

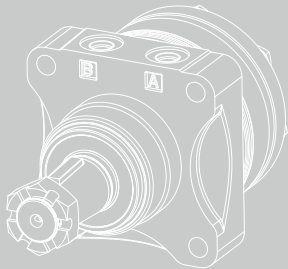
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HCP series

Orbital hydraulic motor

The HCP series orbital hydraulic motor, which boasts superior mass-to-power ratio, has been extensively used in all kinds of mobile and rotary conditions, particularly for low flow and large torque load starting conditions.



Contents

HCP Overview	02
HCP Advantages	02
HCP Standard structure	02
HCP Specification	03
HCP Ordering information	04
HCP Displacement performance	05-11
HCP Installation size	12
HCP Shaft end dimensions	13-14
HCP Length and weight	14
HCP Allowable shaft load/bearing curve	14
HCP Hydraulic diagram	15
HCP Rotation direction	15



Overview

The HCP series orbital hydraulic motor, which boasts superior mass-to-power ratio, has been extensively used in all kinds of mobile and rotary conditions, particularly for low flow and large torque load starting conditions.

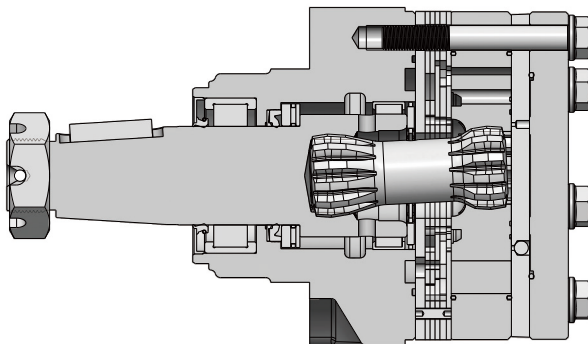
During the working process, the unique balance plate design bends to the rotor under the effect of oil pressure, greatly reducing the end clearance of the fixed rotor and realizing higher volume efficiency; when the oil pressure reaches the working pressure, the deflection and oil pressure of the balance plate will achieve a dynamic balance, allowing for easy, mechanically-efficient rotor operation. This perfect exchange of efficiency maximizes the steady performance of the system and enables the whole machine to consume less energy.

Advantages

- The optimized high-pressure combined seal design ensures excellent sealing performance and reliability.
- The roller bearing structure bears radial loads better.
- The unique balance plate design ensures stable operation at low speeds and high pressures.
- The full flow cooling treatment of its linkage mechanism prolongs its service life.
- The advanced flow distribution system design greatly improves efficiency and makes the motor more compact.
- A variety of flange connection sizes are provided, facilitating installation.

Standard structure

- HCP



P-0101

Specification

Type		HCP	HCP	HCP	HCP	HCP	HCP	HCP
		160	200	230	260	300	375	475
Displacement (cm ³ /rev.)		157	198	225	253	291	363	475
Max.speed (rpm)	Continuous	387	348	303	303	287	212	160
	Intermittent	440	406	369	356	321	253	193
Max.torque (N·m)	Continuous	388	492	596	666	778	955	1176
	Intermittent	450	551	710	778	909	1086	1383
Max. differential pressure (bar)	Continuous	207	207	207	207	207	207	173
	Intermittent	241	241	241	241	241	241	207
	Peak	276	276	276	276	276	276	241
Max.flow (L/min)	Continuous	61	68	68	76	83	76	76
	Intermittent	76	83	83	91	95	91	91
Max.no-load starting pressure (bar)		8	8	10	10	10	10	12
Min.starting torque (N·m)	Max. Continuous differential pressure	215	284	346	440	527	560	728
	Max. Intermittent differential pressure	243	304	395	475	628	727	907

T - 0160

- Intermittent working condition: The working time should be less than 6 seconds per minute under the intermittent working condition.
- Peak differential pressure: At peak differential pressure, the operating time is less than 0.6 seconds per minute.
- It is not recommended for the motor to work at simultaneous maximum torque and maximum speed.
- The filtration standard of ISO 4406 cleaning standard 20/18/15 is recommended.
- High quality anti-wear hydraulic fluids are recommended.
- When the temperature is 50° , the minimum viscosity of the oil is recommended to be 20mm²/s.
- The recommended maximum operating temperature is 82°C .
- To assure best motor life, run motor 10-15 minutes in low speed high torque mode at approximately 50% of continuous pressure and 50% of continuous flow.

Ordering information

HCP	375	W41	T9	A	N	A
①	②	③	④	⑤	⑥	⑦

Orbital Hydraulic Series

①	Orbital Hydraulic Motor	HCP
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Type

②	Type	160	200	230	260	300	375	475
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Mount, Port

③	4×Φ13.5 Wheel mount Φ82.5 pilot, port 7/8-14UNF, rear pilot Φ126.91	W41
	4×Φ13.1 Wheel mount Φ82.5 pilot, port 9/16-18UNF, rear pilot Φ126.91	W48

Output Shaft

④	Φ25.4 Tapered, parallel key 6.35×6.35×31.75	T9
	Ø31.75 Tapered, parallel key 7.96×7×22.25	T2
	Φ38.1 Tapered, parallel key 7.96×7×31.75	T7

Rotation Direction

⑤	CW	A
	CCW	R

Paint option

⑥	No Paint	N
	Black	B
	Hengli blue	C

Special features

⑦	Standard	●	A
	Free running	●	F
	High temperature	○	V
	Low temperature	○	S

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Note: ● =Available; ○ =Available on request; When using the order information, the user can select the motor series, displacement, installation flange, port, shaft and other information. If the selected specification is not in the table or has special requirements, please contact us.

Displacement performance

		Pressure(bar)						Max.Cont	Max.Inter
160		17	35	69	104	138	173	207	241
157 cm ³ /rev.		Torque(N·m), Speed(rpm)							
Flow (L/min)	2	35 10	66 9	124 8	164 8	252 9	247 7		
	4	36 22	77 21	147 19	176 18	261 20	321 19	369 16	
	8	35 47	75 46	150 45	218 44	273 43	326 39	384 37	
	15	31 91	73 90	148 89	217 87	275 85	331 82	383 77	444 71
	23		65 139	144 139	214 137	272 136	331 130	388 124	450 116
	30		67 187	145 182	214 181	275 179	331 175	387 167	449 159
	38		60 238	138 231	210 231	270 229	327 223	383 217	447 205
	45		54 280	149 277	205 276	266 273	326 266	378 254	444 244
	53			123 331	200 326	260 324	318 317	372 303	395 289
	61			113 387	190 386	251 382	307 373	362 358	431 347
	68			102 425	182 423	245 419	300 412	355 399	
	76			74 396	221 409	274 420	322 421	350 440	

Overall Efficiency: 70-100% 40-69% 0-39%

Torque (N·m):322
Speed (rpm):421

T - 0161

Displacement performance

		Pressure(bar)						Max.Cont	Max.Inter
200		17	35	69	104	138	173	207	241
198 cm³/rev.		Torque(N·m), Speed(rpm)							
Flow (L/min)	2	43	81	144	260	320			
		9	8	7	8	7			
	4	44	95	157	270	347	417	473	
		19	18	17	17	17	16	14	
	8	44	95	184	248	346	418	484	549
		39	39	38	37	36	34	32	29
	15	42	92	186	271	347	422	492	550
		75	74	73	73	71	70	67	61
	23	32	90	183	267	341	414	483	551
		96	115	114	113	111	108	90	99
Max.Cont	30		85	182	249	308	369	427	487
			150	148	147	145	142	138	132
	38		76	171	258	333	400	470	546
			192	191	189	186	183	178	172
	45		86	177	250	312	372	429	492
			191	227	225	221	218	214	206
	53		61	158	247	316	382	453	528
			271	269	266	263	258	253	245
	61			145	233	303	365	442	523
				312	310	307	301	293	286
Max.Inter	68			136	226	304	356	434	511
				348	346	342	337	328	320
	76			123	215	291	346	441	
				392	386	386	378	370	
	83				206	286	349		
					391	401	406		

Overall Efficiency: 70-100% 40-69% 0-39%

T - 0162

Displacement performance

		Pressure(bar)						Max.Cont	Max.Inter
230		17	35	69	104	138	173	207	241
225 cm ³ /rev.		Torque(N·m), Speed(rpm)							
Flow (L/min)	2	49	98	207	297	365			
		7	6	6	5	4			
	4	52	106	210	314	405	487	551	
		16	15	14	14	12	11	9	
	8	53	121	212	322	420	514	596	555
		34	33	31	30	29	27	24	17
	15	51	111	222	324	415	509	596	679
		65	64	63	62	60	57	51	46
	23		106	217	321	413	507	590	710
			100	99	96	94	90	83	70
	30		101	214	320	412	503	593	684
			130	129	126	124	120	114	106
	38		95	208	314	406	497	587	680
			166	165	163	160	156	149	140
Max.Cont	45			200	308	402	493	580	675
				197	195	190	186	179	170
	53			189	300	393	477	568	664
				234	232	227	222	214	205
Max.Inter	61			177	290	384	470	556	654
				271	268	265	258	250	238
	68			166	278	378	465	546	645
				303	301	296	289	280	269
	76			152	267	367	456	535	
				348	338	333	327	315	
	83				270	355	452	505	
					369	364	357	326	

Overall Efficiency: 70-100% 40-69% 0-39%

T - 0163

Displacement performance

		Pressure(bar)						Max.Cont	Max.Inter
260		17	35	69	104	138	173	207	241
253 cm³/rev.		Torque(N·m), Speed(rpm)							
Flow (L/min)	2	56	112						
		6	6						
	4	60	124	231	347	441	537	614	
		14	14	14	13	12	10	9	
	8	60	126	227	346	452	554	645	
		30	29	28	27	26	25	23	
	15	56	122	245	359	460	569	666	769
		58	60	58	54	53	51	46	36
	23	52	116	240	355	458	562	664	778
		88	88	84	85	80	80	73	65
Max.Cont	30		116	219	316	402	487	566	661
			114	115	114	108	107	103	91
	38		101	226	345	447	551	650	760
			146	148	145	142	138	134	127
	45		93	217	338	442	546	642	752
			179	174	172	169	165	160	151
	53		81	204	325	421	524	621	733
			208	209	204	201	197	191	181
	61			191	312	415	516	615	727
				240	236	233	228	222	212
Max.Inter	68			178	300	400	506	603	716
				268	265	262	256	249	238
	76			160	284	391	491	589	679
				303	298	292	287	280	268
	83			145	270	378	461	557	
				331	328	323	313	307	
	91			123	240	343	442		
				350	356	351	343		

Overall Efficiency: 70-100% 40-69% 0-39%

T - 0164

Displacement performance

		Pressure(bar)						Max.Cont	Max.Inter
300		17	35	69	104	138	173	207	241
291 cm ³ /rev.		Torque(N · m), Speed(rpm)							
Flow (L/min)	2	68	136						
		6	6						
	4	71	145	285	412	533	641		
		13	12	12	12	11	11		
	8	70	147	277	422	543	667	777	906
		26	26	25	25	24	23	21	20
	15	66	143	282	421	538	668	778	893
		53	57	58	40	52	44	38	35
	23	62	136	278	414	540	656	768	901
		77	79	81	73	70	72	65	64
	30	57	127	273	407	533	648	762	909
		95	99	98	101	94	93	88	78
	38		118	262	396	520	644	760	901
			129	126	124	123	120	115	110
	45		109	253	390	513	636	753	891
			153	150	148	145	144	138	133
	53		97	241	379	504	627	742	879
			186	179	176	174	170	165	158
	61		81	226	348	489	611	728	863
			206	207	202	200	197	190	183
Max.Cont	68			258	352	471	599	712	851
				229	227	226	222	214	207
	76			192	333	463	581	694	834
				257	255	252	247	241	233
Max.Inter	83			172	297	442	565	658	
				283	287	276	272	264	
	91			152	288	412	527	643	
				310	303	300	295	290	
	95			143	292	427	542	673	
				321	320	316	304	294	

Overall Efficiency: 70-100% 40-69% 0-39%

T - 0165

Displacement performance

		Pressure(bar)						Max.Cont	Max.Inter
		17	35	69	104	138	173	207	241
		Torque(N·m), Speed(rpm)							
Flow (L/min)	2	70							
		4							
	4	79	164	326	465	605	737		
		10	10	10	10	9	8		
	8	83	176	323	477	623	763	899	
		21	21	21	21	20	19	17	
	15	77	171	338	497	651	792	928	1051
		40	41	41	39	38	34	29	26
	23	73	164	334	490	648	799	955	1077
		61	63	64	63	60	58	52	42
	30	69	158	330	486	635	784	929	1086
		82	83	83	82	80	78	74	68
Max.Cont	38		146	317	470	614	765	913	1071
			105	105	105	104	100	95	89
	45		135	309	462	606	758	903	1062
			125	125	124	124	121	116	110
	53		119	295	453	600	749	898	1050
			149	147	147	145	143	138	133
	61		101	278	440	584	736	881	1036
			170	170	169	168	165	160	155
	68			262	361	570	721	871	1026
				189	189	188	185	180	173
	76			239	402	551	699	850	1004
				212	208	210	207	202	196
Max.Inter	83			220	371	535	684	835	
				231	231	230	227	222	
	91			192	376	518	668		
				253	252	243	251		

Overall Efficiency: 70-100% 40-69% 0-39%

T - 0166

Displacement performance

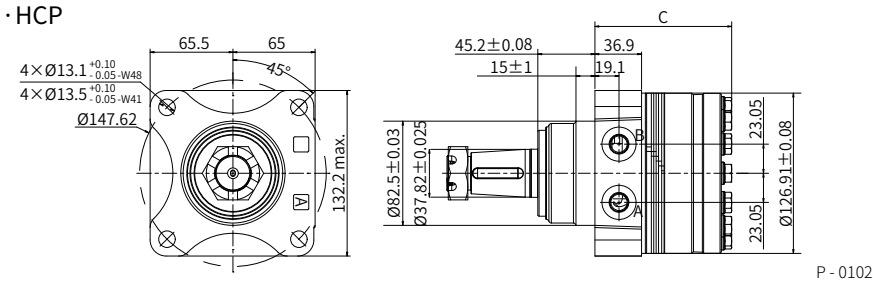
		Pressure(bar)					Max.Cont	Max.Inter
475		17	35	69	104	138	173	207
475 cm ³ /rev.		Torque(N·m), Speed(rpm)						
Flow (L/min)	2	102	207					
		4	4					
	4	112	229	442	635	802		
		7	6	6	5	4		
	8	118	243	481	716	924	1030	1171
		16	15	15	15	14	13	11
	15	113	242	486	725	948	1166	1356
		30	30	29	29	27	25	22
	23	106	235	481	725	949	1167	1376
		47	47	46	45	43	39	36
	30	97	226	475	720	946	1175	1383
		62	61	61	60	58	55	51
	38	81	213	458	714	940	1176	1379
		80	79	78	76	75	71	67
	45		198	442	658	932	1163	1377
			94	93	91	89	86	80
Max.Cont	53		179	425	678	913	1151	1367
			111	110	109	106	103	98
	61		156	402	656	893	1130	1352
			129	127	126	124	121	116
Max.Cont	68		133	381	635	874	1112	1316
			144	142	141	139	135	131
	76			356	608	849	1086	1308
				160	158	156	152	147
Max.Inter	83			327	581	821	1066	
				175	174	171	167	
	91			293	520	771	1005	
Max.Inter				193	190	184	177	

Overall Efficiency: 70-100% 40-69% 0-39%

T - 0167

Installation size

· HCP



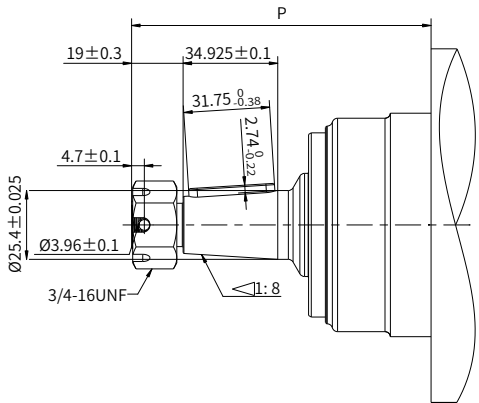
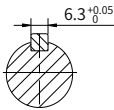
Main Port A, B: **W41** 7/8-14UNF

W48 9/16-18UNF

Shaft end dimensions

T9

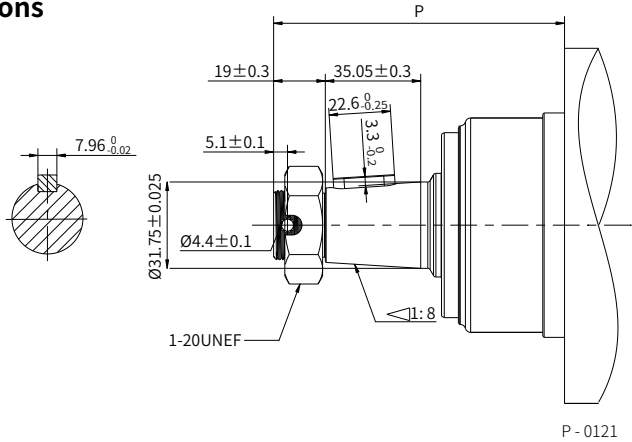
$\varnothing 25.4$ mm Tapered
Parallel key $6.35 \times 6.35 \times 31.75$
Tightening torque: 200 ± 10 N·m
Max. Torque: 655 N·m



Shaft end dimensions

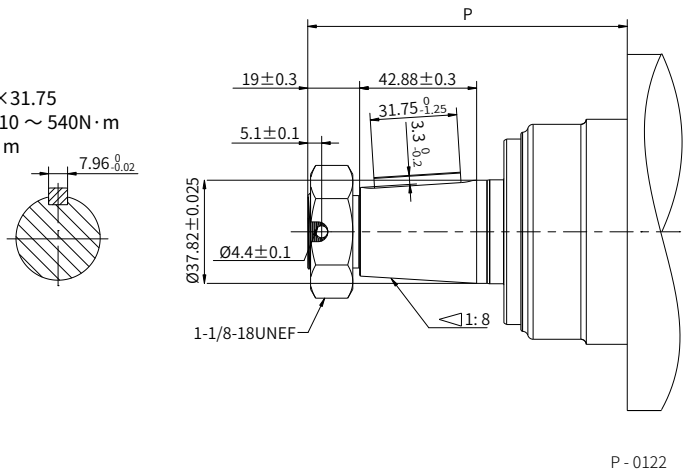
T2

Ø31.75mm Tapered
Parallel key 7.96×7×22.25
Tightening torque: 380N·m
Max. Torque: 1200N·m



T7

Ø38.1mm Tapered
Parallel key 7.96×7×31.75
Tightening torque: 410 ~ 540N·m
Max. Torque: 1200N·m



Shaft depth	P mm
T9	110.4
T2	106.9
T7	116.9

T - 0030

Note: Dimension P is the overall distance from the flange mounting surface to the end of the shaft, and the tolerance is ±1.03mm.

Length and weight

Type	C mm	HCP
		Weight kg
160	103.8	11.0
200	108.2	11.2
230	111.5	11.4
260	114.7	11.5
300	119.9	11.8
375	116.7	11.6
475	140.8	12.7

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Note: Dimensions C are the length from the flange mounting surface to the rear end of the motor, and the tolerance is $\pm 1.13\text{mm}$.

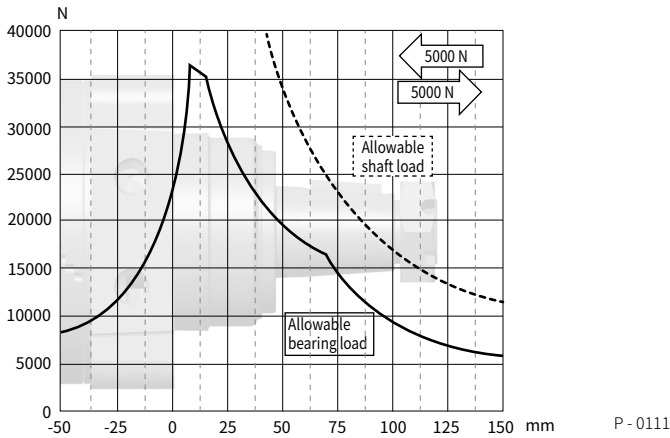
Allowable shaft load/bearing curve

As shown in the figure, when the axial load is 0, the radial allowable load of the output shaft is related to the distance from the flange mounting surface to the load action point.

The solid line shows the allowable radial load of the bearing. It is based on L_{10} bearing life 2000 hrs at 100 RPM with rated output torque.

The dash line shows max radial shaft load. Any shaft load exceeding the values quoted in the curve will involve a risk of failure.

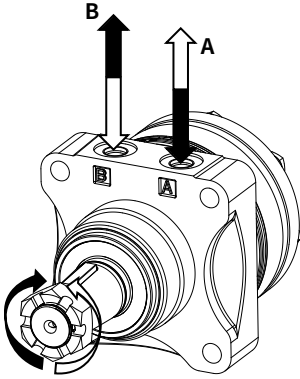
· HCP



P - 0111

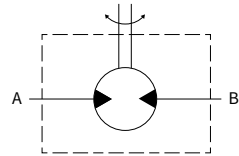
Rotation direction: CW

When facing the motor shaft extension direction, port A is high pressure oil, the output shaft rotates CW; Otherwise, it rotates CCW.



P - 00123

Hydraulic diagram



P - 0010

