

# MSS Hydraulic Orbit Motor



Technical data for MSS										
Type		MSS 80	MSS 100	MSS 125	MSS 160	MSS 200	MSS 250	MSS 315	MSS 400	MSS 475
Displacement (cm <sup>3</sup> /rev.)		80.6	100.8	125	154	194	243	311	394	475
Max. speed (RPM)	cont.	800	748	600	470	375	300	240	185	155
	int	988	900	720	560	450	360	280	225	185
Max. Torque (Nm)	cont.	225	290	365	485	586	708	880	880	910
	int	305	390	480	590	705	860	1000	980	990
Max. Output (kW)	cont.	16	18	18	18.1	18.1	18	17	11	9
	int	20	22	23	25	24	23.8	20.2	12	11
Max. Pressure Drop (Bar)	cont.	205	205	205	210	210	200	200	160	140
	int	275	275	275	260	250	250	240	190	150
	Peak	295	295	295	280	270	270	260	210	175
Max Oil Flow (L/min)	cont.	65	75	75	75	75	75	75	75	75
	int	80	90	90	90	90	90	90	90	90
Max. Inlet Pressure (Bar)	cont.	250	250	250	250	250	250	250	250	250
	int	300	300	300	300	300	300	300	300	300
Weight (kg)		9.8	10	10.3	10.7	11.1	11.6	12.3	13.2	14.3

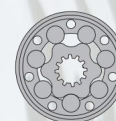
\*Continuous pressure: Max. value of operating motor continuously.

\*Intermittent pressure: Max. value of operating motor in 6 seconds per minute.

\*Peak pressure: Max. value of operating motor in 0.6 second per minute

MS series motor adapt the advanced Geroler gear set designed with disc distribution flow and high pressure.

The unit can be supplied the individual variant in operating multifunction in accordance with requirement of applications.



## CHARACTERISTICS FEATURES

- Advanced manufacturing devices for the Geroler gear set, which use low pressure of start-up, provide smooth, reliable operation and high efficiency.
- The output shaft adapts in tapered roller bearings that permit high axial and radial forces. The case can offer capacities of high pressure and high torque in the wide of applications.
- Advanced design in disc distribution flow, which can automatically compensate in operating with high volume efficiency and long life, provide smooth and reliable operation.
- The new series motor is suitable for vehicles with greater loads and pressure drop.



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## PERFORMANCE DATA

### MSS80 [80.6cm³/rev.]

Pressure (MPa)

		Max.cont. Max.int.						
		3.5	7	10.5	14	17.5	20.5	22.5
Flow (L/min)	15	35	80	120	158	195	228	249
	30	<b>180</b>	<b>174</b>	<b>168</b>	<b>164</b>	<b>158</b>	<b>151</b>	<b>143</b>
	40	35	80	120	158	195	232	260
	50	<b>362</b>	<b>352</b>	<b>346</b>	<b>338</b>	<b>330</b>	<b>322</b>	<b>310</b>
	60	35	79	119	155	193	227	250
Max.cont.	65	<b>487</b>	<b>480</b>	<b>468</b>	<b>457</b>	<b>446</b>	<b>438</b>	<b>425</b>
	75	30	77	117	153	192	224	248
	80	<b>612</b>	<b>603</b>	<b>592</b>	<b>581</b>	<b>572</b>	<b>558</b>	<b>542</b>
Max.int.	60	28	77	117	153	192	224	243
	75	<b>735</b>	<b>726</b>	<b>718</b>	<b>703</b>	<b>687</b>	<b>673</b>	<b>646</b>
	90	26	75	116	151	188	217	236
	80	<b>794</b>	<b>786</b>	<b>773</b>	<b>760</b>	<b>744</b>	<b>722</b>	<b>706</b>
		24	72	109	142	176	206	227
		<b>981</b>	<b>968</b>	<b>955</b>	<b>925</b>	<b>893</b>	<b>870</b>	<b>832</b>

### MSS100 [100.8cm³/rev.]

Pressure (MPa)

		Max.cont. Max.int.						
		3.5	7	10.5	14	17.5	20.5	22.5
Flow (L/min)	15	48	95	150	200	250	282	310
	30	<b>146</b>	<b>144</b>	<b>139</b>	<b>135</b>	<b>130</b>	<b>120</b>	<b>105</b>
	40	45	94	146	198	250	290	317
	50	<b>291</b>	<b>289</b>	<b>278</b>	<b>274</b>	<b>269</b>	<b>258</b>	<b>242</b>
	60	43	89	142	196	248	288	316
Max.cont.	75	<b>387</b>	<b>384</b>	<b>374</b>	<b>359</b>	<b>350</b>	<b>335</b>	<b>320</b>
	90	40	88	135	194	247	286	315
		<b>486</b>	<b>483</b>	<b>473</b>	<b>462</b>	<b>450</b>	<b>430</b>	<b>420</b>
Max.int.	60	37	88	132	185	244	283	312
	75	<b>588</b>	<b>584</b>	<b>574</b>	<b>562</b>	<b>550</b>	<b>538</b>	<b>520</b>
	90	35	80	130	180	240	279	310
		<b>740</b>	<b>735</b>	<b>720</b>	<b>705</b>	<b>696</b>	<b>676</b>	<b>653</b>
		30	75	124	170	236	271	303
		<b>850</b>	<b>840</b>	<b>810</b>	<b>787</b>	<b>770</b>	<b>750</b>	<b>747</b>

### MSS125 [125cm³/rev.]

Pressure (MPa)

		Max.cont. Max.int.						
		3.5	7	10.5	14	17.5	20.5	22.5
Flow (L/min)	15	55	120	176	245	309	345	375
	30	<b>115</b>	<b>113</b>	<b>110</b>	<b>104</b>	<b>98</b>	<b>90</b>	<b>84</b>
	40	55	120	175	250	315	364	404
	50	<b>231</b>	<b>228</b>	<b>223</b>	<b>214</b>	<b>202</b>	<b>188</b>	<b>172</b>
	60	53	118	178	250	315	364	403
Max.cont.	75	<b>312</b>	<b>309</b>	<b>290</b>	<b>289</b>	<b>278</b>	<b>262</b>	<b>235</b>
	90	50	115	176	248	315	362	397
		<b>391</b>	<b>386</b>	<b>378</b>	<b>365</b>	<b>352</b>	<b>339</b>	<b>308</b>
Max.int.	60	45	113	171	241	308	358	397
	75	<b>469</b>	<b>461</b>	<b>450</b>	<b>437</b>	<b>425</b>	<b>400</b>	<b>372</b>
	90	45	110	167	240	306	352	389
		<b>588</b>	<b>574</b>	<b>560</b>	<b>544</b>	<b>526</b>	<b>505</b>	<b>481</b>
		40	105	162	237	301	343	378
		<b>710</b>	<b>696</b>	<b>680</b>	<b>661</b>	<b>646</b>	<b>628</b>	<b>610</b>

TORQUE(N·m) 301  
SPEED (r/min) 646

### MSS160 [154cm³/rev.]

Pressure (MPa)

		Max.cont. Max.int.						
		3.5	7	10.5	14	17.5	21	22.5
Flow (L/min)	15	70	142	215	298	372	435	476
	30	<b>93</b>	<b>91</b>	<b>89</b>	<b>85</b>	<b>80</b>	<b>76</b>	<b>58</b>
	40	73	151	225	312	382	456	492
	50	<b>189</b>	<b>187</b>	<b>181</b>	<b>176</b>	<b>170</b>	<b>162</b>	<b>153</b>
	60	75	152	228	314	383	454	488
Max.cont.	75	<b>252</b>	<b>250</b>	<b>246</b>	<b>239</b>	<b>234</b>	<b>228</b>	<b>212</b>
	90	70	148	225	305	372	445	480
		<b>313</b>	<b>310</b>	<b>306</b>	<b>298</b>	<b>293</b>	<b>285</b>	<b>272</b>
Max.int.	60	68	143	218	296	370	442	480
	75	<b>378</b>	<b>376</b>	<b>370</b>	<b>362</b>	<b>353</b>	<b>346</b>	<b>332</b>
	90	62	140	211	291	365	439	475
		<b>475</b>	<b>469</b>	<b>461</b>	<b>450</b>	<b>441</b>	<b>432</b>	<b>414</b>
		59	131	202	286	357	425	460
		<b>567</b>	<b>561</b>	<b>554</b>	<b>543</b>	<b>532</b>	<b>520</b>	<b>509</b>

□ cont.  
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## PERFORMANCE DATA (continued)

### MSS200 [194cm³/rev.]

Pressure (MPa)

Max.cont. Max.int.

3.5	7	10.5	14	17.5	21	22.5
-----	---	------	----	------	----	------

Flow (L/min)	15	87 <b>74</b>	179 <b>73</b>	273 <b>71</b>	371 <b>68</b>	471 <b>64</b>	562 <b>60</b>	610 <b>48</b>
	30	91 <b>150</b>	190 <b>148</b>	288 <b>143</b>	386 <b>140</b>	489 <b>134</b>	572 <b>128</b>	618 <b>119</b>
40	94 <b>198</b>	193 <b>195</b>	296 <b>192</b>	394 <b>188</b>	498 <b>183</b>	584 <b>178</b>	645 <b>167</b>	
50	90 <b>248</b>	191 <b>246</b>	292 <b>241</b>	389 <b>236</b>	493 <b>230</b>	580 <b>223</b>	634 <b>212</b>	
60	85 <b>300</b>	185 <b>295</b>	279 <b>288</b>	382 <b>281</b>	483 <b>273</b>	575 <b>263</b>	622 <b>251</b>	
Max.cont. 75	78 <b>374</b>	176 <b>370</b>	271 <b>364</b>	370 <b>360</b>	472 <b>352</b>	561 <b>340</b>	610 <b>331</b>	
Max.int. 90	68 <b>443</b>	163 <b>440</b>	265 <b>435</b>	361 <b>428</b>	456 <b>424</b>	545 <b>413</b>	599 <b>400</b>	

### MSS250 [243cm³/rev.]

Pressure (MPa)

Max.cont. Max.int.

3.5	7	10.5	14	17.5	20	22.5
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Flow (L/min)	15	110 <b>59</b>	231 <b>58</b>	351 <b>56</b>	462 <b>53</b>	585 <b>50</b>	681 <b>46</b>	778 <b>35</b>
	30	116 <b>119</b>	236 <b>117</b>	359 <b>114</b>	475 <b>108</b>	597 <b>102</b>	700 <b>92</b>	790 <b>80</b>
40	118 <b>162</b>	241 <b>159</b>	363 <b>156</b>	480 <b>150</b>	599 <b>143</b>	706 <b>134</b>	796 <b>121</b>	
50	111 <b>203</b>	234 <b>201</b>	352 <b>197</b>	472 <b>191</b>	591 <b>182</b>	693 <b>173</b>	788 <b>158</b>	
60	106 <b>244</b>	224 <b>242</b>	345 <b>237</b>	462 <b>230</b>	582 <b>220</b>	685 <b>208</b>	772 <b>194</b>	
Max.cont. 75	101 <b>303</b>	214 <b>299</b>	340 <b>294</b>	454 <b>285</b>	570 <b>272</b>	670 <b>260</b>	760 <b>244</b>	
Max.int. 90	93 <b>363</b>	209 <b>359</b>	335 <b>354</b>	447 <b>348</b>	559 <b>340</b>	657 <b>328</b>	749 <b>303</b>	

### MSS315 [311cm³/rev.]

Pressure (MPa)

Max.cont. Max.int.

3.5	7	10.5	14	17.5	20	22.5
-----	---	------	----	------	----	------

Flow (L/min)	15	148 <b>48</b>	304 <b>47</b>	456 <b>45</b>	613 <b>43</b>	762 <b>41</b>	879 <b>39</b>	978 <b>27</b>
	30	155 <b>95</b>	314 <b>93</b>	465 <b>91</b>	635 <b>89</b>	778 <b>86</b>	884 <b>82</b>	988 <b>67</b>
40	160 <b>127</b>	321 <b>125</b>	479 <b>121</b>	650 <b>117</b>	796 <b>115</b>	906 <b>109</b>	997 <b>91</b>	
50	155 <b>159</b>	314 <b>157</b>	465 <b>153</b>	638 <b>149</b>	780 <b>145</b>	886 <b>142</b>	988 <b>128</b>	
60	151 <b>187</b>	306 <b>185</b>	453 <b>181</b>	620 <b>176</b>	765 <b>169</b>	886 <b>157</b>	976 <b>143</b>	
Max.cont. 75	146 <b>238</b>	300 <b>236</b>	445 <b>232</b>	613 <b>227</b>	755 <b>224</b>	875 <b>220</b>	966 <b>196</b>	
Max.int. 90	135 <b>286</b>	284 <b>283</b>	436 <b>278</b>	601 <b>272</b>	740 <b>265</b>	863 <b>257</b>	952 <b>232</b>	

### MSS400 [394cm³/rev.]

Pressure (MPa)

Max.cont. Max.int.

3.5	7	10.5	14	16	17.5
-----	---	------	----	----	------

Flow (L/min)	15	186 <b>37</b>	379 <b>36</b>	578 <b>35</b>	779 <b>33</b>	896 <b>31</b>	986 <b>29</b>
	30	190 <b>75</b>	388 <b>73</b>	590 <b>71</b>	791 <b>68</b>	905 <b>65</b>	991 <b>61</b>
40	195 <b>99</b>	394 <b>97</b>	596 <b>95</b>	797 <b>93</b>	912 <b>90</b>	998 <b>85</b>	
50	191 <b>125</b>	388 <b>123</b>	587 <b>118</b>	785 <b>114</b>	904 <b>109</b>	983 <b>102</b>	
60	186 <b>149</b>	388 <b>146</b>	587 <b>142</b>	785 <b>137</b>	904 <b>131</b>	983 <b>122</b>	
Max.cont. 75	181 <b>187</b>	372 <b>183</b>	576 <b>177</b>	770 <b>171</b>	891 <b>164</b>	973 <b>153</b>	
Max.int. 90	176 <b>226</b>	367 <b>221</b>	571 <b>214</b>	766 <b>208</b>	883 <b>199</b>	965 <b>183</b>	

TORQUE (N·m) 766  
SPEED (rpm) 208

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# MSS Hydraulic Orbit Motor



## PERFORMANCE DATA (continued)

### MSS475 [475cm<sup>3</sup>/rev.]

Pressure (MPa)

		Max.cont. Max.int.				
		3.5	7	10.5	14	15
Flow (L/min)	15	218 <b>30</b>	439 <b>29</b>	661 <b>28</b>	892 <b>27</b>	995 <b>25</b>
	30	223 <b>61</b>	450 <b>60</b>	676 <b>58</b>	910 <b>56</b>	1002 <b>53</b>
	40	228 <b>82</b>	461 <b>80</b>	689 <b>77</b>	927 <b>74</b>	1017 <b>68</b>
	50	224 <b>103</b>	456 <b>101</b>	682 <b>97</b>	920 <b>92</b>	1008 <b>86</b>
	60	220 <b>123</b>	451 <b>121</b>	677 <b>118</b>	913 <b>112</b>	998 <b>105</b>
	Max.cont. 75	212 <b>155</b>	443 <b>153</b>	664 <b>147</b>	901 <b>140</b>	980 <b>132</b>
Max.int. 90	196 <b>186</b>	421 <b>184</b>	643 <b>178</b>	877 <b>170</b>	959 <b>157</b>	

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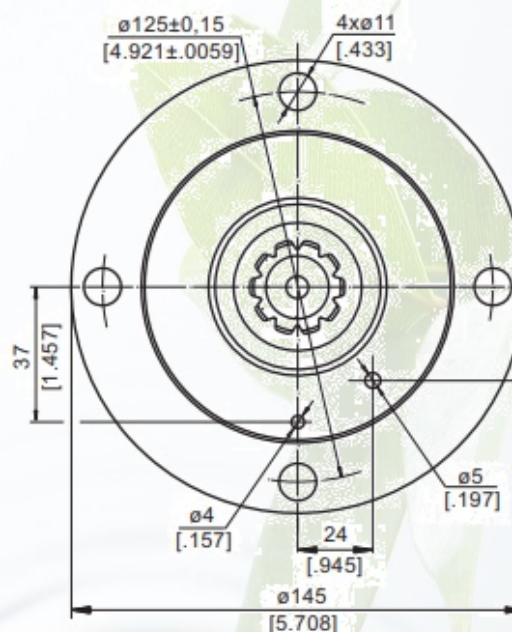
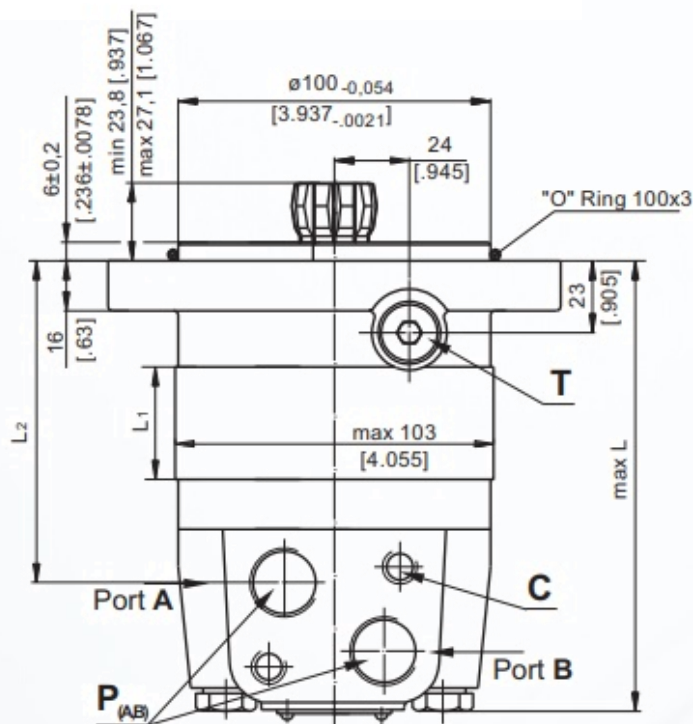
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# MSS Hydraulic Orbit Motor



## OVERVIEW DRAWING



C : 2xM10  
P<sub>(A,B)</sub> : 2xG1/2  
T : G 1/4

Type	MSS 80	MSS100	MSS125	MSS160	MSS200	MSS250	MSS315	MSS400	MSS475
L	125mm	129mm	133mm	139mm	146mm	155mm	166mm	181mm	194mm
L1	16mm	20mm	25mm	27mm	34mm	42mm	54mm	69mm	83mm
L2	83mm	87mm	90mm	96mm	103mm	112mm	123mm	138mm	152mm

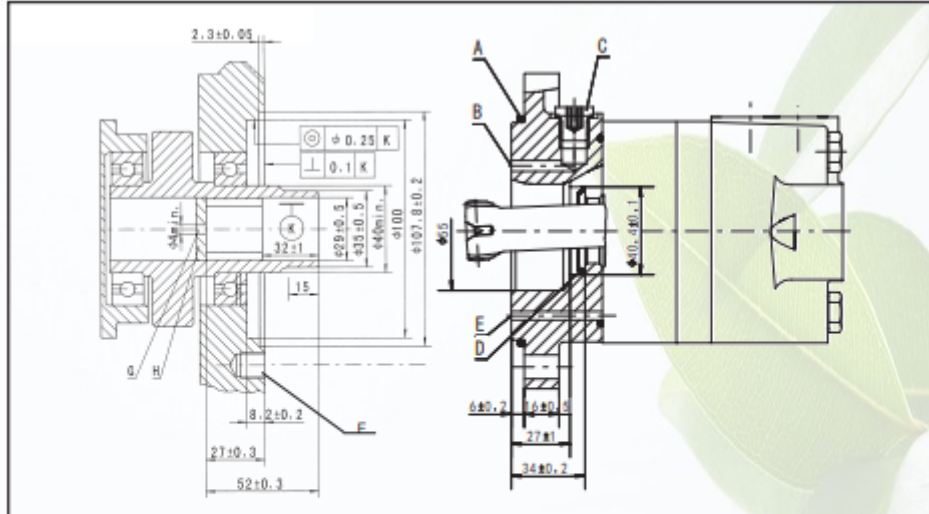


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## OVERVIEW DRAWING



- A: O-ring: 100x3
- B: External drain channel
- C: Drain connection G 1/4; 12 mm deep
- D: Conical seal ring
- E: Internal drain channel
- F: M10; min. 15mm deep
- G: Oil circulation hole
- H: Hardened stop plate

### INTERNAL SPLINE DATA FOR THE ATTACHED COMPONENT

Fillet Root Side Fit		mm
Number of Teeth	Z	12
Diametral Pitch	DP	12/24
Pressure Angle	$\alpha_d$	30°
Pitch Dia.	D	ø25.4
Major Dia.	$D_o$	ø28 <sup>0</sup> <sub>-0.1</sub>
Minor Dia.	$D_i$	ø23 <sup>+0.033</sup> <sub>0</sub>
Space Width [Circular]	E	4.308±0.02



Hardening Specification: HRC 62±2  
Effective case depth 0.7±0.2

# MSS Hydraulic Orbit Motor



## OIL FLOW IN DRAIN LINE

Pressure drop (Bar)	Viscosity (mm <sup>2</sup> /s)	Oil flow in the drain line (L/min.)
<b>140</b>	20	1.5
	35	1
<b>210</b>	20	3
	35	2

The table shows the max. oil flow in the drain line at the return pressure less than 5-10 Bar.

## STANDARD DIRECTION OF SHAFT ROTATION

When facing shaft end of motor, shaft to rotate: Clockwise when port "A" is pressurized. Counter-clockwise port "B" is pressurized.