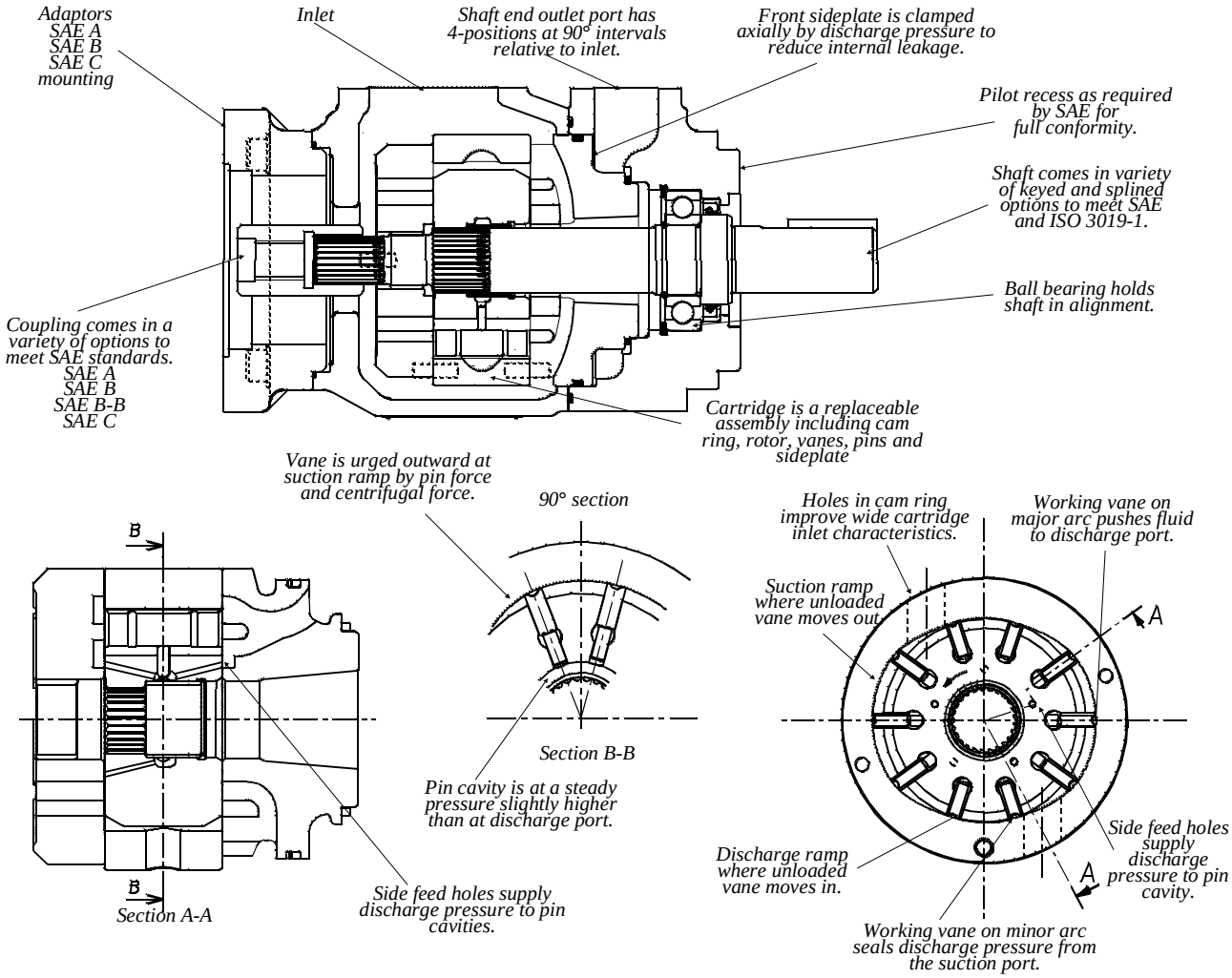


APPLICATION ADVANTAGES

- The high pressure capability up to 4000 PSI, in the small envelope, reduces the installation costs and provides an extended life at reduced pressure.
- The high volumetric efficiency, typically 94%, reduces the heat generation, and allows speeds down to 600 RPM at full pressure.
- The high mechanical efficiency, typically 94%, reduces the energy consumption.
- The wide speed range from 600 RPM to 2800 RPM, combined with large size cartridge displacements, will optimize operation for the lowest noise level in the smallest envelope.
- Operating the pump at a high viscosity (up to 3864 SUS) and/or at alow speed (down to 600 RPM) allows application in cold environments with minimum energy consumption and without seizure risk.
- The low ripple pressure ± 29 PSI reduces the piping noise and increases the life time of other components in the circuit.
- The high resistance to particle contamination because of the double lip vane increases the pump life.
- The large variety of options (cam displacement, shaft, porting) allows customized installation.

RECOMMENDED FLUIDS

Petroleum based antiwear R & O fluids.
These fluids are the recommended fluids for T6 series pumps. Maximum catalog ratings and performance data are based on operation with these fluids. These fluids are covered by DENISON Hydraulics HF-0 and HF-2 specification.

ACCEPTABLE ALTERNATIVE 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 somes cases the minimum replenishment pressures must be increased. Consult specific sections for more details.

VISCOSITY

Max. (cold start, low speed & pressure)	3864 mm^2/s (cSt)
Max. (full speed & pressure)	500 mm^2/s (cSt)
Optimum (max. life)	140 mm^2/s (cSt)
Min. (full speed & pressure for HF-1, HF-3, HF-4 & HF-5 fluids)	90 mm^2/s (cSt)
Min. (full speed & pressure for HF-0 & HF-2 fluids)	60 mm^2/s (cSt)

VISCOSITY INDEX

90° min. higher values extend the range of operating temperatures.

Maximum fluid temperature (θ) °F

HF-0, HF-1, HF-2	+ 212
HF-3, HF-4	+ 122
HF-5	+ 158
Biodegradable fluids (esters & rapeseed base)	+ 149

Minimum fluid temperature (θ) °F

HF-0, HF-1, HF-2, HF-5	- 0.40
HF-3, HF-4	+ 50
Biodegradable fluids (esters & rapeseed base)	- 4.40

FLUID CLEANLINESS

The fluid must be cleaned before and during operation to maintain the contamination level of NAS 1638 class 8 (or ISO 18/14) or better. Filters with 25 micron (or better, ß10 ≥ 100) nominal ratings may be adequate but do not guarantee the required cleanliness levels.
Suction strainers must be of adequate size to provide the minimum inlet pressure specified. 100 mesh (149 micron) is the finest mesh recommended. Use oversize strainers or omit them altogether on applications which require cold starts or use fire resistant fluids.

OPERATING TEMPERATURES AND VISCOSITIES

Operating temperatures are a function of fluid viscosities, fluid type, and the pump. Fluid viscosity should be selected to provide the optimum viscosity at normal operating temperatures. For cold starts, the pumps should be operated at low speed and pressure until the fluid warms up to an acceptable viscosity for full power operation.

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 amount of water is higher, then it should be drained off the circuit.

COUPLINGS AND FEMALE SPLINES SPLINES

- The mating female spline should be free to float and find its own center. If both members are rigidly supported, they must be aligned within .006" TIR or less to reduce fretting. The angular alignment of two spline axes must be less than ± .002" per 1" radius.
- The coupling spline must be lubricated with a lithium molydisulfide grease or a similar lubricant.
- The coupling must be hardened to a hardness between 27 and 45 R.C.
- The female spline must be made to conform to the Class 1 fit as described in SAE-J498b (1971). This is described as a Flat Root Side Fit.

KEYED SHAFTS

DENISON Hydraulics supplies the T6 series keyed shaft pumps with high strength heat-treated keys. Therefore, when installing or replacing these pumps, the heat-treated keys must be used in order to insure maximum life in the application. If the key is replaced it must be a heat-treated key between 27 and 34 R.C. hardness. The corners of the keys must be chamfered from .030" to .040 at 45° to clear the radii in the key way.

NOTE

The alignment of keyed shafts must be within the tolerances given for splined shafts.

SHAFT LOADS

These products are primarily designed for coaxial drives which do not impose axial or side loading on the shaft. Consult specific sections for more details.

Model No. **T6DR - 045 - 1 R 00 - A 1 0 - A 1 ..**

Series

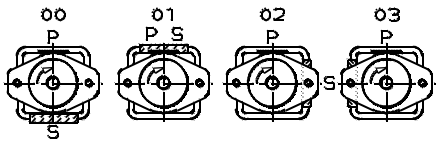
Cam ring
(Delivery at 0 PSI & 1200 r.p.m.)

014 = 15.09 GPM	035 = 35.19 GPM
017 = 18.45 GPM	038 = 38.14 GPM
020 = 20.92 GPM	042 = 43.12 GPM
024 = 25.20 GPM	045 = 46.19 GPM
028 = 28.44 GPM	050 = 50.09 GPM
031 = 31.17 GPM	

Type of shaft
1 = keyed (SAE C)
2 = keyed (SAE CC)
3 = splined (SAE C)
5 = keyed (non SAE)

Direct. of rotation (view on shaft end)
R = clockwise
L = counter-clockwise

Porting combination



Modification

Seal class
1 = S1 (for mineral oil)
4 = S4 (for the resistant fluids)
5 = S5 (for mineral oil and fire resistant fluids)

Design letter

Porting adaptor

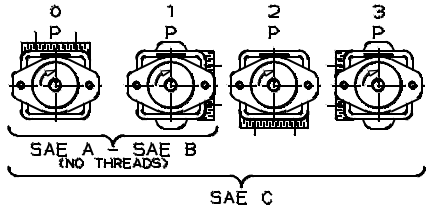
Coupling

1 = SAE A	4 = SAE C
2 = SAE B	5 = SAE J498b
3 = SAE BB	16/32 - 11 teeth

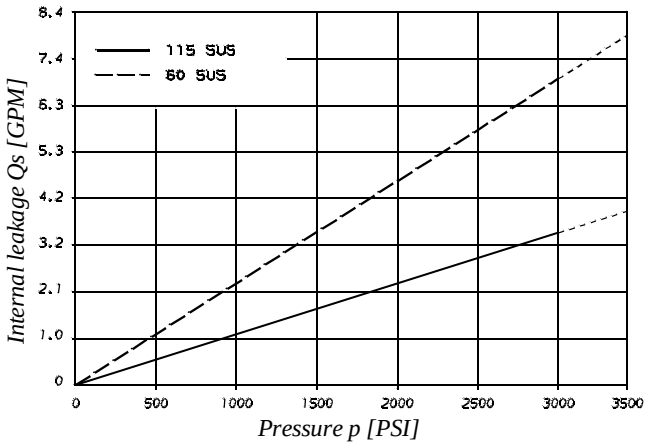
Adaptor

0 = None	B = SAE B
A = SAE A	C = SAE C

Porting adaptor

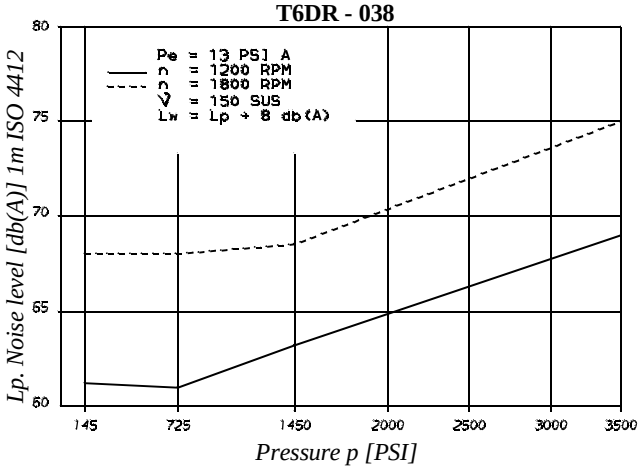


INTERNAL LEAKAGE (TYPICAL)

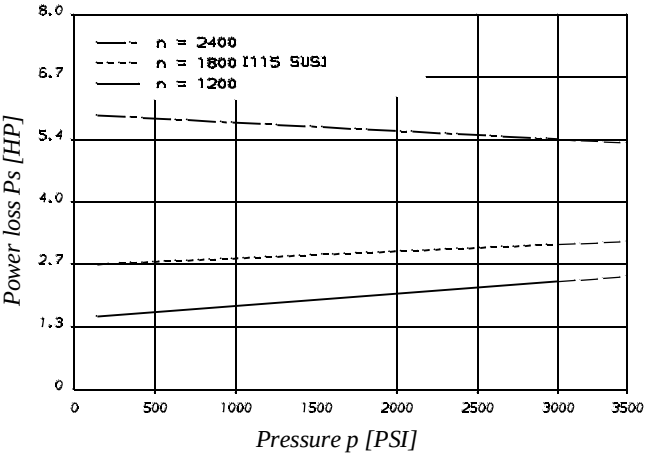


Do not operate the pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.

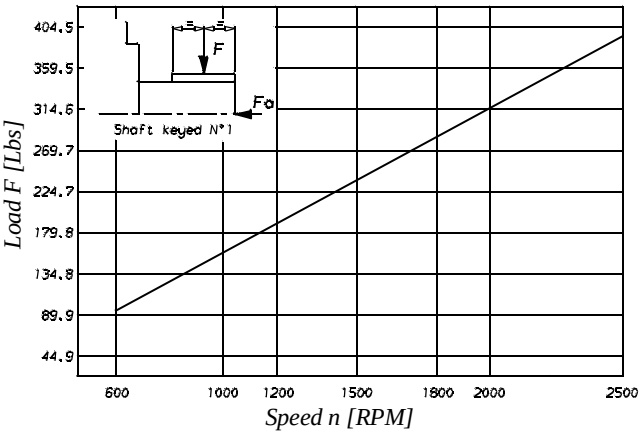
NOISE LEVEL (TYPICAL)
T6DR - 038



POWER LOSS HYDROMECHANICAL (TYPICAL)



PERMISSIBLE RADIAL LOAD



Maximum permissible axial load Fa = 270 Lbs

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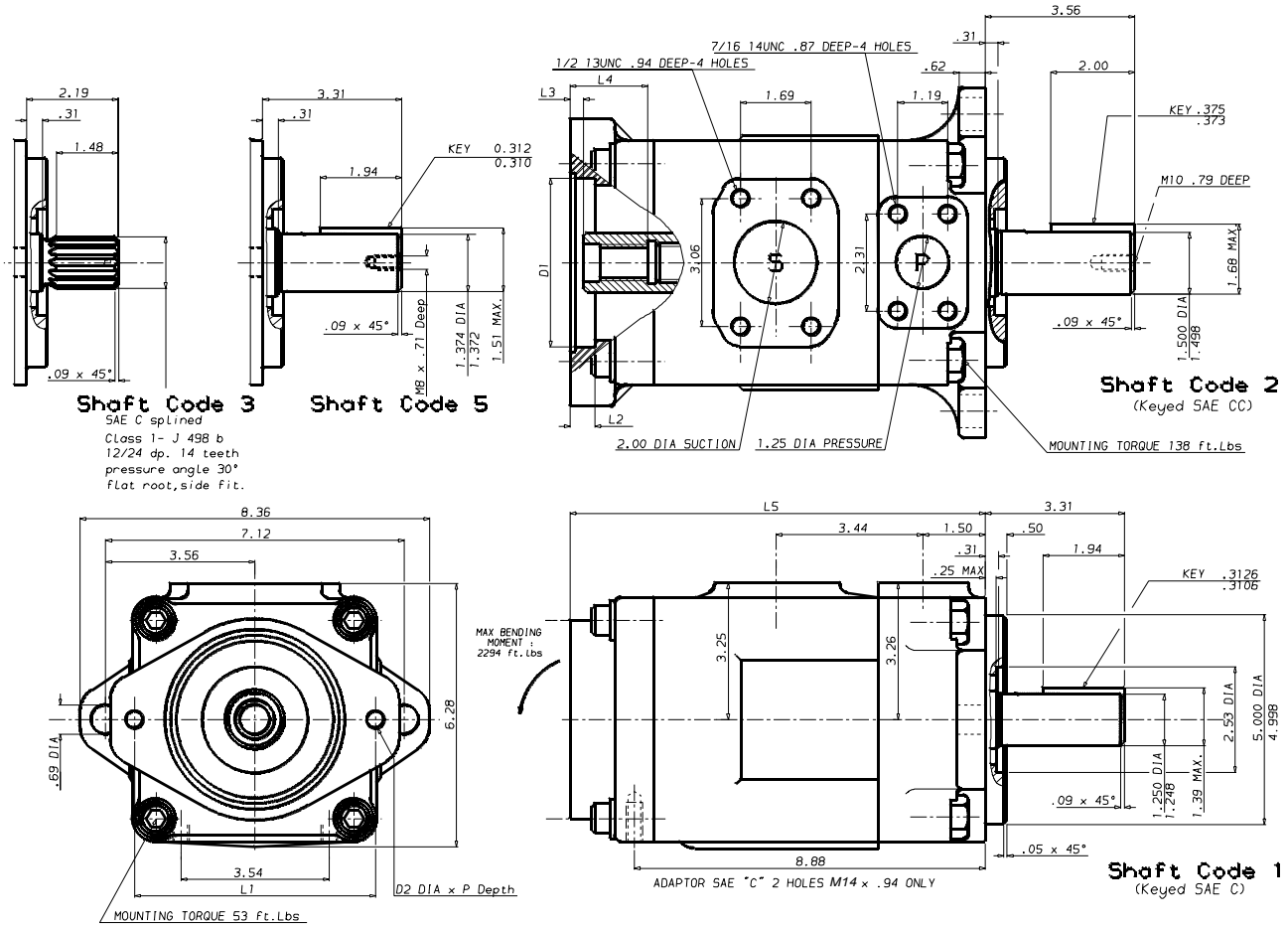
Vierzon - France



Adaptor	D1	D2	P	L1	L2	L3	L4	L5
SAE A	3.25	M10	.94	4.19	.43	.31	1.26	9.33
SAE B	4.00	M12	1.10	5.75	.63	.31	1.81	9.88
SAE C	5.00	M16	-	7.12	.63	.31	2.20	10.27

Adaptor	SAE A			SAE B		SAE C
Coupling drive	SAE A	SAE 11 teeth	SAE B	SAE B	SAE BB	SAE C
Number of teeth	9	11	13	13	15	14
Pitch	16/32	16/32	16/32	16/32	16/32	12/24
Pressure angle	30°	30°	30°	30°	30°	30°
Major dia. (min)	.625	.750	.875	.875	1.00	1.250
Minor dia. (min)	.500	.630	.753	.753	.877	1.086

Shaft torque limits [in^3/rev x PSI]			
Shaft	V x p max.	Coupling drive	V x p max.
1	38300	SAE A	9743
2	58491	SAE B	18246
3	54207	SAE BB	28937
5	49247	SAE C	33118
		SAE - 11 teeth	14039

OPERATING CHARACTERISTICS - TYPICAL [115 SUS]

Series	Volumetric Displacement Vp	Flow Q [GPM] & n = 1800 R.P.M.			Input power P [HP] & n = 1800 R.P.M.		
		p = 0 PSI	p = 2000 PSI	p = 3500 PSI	p = 100 PSI	p = 2000 PSI	p = 3500 PSI
014	2.90 in^3/rev	22.64	20.46	18.82	4.02	29.31	49.34
017	3.55 in^3/rev	27.68	25.50	23.86	4.31	35.20	59.64
020	4.00 in^3/rev	31.39	29.21	27.57	4.53	39.52	67.21
024	4.80 in^3/rev	37.81	35.63	33.99	4.91	47.02	80.32
028	5.50 in^3/rev	42.66	40.48	38.84	5.19	52.68	90.23
031	6.00 in^3/rev	46.75	44.57	42.93	5.43	57.45	98.58
035	6.80 in^3/rev	52.79	50.61	48.97	5.78	64.50	110.91
038	7.30 in^3/rev	57.21	55.03	53.39	6.04	69.66	119.94
042[1)]	8.30 in^3/rev	64.68	62.50	60.86	6.47	78.37	135.19
045[1)]	8.90 in^3/rev	69.29	67.11	65.47	6.74	83.75	144.61
050[1)]	9.64 in^3/rev	75.14	72.96	71.78[2)]	7.08	90.58	134.54[2)]

1) 042 - 045 - 050 = 2200 R.P.M. max. 2) 050 = 3000 PSI max. int. Port connection can be furnished with metric threads.

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