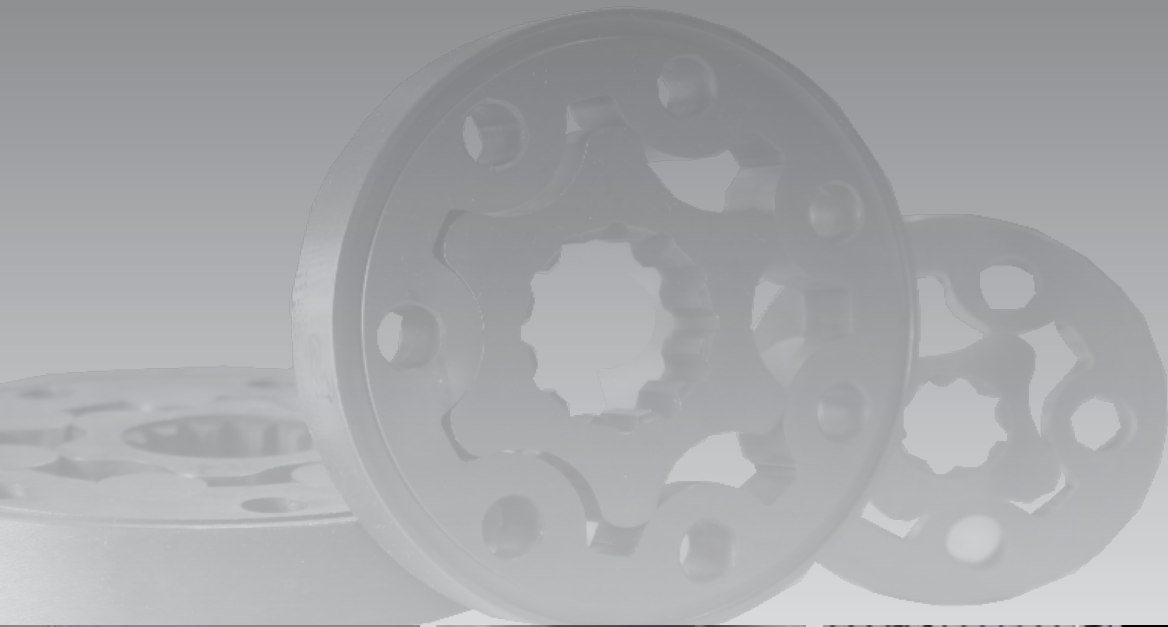


CPRM HYDRAULIC MOTOR



C P R M H Y D R A U L I K M O T O R

HYDROMOT
Hydraulic solutions.

Inhaltsverzeichnis CPRM | Contents CPRM

| | |
|--|-------|
| Technische Daten Technical Data | 3-4 |
| Leistungsdaten Performance Data | 5-9 |
| Abmessungen Dimensions | 10 |
| Abtriebswellen Output Shafts | 11-12 |
| Wellenbelastung Shaft Load | 13 |
| Rücklaufdruck Return Pressure | 13 |
| Drehrichtungsauswahl Rotation Selection | 13 |
| Bestellinformation Order Information | 14 |
| Explosionszeichnung Assembly Drawing | 15 |
| Anwendungsberechnung von Motoren Application calculation of motors | 16-17 |
| Leckageraum und Lecköldruck Drainage space and drainage pressure | 18 |

CPRM Hydraulik Motor

- Modell Längsschieberventil mit Geroller
- Geringes Startmoment und hoher Wirkungsgrad
- Ideal für enge Bauräume
- Internes Rückschlagventil
- Verwendung ohne Leckölanschluss möglich
- Hochdruckwellendichtring 150 Bar ist Standard

CPRM Hydraulic Motor

- Spool valve type
- Compact design
- Optimized for small spaces
- Internal check valve
- Usage without drain line possible
- High pressure seal 150 bar is standard



Technische Daten | Technical Data

| Typ Type | | CPRM(1) | CPRM(2) | CPRM | CPRM | CPRM | CPRM | CPRM(1) | CPRM(2) |
|--|-----------------------|---------|---------|------|------|------|-------|---------|---------|
| | | 36 | 36 | 50 | 80 | 100 | 125 | 160 | 160 |
| Schluckvolumen Displacement [cm ³ /REV] | | 36 | 36 | 51.7 | 81.5 | 102 | 127.2 | 157.2 | 157.2 |
| Max. Drehzahl Max. Speed [RPM] | Dauerbetrieb Cont. | 1250 | 1085 | 960 | 750 | 600 | 475 | 378 | 378 |
| | Int.(3) | 1520 | 1220 | 1150 | 940 | 750 | 600 | 475 | 475 |
| Max. Drehmoment Max. Torque [daNm] | Dauerbetrieb Cont. | 7.2 | 7.2 | 10 | 19.5 | 24 | 30 | 38 | 36 |
| | Int.(3) | 8.3 | 8.3 | 12.6 | 22 | 28 | 34 | 43 | 43 |
| | Spitze (4) Peak | 10.5 | 10.5 | 16.5 | 27 | 32 | 37 | 46 | 46 |
| Max. Leistungsabgabe Max. Output Power [kW] | Dauerbetrieb Cont. | 8.5 | 8.5 | 9.5 | 12.5 | 13 | 12.5 | 12.5 | 12.5 |
| | Int.(3) | 9.8 | 9.8 | 11.2 | 15 | 15 | 14.5 | 14 | 14 |
| Max. Druckgefälle Max. Pressure Drop [bar] | Dauerbetrieb Cont. | 140 | 140 | 140 | 140 | 140 | 140 | 140 | 140 |
| | Int.(3) | 165 | 165 | 175 | 20 | 20 | 20 | 20 | 20 |
| | Spitze (4) Peak | 225 | 225 | 225 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Max. Ölstrom Max. Oil flow [l/min] | Dauerbetrieb Cont. | 45 | 40 | 50 | 60 | 60 | 60 | 60 | 60 |
| | Int.(3) | 55 | 45 | 60 | 75 | 75 | 75 | 75 | 75 |
| Max. Eingangsdruck Max. Input Pressure [bar] | Dauerbetr. Cont. | 175 | 175 | 175 | 175 | 175 | 175 | 175 | 175 |
| | Int.(3) | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| | Spitze (4) Peak | 225 | 225 | 225 | 225 | 225 | 225 | 225 | 225 |
| Gewicht Weight [kg] | | 6.7 | 6.5 | 6.7 | 6.9 | 7 | 7.3 | 7.6 | 7.6 |

- (1) CPRM Motor mit CB, SH, K und SB Wellen
 (2) CPRM Motor mit C, CO und S Wellen
 (3) Intermittierender Betrieb max. 6 Sekunden / Minute
 (4) Spitzenbetrieb max. 0,6 Sekunden / Minute

- (1) CPRM Motor with CB, SH, K and SB shafts
 (2) CPRM Motor with C, CO and S shafts
 (3) Intermittend operation rating applies to 6 sec. of every minute
 (4) Peak load rating applies to 0,6 sec of every minute

Technische Daten | Technical Data

| Typ Type | CPRM(1) | CPRM(2) | CPRM(1) | CPRM(2) | CPRM(1) | CPRM(2) | CPRM(1) | CPRM(2) | |
|--|-----------------------|---------|---------|---------|---------|---------|---------|---------|------|
| | 200 | 200 | 250 | 250 | 315 | 315 | 400 | 400 | |
| Schluckvolumen Displacement [cm ³ /REV] | 194.5 | 194.5 | 253.3 | 253.3 | 317.5 | 317.5 | 381.4 | 381.4 | |
| Max. Drehzahl Max. Speed [RPM] | Dauerbetrieb Cont. | 310 | 310 | 240 | 240 | 190 | 190 | 155 | 155 |
| | Int.(3) | 385 | 385 | 300 | 300 | 240 | 240 | 190 | 190 |
| Max. Drehmoment Max. Torque [daNm] | Dauerbetrieb Cont. | 45 | 36 | 54 | 39 | 55 | 39 | 58 | 36.5 |
| | Int.(3) | 50 | 44 | 61 | 49 | 69 | 53.5 | 69 | 49.5 |
| | Spitze (4) Peak | 56 | 56 | 71 | 64 | 84 | 65 | 83 | 68 |
| Max. Leistungsabgabe Max. Output Power [kW] | Dauerbetrieb Cont. | 11 | 10 | 10 | 7 | 9 | 6 | 7.5 | 5 |
| | Int.(3) | 13 | 13 | 12 | 9.5 | 10 | 9 | 9.0 | 8 |
| Max. Druckgefälle Max. Pressure Drop [bar] | Dauerbetrieb Cont. | 140 | 130 | 140 | 110 | 135 | 90 | 115 | 70 |
| | Int.(3) | 200 | 175 | 200 | 150 | 175 | 130 | 150 | 100 |
| | Spitze (4) Peak | 225 | 225 | 225 | 200 | 210 | 175 | 175 | 150 |
| Max. Ölstrom Max. Oil flow [l/min] | Dauerbetrieb Cont. | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| | Int.(3) | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| Max. Eingangsdruck Max. Input Pressure [bar] | Dauerbetrieb Cont. | 175 | 175 | 175 | 175 | 175 | 175 | 175 | 175 |
| | Int.(3) | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| | Spitze (4) Peak | 225 | 225 | 225 | 225 | 225 | 225 | 225 | 225 |
| Gewicht Weight [kg] | 8 | 8 | 8.5 | 8.5 | 9 | 9 | 9.5 | 9.5 | |

- (1) CPRM Motor mit CB, SH, K und SB Wellen
 (2) CPRM Motor mit C, CO und S Wellen
 (3) Intermittierender Betrieb max. 6 Sekunden / Minute
 (4) Spitzenbetrieb max. 0,6 Sekunden / Minute

- (1) CPRM Motor with CB, SH, K and SB shafts
 (2) CPRM Motor with C, CO and S shafts
 (3) Intermittend operation rating applies to 6 sec. of every minute
 (4) Peak load rating applies to 0,6 sec of every minute

Leistungsdaten CPRM | Performance Data CPRM

CPRM 36 (36cm³/U)

| | Durchflussmenge [l/min] Oil flow | Druck [bar] pressure | | | | | | Max. cont. | Max. int. | daNm RPM |
|----|-------------------------------------|-------------------------|-------------|-------------|-------------|-------------|-------------|---------------|--------------|-------------|
| | | 20 | 30 | 50 | 70 | 90 | 100 | 125 | 140 | |
| 4 | | 1.0 | 1.6 | 2.5 | 3.7 | 4.6 | 5.0 | | | |
| | | 105 | 100 | 92 | 80 | 71 | 58 | | | |
| 8 | | 0.9 | 1.5 | 2.5 | 3.7 | 4.7 | 5.0 | 6.3 | 7.1 | 8.3 |
| | | 208 | 200 | 188 | 175 | 158 | 149 | 134 | 120 | 108 |
| 15 | | 0.8 | 1.4 | 2.3 | 3.6 | 4.5 | 5.1 | 6.4 | 7.2 | 8.2 |
| | | 403 | 392 | 380 | 365 | 348 | 326 | 318 | 302 | 274 |
| 20 | | 0.6 | 1.3 | 2.2 | 3.5 | 4.4 | 5.0 | 6.4 | 7.2 | 8.2 |
| | | 540 | 531 | 518 | 500 | 483 | 462 | 450 | 435 | 412 |
| 30 | | 0.6 | 1.2 | 2.1 | 3.2 | 4.2 | 4.7 | 6.3 | 7.0 | 8.0 |
| | | 810 | 798 | 780 | 763 | 742 | 722 | 705 | 694 | 668 |
| 40 | Max. cont. | 0.5 | 1.1 | 1.9 | 3.0 | 4.1 | 4.5 | 6.1 | 6.8 | 7.9 |
| | | 1092 | 1080 | 1069 | 1056 | 1042 | 1028 | 1011 | 984 | 957 |
| 45 | Max. int. | 0.4 | 1.0 | 1.7 | 2.9 | 4.0 | 4.4 | 5.9 | 6.6 | 7.7 |
| | | 1230 | 1215 | 1194 | 1170 | 1150 | 1128 | 1100 | 1070 | 1020 |

CPRM 50 (51.7 cm³/U)

| | Durchflussmenge [l/min] Oil flow | Druck [bar] pressure | | | | | | Max. cont. | Max. int. | daNm RPM |
|----|-------------------------------------|-------------------------|-------------|-------------|-------------|-------------|-------------|---------------|--------------|-------------|
| | | 50 | 70 | 90 | 100 | 120 | 140 | 160 | 175 | |
| 5 | | 3.5 | 4.5 | 6.1 | 6.7 | 7.7 | 8.8 | | | |
| | | 93 | 84 | 76 | 73 | 69 | 46 | | | |
| 10 | | 3.6 | 4.6 | 6.2 | 6.9 | 8.0 | 9.5 | 10.8 | 12.0 | |
| | | 186 | 178 | 166 | 162 | 153 | 136 | 118 | 97 | |
| 15 | | 3.5 | 4.9 | 6.3 | 7.3 | 8.8 | 10.0 | 10.9 | 12.3 | |
| | | 283 | 277 | 269 | 261 | 250 | 230 | 211 | 185 | |
| 20 | | 3.5 | 4.7 | 6.1 | 6.9 | 8.3 | 9.6 | 10.9 | 12.6 | |
| | | 377 | 375 | 365 | 361 | 346 | 330 | 302 | 270 | |
| 30 | | 3.3 | 4.4 | 6.0 | 6.7 | 8.0 | 9.5 | 10.8 | 12.6 | |
| | | 576 | 569 | 561 | 554 | 542 | 531 | 500 | 465 | |
| 40 | | 3.0 | 4.1 | 5.8 | 6.6 | 7.9 | 9.2 | 10.6 | 12.2 | |
| | | 760 | 758 | 753 | 750 | 738 | 724 | 700 | 670 | |
| 45 | | 2.9 | 4.0 | 5.7 | 6.5 | 7.8 | 9.0 | 10.5 | 12.1 | |
| | | 856 | 853 | 849 | 845 | 835 | 815 | 796 | 770 | |
| 50 | Max. cont. | 2.6 | 3.7 | 5.3 | 6.0 | 7.3 | 8.5 | 9.9 | 11.4 | |
| | | 950 | 940 | 925 | 906 | 880 | 852 | 832 | 801 | |
| 60 | Max. int. | 2.0 | 3.3 | 4.8 | 5.6 | 6.9 | 8.1 | 9.5 | 10.9 | |
| | | 1138 | 1124 | 1100 | 1075 | 1056 | 1028 | 1006 | 970 | |

Leistungsdaten CPRM | Performance Data CPRM

CPRM 80 (77.7 cm³/U)

| | | Druck [bar] pressure | | | | | | | | | |
|----|-------------------------------------|-------------------------|-----|------|------|------|------|------|------|------|-------------|
| | | 50 | 70 | 90 | 100 | 120 | 140 | 160 | 175 | 200 | |
| 5 | Durchflussmenge [l/min] Oil flow | 5.0 | 6.4 | 8.8 | 10.8 | 13.3 | | | | | daNm RPM |
| | | 59 | 56 | 50 | 44 | 38 | | | | | |
| 10 | Durchflussmenge [l/min] Oil flow | 5.4 | 7.7 | 9.9 | 10.8 | 12.9 | 15.0 | 17.3 | | | daNm RPM |
| | | 118 | 113 | 106 | 97 | 86 | 79 | 56 | | | |
| 20 | Durchflussmenge [l/min] Oil flow | 5.7 | 7.8 | 10.2 | 11.1 | 13.4 | 15.5 | 17.7 | 19.6 | 22.5 | daNm RPM |
| | | 238 | 234 | 227 | 216 | 203 | 190 | 178 | 154 | 135 | |
| 30 | Durchflussmenge [l/min] Oil flow | 5.4 | 7.5 | 10.0 | 10.8 | 13.1 | 15.2 | 17.6 | 19.5 | 22.3 | daNm RPM |
| | | 360 | 352 | 340 | 332 | 316 | 302 | 290 | 274 | 250 | |
| 40 | Durchflussmenge [l/min] Oil flow | 4.8 | 7.3 | 9.6 | 10.5 | 2.7 | 14.8 | 17.2 | 19.0 | 22.0 | daNm RPM |
| | | 480 | 470 | 458 | 445 | 430 | 418 | 403 | 388 | 359 | |
| 50 | Durchflussmenge [l/min] Oil flow | 4.2 | 7.0 | 9.3 | 10.2 | 12.4 | 14.7 | 17.0 | 18.8 | 21.8 | daNm RPM |
| | | 604 | 595 | 582 | 570 | 556 | 540 | 521 | 504 | 487 | |
| 60 | Max. cont. | 3.7 | 6.6 | 8.9 | 9.8 | 12.1 | 14.4 | 16.6 | 18.4 | 21.3 | daNm RPM |
| | | 726 | 715 | 704 | 692 | 678 | 663 | 647 | 622 | 594 | |
| 70 | Max. cont. | 3.2 | 6.0 | 8.3 | 9.5 | 11.6 | 14.0 | 16.0 | 17.7 | 20.8 | daNm RPM |
| | | 845 | 834 | 820 | 802 | 789 | 767 | 754 | 730 | 705 | |
| 75 | Max. int. | 2.1 | 5.0 | 7.8 | 9.0 | 11.1 | 13.5 | 15.4 | 17.1 | 20.0 | daNm RPM |
| | | 910 | 895 | 881 | 867 | 852 | 830 | 806 | 787 | 756 | |

CPRM 100 (96.2 cm³/U)

| | | Druck [bar] pressure | | | | | | | | | |
|----|-------------------------------------|-------------------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|
| | | 50 | 70 | 90 | 100 | 120 | 140 | 160 | 175 | 200 | |
| 5 | Durchflussmenge [l/min] Oil flow | 6.6 | 9.2 | 12.0 | 135. | 15.6 | | | | | daNm RPM |
| | | 45 | 42 | 38 | 34 | 27 | | | | | |
| 10 | Durchflussmenge [l/min] Oil flow | 6.8 | 9.6 | 12.5 | 13.8 | 15.9 | 18.8 | 21.2 | | | daNm RPM |
| | | 93 | 90 | 86 | 81 | 74 | 57 | 42 | | | |
| 20 | Durchflussmenge [l/min] Oil flow | 6.5 | 9.4 | 12.3 | 13.7 | 15.5 | 18.6 | 21.0 | 23.8 | 27.4 | daNm RPM |
| | | 189 | 185 | 180 | 173 | 165 | 158 | 150 | 139 | 118 | |
| 30 | Durchflussmenge [l/min] Oil flow | 6.3 | 9.2 | 12.0 | 13.3 | 15.3 | 18.5 | 20.9 | 23.5 | 27.0 | daNm RPM |
| | | 286 | 281 | 275 | 266 | 257 | 246 | 237 | 225 | 207 | |
| 40 | Durchflussmenge [l/min] Oil flow | 5.7 | 8.8 | 11.7 | 13.0 | 15.2 | 18.5 | 20.8 | 23.3 | 26.7 | daNm RPM |
| | | 385 | 378 | 365 | 355 | 345 | 332 | 320 | 314 | 297 | |
| 50 | Durchflussmenge [l/min] Oil flow | 48 | 79 | 110 | 123 | 150 | 183 | 204 | 228 | 260 | daNm RPM |
| | | 482 | 477 | 470 | 460 | 448 | 435 | 420 | 405 | 389 | |
| 60 | Max. cont. | 38 | 70 | 105 | 120 | 144 | 178 | 200 | 220 | 252 | daNm RPM |
| | | 580 | 572 | 560 | 548 | 535 | 523 | 510 | 500 | 478 | |
| 70 | Max. cont. | 32 | 65 | 100 | 118 | 141 | 176 | 197 | 215 | 246 | daNm RPM |
| | | 678 | 670 | 660 | 648 | 638 | 626 | 615 | 606 | 580 | |
| 75 | Max. int. | 23 | 59 | 93 | 111 | 136 | 170 | 192 | 210 | 240 | daNm RPM |
| | | 728 | 720 | 710 | 695 | 681 | 667 | 650 | 634 | 618 | |

Leistungsdaten CPRM | Performance Data CPRM

CPRM 125 (120.2 cm³/U)

| | Durchflussmenge [l/min] Oil flow | Druck [bar] pressure | | | | | | | Max. cont. | Max. Int. | daNm RPM |
|------------|-------------------------------------|-------------------------|------------|------------|------------|------------|------------|------------|---------------|--------------|-------------|
| | | 50 | 70 | 90 | 100 | 120 | 140 | 160 | | | |
| 8 | | 7.6 | 11.0 | 14.5 | 16.7 | 18.9 | | | | | |
| | | 36 | 31 | 25 | 19 | 13 | | | | | |
| 15 | | 8.4 | 11.8 | 15.5 | 17.6 | 20.2 | 22.8 | 25.3 | | | |
| | | 73 | 70 | 60 | 48 | 36 | 25 | 19 | | | |
| 20 | | 8.2 | 11.7 | 15.3 | 17.4 | 20.0 | 23.0 | 25.9 | 29.4 | 33.2 | |
| | | 153 | 151 | 148 | 144 | 138 | 128 | 117 | 104 | 73 | |
| 30 | | 7.9 | 11.6 | 15.1 | 17.1 | 19.8 | 22.8 | 25.7 | 29.2 | 32.9 | |
| | | 231 | 228 | 224 | 218 | 210 | 201 | 183 | 168 | 137 | |
| 35 | | 7.2 | 11.4 | 14.8 | 16.8 | 19.6 | 22.6 | 25.6 | 29.0 | 32.7 | |
| | | 309 | 307 | 303 | 298 | 292 | 280 | 270 | 252 | 218 | |
| 45 | | 6.2 | 10.5 | 14.3 | 16.5 | 19.5 | 22.3 | 25.4 | 28.7 | 32.3 | |
| | | 389 | 386 | 382 | 378 | 370 | 360 | 344 | 328 | 292 | |
| Max. cont. | 55 | 5.2 | 9.8 | 13.6 | 16.0 | 19.1 | 22.0 | 25.0 | 28.2 | 31.9 | |
| | | 467 | 463 | 459 | 456 | 448 | 427 | 410 | 399 | 352 | |
| 60 | | 4.1 | 9.0 | 13.0 | 15.6 | 18.7 | 21.5 | 24.2 | 27.8 | 31.3 | |
| | | 545 | 542 | 538 | 534 | 529 | 520 | 508 | 486 | 430 | |
| Max. int. | 75 | 3.2 | 7.9 | 12.6 | 14.8 | 18.0 | 20.8 | 23.4 | 26.2 | 30.0 | |
| | | 586 | 583 | 578 | 570 | 560 | 546 | 532 | 520 | 480 | |

CPRM 160 (157.2 cm³/U)

| | Durchflussmenge [l/min] Oil flow | Druck [bar] pressure | | | | | | | Max. cont. | Max. int. | daNm RPM |
|------------|-------------------------------------|-------------------------|------------|------------|------------|------------|------------|------------|---------------|--------------|-------------|
| | | 50 | 70 | 90 | 100 | 120 | 140 | 160 | | | |
| 5 | | 10.4 | 14.6 | 19.0 | 21.0 | 24.5 | | | | | |
| | | 26 | 23 | 20 | 16 | 10 | | | | | |
| 10 | | 10.7 | 15.0 | 19.5 | 21.6 | 25.0 | 29.0 | 33.5 | | | |
| | | 59 | 56 | 50 | 45 | 37 | 30 | 22 | | | |
| 20 | | 10.2 | 15.1 | 19.8 | 22.0 | 25.7 | 29.8 | 34.2 | 37.0 | 42.0 | |
| | | 121 | 118 | 115 | 113 | 108 | 102 | 97 | 90 | 78 | |
| 30 | | 9.7 | 14.6 | 19.0 | 21.7 | 25.6 | 29.5 | 34.0 | 36.8 | 41.6 | |
| | | 184 | 178 | 173 | 170 | 164 | 155 | 143 | 128 | 103 | |
| 40 | | 9.8 | 14.0 | 18.5 | 21.0 | 25.2 | 29.0 | 33.5 | 36.3 | 41.2 | |
| | | 246 | 241 | 235 | 228 | 220 | 210 | 194 | 177 | 150 | |
| 50 | | 7.2 | 12.8 | 17.9 | 20.2 | 24.4 | 28.4 | 32.7 | 35.8 | 40.9 | |
| | | 310 | 307 | 300 | 295 | 287 | 278 | 262 | 247 | 210 | |
| Max. cont. | 60 | 6.0 | 11.6 | 17.0 | 19.8 | 24.0 | 27.9 | 32.1 | 35.2 | 40.0 | |
| | | 374 | 367 | 359 | 354 | 346 | 338 | 323 | 306 | 265 | |
| 70 | | 4.9 | 10.7 | 16.4 | 19.3 | 23.3 | 27.1 | 30.9 | 34.4 | 39.0 | |
| | | 437 | 430 | 421 | 415 | 403 | 393 | 381 | 365 | 318 | |
| Max. int. | 75 | 3.6 | 9.8 | 15.2 | 18.5 | 22.6 | 26.5 | 30.0 | 33.4 | 37.9 | |
| | | 472 | 463 | 450 | 441 | 431 | 420 | 405 | 389 | 365 | |

Leistungsdaten CPRM | Performance Data CPRM

CPRM 200 (194.5 cm³/U)

| | | Druck [bar] pressure | | | | | | | | | Max. cont. | Max. int. | |
|-------------------------------------|----|-------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------|--------------|--------------------|
| | | 50 | 70 | 90 | 100 | 120 | 140 | 160 | 175 | 200 | | | |
| Durchflussmenge [l/min] Oil flow | 5 | 13.2 24 | 18.1 22 | 23.8 18 | 26.2 13 | 31.0 10 | | | | | | | daNm RPM |
| | 10 | 13.5 49 | 18.6 47 | 24.0 45 | 26.4 43 | 31.5 38 | 35.6 33 | 40.3 24 | | | | | |
| | 20 | 13.1 99 | 18.3 97 | 23.8 94 | 26.0 92 | 31.4 88 | 35.8 83 | 40.4 74 | 43.8 64 | 49.8 56 | | | |
| | 30 | 12.6 149 | 17.8 147 | 23.3 144 | 25.4 141 | 31.1 135 | 35.5 126 | 40.2 113 | 43.1 105 | 48.6 127 | | | |
| | 40 | 11.2 200 | 16.9 197 | 22.8 194 | 25.0 191 | 30.7 185 | 35.2 174 | 40.0 160 | 42.6 151 | 47.7 127 | | | |
| | 50 | 9.5 252 | 15.6 249 | 22.1 246 | 24.6 243 | 30.0 238 | 35.0 228 | 39.8 212 | 42.1 194 | 47.0 161 | | | |
| | 60 | 7.8 304 | 14.5 301 | 21.3 298 | 23.8 294 | 28.9 286 | 34.2 276 | 38.6 262 | 41.2 243 | 45.9 218 | | | |
| | 70 | 6.7 355 | 13.5 353 | 20.6 349 | 22.8 340 | 27.7 329 | 33.6 316 | 37.5 300 | 40.8 288 | 45.3 257 | | | |
| | 75 | 5.8 382 | 12.5 379 | 19.7 373 | 22.0 362 | 27.0 350 | 32.1 337 | 36.0 332 | 39.8 312 | 44.2 278 | | | |

CPRM 250 (240.3 cm³/U)

| | | Druck [bar] pressure | | | | | | | | | Max. cont. | Max. int. | |
|-------------------------------------|----|-------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------|--------------|--------------------|
| | | 50 | 70 | 90 | 100 | 120 | 140 | 160 | 175 | 200 | | | |
| Durchflussmenge [l/min] Oil flow | 5 | 17.5 17 | 24.3 16 | 30.4 14 | 34.2 12 | 40.7 10 | | | | | | | daNm RPM |
| | 10 | 17.6 37 | 24.6 35 | 31.0 31 | 34.4 28 | 40.9 23 | 46.5 18 | 52.5 11 | | | | | |
| | 20 | 17.5 75 | 24.4 73 | 30.8 72 | 34.0 70 | 40.8 66 | 46.3 58 | 52.0 53 | 55.8 50 | 63.6 42 | | | |
| | 30 | 16.2 114 | 23.5 111 | 30.4 108 | 33.2 106 | 40.0 100 | 45.5 92 | 51.6 83 | 55.0 77 | 62.1 65 | | | |
| | 40 | 14.3 154 | 22.3 152 | 30.0 150 | 32.9 147 | 39.6 143 | 44.7 132 | 51.2 120 | 54.6 110 | 61.7 90 | | | |
| | 50 | 12.4 193 | 20.8 190 | 28.9 187 | 32.3 174 | 38.4 168 | 44.0 160 | 50.3 149 | 53.5 140 | 60.0 116 | | | |
| | 60 | 10.3 233 | 19.2 230 | 28.0 227 | 31.4 224 | 37.1 218 | 42.6 205 | 48.9 190 | 51.4 181 | 57.8 155 | | | |
| | 70 | 8.8 273 | 17.8 270 | 26.4 267 | 30.1 263 | 35.6 252 | 41.8 242 | 47.9 226 | 49.8 209 | 56.0 173 | | | |
| | 75 | 6.2 294 | 16.5 291 | 25.6 287 | 28.8 283 | 34.7 274 | 41.2 263 | 47.4 249 | 48.6 236 | 54.2 211 | | | |

Leistungsdaten CPRM | Performance Data CPRM

CPRM 315 (314.5 cm³/U)

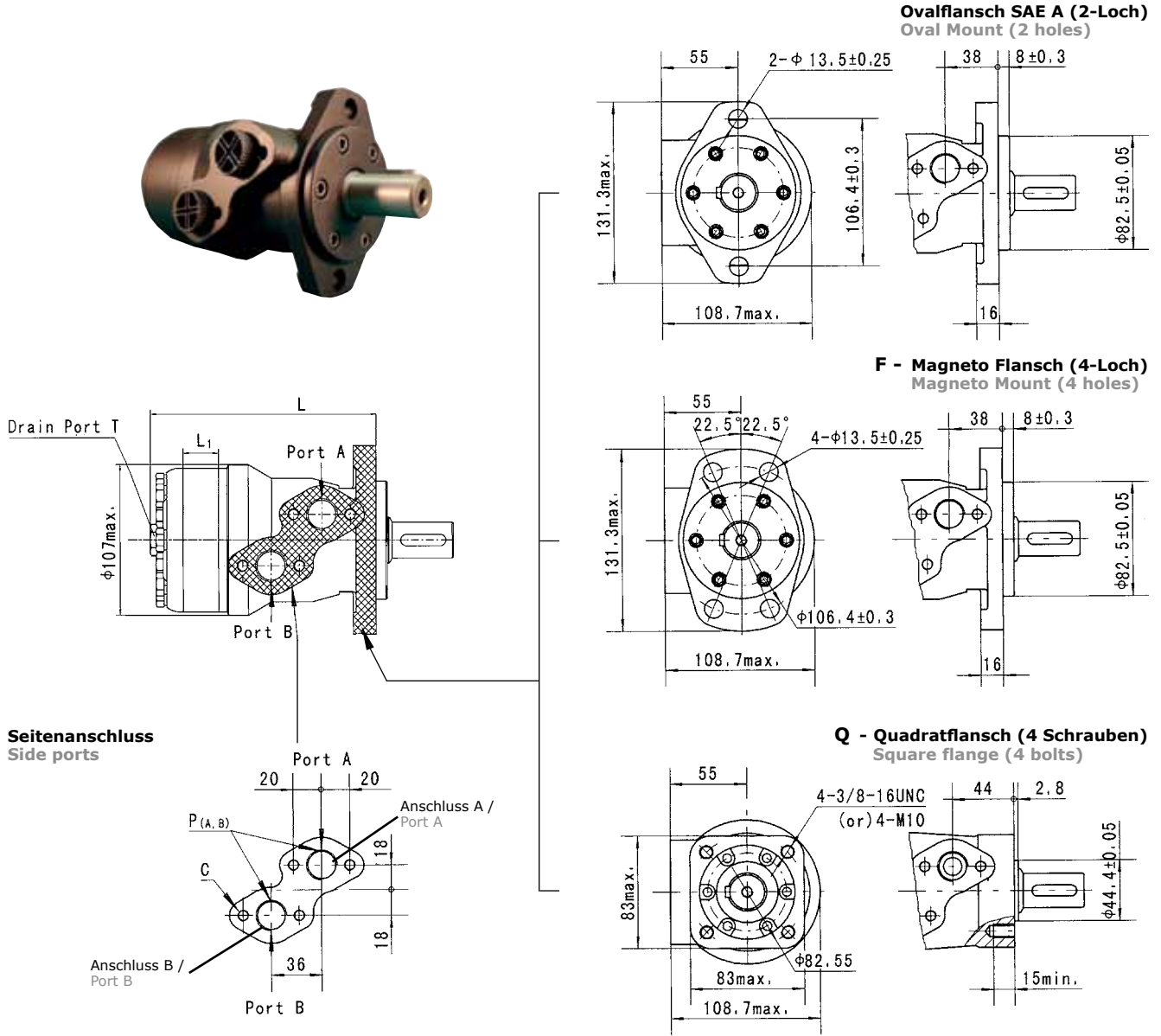
| | | Druck [bar] pressure | | | | | | Max. cont. | | Max. int. | | | |
|-------------------------------------|------------|-------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--|-------------|--|
| | | 50 | 70 | 90 | 100 | 120 | 140 | 160 | 175 | | | | |
| Durchflussmenge [l/min] Oil flow | 5 | 21.5 13 | 30.2 11 | | | | | | | | | daNm RPM | |
| | 10 | 21.8 28 | 30.5 27 | 38.3 25 | 42.2 24 | 48.8 21 | 55.1 18 | 62.2 13 | | | | | |
| | 20 | 21.5 60 | 30.3 59 | 38.0 57 | 41.8 55 | 48.5 52 | 54.9 49 | 62.0 45 | 66.0 42 | | | | |
| | 30 | 20.4 91 | 29.6 89 | 37.5 86 | 41.3 84 | 48.0 81 | 54.2 78 | 61.3 72 | 65.4 67 | | | | |
| | 40 | 19.6 122 | 28.7 120 | 36.8 117 | 41.0 112 | 47.7 106 | 53.9 100 | 60.9 94 | 65.0 85 | | | | |
| | 50 | 17.6 154 | 27.0 151 | 35.6 147 | 39.3 140 | 46.1 131 | 52.6 120 | 59.7 109 | 64.5 100 | | | | |
| | Max. cont. | 60 | 16.2 185 | 24.6 182 | 33.9 177 | 37.4 172 | 44.6 163 | 51.1 152 | 58.6 140 | 62.8 134 | | | |
| | Max. int. | 70 | 14.3 217 | 23.5 213 | 32.4 208 | 35.8 201 | 43.0 190 | 49.3 178 | 56.2 166 | 61.4 158 | | | |
| | | 75 | 12.5 232 | 21.2 228 | 30.3 222 | 33.9 216 | 41.7 208 | 48.1 200 | 54.3 183 | 58.2 171 | | | |

CPRM 400 (386.2 cm³/U)

| | | Druck [bar] pressure | | | | | Max. cont. | | Max. int. | | | | |
|-------------------------------------|------------|-------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--|-------------|--|
| | | 30 | 45 | 55 | 65 | 80 | 100 | 125 | 140 | | | | |
| Durchflussmenge [l/min] Oil flow | 5 | 15.3 12 | 23.2 10 | | | | | | | | | daNm RPM | |
| | 10 | 15.7 24 | 23.6 23 | 28.4 22 | 33.7 21 | 40.6 19 | 49.7 17 | 61.2 15 | 66.8 12 | | | | |
| | 20 | 15.0 49 | 23.2 48 | 28.0 47 | 33.2 46 | 40.1 44 | 49.0 41 | 60.6 38 | 66.0 32 | | | | |
| | 30 | 14.2 76 | 21.5 75 | 27.4 74 | 32.7 73 | 39.8 71 | 48.3 67 | 60.3 63 | 65.2 50 | | | | |
| | 40 | 12.6 103 | 21.2 101 | 26.8 99 | 32.0 97 | 39.3 95 | 47.7 92 | 59.3 88 | 63.5 70 | | | | |
| | 50 | 10.5 128 | 18.7 126 | 24.2 124 | 30.2 121 | 37.6 118 | 45.5 115 | 58.3 111 | 60.8 96 | | | | |
| | Max. cont. | 60 | 9.0 154 | 16.7 152 | 22.9 150 | 28.1 148 | 36.2 145 | 44.4 138 | 56.6 130 | 60.0 121 | | | |
| | Max. int. | 70 | 9.0 180 | 14.9 179 | 20.0 178 | 25.8 176 | 34.1 173 | 42.5 168 | 54.6 160 | 58.0 148 | | | |
| | | 75 | 5.6 195 | 12.5 194 | 18.2 193 | 24.1 191 | 32.0 189 | 40.8 185 | 52.4 178 | 56.5 170 | | | |

Abmessungen CPRM | Dimensions CPRM

Anschlüsse und Anbaumaße | Porting and Mounting



Abmessungen Endanschluss E auf Anfrage
Dimensions Rear Ports on request

| Anschluss Port | Versionen Versions | | | |
|----------------|--------------------|-----------|---------------|-------------|
| | Leer Omit | M | S | P |
| P(A,B) | G 1/2" | M22 x 1,5 | 7/8-14 O-Ring | 1/2-14NPTF |
| T | G 1/4" | M14 x 1.5 | 7/16-20UNF | 7/16-20UNF |
| C | M8 | M8 | 5/16-18 UNC | 5/16-18 UNC |

| Typ Type | L | L1 | Typ Type | L | L1 |
|-------------|-------|------|-----------|-------|------|
| CPRM(F) 36 | 137 | 7 | CPRMQ 36 | 143 | 7 |
| CPRM(F) 50 | 140 | 10 | CPRMQ 50 | 146 | 10 |
| CPRM(F) 80 | 146 | 16 | CPRMQ 80 | 152 | 16 |
| CPRM(F) 100 | 150 | 20 | CPRMQ 100 | 156 | 20 |
| CPRM(F) 125 | 155 | 25 | CPRMQ 125 | 161 | 25 |
| CPRM(F) 160 | 161.5 | 30.5 | CPRMQ 160 | 167.5 | 30.5 |
| CPRM(F) 200 | 170 | 38.1 | CPRMQ 200 | 176 | 38.1 |
| CPRM(F) 250 | 180 | 50 | CPRMQ 250 | 186 | 50 |
| CPRM(F) 315 | 192 | 62 | CPRMQ 315 | 198 | 62 |
| CPRM(F) 400 | 204 | 74 | CPRMQ 400 | 210 | 74 |

Abtriebswellen | Output Shafts

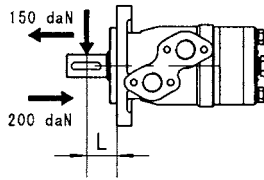
| | |
|---|---|
| <p>C - Ø 25 mm zylindrisch mit Passfeder A8 x 7 x 32. Max. Drehmoment: 34 daNm Ø 25 mm straight, parallel key A8 x 7 x 32. Max. torque: 34 daNm</p> | <p>CB - Ø 32 mm zylindrisch mit Passfeder A10 x 8 x 45. Max. Drehmoment: 77 daNm Ø 32 mm straight, parallel key A10 x 8 x 45. Max. torque: 77 daNm</p> |
| | |
| <p>CO - Ø 25.4 mm (1") zylindrisch mit Passfeder ¼" x ¼" x 1¼". Max. Drehmoment: 34 daNm Ø 25.4 mm (1") straight, parallel key ¼" x ¼" x 1¼". Max. torque: 34 daNm</p> | <p>SH - verzahnt (SAE 6B). Max. Drehmoment: 40 daNm splined (SAE 6B). Max. torque: 40 daNm</p> |
| | |
| <p>SB - Ø 31.75 mm verzahnt 14 Zähne, DP 12/24. Max. Drehmoment: 77 daNm Ø 31.75 mm splined, 14 T, DP 12/24. Max. torque: 77 daNm</p> | <p>C1 - Ø 1¼" zylindrisch mit Passfeder 5/16" x 5/16" x 1¼". Max. Drehmoment: 77 daNm Ø 1¼" straight, parallel key 5/16" x 5/16" x 1¼". Max. torque: 77 daNm</p> |
| | |

Abtriebswellen | Output Shafts

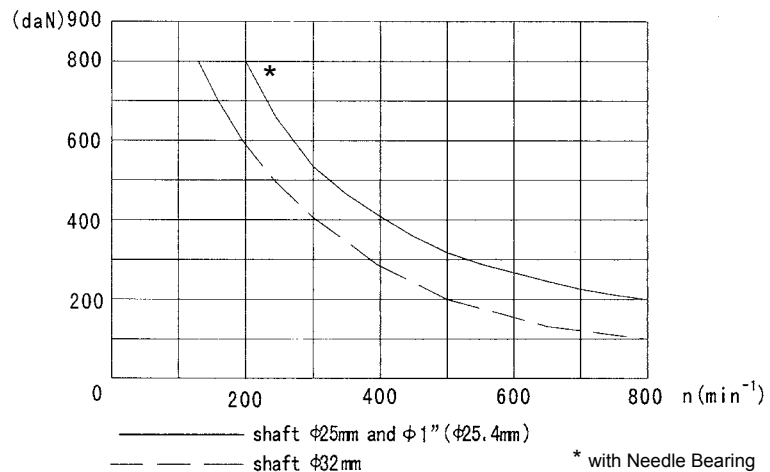
| |
|---|
| <p>S - Ø 31.75 (1 ¼") verzahnt, 14 Zähne, DP 12/24. Max. Drehmoment: 77 daNm Ø 31.75 (1 ¼") splined, 14T, DP 12/24. Max. torque: 77 daNm</p> |
| |
| <p>K - kon. 1:10 mit Passfeder B5 x 5 x 14. Max. Drehmoment: 40 daNm conical 1:10, parallel key B5 x 5 x 14. Max. torque: 40 daNm</p> |
| |
| <p>KA - kon. 1:8, SAE J 501, mit Passfeder 5/16" x 5/16" x 1 ¼". Max. Drehmoment: 77 daNm conical 1:8, SAE J 501, parallel key 5/16" x 5/16" x 1 ¼". Max. torque: 77 daNm</p> |
| |

Radiale Wellenbelastung | Radial Shaft Load

Die zulässige Radiallast berechnet sich aus dem Abstand L zwischen Kraftangriffspunkt und der Montagefläche des Flansches:
 The permissible radial shaft load is calculated from the distance L between the point load application and the mounting surface:

$$F_r = \frac{800 \cdot 25000}{n \cdot 95 + L} \text{ daN}$$


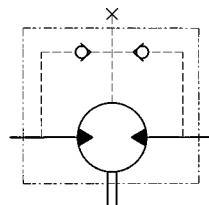
F_r =Radial Force (daN)
 L =Distance (mm)
 n =Speed (rpm)



Rücklaufdruck | Return Pressure

| | |
|----------------------------|---------|
| Dauerbetrieb Continuous | 160 bar |
| Kurzzeitig Intermittent | 175 bar |
| Spitze Peak | 210 bar |

Max. Rücklaufdruck mit Leckölleitung
 Max. return pressure with drain line

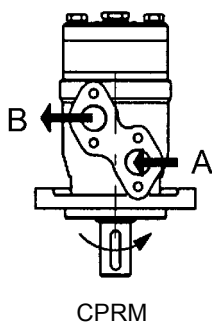


Leckölanschluss
 Drain Line

| Drehzahl RPM | Dauerdruck (bar) cont. Pressure |
|-----------------|------------------------------------|
| 0-100 | 150 |
| 100-300 | 125 |
| 300-1000 | 100 |

Max. Rücklaufdruck ohne Leckölleitung
 bzw. max. Druck in der Leckölleitung
 Max. return pressure without drain line
 or max. pressure in drain line

Drehrichtungsauswahl | Rotation Selection



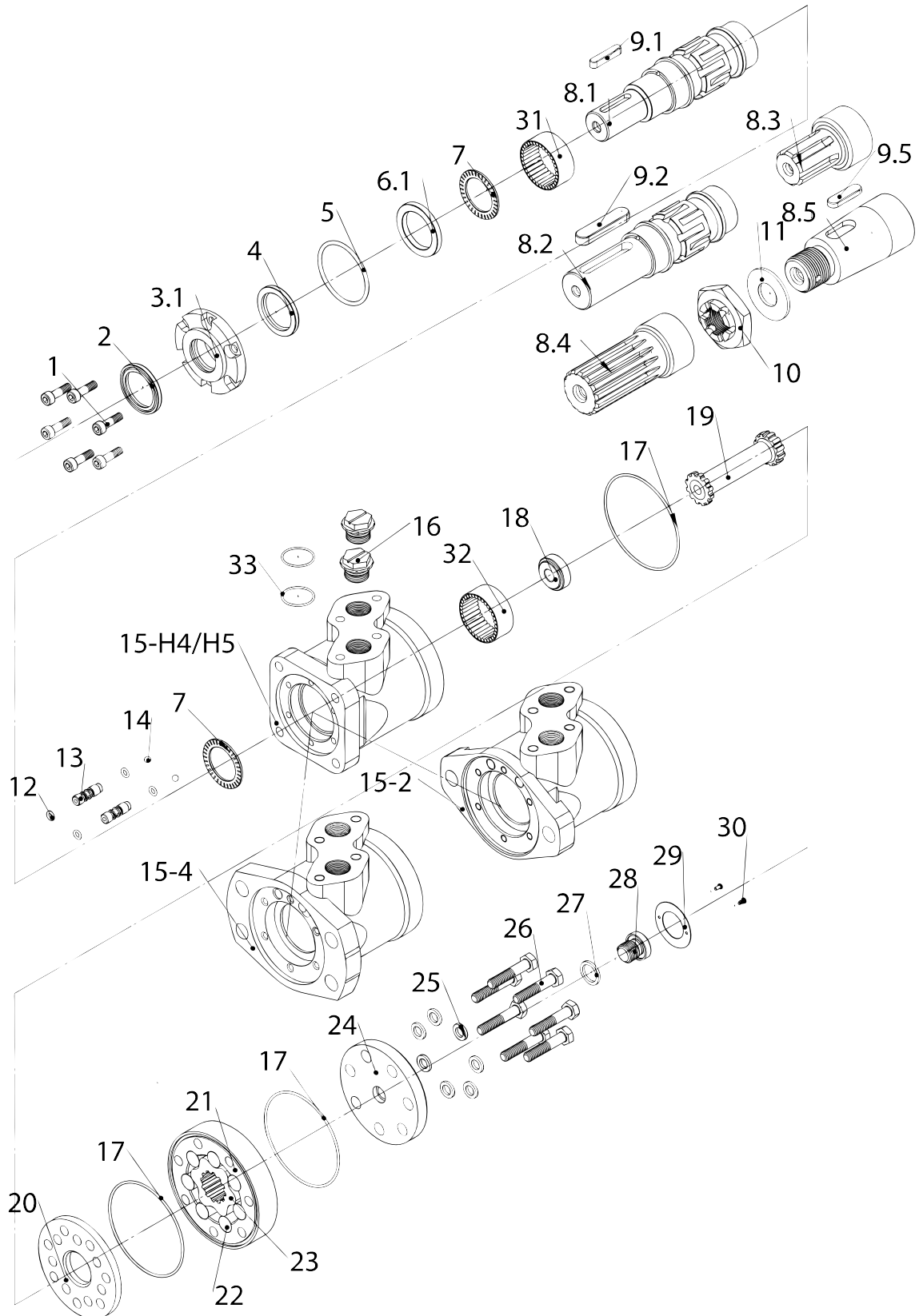
Standardeinstellung:
 Drehrichtung rechts, wenn Anschluss A druckbeaufschlagt ist.
 Drehrichtung links, wenn Anschluss B druckbeaufschlagt ist.
 Standard direction of rotation:
 Clockwise when port „A“ is pressurized.
 Counter-Clockwise when port „B“ is pressurized.

Bestellinformation | Order Information

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---------------|---|---|---|---|---|---|---|
| CPRM | | | | | | | |
| Pos. 1 | Montageflansch Mounting flange | | | | | | |
| Leer Omit | Ovalflansch 2-loch, SAE A Oval mount 2-holes SAE A | | | | | | |
| F | Magnetoflansch 4-loch Magneto mount 4 holes | | | | | | |
| Q | Quadratflansch, 4-loch Square flange 4 holes | | | | | | |
| Pos. 2 | Anschlüsse Port type | | | | | | |
| Leer Omit | Seitliche Anschlüsse Side ports | | | | | | |
| E | Endanschlüsse (auf Anfrage) Rear ports (on request) | | | | | | |
| Pos. 3 | Schluckvolumen Displacement | | | | | | |
| 36 | 36 cm ³ /U 36 ccm/REV | | | | | | |
| 50 | 51.7 cm ³ /U 51.7 ccm/REV | | | | | | |
| 80 | 81.5 cm ³ /U 81.5 ccm/REV | | | | | | |
| 100 | 102 cm ³ /U 102 ccm/REV | | | | | | |
| 125 | 127.2 cm ³ /U 127.2 ccm/REV | | | | | | |
| 160 | 157.2 cm ³ /U 157.2 ccm/REV | | | | | | |
| 200 | 194.5 cm ³ /U 194.5 ccm/REV | | | | | | |
| 250 | 253.3 cm ³ /U 253.3 ccm/REV | | | | | | |
| 315 | 317.5 cm ³ /U 317.5 ccm/REV | | | | | | |
| 400 | 381.4 cm ³ /U 381.4 ccm/REV | | | | | | |
| Pos. 4 | Wellenausführungen Shaft extensions | | | | | | |
| C | Ø25 mm zylindrisch mit Passfeder A8 x 7 x 28 Ø 25 mm straight with parallel key A8 x 7 x 28 | | | | | | |
| CO | Ø1 (25.4 mm) zylindrisch mit Passfeder 1/4" x 1/4" x 1/4" Ø1 (25.4 mm) straight with parallel key 1/4" x 1/4" x 1/4" | | | | | | |
| S | Ø31.75 mm (1 1/4") verzahnt, 14 Zähne, DP 12/24 Ø31.75 mm (1 1/4") splined, 14T, DP 12/24 | | | | | | |
| SH | Ø25.32 mm verzahnt (SAE 6B) Ø25.32 mm splined (SAE 6B) | | | | | | |
| KA | Konisch 1:8 SAE, J501 mit Passfeder 5/16" x 5/16" x 1 1/4" Conical 1:8 SAE, J501 with key 5/16" x 5/16" x 1 1/4" | | | | | | |
| C1 | Ø1 1/4" zylindrisch mit Paßfeder 5/16" x 5/16" x 1 1/4" Ø1 1/4" straight with key 5/16" x 5/16" x 1 1/4" | | | | | | |
| CB | Ø32 mm zylindrisch mit Paßfeder A10 x 8 x 45 Ø32 mm straight with key A10 x 8 x 45 | | | | | | |
| SB | Verzahnt 14 Zähne, DP 12/24 Splined, 14 T, DP 12/24 | | | | | | |
| K | Konisch 1:10 mit Passfeder B5 x 5 x 14 Conical 1:10 with key B5 x 5 x 14 | | | | | | |

| | |
|---------------|---|
| Pos. 5 | Wellendichtung Shaft seal |
| D | Hochdruckwellendichtung bis 150 bar (Standard) High Pressure Seal up to 150 bar (Standard) |
| U | Hochdruckwellendichtung 200 bar High Pressure Seal 200 bar |
| Pos. 6 | Anschlüsse Porting |
| Leer Omit | G 1/2" G 1/2" |
| M | M22 x 1.5 M22 x 1.5 |
| S | 7/8 -14 UNF, O-Ring 7/8 -UNF, O-ring |
| P | 1/2 -14 NPTF 1/2 -14 NPTF |
| Pos. 7 | Farbe Painting |
| Leer Omit | Grau Grey |
| RAL... | + Ralfarbe (z.B. 7021) + Ral colour (e.g. 7021) |
| Pos. 8 | Drehrichtung Rotation direction |
| Leer Omit | Standarddrehrichtung Standard Rotation |
| R | Umgekehrte Drehrichtung Reverse Rotation |

Explosionszeichnung CPRM | Assembly Drawing CPRM



Anwendungsberechnung von Motoren | Application calculation of motors

Berechnung des Antriebes von Fahrzeugen | Vehicle drive calculations

1. Geschwindigkeit des Motors: n [min⁻¹]

$$n = \frac{2,65 \times v_{km} \times i}{R_m} \quad n = \frac{168 \times v_{mi} \times i}{R_{in}}$$

v_{km}: Fahrzeug Geschwindigkeit [km/h]
v_{mi}: Fahrzeug Geschwindigkeit [mi/h]
R_m: Rollradius des Rads [m]
R_{in}: Rollradius des Rads [in]
i: Übersetzung zwischen Motor und Rad
 Wenn kein Getriebe verwendet wird => i = 1

2. Rollwiderstand: RR [daN]; [lbs]
 Widerstandskraft entstanden durch Berührung der Räder mit diversen Oberflächen:

$$RR = G \times p$$

G: Fahrzeug Gesamtgewicht (beladen) [daN]; [lbs]
p: Widerstandsbeiwert beim Rollen

| Widerstandsbeiwert beim Rollen von Gummireifen auf diversen Oberflächen | |
|---|---------------|
| Oberfläche | p |
| Beton (einwandfrei) | 0,010 |
| Beton (gut) | 0,015 |
| Beton (schlecht) | 0,020 |
| Asphalt (einwandfrei) | 0,012 |
| Asphalt (gut) | 0,017 |
| Asphalt (schlecht) | 0,022 |
| Schotterdecke (einwandfrei) | 0,015 |
| Schotterdecke (gut) | 0,022 |
| Schotterdecke (schlecht) | 0,037 |
| Schnee (5 cm) | 0,025 |
| Schnee (10 cm) | 0,037 |
| Verschmutzte Decke (glatt) | 0,025 |
| Verschmutzte Decke (sandig) | 0,040 |
| Schlamm | 0,037 - 0,150 |
| Kies | 0,060 - 0,150 |
| Sand | 0,160 - 0,300 |

3. Neigungswiderstand: GR [daN]; [lbs]

$$GR = G \times (\sin \alpha \times p \times \cos \alpha)$$

α: Neigungswinkel (Straßengefälle)

| Neigung | α Grad |
|---------|--------|
| 1% | 0°35' |
| 2% | 1°9' |
| 5% | 2°51' |
| 6% | 3°26' |
| 8% | 4°35' |
| 10% | 5°43' |

| Neigung | α Grad |
|---------|--------|
| 12% | 6°5' |
| 15% | 8°31' |
| 20% | 11°19' |
| 25% | 14°3' |
| 32% | 18° |
| 60% | 31° |

1. Motor speed: n [min⁻¹]

$$n = \frac{2,65 \times v_{km} \times i}{R_m} \quad n = \frac{168 \times v_{mi} \times i}{R_{in}}$$

v_{km}: Vehicle speed [km/h]
v_{mi}: Vehicle speed [mi/h]
R_m: Wheel rolling radius [m]
R_{in}: Wheel rolling radius [in]
i: Gear ratio between motor and wheels
 If no gearbox use => i = 1

2. Rolling resistance: RR [daN]; [lbs]
 The resistance force resulted in wheels contact with different surfaces:

$$RR = G \times p$$

G: Total weight loaded on vehicle [daN]; [lbs]
p: Rolling resistance coefficient

| Grade resistance coefficient in case of rubber tire rolling on different surfaces | |
|---|---------------|
| Surface | p |
| Concrete (faultless) | 0,010 |
| Concrete (good) | 0,015 |
| Concrete (bad) | 0,020 |
| Asphalt (faultless) | 0,012 |
| Asphalt (good) | 0,017 |
| Asphalt (bad) | 0,022 |
| Macadam (faultless) | 0,015 |
| Macadam (good) | 0,022 |
| Macadam (bad) | 0,037 |
| Snow (5 cm) | 0,025 |
| Snow (10 cm) | 0,037 |
| Polluted covering (smooth) | 0,025 |
| Polluted covering (sandy) | 0,040 |
| Mud | 0,037 - 0,150 |
| Gravel | 0,060 - 0,150 |
| Sand | 0,160 - 0,300 |

3. Grade resistance: GR [daN]; [lbs]

$$GR = G \times (\sin \alpha \times p \times \cos \alpha)$$

α: gradient negotiation angle

| Grade | α Degrees |
|-------|-----------|
| 1% | 0°35' |
| 2% | 1°9' |
| 5% | 2°51' |
| 6% | 3°26' |
| 8% | 4°35' |
| 10% | 5°43' |

| Grade | α Degrees |
|-------|-----------|
| 12% | 6°5' |
| 15% | 8°31' |
| 20% | 11°19' |
| 25% | 14°3' |
| 32% | 18° |
| 60% | 31° |

4. Trägheitskraft: FA [daN]; [lbs]

Die Kraft **FA**, erforderlich für die Beschleunigung von 0 bis zur max. Geschwindigkeit **v** und Zeit **t**, wird nach folgender Formel berechnet:

$$FA = \frac{v_{km} \times G}{3,6 \times t} \quad FA = \frac{v_{ml} \times G}{22 \times t}$$

FA: Trägheitskraft [daN]; [lbs]
t: Zeit [s]

5. Zugkraft: DP [daN]; [lbs]

Die Zugkraft **DP** ist die zusätzliche Kraft des Anhängers. Diese Größe wird wie folgt ermittelt:
- nach Bewertung des Konstrukteurs
- durch Berechnung der Kräfte gemäß Punkte 2, 3 und 4 für den Anhänger.
Die berechnete Summe entspricht der gesuchten Zugkraft.

6. Gesamtzugkraft: TE [daN]; [lbs]

Die Gesamtzugkraft **TE** entspricht der benötigten Kraft zur Fahrzeugbewegung. Das ist die Summe der Punkte 2 bis 5 erhöht um 10% wegen des Luftwiderstandes.

$$TE = 1,1 \times (RR + GR + FA + DP)$$

RR: Erforderliche Kraft zur Überwindung des Rollwiderstandes
GR: Erforderliche Kraft zur Überwindung von Steigungen
FA: Erforderliche Kraft zum Beschleunigen (Trägheitskraft)
DP: Zusätzliche Zugkraft (Anhänger)

7. Drehmoment des Motors: M [daNm]; [in-lb]

Erforderliches Drehmoment für jeden hydraulischen Motor:

$$M = \frac{TE \times R_m}{N \times i \times \eta_m} \quad M = \frac{TE \times R_{in}}{N \times i \times \eta_m}$$

N: Anzahl der Motoren
 η_m : Mechanischer Wirkungsgrad des Getriebes (wenn vorhanden)

8. Radhaftung: MW [daNm]; [in-lb]

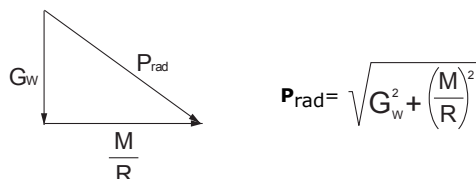
$$M_W = \frac{G_W \times f \times R_m}{i \times \eta_m} \quad M_W = \frac{G_W \times f \times R_m}{i \times \eta_m}$$

Um Radschlupf zu vermeiden sollte **M_W** größer als **M** sein
f: Reibungskoeffizient
G_W: Gesamtgewicht über Räder [daN]; [lbs]

| Oberfläche | f |
|------------------------------------|-------------|
| Stahl an Stahl | 0,15 - 0,20 |
| Reifen an verschmutzter Oberfläche | 0,5 - 0,7 |
| Reifen an Asphalt | 0,8 - 1,0 |
| Reifen an Beton | 0,8 - 1,0 |
| Reifen an Gras | 0,4 |

9. Radiale Belastung des Motors: P_{rad} [daN]; [lbs]

Falls der Motor für den Antrieb von Fahrzeugen mit direkt auf der Motorwelle montierten Rädern eingesetzt wird, entspricht die radiale Gesamtbelastung der Motorwelle **P_{rad}** der Summe von Antriebs- und Lastkraft, die auf einem Rad wirken.



G_W: Gewicht, getragen vom Rad
P_{rad}: Radiale Gesamtbelastung der Motorwelle
M/R: Antriebskraft

Gemäß den berechneten Belastungen kann der passende Motor aus diesem Katalog ausgewählt werden.

4. Accelerate force: FA [daN]; [lbs]

Force **FA** necessary for acceleration from 0 to maximum speed **v** and time **t** can be calculated with the following formula:

$$FA = \frac{v_{km} \times G}{3,6 \times t} \quad FA = \frac{v_{ml} \times G}{22 \times t}$$

FA: Accelerate force [daN]; [lbs]
t: Time [s]

5. Tractive effort: DP [daN]; [lbs]

Tractive effort **DP** is the additional force of trailer. This value will be established as follows:
- according to constructor's assessment
- As calculated forces in items 2, 3 and 4 of trailer.
The calculated sum corresponds to the tractive effort requested.

6. Total tractive effort: TE [daN]; [lbs]

Total tractive effort **TE** is total effort necessary for vehicle motion. That is the sum of forces calculated in items from 2 to 5 and increased 10% because of air resistance.

$$TE = 1,1 \times (RR + GR + FA + DP)$$

RR: Force acquired to overcome the rolling resistance
GR: Force acquired to slope upwards
FA: Force acquired to accelerate (acceleration force)
DP: Additional tractive effort (trailer)

7. Motor torque: M [daNm]; [in-lb]

Necessary torque for every hydraulic motor:

$$M = \frac{TE \times R_m}{N \times i \times \eta_m} \quad M = \frac{TE \times R_{in}}{N \times i \times \eta_m}$$

N: Number of motors
 η_m : Mechanical gear efficiency (if it's available)

8. Cohesion between tire and road covering: MW [daNm]; [in-lb]

$$M_W = \frac{G_W \times f \times R_m}{i \times \eta_m} \quad M_W = \frac{G_W \times f \times R_m}{i \times \eta_m}$$

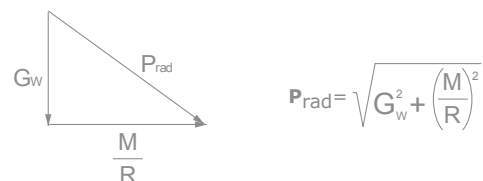
To avoid wheel slipping, it should be observed that **M_W** is higher than **M**

f: Frictional factor
G_W: Total weight over the wheels [daN]; [lbs]

| Surface | f |
|---------------------------------|-------------|
| Steel on steel | 0,15 - 0,20 |
| Rubber tire on polluted surface | 0,5 - 0,7 |
| Rubber tire on asphalt | 0,8 - 1,0 |
| Rubber tire on concrete | 0,8 - 1,0 |
| Rubber tire on grass | 0,4 |

9. Radial motor loading: P_{rad} [daN]; [lbs]

When motor is used for vehicle motion with wheels mounted directly on motor shaft, the total radial loading of motoshaft **P_{rad}** is the sum of motion force and weight force acting on one wheel.



G_W: Weight held by wheel
P_{rad}: Total radial loading of motor shaft
M/R: Motion force

In accordance with calculated loadings the suitable motor from this catalogue could be selected.

Leckageraum und Lecköldruck | Drainage space and drainage pressure

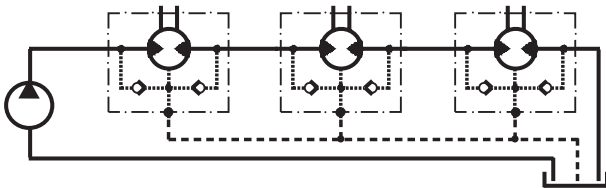
Vorteile der Leckölabfuhr aus dem Leckageraum:

- Reinigung
- Kühlung
- Verlängerung der Dichtungshaltbarkeit

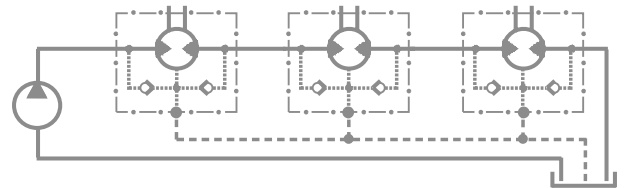
Advantages of oil drainage from drain space:

- Cleaning
- Cooling
- Seal lifetime prolonging

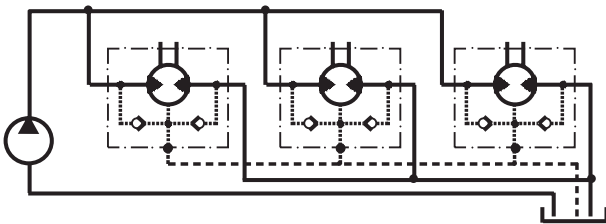
Reihenschaltung



Series connection



Parallelschaltung



Parallel connection

