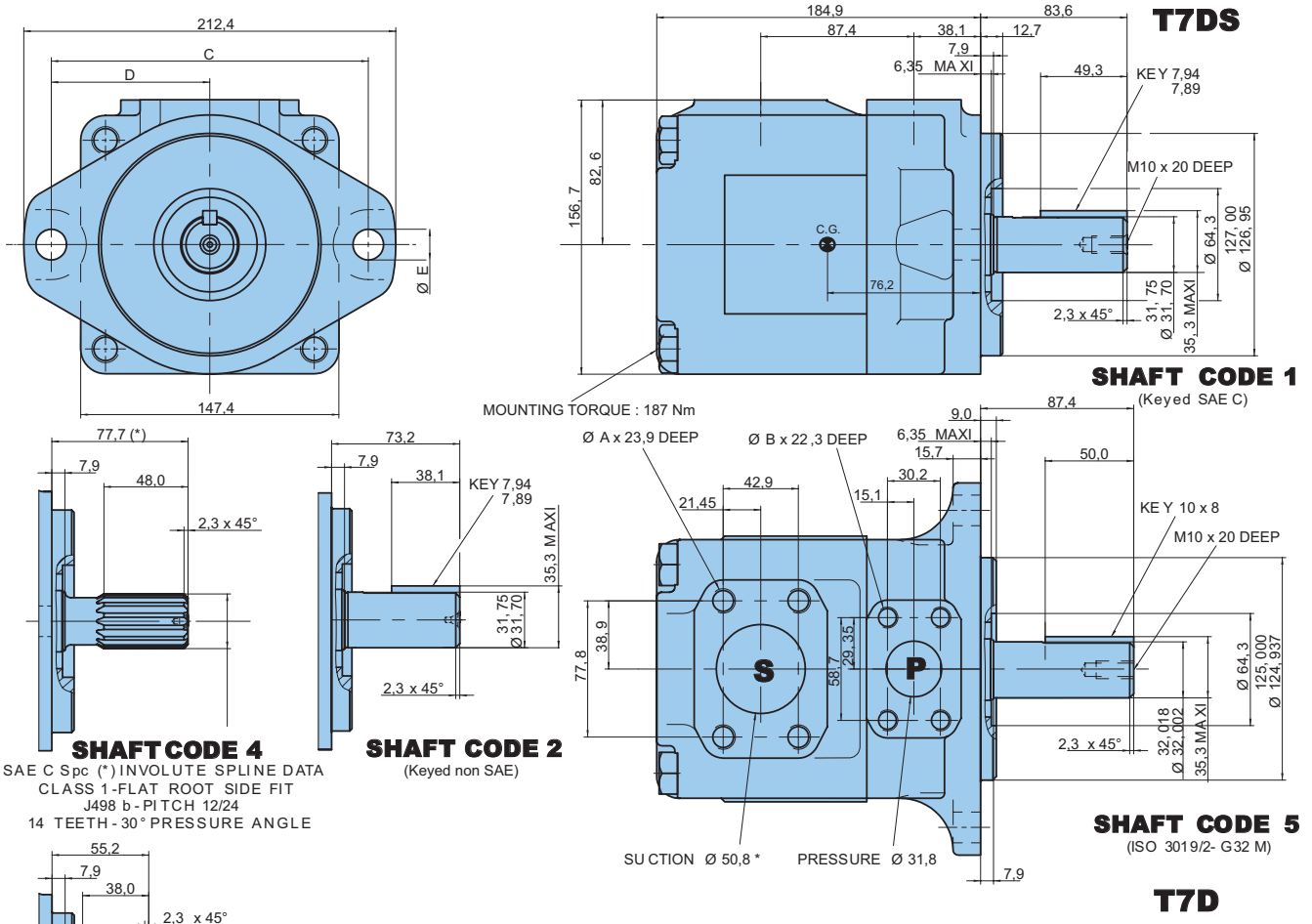


PERMISSIBLE RADIAL LOAD



Maximum permissible axial load Fa = 1200 N

Parker Hannifin
Pump & Motor Division Europe
Vierzon - France



Model	T7D	T7DS		
Code	M0	00	M0	YO[1]
Ø A	M12	1/2" - 13 UNC	M12	M12
Ø B	M12	7/16" - 14 UNC	M12	M10
C	180,0	181,0		
D	90,0	90,5		
Ø E	18,0	17,5		

1) 250 bar max. int.

Shaft torque limits [ml/rev. x bar]	
Shaft	Vi x p max.
1	43240
2	34590
3	61200
4	61200
5	44300

OPERATING CHARACTERISTICS - TYPICAL [24 cSt]

Pressure port	Series	Vi Volumetric displacement	Flow q_{Ve} [l/min] & n = 1500 RPM			Input power P [kW] & n = 1500 RPM		
			p = 0 bar	p = 140 bar	p = 300 bar	p = 7 bar	p = 140 bar	p = 300 bar
T7D T7DS	B14	44,0 ml/rev	66,0	59,4	51,9	1,5	16,6	34,2
	B17	55,0 ml/rev	82,5	75,9	68,4	1,7	20,4	42,4
	B20	66,0 ml/rev	99,0	92,4	84,9	1,9	24,3	50,7
	B22	70,3 ml/rev	105,5	98,8	91,3	2,0	25,8	53,9
	B24	81,1 ml/rev	121,7	115,0	107,5	2,2	29,5	62,0
	B28	90,0 ml/rev	135,0	128,4	120,9	2,3	32,7	68,7
	B31	99,2 ml/rev	148,8	142,2	134,7	2,5	35,9	75,6
	B35	113,4 ml/rev	170,1	163,5	156,9[1]	2,7	40,8	80,5[1]
	B38	120,6 ml/rev	180,9	174,3	167,7[1]	2,9	43,4	85,6[1]
	B42	137,5 ml/rev	206,3	199,6	194,0[2]	3,2	49,3	90,5[2]
	B45	145,7 ml/rev	218,6	209,2	202,6[3]	4,1	52,8	89,5[3]
	B50	158,0 ml/rev	237,0	227,7	223,0[4]	4,4	57,1	85,0[4]

1) B35 - B38 = 280 bar max. int. *2) B42 = 260 bar max. int.* *3) B45 = 240 bar max. int.* *4) B50 = 210 bar max. int.*

** special 2.1/2" (Ø 63,5) suction also available - Please contact Parker.*

Parker Hannifin
Pump & Motor Division Europe
Vierzon - France