

# Chapter 2

## POWER UNIT SELECTION

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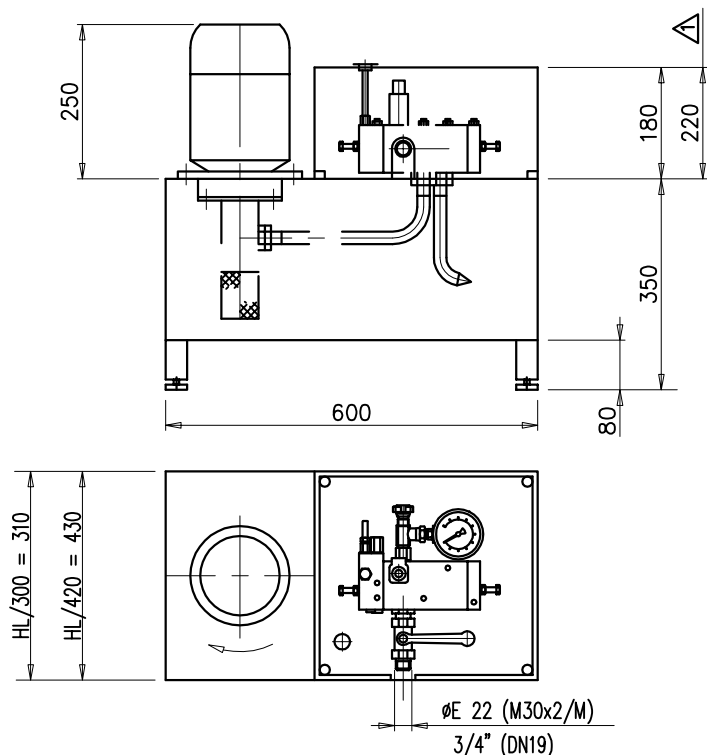
*Enclosed with this handbook and related production.*

| DRAWING                    |  | DESCRIPTION                                                                                                                                    |
|----------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------|
| 9017                       |  | Table to determine the rates of pressure – speed – pump – motor (50Hz) relative to rod diameter and load                                       |
| 9017-60 Hz                 |  | Table to determine the rates of pressure – speed – pump – motor (60Hz) relative to rod diameter and load                                       |
| 9017/MED                   |  | Table to determine the rates of pressure – speed – pump – motor “MED” relative to rod diameter and load                                        |
| 9018/HL-50Hz               |  | Table to determine the rates of pressure – speed – pump – motor “AIR” (50Hz) for “HL” power unit relating to rod diameter and load             |
| 9018/HL-MH2V-50Hz          |  | Table to determine the rates of pressure – speed – pump – motor “AIR” (50Hz) for “HL/2 speed” power unit relating to rod diameter and load     |
| 9018/HL-OIL-265-50Hz       |  | Table to determine the rates of pressure – speed – pump – motor “OIL” (50Hz) for “HL-265” power unit relating to rod diameter and load         |
| 9018/HL-OIL-265-MH2V-50Hz  |  | Table to determine the rates of pressure – speed – pump – motor “OIL” (50Hz) for “HL-265/2 speed” power unit relating to rod diameter and load |
| 0948/HL-OIL-AR-CLOSED      |  | Optional cover for HL/OIL-265 and HL/OIL-265-2V power unit without cabinet                                                                     |
| 9018/HL-MTW                |  | Table to determine the rates of pressure – speed – pump – motor “AIR” (50Hz) for “HL-MTW speed” power unit relating to rod diameter and load   |
| 9018/HL-HR                 |  | Table to determine the rates of pressure – speed – pump – motor “AIR” (100Hz) for “HL-HR speed” power unit relating to rod diameter and load   |
| 9018/CM-320-Mark2/50       |  | Table to determine the rates of pressure – speed – pump – motor (50Hz) for “CM-320-MK2” power unit relating to rod diameter and load           |
| 9018/CM-320-Mark2/60Hz     |  | Table to determine the rates of pressure – speed – pump – motor (60Hz) for “CM-320-MK2” power unit relating to rod diameter and load           |
| 9018/CM-320-Mark2-A/50Hz   |  | Technical data sheet power unit CM/320-Mark2-A (Version locker)                                                                                |
| 9018/CM-320-Mark2-IV + LRV |  | Technical data sheet power unit CM/320-MK2-IV / CM/320-MK2-LRV                                                                                 |
| 9018/CM-320-AR             |  | Technical data sheet power unit CM/320-AR (Version locker)                                                                                     |
| 0948/AR-CLOSED             |  | Optional cover for CM/320-R power unit without cabinet                                                                                         |
| 9211                       |  | Hydraulic power unit dimensions CM-CA-CA/A-CG-CGXL                                                                                             |
| 9018/CM-IV + LRV           |  | Technical data sheet power unit CM-IV / CM-LRV                                                                                                 |
| 9018/CIF-2                 |  | Technical data sheet power unit in the pit “CIF-2”                                                                                             |
| 9018/CIF-2-MB              |  | Technical data sheet power unit in the pit “CIF-2-MB”                                                                                          |
| 9213                       |  | Notes for gearcases handling                                                                                                                   |
| 9215/1                     |  | Test for oil amount in power unit                                                                                                              |
| 9215/2                     |  | Test for oil amount in power unit                                                                                                              |
| 9280                       |  | Instructions for power unit assembling                                                                                                         |
| 9290                       |  | Auxiliary tank against power unit oil spills EN 81.20 CM/320-R – CM – CA – CA/A                                                                |
| 9291                       |  | Auxiliary tank against power unit oil spills EN 81.20 CM/320-MK2                                                                               |
| UT                         |  | Index Chapter 2                                                                                                                                |
|                            |  | <b>POWER UNIT SELECTION</b>                                                                                                                    |
|                            |  | DATE 11/17                                                                                                                                     |
|                            |  | <b>IN-CAP-02</b>                                                                                                                               |

| PUMP L/1'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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                                                                                                                                                                                                                                                                               |      |      |      |      |      |      |      |      |      | 0.71 | 0.57 | 0.42 | 0.30 | 60   | 5                       | 280  | 335  | 392  | 450  | 505  | 562  | 618  | 675   | 732   | 788   | 845   | 901   | 958   | 1015  | 1071  | 1128  | 1184  | 1240  |      |      |      |      |                                                           |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |
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                                                                                                                                                                                                                                                                               |      |      |      |      |      |      |      |      | 0.76 | 0.61 | 0.52 | 0.42 | 0.31 | 0.22 |                         | 5    | 380  | 458  | 535  | 612  | 688  | 766  | 843   | 920   | 997   | 1074  | 1151  | 1227  | 1305  | 1382  | 1458  | 1535  | 1612  | 1689 |      |      |      |                                                           |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |
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                                                                                                                                                                                                                                                                               |      |      |      |      | 0.80 | 0.67 | 0.58 | 0.47 | 0.40 | 0.31 | 0.25 | 0.17 |      |      | 5                       | 500  | 604  | 704  | 805  | 905  | 1006 | 1106 | 1207  | 1307  | 1408  | 1508  | 1609  | 1709  | 1810  | 1910  | 2011  | 2111  | 2212  |      |      |      |      |                                                           |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |
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                                                                                                                                                                                                                                                                               |      |      |      |      |      |      |      |      |      | 0.73 | 0.61 | 0.52 | 0.44 | 0.36 | 0.29                    | 0.22 | 0.16 | 85   | 7.5  | 495  | 609  | 722  | 836   | 949   | 1063  | 1176  | 1290  | 1403  | 1517  | 1630  | 1744  | 1857  | 1971  | 2084 | 2198 | 2311 | 2425 |                                                           |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |
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                                                                                                                                                                                                                                                                               |      |      |      |      | 0.82 | 0.75 | 0.65 | 0.53 | 0.46 | 0.37 | 0.31 | 0.26 | 0.18 | 0.13 |                         | 7.5  | 562  | 689  | 816  | 944  | 1071 | 1198 | 1325  | 1453  | 1580  | 1707  | 1834  | 1962  | 2089  | 2216  | 2343  | 2471  | 2598  | 2725 |      |      |      |                                                           |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |
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| 0.95                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0.73 | 0.64 | 0.55 | 0.47 | 0.43 | 0.36 | 0.31 | 0.26 | 0.21 | 0.18 | 0.15 | 0.11 | 0.08 | 120  | 7.5                     | 706  | 863  | 1020 | 1177 | 1334 | 1491 | 1648 | 1806  | 1963  | 2120  | 2277  | 2434  | 2591  | 2748  | 2905  | 3062  | 3219  | 3376  |      |      |      |      |                                                           |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |
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                                                                                                                                                                                                                                                                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 12                      | 471  | 628  | 785  | 942  | 1099 | 1256 | 1414 | 1571  | 1728  | 1885  | 2042  | 2199  | 2356  | 2513  | 2670  | 2827  | 2984  | 3141  |      |      |      |      |                                                           |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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| 0.81                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0.62 | 0.55 | 0.45 | 0.39 | 0.36 | 0.31 | 0.26 | 0.22 | 0.18 | 0.15 | 0.12 | 0.09 | 0.06 | 130  | 7.5                     | 1216 | 1482 | 1747 | 2013 | 2278 | 2544 | 2809 | 3075  | 3340  | 3605  | 3871  | 4137  | 4402  | 4668  | 4933  | 5198  | 5464  | 5729  |      |      |      |      |                                                           |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |
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| 0.61                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0.47 | 0.41 | 0.35 | 0.29 | 0.27 | 0.23 | 0.20 | 0.16 | 0.13 | 0.11 | 0.09 | 0.06 |      | 150  | 6                       | 1748 | 2102 | 2455 | 2808 | 3165 | 3515 | 3869 | 4222  | 4576  | 4929  | 5282  | 5636  | 5990  | 6343  | 6697  | 7050  | 7403  | 7759  |      |      |      |      |                                                           |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |
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| 0.53                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0.41 | 0.36 | 0.31 | 0.27 | 0.25 | 0.21 | 0.17 | 0.15 | 0.12 | 0.10 | 0.08 |      |      | 160  | 10                      | 1800 | 2200 | 2601 | 3004 | 3406 | 3808 | 4210 | 4612  | 5015  | 5417  | 5819  | 6221  | 6623  | 7025  | 7427  | 7830  | 8232  | 8634  |      |      |      |      |                                                           |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |
| 0.42                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0.32 | 0.28 | 0.24 | 0.22 | 0.20 | 0.16 | 0.13 | 0.11 | 0.09 | 0.07 | 0.06 |      |      | 180  | 10                      | 2330 | 2839 | 3348 | 3857 | 4366 | 4875 | 5384 | 5893  | 6402  | 6914  | 7420  | 7930  | 8438  | 8947  | 9456  | 9956  | 10473 | 10982 |      |      |      |      |                                                           |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |
| 0.34                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0.26 | 0.23 | 0.20 | 0.16 | 0.15 | 0.13 | 0.10 | 0.09 | 0.07 | 0.06 |      |      |      | 200  | 10                      | 2960 | 3588 | 4216 | 4845 | 5473 | 6102 | 6730 | 7358  | 7986  | 8615  | 9243  | 9871  | 10500 | 11128 | 11756 | 12385 | 13013 | 13641 |      |      |      |      |                                                           |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |
| 0.24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0.18 | 0.16 | 0.13 | 0.12 | 0.11 | 0.09 | 0.07 | 0.06 |      |      |      |      |      | 238  | 14                      | 4098 | 4988 | 5878 | 6767 | 7657 | 8547 | 9437 | 10326 | 11216 | 12106 | 12996 | 13885 | 14775 | 15665 | 16555 | 17444 | 18334 | 19224 |      |      |      |      |                                                           |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |
| <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><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| OIL QUANTITY (LITRES) | HL/300 | HL/420 |
|-----------------------|--------|--------|
| MINIMUM LEVEL         | 4      | 5      |
| USEFUL OIL            | 38     | 55     |
| TOTAL OIL             | 42     | 60     |

| OILFREE POWER UNIT WEIGHT | HL/300 | HL/420 |
|---------------------------|--------|--------|
|                           | 50     | 60     |

| MONO-PHASE MOTOR AIR 230V - 50Hz |      |    |                  |                  |
|----------------------------------|------|----|------------------|------------------|
| CV                               | KW   | Ø  | I <sub>N</sub> A | I <sub>A</sub> A |
| 1                                | 0.75 | 19 | 6                | 2                |
| 1.5                              | 1.1  | 19 | 7.6              |                  |
| 2                                | 1.5  | 19 | 8.95             |                  |
| 2.5                              | 1.8  | 19 | 12.8             |                  |
| 3                                | 2.2  | 19 | 14.7             |                  |

| TREE-PHASE MOTOR AIR 400-415V - 50Hz<br>(230-240V - 50Hz) |      |    |                  |                  |
|-----------------------------------------------------------|------|----|------------------|------------------|
| CV                                                        | KW   | Ø  | I <sub>N</sub> A | I <sub>A</sub> A |
| 1                                                         | 0.75 | 19 | 1.9 (3.3)        | 2                |
| 1.5                                                       | 1.1  | 19 | 3 (5.2)          |                  |
| 2                                                         | 1.5  | 19 | 3.6 (6.2)        |                  |
| 3                                                         | 2.2  | 19 | 6.6 (11.4)       |                  |

1 - REF DIMENSION CAP FOR TWO-SOLENEID VALVE  
(ON CAN BE SUPPLIED OPTIONALLY)

2 - STARTING CURRENT:  $I_A = I_N \times 3$

|                                                          |  | PUMP L/1' (ø 19) |      |      |      | RAM  |     | STATIC PRESSURE IN BARS |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |    |    |    |    |    |    |  |  |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------------------------------------|--|------------------|------|------|------|------|-----|-------------------------|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----|----|----|----|----|----|--|--|----|----|----|----|----|----|----|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
|                                                          |  |                  | 23   | 18   | 12   | 8    | ød  | e                       | 16  | 17  | 18   | 19   | 20   | 21   | 22   | 23   | 24   | 25   | 26   | 27   | 28   | 29   | 30   | 31   | 32   | 33 | 34 | 35 | 36 | 37 | 38 |  |  | 39 | 40 | 41 | 42 | 43 | 44 | 45 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SPEED OF RAM IN UPWARD<br>DIRECTION M/SEC (AVERAGE LOAD) |  | 0.19             | 0.15 | 0.10 | 0.06 | 50   | 5   |                         | 281 | 320 | 359  | 398  | 438  | 477  | 516  | 556  | 595  | 634  | 673  | 713  | 752  | 791  | 830  | 870  |      |    |    |    |    |    |    |  |  |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                          |  |                  |      |      |      |      | 7.5 |                         | 267 | 306 | 345  | 384  | 424  | 463  | 502  | 542  | 581  | 620  | 659  | 699  | 738  | 777  | 816  | 856  |      |    |    |    |    |    |    |  |  |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                          |  | 0.13             | 0.10 | 0.07 | 0.04 | 60   | 5   |                         | 392 | 450 | 505  | 562  | 618  | 675  | 732  | 788  | 845  | 901  | 958  | 1015 | 1071 | 1128 | 1184 | 1240 |      |    |    |    |    |    |    |  |  |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                          |  |                  |      |      |      |      | 7.5 |                         | 368 | 425 | 481  | 538  | 594  | 651  | 707  | 764  | 820  | 877  | 933  | 990  | 1046 | 1103 | 1160 | 1216 |      |    |    |    |    |    |    |  |  |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                          |  | 0.09             | 0.07 | 0.05 | 0.03 | 70   | 5   |                         | 535 | 612 | 688  | 766  | 843  | 920  | 997  | 1074 | 1151 | 1227 | 1305 | 1382 | 1458 | 1535 | 1612 | 1689 |      |    |    |    |    |    |    |  |  |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                          |  |                  |      |      |      |      | 7.5 |                         | 502 | 579 | 656  | 733  | 810  | 887  | 964  | 1041 | 1118 | 1195 | 1272 | 1349 | 1426 | 1503 | 1580 | 1657 |      |    |    |    |    |    |    |  |  |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                          |  |                  | 0.07 | 0.06 | 0.04 | 0.02 | 80  | 5                       |     | 704 | 805  | 905  | 1006 | 1106 | 1207 | 1307 | 1408 | 1508 | 1609 | 1709 | 1810 | 1910 | 2011 | 2111 | 2212 |    |    |    |    |    |    |  |  |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                          |  |                  |      |      |      |      |     | 7.5                     |     | 649 | 749  | 850  | 950  | 1051 | 1151 | 1252 | 1352 | 1453 | 1554 | 1654 | 1755 | 1855 | 1956 | 2056 | 2157 |    |    |    |    |    |    |  |  |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                          |  |                  | 0.06 | 0.05 | 0.03 | 0.02 | 85  | 12                      |     | 566 | 667  | 767  | 869  | 968  | 1069 | 1169 | 1270 | 1370 | 1471 | 1571 | 1672 | 1772 | 1873 | 1973 | 2074 |    |    |    |    |    |    |  |  |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                          |  |                  |      |      |      |      |     | 7.5                     |     | 722 | 836  | 949  | 1063 | 1176 | 1290 | 1403 | 1517 | 1630 | 1744 | 1857 | 1971 | 2084 | 2198 | 2311 | 2425 |    |    |    |    |    |    |  |  |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                          |  |                  | 0.06 | 0.05 | 0.03 | 0.02 | 90  | 5                       |     | 890 | 1017 | 1144 | 1271 | 1398 | 1526 | 1653 | 1780 | 1908 | 2035 | 2162 | 2289 | 2416 | 2544 | 2671 | 2798 |    |    |    |    |    |    |  |  |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                          |  |                  |      |      |      |      |     | 7.5                     |     | 816 | 944  | 1071 | 1198 | 1325 | 1453 | 1580 | 1707 | 1834 | 1962 | 2089 | 2216 | 2343 | 2471 | 2598 | 2725 |    |    |    |    |    |    |  |  |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                          |  | 0.06             | 0.05 | 0.03 | 0.02 | 90   | 12  |                         | 717 | 844 | 971  | 1098 | 1225 | 1353 | 1480 | 1607 | 1734 | 1861 | 1988 | 2116 | 2243 | 2370 | 2497 | 2624 |      |    |    |    |    |    |    |  |  |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                          |  |                  |      |      |      |      |     |                         |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |    |    |    |    |    |    |  |  |    |    |    |    |    |    |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

- THE WEIGHT INDICATED IN THIS TABLE HAS BEEN CALCULATED CONSIDERING  
THE ROD WEIGHT FOR A MAXIMUM STROKE ( SEE DWG. 9020/... 9030/... )

|    |                                                                                                                                        |  |               |
|----|----------------------------------------------------------------------------------------------------------------------------------------|--|---------------|
| UT | TABLE TO DETERMINE THE VALUES OF<br>PRESSURE - SPEED - PUMP FLOW - MOTOR IN AIR (50Hz)<br>FOR HL POWER UNIT, RELATED TO ROD Ø AND LOAD |  | DATE<br>12/15 |
|    | DWG. N.<br>9018/HL-50Hz                                                                                                                |  |               |



| THREE-PHASE MOTOR |      |    |            |      | AIR 400-415V - 50Hz<br>(230-240V - 50Hz)                                            |  |
|-------------------|------|----|------------|------|-------------------------------------------------------------------------------------|--|
| CV                | KW   | Ø  | IN A       | IA A |                                                                                     |  |
| 1                 | 0.75 | 19 | 1.9 (3.3)  |      |  |  |
| 1.5               | 1.1  | 19 | 3 (5.2)    |      |                                                                                     |  |
| 2                 | 1.5  | 19 | 3.6 (6.2)  |      |                                                                                     |  |
| 3                 | 2.2  | 19 | 6.6 (11.4) |      |                                                                                     |  |
| 4                 | 3    | 19 | 7.4 (12.8) |      |                                                                                     |  |

| SPEED OF RAM IN UPWARD DIRECTION M/SEC (M. LOAD) | PUMP L/1' |      |        |      |    | RAM |     | STATIC PRESSURE IN BARS |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |    |  |  | TOTAL LOAD (P+Q=KG) |
|--------------------------------------------------|-----------|------|--------|------|----|-----|-----|-------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|----|--|--|---------------------|
|                                                  | (ø 19)    |      | (ø 19) |      |    | ød  | e   |                         |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |    |  |  |                     |
|                                                  | 30        | 23   | 18     | 12   | 8  |     |     | 12 <sup>13</sup>        | 14 <sup>15</sup> | 16 <sup>17</sup> | 18 <sup>19</sup> | 20 <sup>21</sup> | 22 <sup>23</sup> | 24 <sup>25</sup> | 26 <sup>27</sup> | 28 <sup>29</sup> | 30 <sup>31</sup> | 32 <sup>33</sup> | 34 <sup>35</sup> | 36 <sup>37</sup> | 38 <sup>39</sup> | 40 <sup>41</sup> | 42 <sup>43</sup> | 44 <sup>45</sup> | 46 |  |  |                     |
| 0.25                                             | 0.19      | 0.15 | 0.10   | 0.06 | 50 | 5   | 202 | 241                     | 281              | 320              | 359              | 398              | 438              | 477              | 516              | 556              | 595              | 634              | 673              | 713              | 752              | 791              | 830              | 870              |    |  |  |                     |
|                                                  |           |      |        |      |    | 7.5 | 188 | 227                     | 267              | 306              | 345              | 384              | 424              | 463              | 502              | 542              | 581              | 620              | 659              | 699              | 738              | 777              | 816              | 856              |    |  |  |                     |
| 0.17                                             | 0.13      | 0.10 | 0.07   | 0.04 | 60 | 5   | 280 | 335                     | 392              | 450              | 505              | 562              | 618              | 675              | 732              | 788              | 845              | 901              | 958              | 1015             | 1071             | 1128             | 1184             | 1240             |    |  |  |                     |
|                                                  |           |      |        |      |    | 7.5 | 255 | 312                     | 368              | 425              | 481              | 538              | 594              | 651              | 707              | 764              | 820              | 877              | 933              | 990              | 1046             | 1103             | 1160             | 1216             |    |  |  |                     |
| 0.12                                             | 0.09      | 0.07 | 0.05   | 0.03 | 70 | 5   | 380 | 458                     | 535              | 612              | 688              | 766              | 843              | 920              | 997              | 1074             | 1151             | 1227             | 1305             | 1382             | 1458             | 1535             | 1612             | 1689             |    |  |  |                     |
|                                                  |           |      |        |      |    | 7.5 | 348 | 425                     | 502              | 579              | 656              | 733              | 810              | 887              | 964              | 1041             | 1118             | 1195             | 1272             | 1349             | 1426             | 1503             | 1580             | 1657             |    |  |  |                     |
| 0.10                                             | 0.07      | 0.06 | 0.04   | 0.02 | 80 | 5   | 500 | 604                     | 704              | 805              | 905              | 1006             | 1106             | 1207             | 1307             | 1408             | 1508             | 1609             | 1709             | 1810             | 1910             | 2011             | 2111             | 2212             |    |  |  |                     |
|                                                  |           |      |        |      |    | 7.5 | 448 | 548                     | 649              | 749              | 850              | 950              | 1051             | 1151             | 1252             | 1352             | 1453             | 1554             | 1654             | 1755             | 1855             | 1956             | 2056             | 2157             |    |  |  |                     |
| 0.08                                             | 0.06      | 0.05 | 0.03   | 0.02 | 85 | 7.5 | 365 | 466                     | 566              | 667              | 767              | 869              | 968              | 1069             | 1169             | 1270             | 1370             | 1471             | 1571             | 1672             | 1772             | 1873             | 1973             | 2074             |    |  |  |                     |
|                                                  |           |      |        |      |    | 5   | 495 | 609                     | 722              | 836              | 949              | 1063             | 1176             | 1290             | 1403             | 1517             | 1630             | 1744             | 1857             | 1971             | 2084             | 2198             | 2311             | 2425             |    |  |  |                     |
| 0.08                                             | 0.06      | 0.05 | 0.03   | 0.02 | 90 | 7.5 | 630 | 762                     | 890              | 1017             | 1144             | 1271             | 1398             | 1526             | 1653             | 1780             | 1908             | 2035             | 2162             | 2289             | 2416             | 2544             | 2671             | 2798             |    |  |  |                     |
|                                                  |           |      |        |      |    | 12  | 562 | 689                     | 816              | 944              | 1071             | 1198             | 1325             | 1453             | 1580             | 1707             | 1834             | 1962             | 2089             | 2216             | 2343             | 2471             | 2598             | 2725             |    |  |  |                     |
|                                                  |           |      |        |      |    |     | 462 | 590                     | 717              | 844              | 971              | 1098             | 1225             | 1353             | 1480             | 1607             | 1734             | 1861             | 1988             | 2116             | 2243             | 2370             | 2497             | 2624             |    |  |  |                     |

8 —

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|               |  |  |  |  |  |  |  |               |  |  |  |  |  |  |  |               |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |   |  |  |  |
|---------------|--|--|--|--|--|--|--|---------------|--|--|--|--|--|--|--|---------------|--|--|--|--|--|--|--|-----------|--|--|--|--|--|--|--|---|--|--|--|
| 1 (0.75) ø19  |  |  |  |  |  |  |  | 1.5 (1.1) ø19 |  |  |  |  |  |  |  |               |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |   |  |  |  |
| 1 (0.75) ø19  |  |  |  |  |  |  |  | 1.5 (1.1) ø19 |  |  |  |  |  |  |  | 2 (1.5) ø19   |  |  |  |  |  |  |  | /         |  |  |  |  |  |  |  |   |  |  |  |
| 1.5 (1.1) ø19 |  |  |  |  |  |  |  | 2 (1.5) ø19   |  |  |  |  |  |  |  | 2.5 (1.8) ø19 |  |  |  |  |  |  |  | /         |  |  |  |  |  |  |  |   |  |  |  |
| 2 (1.5) ø19   |  |  |  |  |  |  |  | 2.5 (1.8) ø19 |  |  |  |  |  |  |  | 3 (2.2) ø19   |  |  |  |  |  |  |  | 4 (3) ø19 |  |  |  |  |  |  |  | / |  |  |  |
| 2.5 (1.8) ø19 |  |  |  |  |  |  |  | 3 (2.2) ø19   |  |  |  |  |  |  |  | 4 (3) ø19     |  |  |  |  |  |  |  | /         |  |  |  |  |  |  |  |   |  |  |  |

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| 1 (0.75) ø19  |  |  |  |  |  |  |  |               |  |  |  | 1.5 (1.1) ø19 |  |  |  |             |  |  |  |  |  |  |  | 1.5 (1.1) ø19 |  |  |  |
| 1 (0.75) ø19  |  |  |  |  |  |  |  |               |  |  |  | 1.5 (1.1) ø19 |  |  |  |             |  |  |  |  |  |  |  | 2 (1.5) ø19   |  |  |  |
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| 1.5 (1.1) ø19 |  |  |  |  |  |  |  | 2 (1.5) ø19   |  |  |  |               |  |  |  | 3 (2.2) ø19 |  |  |  |  |  |  |  | /             |  |  |  |
| 2 (1.5) ø19   |  |  |  |  |  |  |  | 3 (2.2) ø19   |  |  |  |               |  |  |  | 4 (3) ø19   |  |  |  |  |  |  |  | /             |  |  |  |

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| 1 (0.75) ø19  |  |  |  |  |  |  |  |               |  |  |  | 1.5 (1.1) ø19 |  |  |  |             |  |  |  |  |  |  |  | 1.5 (1.1) ø19 |  |  |  |
| 1 (0.75) ø19  |  |  |  |  |  |  |  |               |  |  |  | 1.5 (1.1) ø19 |  |  |  |             |  |  |  |  |  |  |  | 2 (1.5) ø19   |  |  |  |
| 1 (0.75) ø19  |  |  |  |  |  |  |  | 1.5 (1.1) ø19 |  |  |  |               |  |  |  | 2 (1.5) ø19 |  |  |  |  |  |  |  | /             |  |  |  |
| 1.5 (1.1) ø19 |  |  |  |  |  |  |  | 2 (1.5) ø19   |  |  |  |               |  |  |  | 3 (2.2) ø19 |  |  |  |  |  |  |  | /             |  |  |  |
| 2 (1.5) ø19   |  |  |  |  |  |  |  | 3 (2.2) ø19   |  |  |  |               |  |  |  | 4 (3) ø19   |  |  |  |  |  |  |  | /             |  |  |  |

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| 1 (0.75) ø19  |  |  |  |  |  |  |  |               |  |  |  | 1.5 (1.1) ø19 |  |  |  |             |  |  |  |  |  |  |  | 1.5 (1.1) ø19 |  |  |  |
| 1 (0.75) ø19  |  |  |  |  |  |  |  |               |  |  |  | 1.5 (1.1) ø19 |  |  |  |             |  |  |  |  |  |  |  | 2 (1.5) ø19   |  |  |  |
| 1 (0.75) ø19  |  |  |  |  |  |  |  | 1.5 (1.1) ø19 |  |  |  |               |  |  |  | 2 (1.5) ø19 |  |  |  |  |  |  |  | /             |  |  |  |
| 1.5 (1.1) ø19 |  |  |  |  |  |  |  | 2 (1.5) ø19   |  |  |  |               |  |  |  | 3 (2.2) ø19 |  |  |  |  |  |  |  | /             |  |  |  |
| 2 (1.5) ø19   |  |  |  |  |  |  |  | 3 (2.2) ø19   |  |  |  |               |  |  |  | 4 (3) ø19   |  |  |  |  |  |  |  | /             |  |  |  |

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| 1 (0.75) ø19  |  |  |  |  |  |  |  |               |  |  |  | 1.5 (1.1) ø19 |  |  |  |             |  |  |  |  |  |  |  | 1.5 (1.1) ø19 |  |  |  |
| 1 (0.75) ø19  |  |  |  |  |  |  |  |               |  |  |  | 1.5 (1.1) ø19 |  |  |  |             |  |  |  |  |  |  |  | 2 (1.5) ø19   |  |  |  |
| 1 (0.75) ø19  |  |  |  |  |  |  |  | 1.5 (1.1) ø19 |  |  |  |               |  |  |  | 2 (1.5) ø19 |  |  |  |  |  |  |  | /             |  |  |  |
| 1.5 (1.1) ø19 |  |  |  |  |  |  |  | 2 (1.5) ø19   |  |  |  |               |  |  |  | 3 (2.2) ø19 |  |  |  |  |  |  |  | /             |  |  |  |
| 2 (1.5) ø19   |  |  |  |  |  |  |  | 3 (2.2) ø19   |  |  |  |               |  |  |  | 4 (3) ø19   |  |  |  |  |  |  |  | /             |  |  |  |

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| 1 (0.75) ø19  |  |  |  |  |  |  |  |               |  |  |  | 1.5 (1.1) ø19 |  |  |  |             |  |  |  |  |  |  |  | 1.5 (1.1) ø19 |  |  |  |
| 1 (0.75) ø19  |  |  |  |  |  |  |  |               |  |  |  | 1.5 (1.1) ø19 |  |  |  |             |  |  |  |  |  |  |  | 2 (1.5) ø19   |  |  |  |
| 1 (0.75) ø19  |  |  |  |  |  |  |  | 1.5 (1.1) ø19 |  |  |  |               |  |  |  | 2 (1.5) ø19 |  |  |  |  |  |  |  | /             |  |  |  |
| 1.5 (1.1) ø19 |  |  |  |  |  |  |  | 2 (1.5) ø19   |  |  |  |               |  |  |  | 3 (2.2) ø19 |  |  |  |  |  |  |  | /             |  |  |  |
| 2 (1.5) ø19   |  |  |  |  |  |  |  | 3 (2.2) ø19   |  |  |  |               |  |  |  | 4 (3) ø19   |  |  |  |  |  |  |  | /             |  |  |  |

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| 1 (0.75) ø19  |  |  |  |  |  |  |  |               |  |  |  | 1.5 (1.1) ø19 |  |  |  |             |  |  |  |  |  |  |  | 1.5 (1.1) ø19 |  |  |  |
| 1 (0.75) ø19  |  |  |  |  |  |  |  |               |  |  |  | 1.5 (1.1) ø19 |  |  |  |             |  |  |  |  |  |  |  | 2 (1.5) ø19   |  |  |  |
| 1 (0.75) ø19  |  |  |  |  |  |  |  | 1.5 (1.1) ø19 |  |  |  |               |  |  |  | 2 (1.5) ø19 |  |  |  |  |  |  |  | /             |  |  |  |
| 1.5 (1.1) ø19 |  |  |  |  |  |  |  | 2 (1.5) ø19   |  |  |  |               |  |  |  | 3 (2.2) ø19 |  |  |  |  |  |  |  | /             |  |  |  |
| 2 (1.5) ø19   |  |  |  |  |  |  |  | 3 (2.2) ø19   |  |  |  |               |  |  |  | 4 (3) ø19   |  |  |  |  |  |  |  | /             |  |  |  |

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| 1 (0.75) ø19  |  |  |  |  |  |  |  |               |  |  |  | 1.5 (1.1) ø19 |  |  |  |             |  |  |  |  |  |  |  | 1.5 (1.1) ø19 |  |  |  |
| 1 (0.75) ø19  |  |  |  |  |  |  |  |               |  |  |  | 1.5 (1.1) ø19 |  |  |  |             |  |  |  |  |  |  |  | 2 (1.5) ø19   |  |  |  |
| 1 (0.75) ø19  |  |  |  |  |  |  |  | 1.5 (1.1) ø19 |  |  |  |               |  |  |  | 2 (1.5) ø19 |  |  |  |  |  |  |  | /             |  |  |  |
| 1.5 (1.1) ø19 |  |  |  |  |  |  |  | 2 (1.5) ø19   |  |  |  |               |  |  |  | 3 (2.2) ø19 |  |  |  |  |  |  |  | /             |  |  |  |
| 2 (1.5) ø19   |  |  |  |  |  |  |  | 3 (2.2) ø19   |  |  |  |               |  |  |  | 4 (3) ø19   |  |  |  |  |  |  |  | /             |  |  |  |

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| 1 (0.75) ø19  |  |  |  |  |  |  |  |               |  |  |  | 1.5 (1.1) ø19 |  |  |  |             |  |  |  |  |  |  |  | 1.5 (1.1) ø19 |  |  |  |
| 1 (0.75) ø19  |  |  |  |  |  |  |  |               |  |  |  | 1.5 (1.1) ø19 |  |  |  |             |  |  |  |  |  |  |  | 2 (1.5) ø19   |  |  |  |
| 1 (0.75) ø19  |  |  |  |  |  |  |  | 1.5 (1.1) ø19 |  |  |  |               |  |  |  | 2 (1.5) ø19 |  |  |  |  |  |  |  | /             |  |  |  |
| 1.5 (1.1) ø19 |  |  |  |  |  |  |  | 2 (1.5) ø19   |  |  |  |               |  |  |  | 3 (2.2) ø19 |  |  |  |  |  |  |  | /             |  |  |  |
| 2 (1.5) ø19   |  |  |  |  |  |  |  | 3 (2.2) ø19   |  |  |  |               |  |  |  | 4 (3) ø19   |  |  |  |  |  |  |  | /             |  |  |  |

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| 1 (0.75) ø19  |  |  |  |  |  |  |  |               |  |  |  | 1.5 (1.1) ø19 |  |  |  |             |  |  |  |  |  |  |  | 1.5 (1.1) ø19 |  |  |  |
| 1 (0.75) ø19  |  |  |  |  |  |  |  |               |  |  |  | 1.5 (1.1) ø19 |  |  |  |             |  |  |  |  |  |  |  | 2 (1.5) ø19   |  |  |  |
| 1 (0.75) ø19  |  |  |  |  |  |  |  | 1.5 (1.1) ø19 |  |  |  |               |  |  |  | 2 (1.5) ø19 |  |  |  |  |  |  |  | /             |  |  |  |
| 1.5 (1.1) ø19 |  |  |  |  |  |  |  | 2 (1.5) ø19   |  |  |  |               |  |  |  | 3 (2.2) ø19 |  |  |  |  |  |  |  | /             |  |  |  |
| 2 (1.5) ø19   |  |  |  |  |  |  |  | 3 (2.2) ø19   |  |  |  |               |  |  |  | 4 (3) ø19   |  |  |  |  |  |  |  | /             |  |  |  |

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| 1 (0.75) ø19  |  |  |  |  |  |  |  |               |  |  |  | 1.5 (1.1) ø19 |  |  |  |             |  |  |  |  |  |  |  | 1.5 (1.1) ø19 |  |  |  |
| 1 (0.75) ø19  |  |  |  |  |  |  |  |               |  |  |  | 1.5 (1.1) ø19 |  |  |  |             |  |  |  |  |  |  |  | 2 (1.5) ø19   |  |  |  |
| 1 (0.75) ø19  |  |  |  |  |  |  |  | 1.5 (1.1) ø19 |  |  |  |               |  |  |  | 2 (1.5) ø19 |  |  |  |  |  |  |  | /             |  |  |  |
| 1.5 (1.1) ø19 |  |  |  |  |  |  |  | 2 (1.5) ø19   |  |  |  |               |  |  |  | 3 (2.2) ø19 |  |  |  |  |  |  |  | /             |  |  |  |
| 2 (1.5) ø19   |  |  |  |  |  |  |  | 3 (2.2) ø19   |  |  |  |               |  |  |  | 4 (3) ø19   |  |  |  |  |  |  |  | /             |  |  |  |

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| 1 (0.75) ø19  |  |  |  |  |  |  |  |               |  |  |  | 1.5 (1.1) ø19 |  |  |  |             |  |  |  |  |  |  |  | 1.5 (1.1) ø19 |  |  |  |
| 1 (0.75) ø19  |  |  |  |  |  |  |  |               |  |  |  | 1.5 (1.1) ø19 |  |  |  |             |  |  |  |  |  |  |  | 2 (1.5) ø19   |  |  |  |
| 1 (0.75) ø19  |  |  |  |  |  |  |  | 1.5 (1.1) ø19 |  |  |  |               |  |  |  | 2 (1.5) ø19 |  |  |  |  |  |  |  | /             |  |  |  |
| 1.5 (1.1) ø19 |  |  |  |  |  |  |  | 2 (1.5) ø19   |  |  |  |               |  |  |  | 3 (2.2) ø19 |  |  |  |  |  |  |  | /             |  |  |  |
| 2 (1.5) ø19   |  |  |  |  |  |  |  | 3 (2.2) ø19   |  |  |  |               |  |  |  | 4 (3) ø19   |  |  |  |  |  |  |  | /             |  |  |  |

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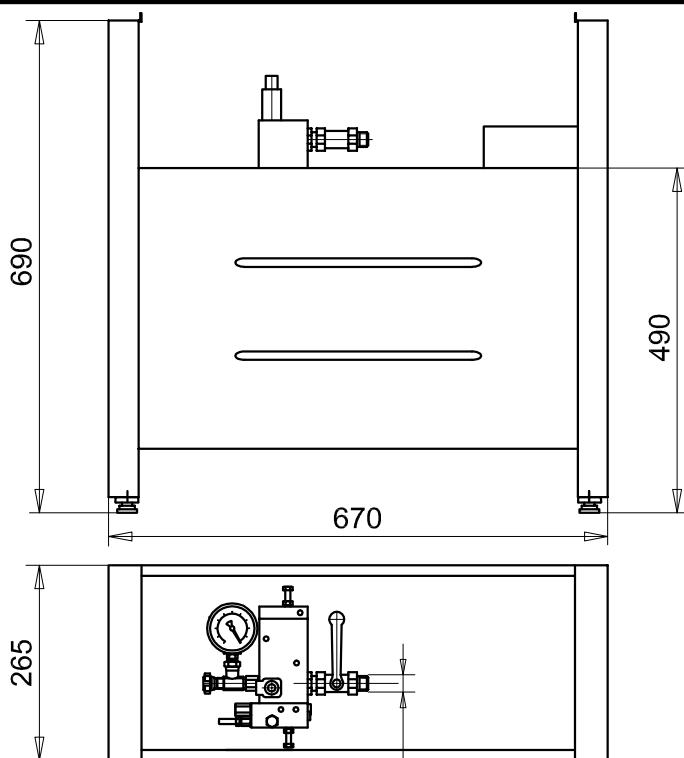
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| 1 (0.75) ø19 |  |  |  |  |  |  |  |  |  |  |  | 1.5 (1.1) ø19 |  |  |  |  |  |  |  |  |  |  |  | 1.5 (1.1) ø19 |  |  |  |
| 1 (          |  |  |  |  |  |  |  |  |  |  |  |               |  |  |  |  |  |  |  |  |  |  |  |               |  |  |  |

– THE WEIGHT INDICATED IN THIS TABLE HAS BEEN CALCULATED CONSIDERING THE ROD WEIGHT FOR MAXIMUM STROKE (SEE DWG 9020/... 9030/... )

|    |  |                                                                                                                                                                                        |         |                   |
|----|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------------|
| UT |  | <p>TABLE TO CALCULATE THE VALUES OF<br/>         PRESSURE - SPEED - PUMP FLOW - MOTOR IN AIR (50Hz)<br/>         FOR HL-MH2V POWER UNIT, RELATED TO ROD <math>\phi</math> AND LOAD</p> | DATA    | 04/16             |
|    |  |                                                                                                                                                                                        | DIS. N° | 9018/HL-MH2V/50Hz |



| OIL QUANTITY  | HL/OIL    |
|---------------|-----------|
| MINIMUM LEVEL | 9 litres  |
| USEFUL OIL    | 40 litres |
| TOTAL OIL     | 49 litres |

| EMPTY POWER | HL/OIL |
|-------------|--------|
| UNIT WEIGHT | 55 KG  |

| MONO-PHASE MOTOR "OIL" 230V - 50HZ |      |    |                  |                  |
|------------------------------------|------|----|------------------|------------------|
| CV                                 | kW   | Ø  | I <sub>N</sub> A | I <sub>A</sub> A |
| 1                                  | 0.75 | 14 | 5.3              |                  |
| 1.5                                | 1.1  | 14 | 8.3              |                  |
| 2                                  | 1.5  | 14 | 11               |                  |
| 2.5                                | 1.8  | 14 | 12.8             |                  |
| 3                                  | 2.2  | 14 | 15               |                  |

| THREE-PHASE MOTOR "OIL" 400V - 50HZ<br>(230V - 50HZ) |      |    |                  |                  |
|------------------------------------------------------|------|----|------------------|------------------|
| CV                                                   | kW   | Ø  | I <sub>N</sub> A | I <sub>A</sub> A |
| 1                                                    | 0.75 | 14 | 1.8 (3.2)        |                  |
| 1.5                                                  | 1.1  | 14 | 2.4 (4.2)        |                  |
| 2                                                    | 1.5  | 14 | 4 (7)            |                  |
| 3                                                    | 2.2  | 14 | 6 (10.3)         |                  |
|                                                      |      |    |                  |                  |

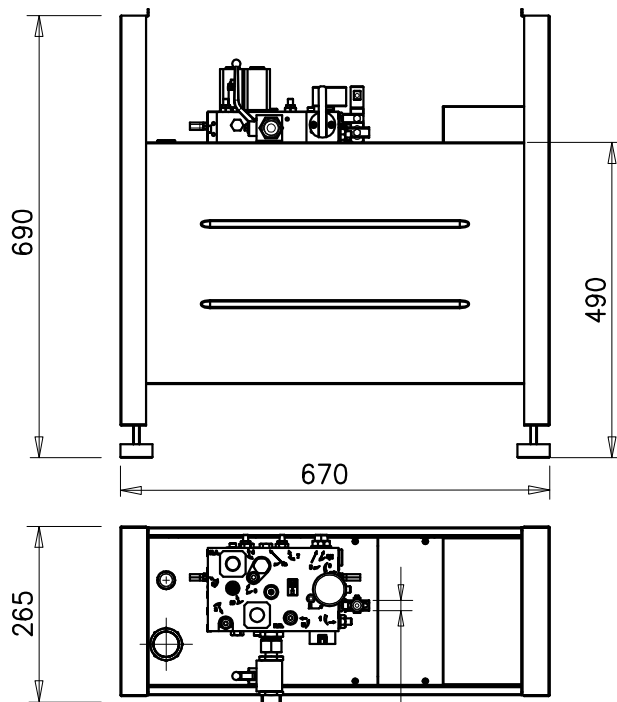
- STARTING CURRENT:  $\sim I_A = I_N \times 3$

|                                                          |      | PUMP "SP" L/1'<br>( Ø 14 ) |      |      |    | RAM |     | STATIC PRESSURE IN BAR |     |      |      |      |      |      |      |      |      |      |      |      |      |      |                                                         |    |    |    |    |    |    |    |    |    |                                                         |    |    |    |    |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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|                                                          |      | 23                         | 18   | 12   | 8  | Ød  | e   | 16                     | 17  | 18   | 19   | 20   | 21   | 22   | 23   | 24   | 25   | 26   | 27   | 28   | 29   | 30   | 31                                                      | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41                                                      | 42 | 43 | 44 | 45 |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SPEED OF RAM IN UPWARD<br>DIRECTION M/SEC (AVERAGE LOAD) | 0.19 | 0.15                       | 0.10 | 0.06 | 50 | 5   | 281 | 320                    | 359 | 398  | 438  | 477  | 516  | 556  | 595  | 634  | 673  | 713  | 752  | 791  | 830  | 870  | TOTAL LOAD<br><br>(USEFUL LOAD+CAR+CAR-FRAME+ACC. = KG) |    |    |    |    |    |    |    |    |    |                                                         |    |    |    |    |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                          |      |                            |      |      |    | 7.5 | 267 | 306                    | 345 | 384  | 424  | 463  | 502  | 542  | 581  | 620  | 659  | 699  | 738  | 777  | 816  | 856  |                                                         |    |    |    |    |    |    |    |    |    |                                                         |    |    |    |    |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                          | 0.13 | 0.10                       | 0.07 | 0.04 | 60 | 5   | 392 | 450                    | 505 | 562  | 618  | 675  | 732  | 788  | 845  | 901  | 958  | 1015 | 1071 | 1128 | 1184 | 1240 |                                                         |    |    |    |    |    |    |    |    |    | TOTAL LOAD<br><br>(USEFUL LOAD+CAR+CAR-FRAME+ACC. = KG) |    |    |    |    |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                          |      |                            |      |      |    | 7.5 | 368 | 425                    | 481 | 538  | 594  | 651  | 707  | 764  | 820  | 877  | 933  | 990  | 1046 | 1103 | 1160 | 1216 |                                                         |    |    |    |    |    |    |    |    |    |                                                         |    |    |    |    |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                          | 0.09 | 0.07                       | 0.05 | 0.03 | 70 | 5   | 535 | 612                    | 688 | 766  | 843  | 920  | 997  | 1074 | 1151 | 1227 | 1305 | 1382 | 1458 | 1535 | 1612 | 1689 |                                                         |    |    |    |    |    |    |    |    |    |                                                         |    |    |    |    |  |  |  |  |  | TOTAL LOAD<br><br>(USEFUL LOAD+CAR+CAR-FRAME+ACC. = KG) |  |  |  |  |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                          |      |                            |      |      |    | 7.5 | 502 | 579                    | 656 | 733  | 810  | 887  | 964  | 1041 | 1118 | 1195 | 1272 | 1349 | 1426 | 1503 | 1580 | 1657 |                                                         |    |    |    |    |    |    |    |    |    |                                                         |    |    |    |    |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                          | 0.07 | 0.06                       | 0.04 | 0.02 | 80 | 5   | 704 | 805                    | 905 | 1006 | 1106 | 1207 | 1307 | 1408 | 1508 | 1609 | 1709 | 1810 | 1910 | 2011 | 2111 | 2212 |                                                         |    |    |    |    |    |    |    |    |    |                                                         |    |    |    |    |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  | TOTAL LOAD<br><br>(USEFUL LOAD+CAR+CAR-FRAME+ACC. = KG) |  |  |  |  |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                          |      |                            |      |      |    | 7.5 | 649 | 749                    | 850 | 950  | 1051 | 1151 | 1252 | 1352 | 1453 | 1554 | 1654 | 1755 | 1855 | 1956 | 2056 | 2157 |                                                         |    |    |    |    |    |    |    |    |    |                                                         |    |    |    |    |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                          |      |                            |      |      |    | 12  | 566 | 667                    | 767 | 869  | 968  | 1069 | 1169 | 1270 | 1370 | 1471 | 1571 | 1672 | 1772 | 1873 | 1973 | 2074 |                                                         |    |    |    |    |    |    |    |    |    |                                                         |    |    |    |    |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                          | 0.06 | 0.05                       | 0.03 | 0.02 | 85 | 7.5 | 722 | 836                    | 949 | 1063 | 1176 | 1290 | 1403 | 1517 | 1630 | 1744 | 1857 | 1971 | 2084 | 2198 | 2311 | 2425 |                                                         |    |    |    |    |    |    |    |    |    |                                                         |    |    |    |    |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  | TOTAL LOAD<br><br>(USEFUL LOAD+CAR+CAR-FRAME+ACC. = KG) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                          |      |                            |      |      |    |     |     |                        |     |      |      |      |      |      |      |      |      |      |      |      |      |      |                                                         |    |    |    |    |    |    |    |    |    |                                                         |    |    |    |    |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |                                                         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

- THE WEIGHT INDICATED IN THIS TABLE HAS BEEN CALCULATED CONSIDERING THE ROD WEIGHT FOR A MAXIMUM STROKE ( SEE DWG. 9020/... 9030/... )

|    |                                                                                                                                                |  |          |                 |
|----|------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|-----------------|
| UT | TABLE TO DETERMINE THE VALUES OF<br>PRESSURE - SPEED - PUMP FLOW - MOTOR IN OIL (50Hz)<br>FOR HL/OIL-265 POWER UNIT, RELATED TO ROD Ø AND LOAD |  | DATE     | 12/15           |
|    |                                                                                                                                                |  | DWG. Nr. | 9018/HL-OIL-265 |
|    |                                                                                                                                                |  |          |                 |





OUTLET FLEX-PIPE 3/4" (M30x2)

△ - STARTING CURRENT:  $\sim I_A = I_N \times 3$

| OIL QUANTITY  | HL/OILMH2V |
|---------------|------------|
| MINIMUM LEVEL | 9 litres   |
| USEFUL OIL    | 40 litres  |
| TOTAL OIL     | 49 litres  |

| EMPTY POWER | HL/OIL2V |
|-------------|----------|
| UNIT WEIGHT | 65 KG    |

| MONO-PHASE MOTOR "OIL" 230V - 50HZ |      |       |                  |                  |
|------------------------------------|------|-------|------------------|------------------|
| CV                                 | kW   | Ø     | I <sub>N</sub> A | I <sub>A</sub> A |
| 1                                  | 0.75 | 14    | 5.3              | △                |
| 1.5                                | 1.1  | 14    | 8.3              |                  |
| 2                                  | 1.5  | 14    | 11               |                  |
| 2.5                                | 1.8  | 14/19 | 12.8             |                  |
| 3                                  | 2.2  | 14/19 | 15               |                  |
| 4                                  | 3.0  | 14/19 | 17.5             |                  |

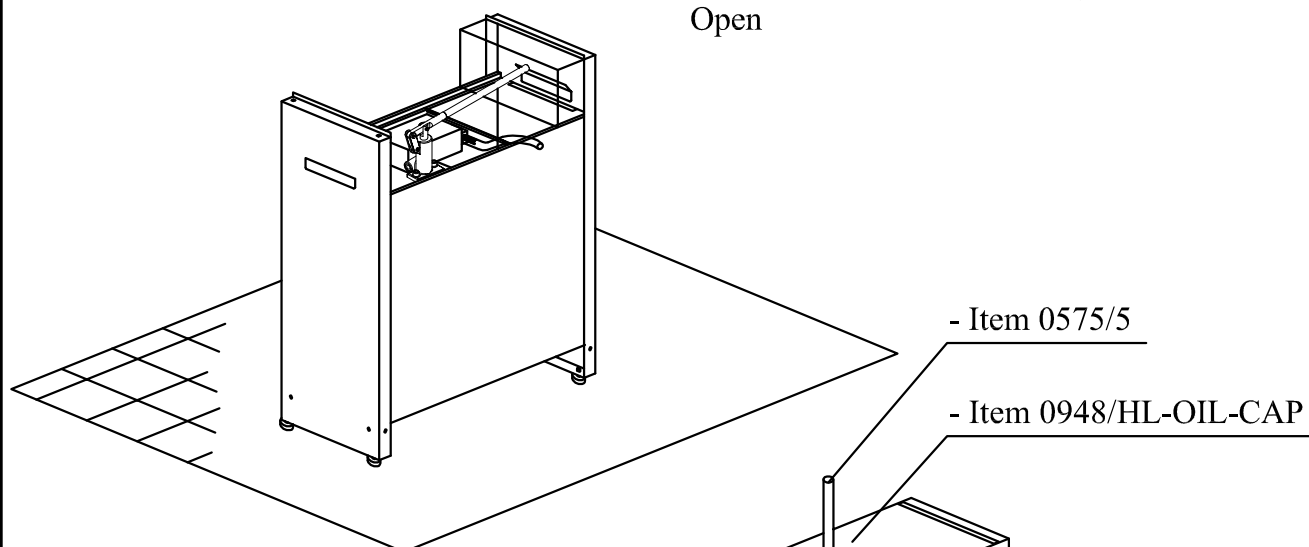
| THREE-PHASE MOTOR "OIL" 400V - 50HZ<br>(230V - 50HZ) |      |       |                  |                  |
|------------------------------------------------------|------|-------|------------------|------------------|
| CV                                                   | kW   | Ø     | I <sub>N</sub> A | I <sub>A</sub> A |
| 1                                                    | 0.75 | 14    | 1.8 (3.2)        | △                |
| 1.5                                                  | 1.1  | 14    | 2.4 (4.2)        |                  |
| 2                                                    | 1.5  | 14/19 | 4 (7)            |                  |
| 2,7                                                  | 2    | 14/19 | 5.1 (8.9)        |                  |
| 3                                                    | 2.2  | 14/19 | 6 (10.3)         |                  |
| 4                                                    | 3.0  | 19    | 7.4 (12.9)       |                  |

| SPEED OF RAM IN UPWARD DIRECTION M/SEC (A. LOAD) | PUMP L/1' |      |      |      |    | RAM           |     | STATIC PRESSURE IN BARS |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |    |               |  | TOTAL LOAD (P+Q=KG)              |  |  |  |
|--------------------------------------------------|-----------|------|------|------|----|---------------|-----|-------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|----|---------------|--|----------------------------------|--|--|--|
|                                                  | (ø 19)    |      |      |      |    | ød            | e   |                         |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |    |               |  |                                  |  |  |  |
|                                                  | (ø 14)    |      |      |      |    |               |     |                         |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |    |               |  |                                  |  |  |  |
|                                                  | 30        | 23   | 18   | 12   | 8  |               |     | 12 <sup>13</sup>        | 14 <sup>15</sup> | 16 <sup>17</sup> | 18 <sup>19</sup> | 20 <sup>21</sup> | 22 <sup>23</sup> | 24 <sup>25</sup> | 26 <sup>27</sup> | 28 <sup>29</sup> | 30 <sup>31</sup> | 32 <sup>33</sup> | 34 <sup>35</sup> | 36 <sup>37</sup> | 38 <sup>39</sup> | 40 <sup>41</sup> | 42 <sup>43</sup> | 44 <sup>45</sup> | 46 |               |  |                                  |  |  |  |
| 0.25                                             | 0.19      | 0.15 | 0.10 | 0.06 | 50 | 5             | 202 | 241                     | 281              | 320              | 359              | 398              | 438              | 477              | 516              | 556              | 595              | 634              | 673              | 713              | 752              | 791              | 830              | 870              |    |               |  |                                  |  |  |  |
| 0.17                                             | 0.13      | 0.10 | 0.07 | 0.04 | 60 | 7.5           | 188 | 227                     | 267              | 306              | 345              | 384              | 424              | 463              | 502              | 542              | 581              | 620              | 659              | 699              | 738              | 777              | 816              | 856              |    |               |  |                                  |  |  |  |
|                                                  |           |      |      |      |    | 5             | 280 | 335                     | 392              | 450              | 505              | 562              | 618              | 675              | 732              | 788              | 845              | 901              | 958              | 1015             | 1071             | 1128             | 1184             | 1240             |    |               |  |                                  |  |  |  |
| 0.12                                             | 0.09      | 0.07 | 0.05 | 0.03 | 70 | 7.5           | 255 | 312                     | 368              | 425              | 481              | 538              | 594              | 651              | 707              | 764              | 820              | 877              | 933              | 990              | 1046             | 1103             | 1160             | 1216             |    |               |  |                                  |  |  |  |
|                                                  |           |      |      |      |    | 5             | 380 | 458                     | 535              | 612              | 688              | 766              | 843              | 920              | 997              | 1074             | 1151             | 1227             | 1305             | 1382             | 1458             | 1535             | 1612             | 1689             |    |               |  |                                  |  |  |  |
| 0.10                                             | 0.07      | 0.06 | 0.04 | 0.02 | 80 | 7.5           | 348 | 425                     | 502              | 579              | 656              | 733              | 810              | 887              | 964              | 1041             | 1118             | 1195             | 1272             | 1349             | 1426             | 1503             | 1580             | 1657             |    |               |  |                                  |  |  |  |
|                                                  |           |      |      |      |    | 5             | 500 | 604                     | 704              | 805              | 905              | 1006             | 1106             | 1207             | 1307             | 1408             | 1508             | 1609             | 1709             | 1810             | 1910             | 2011             | 2111             | 2212             |    |               |  |                                  |  |  |  |
| 0.08                                             | 0.06      | 0.05 | 0.03 | 0.02 | 85 | 7.5           | 448 | 548                     | 649              | 749              | 850              | 950              | 1051             | 1151             | 1252             | 1352             | 1453             | 1554             | 1654             | 1755             | 1855             | 1956             | 2056             | 2157             |    |               |  |                                  |  |  |  |
|                                                  |           |      |      |      |    | 12            | 365 | 466                     | 566              | 667              | 767              | 869              | 968              | 1069             | 1169             | 1270             | 1370             | 1471             | 1571             | 1672             | 1772             | 1873             | 1973             | 2074             |    |               |  |                                  |  |  |  |
| 0.08                                             | 0.06      | 0.05 | 0.03 | 0.02 | 90 | 7.5           | 495 | 609                     | 722              | 836              | 949              | 1063             | 1176             | 1290             | 1403             | 1517             | 1630             | 1744             | 1857             | 1971             | 2084             | 2198             | 2311             | 2425             |    |               |  |                                  |  |  |  |
|                                                  |           |      |      |      |    | 5             | 630 | 762                     | 890              | 1017             | 1144             | 1271             | 1398             | 1526             | 1653             | 1780             | 1908             | 2035             | 2162             | 2289             | 2416             | 2544             | 2671             | 2798             |    |               |  |                                  |  |  |  |
| 0.08                                             | 0.06      | 0.05 | 0.03 | 0.02 | 90 | 7.5           | 562 | 689                     | 816              | 944              | 1071             | 1198             | 1325             | 1453             | 1580             | 1707             | 1834             | 1962             | 2089             | 2216             | 2343             | 2471             | 2598             | 2725             |    |               |  |                                  |  |  |  |
|                                                  |           |      |      |      |    | 12            | 462 | 590                     | 717              | 844              | 971              | 1098             | 1225             | 1353             | 1480             | 1607             | 1734             | 1861             | 1988             | 2116             | 2243             | 2370             | 2497             | 2624             |    |               |  |                                  |  |  |  |
| 8                                                | 12        | 18   | 23   | 30   |    | 1 (0.75) ø14  |     |                         |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |    | 1.5 (1.1) ø14 |  | MONO-PHASE 50 Hz 230V ± 5%       |  |  |  |
|                                                  |           |      |      |      |    | 1 (0.75) ø14  |     |                         |                  |                  |                  |                  |                  | 1.5 (1.1) ø14    |                  |                  |                  |                  |                  |                  |                  | 2 (1.5) ø14      |                  |                  |    |               |  |                                  |  |  |  |
|                                                  |           |      |      |      |    | 1.5 (1.1) ø14 |     |                         |                  |                  |                  |                  |                  | 2 (1.5) ø14      |                  |                  |                  |                  |                  |                  |                  | 2.5 (1.8) ø14    |                  |                  |    |               |  |                                  |  |  |  |
|                                                  |           |      |      |      |    | 2 (1.5) ø14   |     |                         |                  |                  |                  |                  |                  | 2.5 (1.8) ø14    |                  |                  |                  |                  |                  |                  |                  | 3 (2.2) ø14      |                  |                  |    |               |  |                                  |  |  |  |
|                                                  |           |      |      |      |    | 2.5 (1.8) ø19 |     |                         |                  |                  |                  |                  |                  | 3 (2.2) ø19      |                  |                  |                  |                  |                  |                  |                  | 4 (3) ø14        |                  |                  |    |               |  |                                  |  |  |  |
| 8                                                | 12        | 18   | 23   | 30   |    | 1 (0.75) ø14  |     |                         |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |    | 1.5 (1.1) ø14 |  | THREE-PHASE 50 Hz 230/400V ± 10% |  |  |  |
|                                                  |           |      |      |      |    | 1 (0.75) ø14  |     |                         |                  |                  |                  |                  |                  | 1.5 (1.1) ø14    |                  |                  |                  |                  |                  |                  |                  | 2 (1.5) ø14      |                  |                  |    |               |  |                                  |  |  |  |
|                                                  |           |      |      |      |    | 1 (0.75) ø14  |     |                         |                  |                  |                  |                  |                  | 1.5 (1.1) ø14    |                  |                  |                  |                  |                  |                  |                  | 2 (1.5) ø14      |                  |                  |    |               |  |                                  |  |  |  |
|                                                  |           |      |      |      |    | 1.5 (1.1) ø14 |     |                         |                  |                  |                  |                  |                  | 2 (1.5) ø14      |                  |                  |                  |                  |                  |                  |                  | 3 (2.2) ø14      |                  |                  |    |               |  |                                  |  |  |  |
|                                                  |           |      |      |      |    | 2 (1.5) ø19   |     |                         |                  |                  |                  |                  |                  | 2.7 (2) ø19      |                  |                  |                  |                  |                  |                  |                  | 3 (2.2) ø19      |                  |                  |    |               |  |                                  |  |  |  |

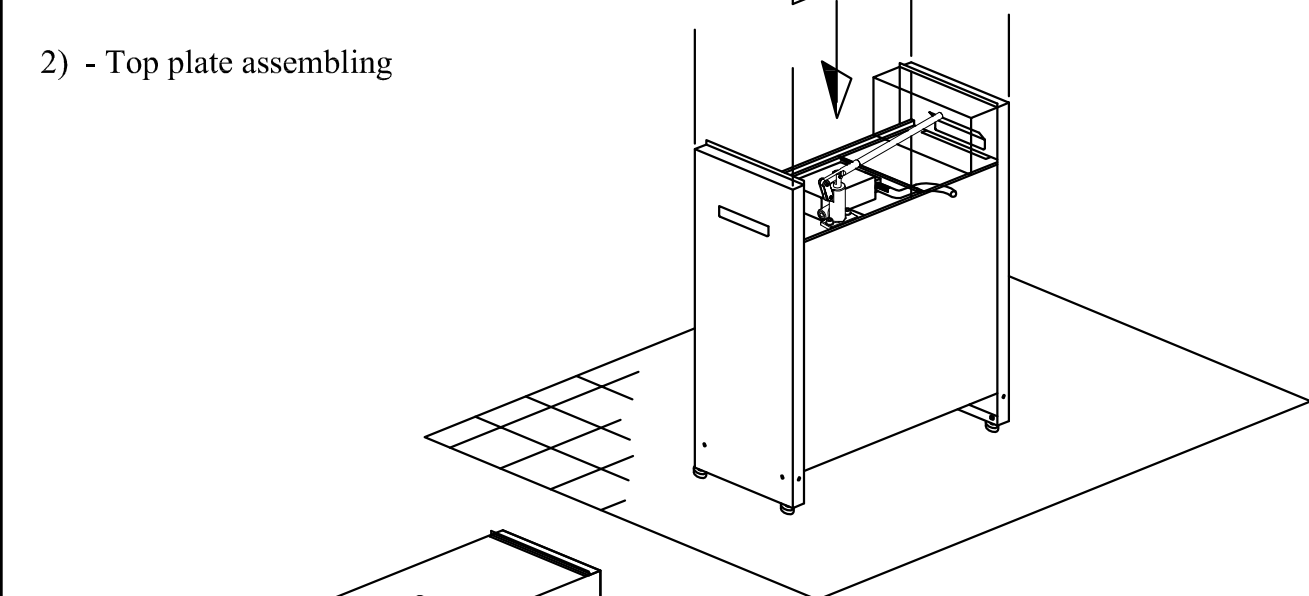
- THE WEIGHT INDICATED IN THIS TABLE HAS BEEN CALCULATED CONSIDERING THE ROD WEIGHT FOR MAXIMUM STROKE (SEE DWG 9020/... 9030/... )

|    |                                                                                                                                                       |  |         |  |                      |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------|--|----------------------|
| UT | TABLE TO DETERMINE THE RATES OF<br>PRESSURE - SPEED - PUMP "SP" - MOTOR "OIL" (50HZ)<br>FOR - (HL/OIL-265-2V) - POWER UNIT RELATING TO ROD Ø AND LOAD |  | DATE    |  | 02/17                |
|    |                                                                                                                                                       |  | DWG Nr. |  | 9018/HL-OIL-265-MH2V |

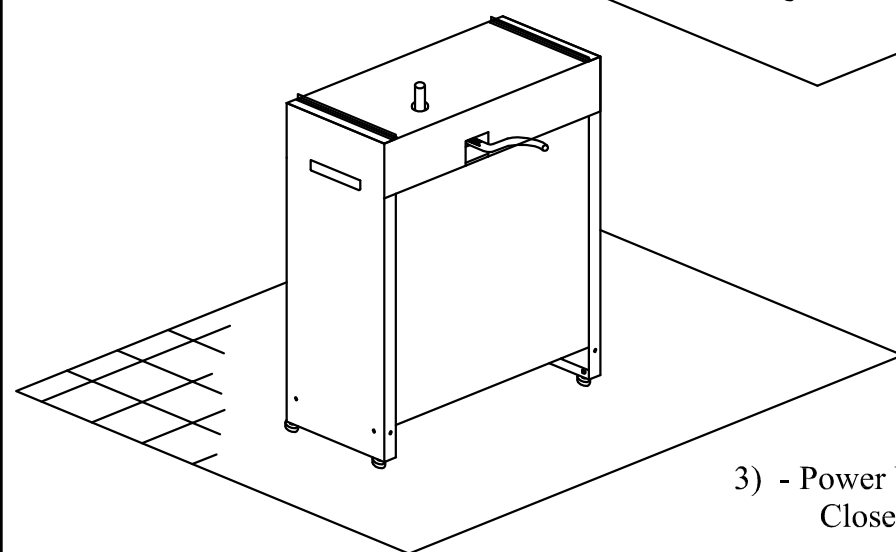
1) - Power Unit HL/OIL-265-AR (HL/OIL-265-2V-AR)  
Open



2) - Top plate assembling

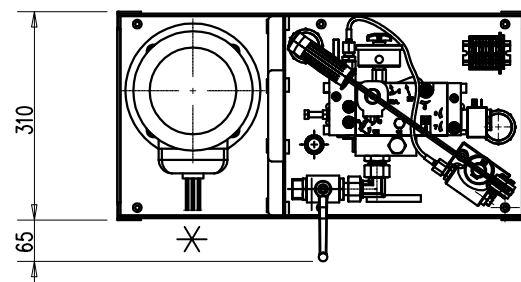
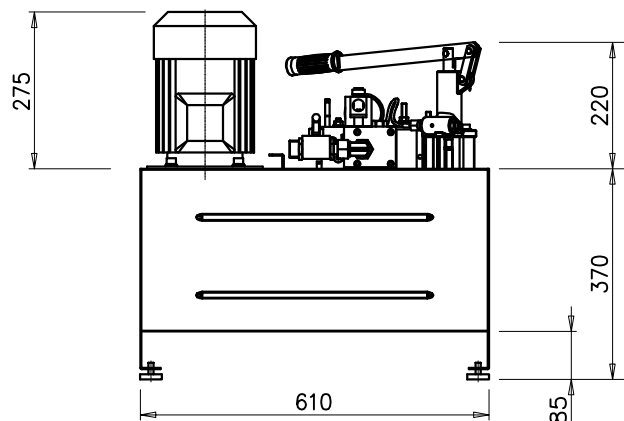


3) - Power Unit HL/OIL-265 (HL/OIL-265-2V)  
Closed



|    |  |                                          |                                          |
|----|--|------------------------------------------|------------------------------------------|
| UT |  | POWER UNIT<br>HL/OIL-265 - HL/OIL-265-2V | DATA<br>01/16                            |
|    |  |                                          | DIS. N°<br>MONT-01/0948-HL-OIL-AR-CLOSED |





- ✱ - MOTOR CABLES LENGTH 1 M  
✱✱ - SPECIAL EXECUTION: PUMP 23 L/M

| OIL QUANTITY (LITRE) | HL/HR |
|----------------------|-------|
| MINIMUM LEVEL        | 4     |
| USEFUL OIL           | 38    |
| TOTAL OIL            | 42    |

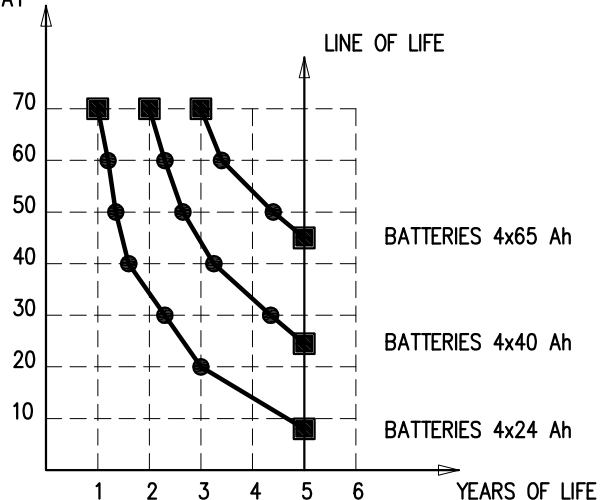
| EMPTY             | HL/HR |
|-------------------|-------|
| POWER UNIT WEIGHT | 50    |

| THREE-PHASE MOTOR AIR 48V - 100Hz |     |    |                  |
|-----------------------------------|-----|----|------------------|
| CV                                | KW  | Ø  | I <sub>N</sub> A |
| 3                                 | 2.2 | 19 | 50               |

- POWER UNIT COMBINED WITH INVERTER PLUS BATTERY  
MAXIMUM POWER CONSUMPTION IN CHARGE 300 W

BATTERIES 4x24/4x40/4x65 Ah  
AUTONOMY 20 RUNS-DAY  
MEDIUM TRAVEL 3.5 M  
DUTY LOAD 250 Kg

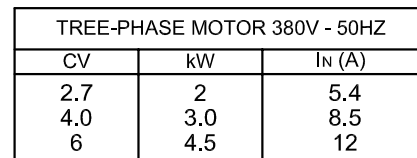
RUNS DAY



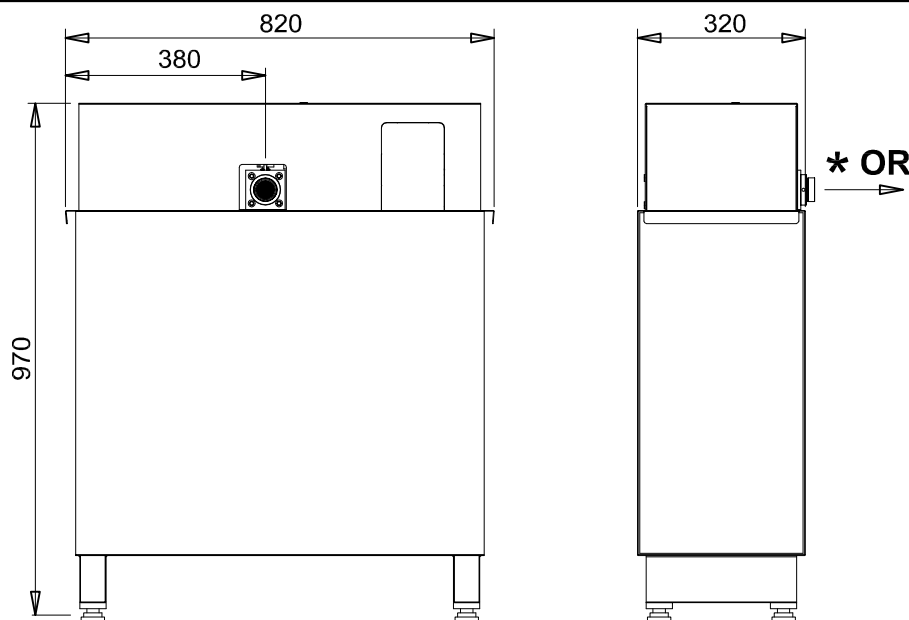
| TRACTION | PUMP L/1' (Ø 19) | JACK (Ø dxe) | STATIC PRESSURE (bar) | P+Q * (Kg) | SPEED (m/s) |
|----------|------------------|--------------|-----------------------|------------|-------------|
| 1:1      | 18               | 50x5         | 35                    | 688        | 0,15        |
| 1:1      | 18               | 50x7.5       | 35                    | 688        | 0,15        |
| 1:1      | 18               | 60x5         | 35                    | 989        | 0,10        |
| 1:1      | 18               | 60x7.5       | 35                    | 989        | 0,10        |
| 2:1      | 18               | 70x5         | 35                    | 673        | 0,15        |
| 2:1      | 18               | 70x7.5       | 35                    | 673        | 0,15        |
| 2:1      | 18               | 80x5         | 35                    | 879        | 0,12        |
| 2:1      | 18               | 80x7.5       | 35                    | 879        | 0,12        |

\* WEIGHT ROD NOT INCLUDED

|    |                                                                                                                                      |                      |
|----|--------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| UT | TABLE TO DETERMINE THE RATES OF<br>PRESSURE - SPEED - POMPE - MOTOR AIR (100Hz)<br>FOR "HL/HR" POWER UNIT RELATING TO ROD Ø AND LOAD | DATE<br>05/17        |
|    |                                                                                                                                      | DWG N°<br>9018/HL-HR |



**OR - HORIZONTAL OUTLET**



- WITHOUT FLYWHEEL

OR - HORIZONTAL OUTLET

### OIL QUANTITY

(with engine size and maximum pump)

|               |           |
|---------------|-----------|
| MINIMUM LEVEL | 40 litri  |
| USEFUL OIL    | 90 litri  |
| TOTAL OIL     | 130 litri |

OILFREE POWER UNIT WEIGHT 125 Kg

### MONO-PHASE MOTOR 230V - 60HZ

| CV  | kW  | I <sub>N</sub> (A) | I <sub>A</sub> (A) |
|-----|-----|--------------------|--------------------|
| 1.6 | 1.2 | 13                 | 30                 |
| 2.4 | 1.8 | 19                 | 44                 |
| 4   | 3   | 29                 | 64                 |
| 6   | 4.5 | 38                 | 84                 |
| 8   | 6   | 48                 | 106                |

### THREE-PHASE MOTOR 380V - 60HZ

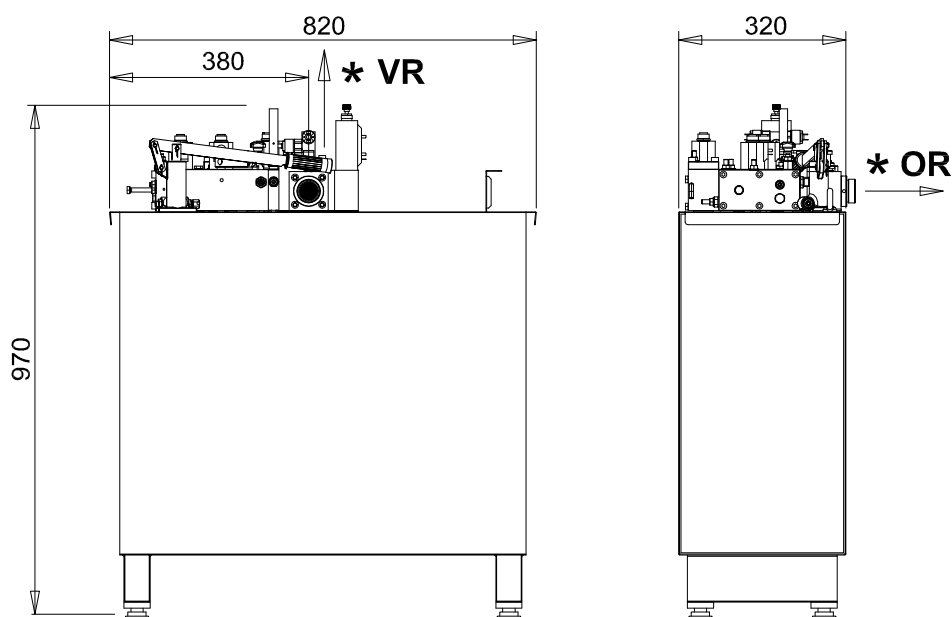
| CV  | kW  | I <sub>N</sub> (A) |
|-----|-----|--------------------|
| 3.5 | 2.6 | 6.4                |
| 5   | 3.7 | 10.2               |
| 8   | 6   | 13.9               |

|                                                          | PUMP L/1' |                  |      |      |      | RAM |           | STATIC PRESSURE (BAR) |      |      |      |      |      |      |      |      |      |      |      |                       |      |      |      |  |                         | TOTAL LOAD<br>(USEFUL LOAD+CAR+CAR-FRAME+ACC.= kg) |  |
|----------------------------------------------------------|-----------|------------------|------|------|------|-----|-----------|-----------------------|------|------|------|------|------|------|------|------|------|------|------|-----------------------|------|------|------|--|-------------------------|----------------------------------------------------|--|
| **                                                       | 90        | 65               | 42   | 27   | 18   | Ød  | e         | 16                    | 18   | 20   | 22   | 24   | 26   | 28   | 30   | 32   | 34   | 36   | 38   | 40                    | 42   | 44   | 46   |  |                         |                                                    |  |
|                                                          | 75        | 55               | 35   | 23   | 15   |     |           | 16                    | 18   | 20   | 22   | 24   | 26   | 28   | 30   | 32   | 34   | 36   | 38   | 40                    | 42   | 44   | 46   |  |                         |                                                    |  |
| SPEED OF RAM IN UPWARD<br>DIRECTION M/SEC (AVERAGE LOAD) | 0.72      | 0.52             | 0.36 | 0.22 | 0.14 | 50  | 5         | 281                   | 320  | 359  | 398  | 438  | 477  | 516  | 556  | 595  | 634  | 673  | 713  | 752                   | 791  | 830  | 870  |  |                         |                                                    |  |
|                                                          |           |                  |      |      |      |     | 7.5       | 267                   | 306  | 345  | 384  | 424  | 463  | 502  | 542  | 581  | 620  | 659  | 699  | 738                   | 777  | 816  | 856  |  |                         |                                                    |  |
|                                                          | 0.50      | 0.36             | 0.24 | 0.15 | 0.09 | 60  | 5         | 392                   | 450  | 505  | 562  | 618  | 675  | 732  | 788  | 845  | 901  | 958  | 1015 | 1071                  | 1128 | 1184 | 1240 |  |                         |                                                    |  |
|                                                          |           |                  |      |      |      |     | 7.5       | 368                   | 425  | 481  | 538  | 594  | 651  | 707  | 764  | 820  | 877  | 933  | 990  | 1046                  | 1103 | 1160 | 1216 |  |                         |                                                    |  |
|                                                          | 0.37      | 0.26             | 0.18 | 0.10 | 0.07 | 70  | 5         | 535                   | 612  | 688  | 766  | 843  | 920  | 997  | 1074 | 1151 | 1227 | 1305 | 1382 | 1458                  | 1535 | 1612 | 1689 |  |                         |                                                    |  |
|                                                          |           |                  |      |      |      |     | 7.5       | 502                   | 579  | 656  | 733  | 810  | 887  | 964  | 1041 | 1118 | 1195 | 1272 | 1349 | 1426                  | 1503 | 1580 | 1657 |  |                         |                                                    |  |
|                                                          | 0.30      | 0.21             | 0.14 | 0.09 | 0.06 | 80  | 5         | 704                   | 805  | 905  | 1006 | 1106 | 1207 | 1307 | 1408 | 1508 | 1609 | 1709 | 1810 | 1910                  | 2011 | 2111 | 2212 |  |                         |                                                    |  |
|                                                          |           |                  |      |      |      |     | 7.5       | 649                   | 749  | 850  | 950  | 1051 | 1151 | 1252 | 1352 | 1453 | 1554 | 1654 | 1755 | 1855                  | 1956 | 2056 | 2157 |  |                         |                                                    |  |
|                                                          | 0.26      | 0.19             | 0.12 | 0.08 | 0.05 | 85  | 12        | 566                   | 667  | 767  | 869  | 968  | 1069 | 1169 | 1270 | 1370 | 1471 | 1571 | 1672 | 1772                  | 1873 | 1973 | 2074 |  |                         |                                                    |  |
|                                                          |           |                  |      |      |      |     | 7.5       | 722                   | 836  | 949  | 1063 | 1176 | 1290 | 1403 | 1517 | 1630 | 1744 | 1857 | 1971 | 2084                  | 2198 | 2311 | 2425 |  |                         |                                                    |  |
|                                                          | 0.21      | 0.15             | 0.10 | 0.07 | 0.04 | 90  | 5         | 890                   | 1017 | 1144 | 1271 | 1398 | 1526 | 1653 | 1780 | 1908 | 2035 | 2162 | 2289 | 2416                  | 2544 | 2671 | 2798 |  |                         |                                                    |  |
|                                                          |           |                  |      |      |      |     | 7.5       | 816                   | 944  | 1071 | 1198 | 1325 | 1453 | 1580 | 1707 | 1834 | 1962 | 2089 | 2216 | 2343                  | 2471 | 2598 | 2725 |  |                         |                                                    |  |
|                                                          |           |                  |      |      |      | 12  | 717       | 844                   | 971  | 1098 | 1225 | 1353 | 1480 | 1607 | 1734 | 1861 | 1988 | 2116 | 2243 | 2370                  | 2497 | 2624 |      |  |                         |                                                    |  |
|                                                          |           |                  |      |      |      | 18  | 1.6 (1.2) |                       |      |      |      |      |      |      |      |      |      |      |      |                       |      |      |      |  | MONO-PHASE<br>220V 60Hz |                                                    |  |
|                                                          |           |                  |      |      |      | 27  | 2.4 (1.8) |                       |      |      |      |      |      |      |      |      |      |      |      |                       |      |      |      |  |                         |                                                    |  |
|                                                          |           |                  |      |      |      | 42  | 4 (3)     |                       |      |      |      |      |      |      |      |      |      |      |      |                       |      |      |      |  |                         |                                                    |  |
|                                                          |           |                  |      |      |      | 18  | 3.5 (2.6) |                       |      |      |      |      |      |      |      |      |      |      |      |                       |      |      |      |  | TREE-PHASE<br>380V 60Hz |                                                    |  |
|                                                          |           |                  |      |      |      | 27  | 3.5 (2.6) |                       |      |      |      |      |      |      |      |      |      |      |      |                       |      |      |      |  |                         |                                                    |  |
|                                                          |           |                  |      |      |      | 42  | 5 (3.7)   |                       |      |      |      |      |      |      |      |      |      |      |      |                       |      |      |      |  |                         |                                                    |  |
|                                                          | 65        | SEE DRAWING 9017 |      |      |      |     |           |                       |      |      |      |      |      |      |      |      |      |      |      | MOTOR POWER H.P. (Kw) |      |      |      |  |                         |                                                    |  |
|                                                          | 90        | SEE DRAWING 9017 |      |      |      |     |           |                       |      |      |      |      |      |      |      |      |      |      |      |                       |      |      |      |  |                         |                                                    |  |

## NOTE:

- THE WEIGHT INDICATED IN THIS TABLE HAS BEEN CALCULATED CONSIDERING THE ROD WEIGHT FOR A MAXIMUM STROKE ( SEE DWG. 9020/... 9030/... )
- FLEXIBLE HOSE OUTLET FROM 1" (M36x2) 1 1/4" (M45x2)
- (\*\*\*) PUMP 100/125/150 L/1' SEE TABLE 9017 60 HZ

|    |  |                                                                                                                                        |                                 |
|----|--|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| UT |  | TABLE TO DETERMINE THE RATES OF<br>PRESSURE - SPEED - POMPE - MOTOR (60Hz)<br>FOR "CM-320-MARK2" POWER UNIT RELATING TO ROD Ø AND LOAD | DATE<br>05/17                   |
|    |  |                                                                                                                                        | DWG. N° 9018<br>CM-320-MK2/60Hz |



**THREE-PHASE MOTOR:** From 2.7 up to 20 CV (2 / 15 kW)  
230 V - 400 V - 415 V; (50/60 HZ)

**MONO-PHASE MOTOR:** From 2 up to 8 CV (1.5 / 6 kW)  
**WITHOUT FLYWHEEL**

**PUMP:** From 18 up to 150 L/1'.

**PRESSURE:** From 12 up to 45 BAR

**SPECIAL EXECUTION:**

- A) PUMP 180 L/1'
- B) FLEX-PIPE 1"1/2 (M52x2)  
FOR PUMP 180 L/1'
- C) HEAT EXCHANGER ARRANGEMENT  
(STANDARD)
- D) CONNECTION KIT EXCHANGER  
(OPTIONAL)

**OIL QUANTITY**

(with engine size and maximum pump)

|               |            |
|---------------|------------|
| MINIMUM LEVEL | 40 litres  |
| USEFUL OIL    | 90 litres  |
| TOTAL OIL     | 130 litres |

**EMPTY  
POWER UNIT  
WEIGHT**

115 KG

**NOTE:**

- DISTRIBUTOR: 15-150 L/1'
- REF TABLE # 9017 - 9018 TO CHOOSE PUMP AND POWER MOTOR
- OUTLET ( \* ) WITH FLEX-PIPE 1" (M36x2) or 1"1/4 (M45x2)
- CABINET ARRANGEMENT:  
0884/CM3-...

**OR** - HORIZONTAL OUTLET

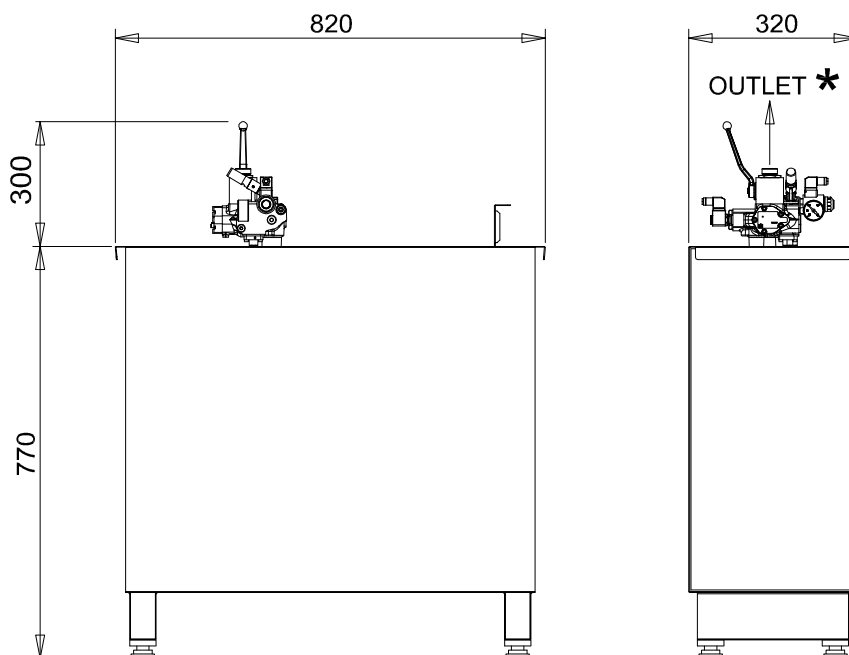
**VR** - VERTICAL OUTLET

|    |  |
|----|--|
| UT |  |
|    |  |

**TECHNIQUE SHEET**  
**POWER UNIT: CM-320-MARK2-A**

**DATE**  
05/17

**DWG N° 9018**  
**CM-320-MK2-A**



**THREE-PHASE MOTOR:** From 2.7 up to 20 CV (2 / 15 kW)  
 230 V-400 V-415 V ; (50/60 HZ)

**MONO-PHASE MOTOR:** From 2 up to 8 CV (1.5 / 6 kW)  
 WITHOUT FLYWHEEL

**PUMP:** From 18 up to 150 L/min.

**PRESSURE:** From 12 up to 60 BAR

| OIL QUANTITY<br>(with engine size and maximum pump) |            |
|-----------------------------------------------------|------------|
| MINIMUM LEVEL                                       | 40 litres  |
| USEFUL OIL                                          | 90 litres  |
| TOTAL OIL                                           | 130 litres |

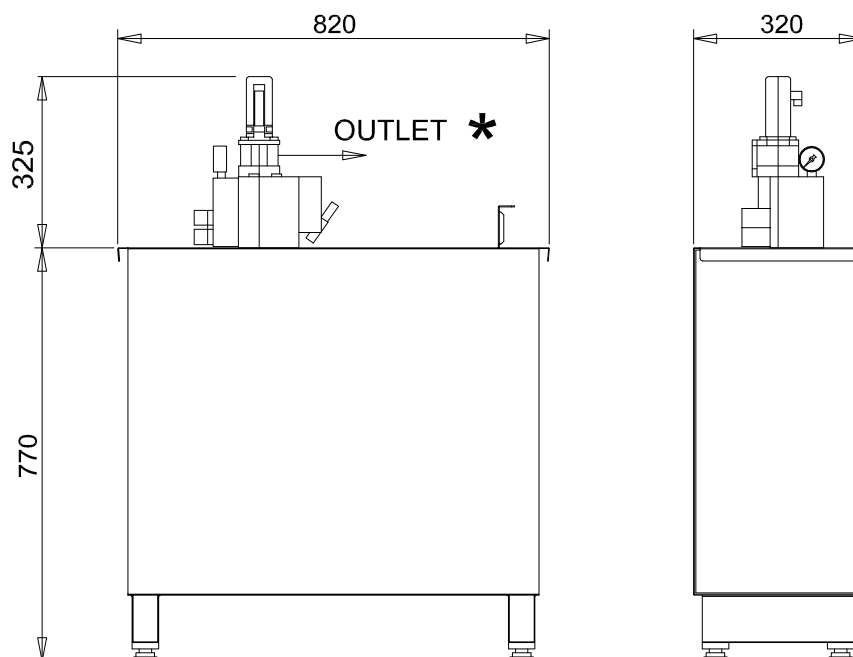
|                               |        |
|-------------------------------|--------|
| EMPTY<br>POWER UNIT<br>WEIGHT | 100 KG |
|-------------------------------|--------|

## NOTE:

- DISTRIBUTOR: I-VALVE 250
- REF TABLE # 9017/E.VALVE, TO CHOOSE PUMP AND POWER MOTOR
- OUTLET ( \* ) WITH FLEX-PIPE 1" (M36x2)
- CABINET ARRANGEMENT:  
0884/CM3-...
- CONNECTION KIT EXCHANGER  
(OPTIONAL)

|    |  |  |                                                |               |       |
|----|--|--|------------------------------------------------|---------------|-------|
| UT |  |  | TECHNIQUE SHEET<br>POWER UNIT: CM-320-MARK2-IV | DATE          | 06/17 |
|    |  |  |                                                | DWG N° 9018   |       |
|    |  |  |                                                | CM-320-MK2-IV |       |





**THREE-PHASE MOTOR:** From 2.7 up to 20 CV (2 / 15 kW)  
230 V-400 V-415 V ; (50/60 HZ)

**MONO-PHASE MOTOR:** From 2 up to 8 CV (1.5 / 6 kW)  
**WITHOUT FLYWHEEL**

**PUMP:** From 18 up to 150 L/min.

**PRESSURE:** From 12 up to 60 BAR

| OIL QUANTITY<br>(with engine size and maximum pump) |            |
|-----------------------------------------------------|------------|
| MINIMUM LEVEL                                       | 40 litres  |
| USEFUL OIL                                          | 90 litres  |
| TOTAL OIL                                           | 130 litres |

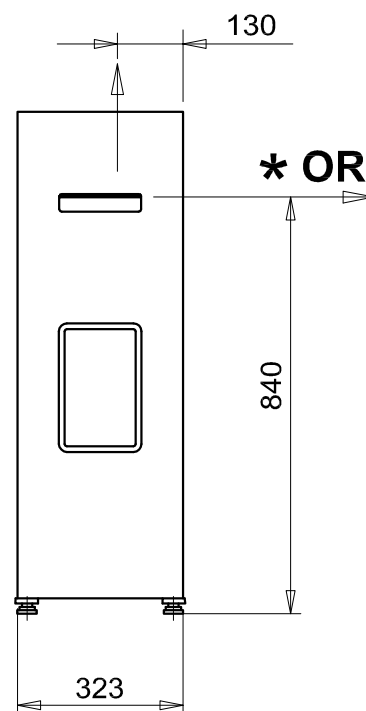
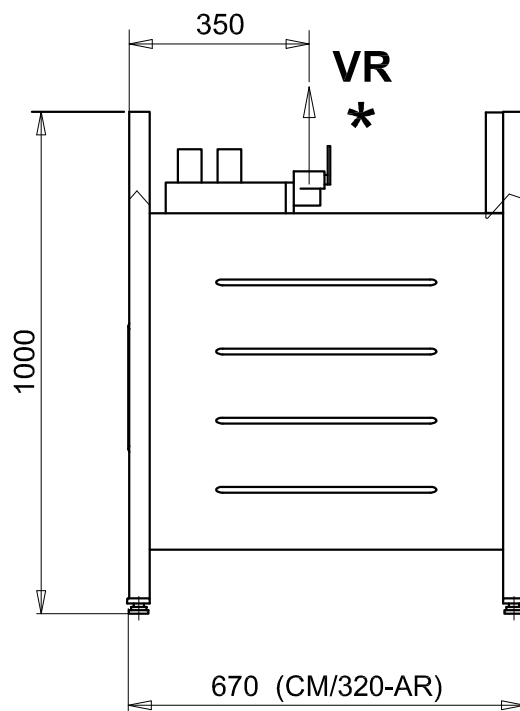
  

|                               |        |
|-------------------------------|--------|
| EMPTY<br>POWER UNIT<br>WEIGHT | 100 KG |
|-------------------------------|--------|

## NOTE:

- DISTRIBUTOR: LRV-175
- REF TABLE # 9017/E.VALVE, TO CHOOSE PUMP AND POWER MOTOR
- OUTLET ( \* ) WITH FLEX-PIPE 1" (M36x2) or 1"1/4 (M45x2)
- CABINET ARRANGEMENT:  
0884/CM3-...
- CONNECTION KIT EXCHANGER  
(OPTIONAL)

|    |  |  |                                                               |                               |
|----|--|--|---------------------------------------------------------------|-------------------------------|
| UT |  |  | <b>TECHNIQUE SHEET</b><br><b>POWER UNIT: CM-320-MARK2-LRV</b> | DATE<br>06/17                 |
|    |  |  |                                                               | DWG N° 9018<br>CM-320-MK2-LRV |



**THREE-PHASE MOTOR:** From 2.7 up to 13 CV (2 / 9.5 kW) (AR = MAX 13 CV / 9.5 kW)  
230 V-400 V-415 V ; (50/60 HZ)

**MONO-PHASE MOTOR:** From 2 up to 8 CV (1.5 / 6 kW)  
(WITHOUT FLYWHEEL)

**PUMP:** From 18 up to 150 L/min. (AR = MAX 150 L/min.)  
**PRESSURE:** From 12 up to 45 BAR

**SPECIAL EXECUTION:**  
HEAT EXCHANGER ARRANGEMENT

| OIL QUANTITY  | TYPE       |
|---------------|------------|
|               | CM/320-AR  |
| MINIMUM LEVEL | 35 litres  |
| USEFUL OIL    | 75 litres  |
| TOTAL OIL     | 110 litres |

| EMPTY<br>POWER UNIT<br>WEIGHT | TYPE      |
|-------------------------------|-----------|
|                               | CM/320-AR |
|                               | 110 KG    |

## NOTE:

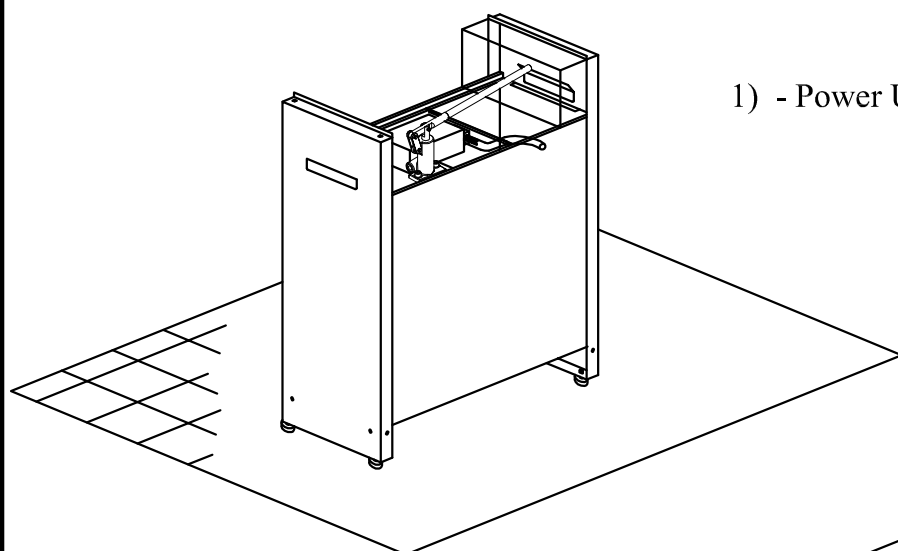
- DISTRIBUTOR: 15-150 L/1'
- REF TABLE # 9017 - 9018 TO CHOICE PUMP AND POWER MOTOR
- OUTLET ( ★ ) WITH FLEX-PIPE 1" (M36x2) or 1"1/4 (M45x2)
- CABINET ARRANGEMENT:  
CM/320-R for CM/320-AR

**OR** - HORIZONTAL OUTLET  
**VR** - VERTICAL OUTLET

|    |  |
|----|--|
| UT |  |
|    |  |

## TECHNIQUE SHEET POWER UNIT: CM/320-AR

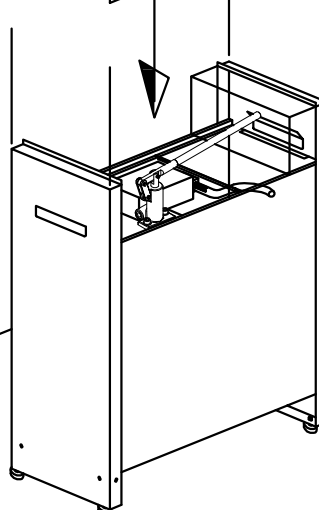
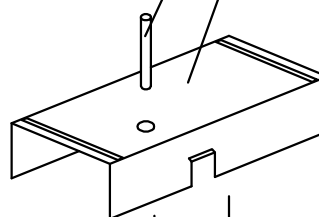
|        |               |
|--------|---------------|
| DATE   | 05/17         |
| DWG N. | 9018/CM320-AR |



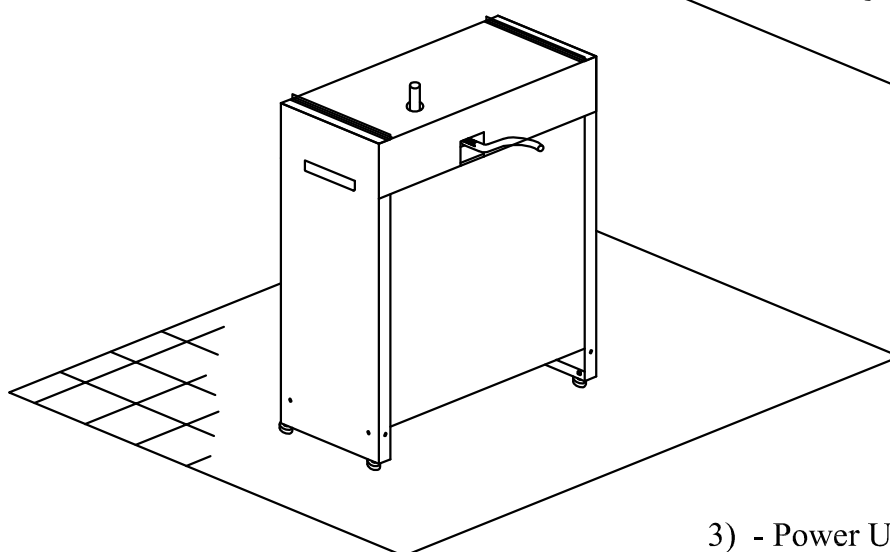
1) - Power Unit CM/320-AR; open

- Item 0575/5

- Item 0948/AR-CAP



2) - Top plate assembling



3) - Power Unit CM/320-R; closed

|    |  |                     |         |                        |
|----|--|---------------------|---------|------------------------|
| UT |  |                     | DATA    | 01/16                  |
|    |  | POWER UNIT CM/320-R | DIS. N° | MONT-01/0948-AR-CLOSED |

UT

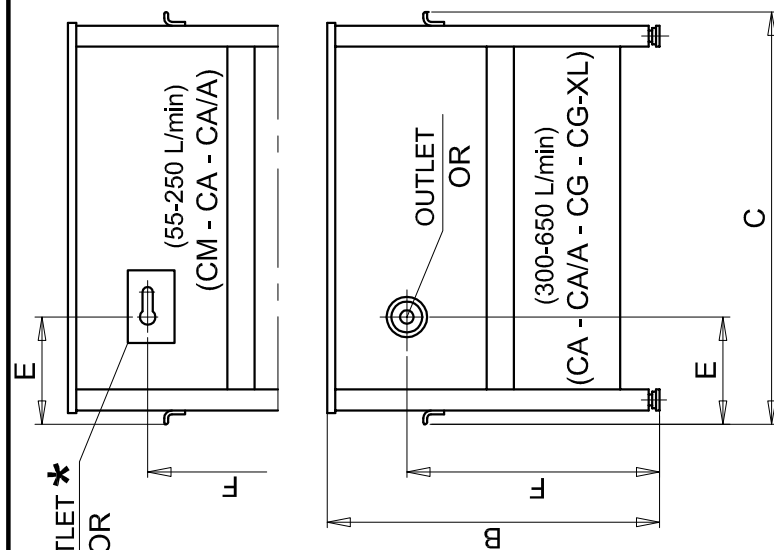
## HYDRAULIC POWER UNIT DIMENSIONS

DATE

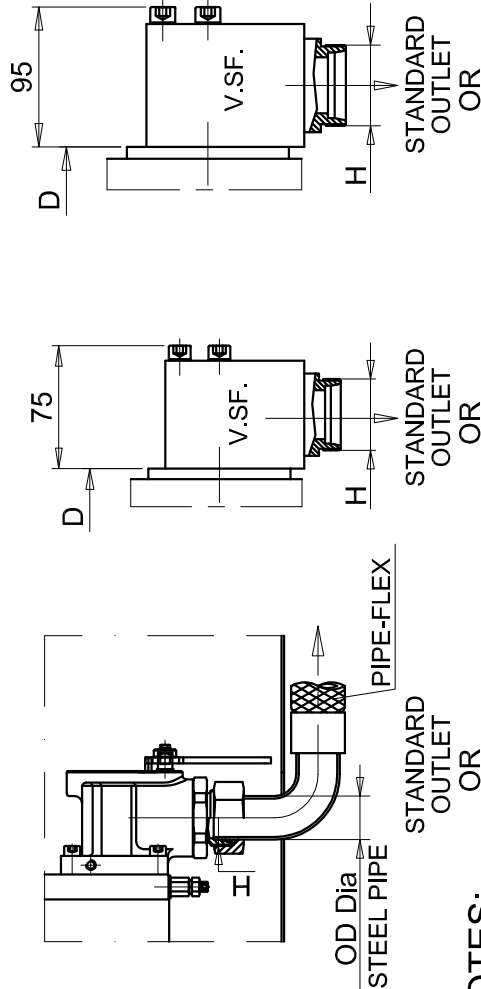
05/16

DWG Nr.

9211



| OUTLET * | OUTLET OR                        | USCITA OR                                 | OUTLET OR                     |
|----------|----------------------------------|-------------------------------------------|-------------------------------|
|          | CM - CA - CA/A<br>(55-250 L/min) | CA - CA/A - CG - CG-XL<br>(300-380 L/min) | CG - CG-XL<br>(440-650 L/min) |

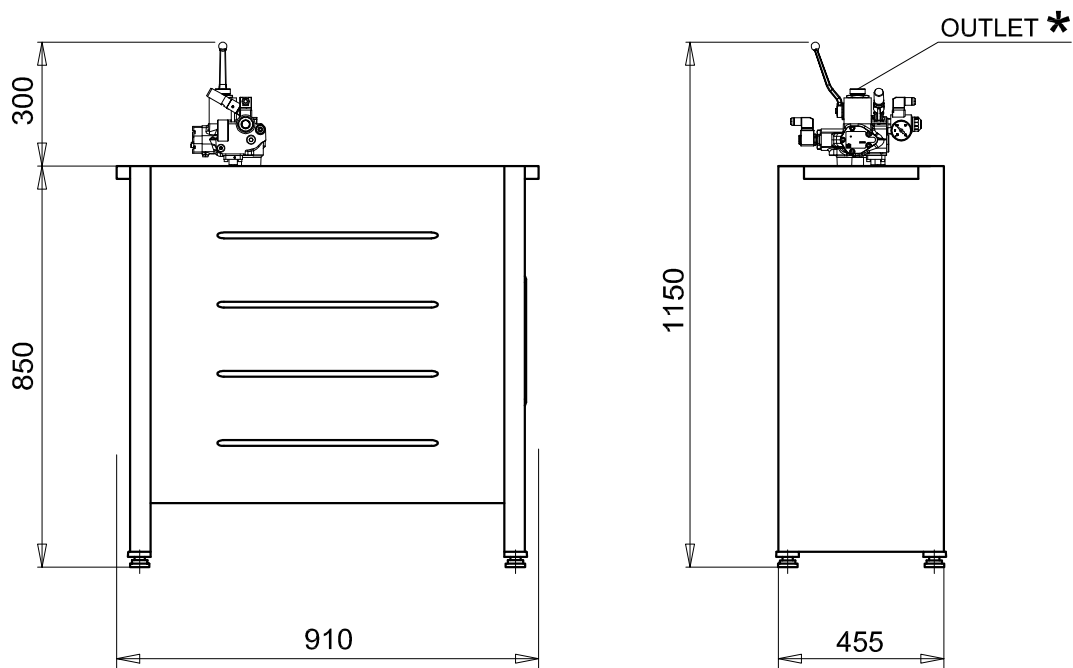


## NOTES:

- For CM - CA we advisable to out (★) with PIPE-FLEX, while is indispensable, in locker insert (Lenght.: MIN. 2 mt.)
- OR: Horizontal standard outlet for units
- MORIS S.r.l. ALWAYS RECOMMENDS THE USE OF A STAR/DELTA STARTING FOR ENGINES WITH A POWER OF 16 Hp (12 Kw)

| UNIT TYPE | MOTOR POWER CV (KW)     | PUMP DELIVERY L/1'     | A             |                        | B (mm) | C (mm) | D (mm) | E (mm)     | F (mm) | G (mm) | H                | WEIGHT WITHOUT OIL (Kg) | QUANTITY OF OIL (LITRES) |     |       |
|-----------|-------------------------|------------------------|---------------|------------------------|--------|--------|--------|------------|--------|--------|------------------|-------------------------|--------------------------|-----|-------|
|           |                         |                        | PIPE FLEX     | OD DIA PIPE STEEL (mm) |        |        |        |            |        |        |                  |                         | MIN. LEV.                | USE | TOTAL |
| CM        | 6 - 20<br>(4.5 - 15)    | 55 — 150               | 1" (DN25)     | 28                     | 1030   | 910    | 465    | 383        | 830    | 450    | M 36x2<br>M 45x2 | 140                     | 50                       | 150 | 200   |
|           |                         |                        | 1 1/4" (DN32) | 35                     | 1030   | 910    | 465    | 383        | 830    | 450    | M 52x2           | 140                     | 50                       | 150 | 200   |
| CA        | 13 - 25<br>(9.5 - 18.5) | 180 — 210              | 1 1/2" (DN38) | 42                     | 1130   | 1000   | 575    | 402<br>313 | 930    | 560    | M 52x2           | 200                     | 55                       | 245 | 300   |
|           |                         |                        | 1 1/2" (DN38) | 42                     | 1130   | 1490   | 575    | 402<br>313 | 930    | 560    | M 52x2           | 315                     | 160                      | 310 | 470   |
| CA/A      | 13 - 50<br>(9.5 - 37)   | 180 — 250<br>300 — 380 | 1 1/2" (DN38) | 42                     | 1260   | 1490   | 775    | 313        | 1060   | 765    | M 52x2<br>2" GAS | 360                     | 220                      | 530 | 750   |
| CG        | 16 - 100<br>(12 - 75)   | 300 — 380<br>440 — 650 | 2" (DN50)     | /                      | 1560   | 1490   | 775    | 313        | 1360   | 765    | M 52x2<br>2" GAS | 400                     | 220                      | 830 | 1050  |
| CG-XL     | 16 - 100<br>(12 - 75)   | 300 — 380<br>440 — 650 | 1 1/2" (DN38) | 42                     | 1560   | 1490   | 775    | 313        | 1360   | 765    | M 52x2<br>2" GAS | 400                     | 220                      | 830 | 1050  |

"GENERAL ALLOWANCES: ±5 mm"



**THREE-PHASE MOTOR:** From 6 up to 25 CV (4.5 / 18.5 kW)  
230 V-400 V-415 V ; (50/60 HZ)

**MONO-PHASE MOTOR:** From 2 up to 8 CV (1.5 / 4.5 kW)

**PUMP:** From 55 up to 210 L/min.

**PRESSURE:** From 12 up to 60 BAR

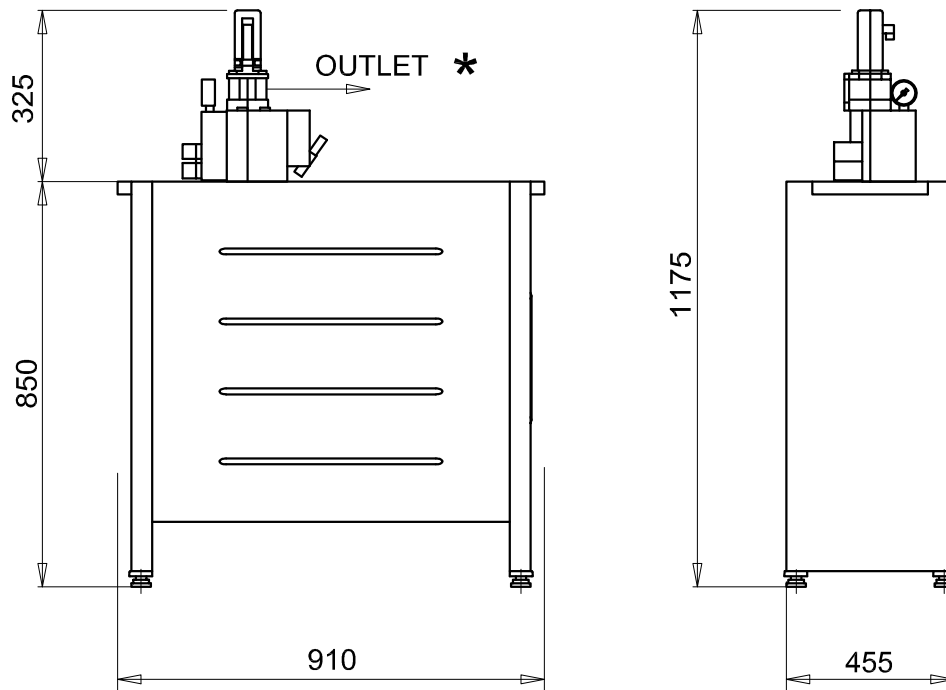
| OIL QUANTITY  | TYPE       |
|---------------|------------|
|               | CM-IV      |
| MINIMUM LEVEL | 50 litres  |
| USEFUL OIL    | 150 litres |
| TOTAL OIL     | 200 litres |

| EMPTY<br>POWER UNIT<br>WEIGHT | TYPE   |
|-------------------------------|--------|
|                               | CM-IV  |
|                               | 106 KG |

## NOTE:

- DISTRIBUTOR: I-VALVE 250
- REF TABLE # 9017/E.VALVE, TO CHOICE PUMP AND POWER MOTOR
- OUTLET ( \* ) WITH FLEX-PIPE 1" (M36x2) FOR PUMP UNTIL 150 L/min
- OUTLET ( \* ) WITH FLEX-PIPE 1"1/2 (M52x2)  
FOR PUMP From 180 L/min. up to 210 L/min.
- CABINET ARRANGEMENT:  
0884/CM-...
- HEAT EXCHANGER ARRANGEMENT

|    |  |                                     |            |
|----|--|-------------------------------------|------------|
| UT |  | TECHNIQUE SHEET<br>POWER UNIT CM-IV | DATE       |
|    |  |                                     | 06/17      |
|    |  |                                     | DWG Nr.    |
|    |  |                                     | 9018/CM-IV |



**THREE-PHASE MOTOR:** From 6 up to 25 CV (4.5 / 18.5 kW)  
 230 V-400 V-415 V ; (50/60 HZ)  
**MONO-PHASE MOTOR:** From 2 up to 8 CV (1.5 / 4.5 kW)  
**PUMP:** From 55 up to 210 L/min.  
**PRESSURE:** From 12 up to 60 BAR

| OIL QUANTITY  | TYPE       |
|---------------|------------|
|               | CM-LRV     |
| MINIMUM LEVEL | 50 litres  |
| USEFUL OIL    | 150 litres |
| TOTAL OIL     | 200 litres |

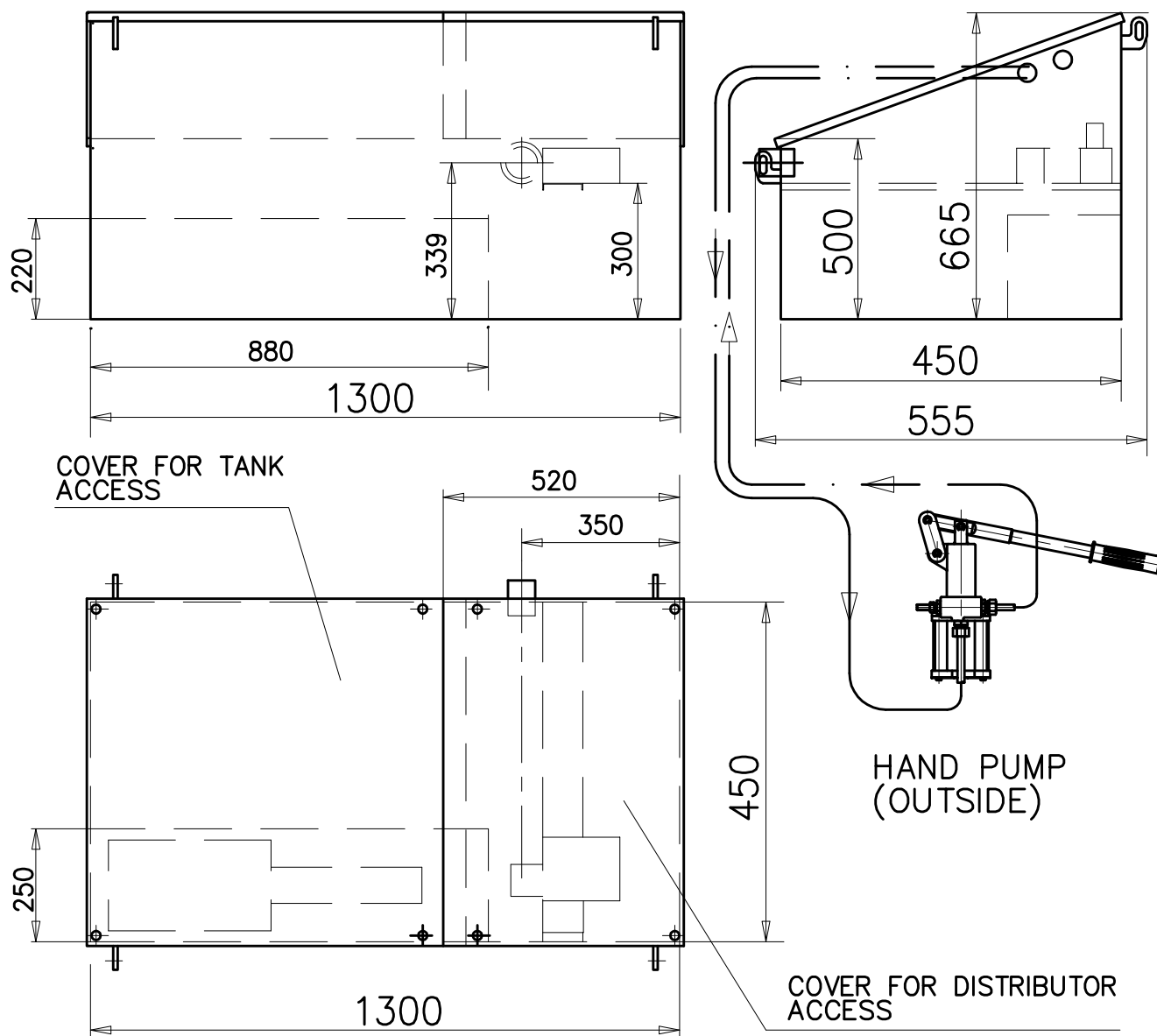
  

| EMPTY<br>POWER UNIT<br>WEIGHT | TYPE   |
|-------------------------------|--------|
|                               | CM-LRV |
|                               | 106 KG |

#### NOTE:

- DISTRIBUTOR: LRV-175
- REF TABLE # 9017/E.VALVE, TO CHOICE PUMP AND POWER MOTOR
- OUTLET ( \* ) WITH FLEX-PIPE 1"1/4 (M45x2) FOR PUMP UNTIL 150 L/min
- OUTLET ( \* ) WITH FLEX-PIPE 1"1/2 (M52x2)  
FOR PUMP From 180 L/min. up to 210 L/min.
- CABINET ARRANGEMENT:  
0884/CM-...
- HEAT EXCHANGER ARRANGEMENT

|    |  |  |                                      |         |             |
|----|--|--|--------------------------------------|---------|-------------|
| UT |  |  | TECHNIQUE SHEET<br>POWER UNIT CM-LRV | DATE    | 06/17       |
|    |  |  |                                      | DWG Nr. | 9018/CM-LRV |



MONO-PHASE MOTOR: From 3 up to 8 CV (2.2 / 6 kW) – WITHOUT FLYWHEEL  
 THREE-PHASE MOTOR: From 6 up to 30 CV (4.5 / 22.5 kW)  
 230 V-400 V-415 V ; (50/60 HZ)

PUMP: From 35 up to 250 L/min.  
 PRESSURE: From 12 up to 45 BAR  
 RAM  $\phi$  : From 50 up to 200 mm

#### NOTE:

- DISTRIBUTOR: 15-250 L/min
- REF TABLE # 9017 ; 9017-60 HZ TO CHOICE PUMP AND POWER MOTOR
- OUTLET WITH FLEX-PIPE 1"1/4 (M45x2) FOR PUMP UP TO 150 L/min.
- OUTLET WITH FLEX-PIPE 1"1/2 (M52x2) FOR PUMP From 180 L/min. up to 250 L/min.

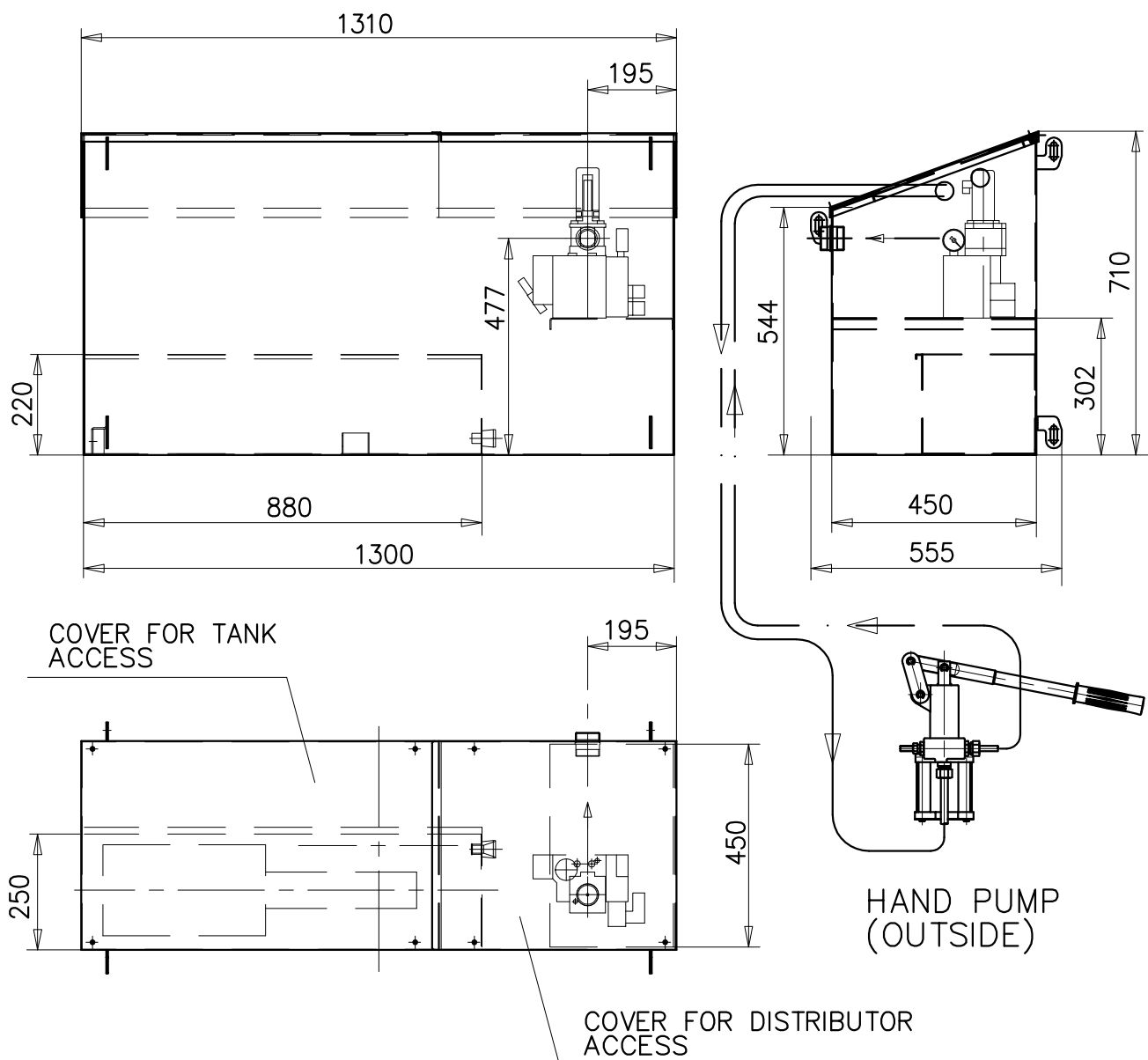
| OIL QUANTITY  |            |
|---------------|------------|
| TYPE          | CIF-2      |
| MINIMUM LEVEL | 70 litres  |
| USEFUL OIL    | 200 litres |
| TOTAL OIL     | 270 litres |

| EMPTY POWER WEIGHT |     |
|--------------------|-----|
| TYPE               | KG  |
| CIF-2              | 160 |

|    |  |
|----|--|
| UT |  |
|    |  |

## TECHNIQUE SHEET POWER UNIT IN THE PIT "CIF-2"

|         |            |
|---------|------------|
| DATE    | 08/13      |
| DWG Nr. | 9018/CIF-2 |



MONO-PHASE MOTOR: From 3 up to 8 CV (2.2 / 6 kW) – WITHOUT FLYWHEEL  
 THREE-PHASE MOTOR: From 6 up to 30 CV (4.5 / 22.5 kW)  
 230 V-400 V-415 V ; (50/60 HZ)

PUMP: From 35 up to 250 L/min.

PRESSURE: From 12 up to 45 BAR

RAM Ø : From 50 up to 200 mm

#### NOTE:

- DISTRIBUTOR: LRV-175
- PLEASE CONTACT OUR TRADE OFFICE  
TO CHOICE PUMP AND POWER MOTOR
- OUTLET WITH FLEX-PIPE 1"1/4 (M45x2)  
FOR PUMP UP TO 150 L/min.
- OUTLET WITH FLEX-PIPE 1"1/2 (M52x2)  
FOR PUMP From 180 L/min. up to 250 L/min.

| OIL QUANTITY  |             |
|---------------|-------------|
| TYPE          | CE/CIF-2-MB |
| MINIMUM LEVEL | 70 litres   |
| USEFUL OIL    | 210 litres  |
| TOTAL OIL     | 280 litres  |

| EMPTY POWER WEIGHT |     |
|--------------------|-----|
| TYPE               | KG  |
| CIF-2-MB           | 160 |

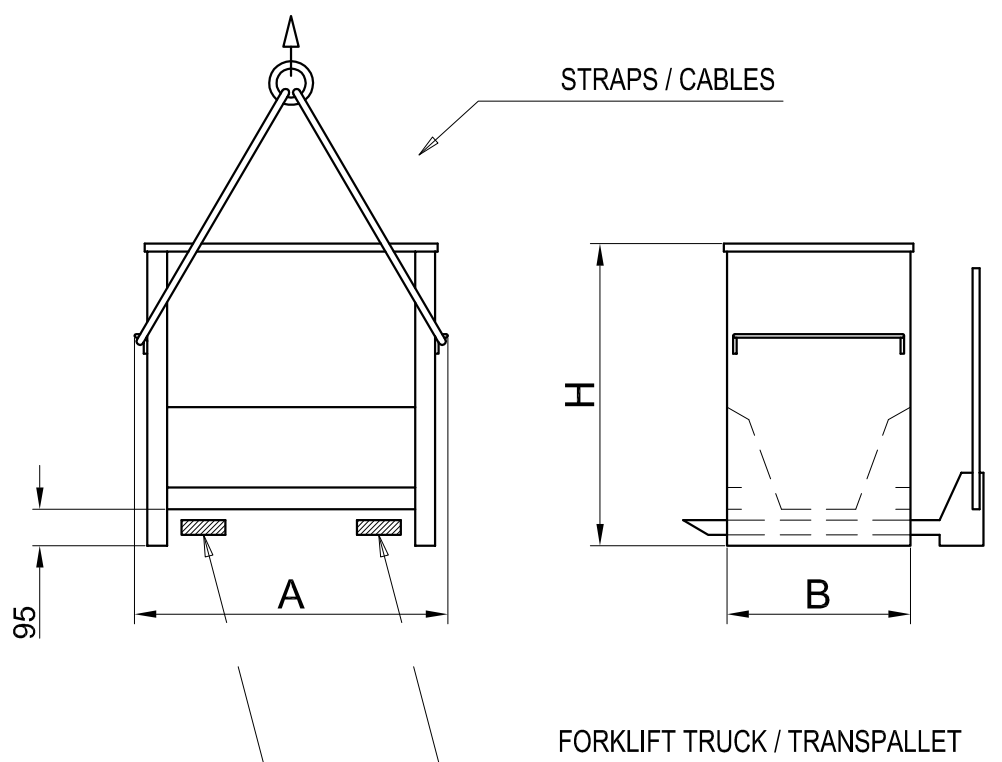
|    |  |
|----|--|
| UT |  |
|    |  |

## DATA SHEET POWER UNIT IN THE PIT "CE/CIF-2-MB"

|         |               |
|---------|---------------|
| DATE    | 04/16         |
| DWG Nr. | 9018/CIF-2-MB |



| UNIT TYPE  | PUMP DELIVERY L/1' | A (mm) | B (mm) | H (mm) | WEIGHT WITHOUT OIL (Kg) |
|------------|--------------------|--------|--------|--------|-------------------------|
| CM/320-MK2 | 15 - 150           | 820    | 323    | 1000   | 115                     |
| CM         | 55 - 150           | 910    | 450    | 1030   | 140                     |
| CA         | 180 - 250          | 1000   | 560    | 1130   | 200                     |
| CA/A       | 180 - 380          | 1490   | 560    | 1130   | 315                     |
| CG         | 300 - 650          | 1490   | 765    | 1260   | 360                     |
| CG-XL      | 300 - 650          | 1490   | 765    | 1560   | 400                     |



MANUAL  
(WHERE PERMITTED)

|    |  |                                 |        |       |
|----|--|---------------------------------|--------|-------|
| UT |  | NOTES FOR GEARCASES<br>HANDLING | DATA   | 06/17 |
|    |  |                                 | N°DIS. | 9213  |

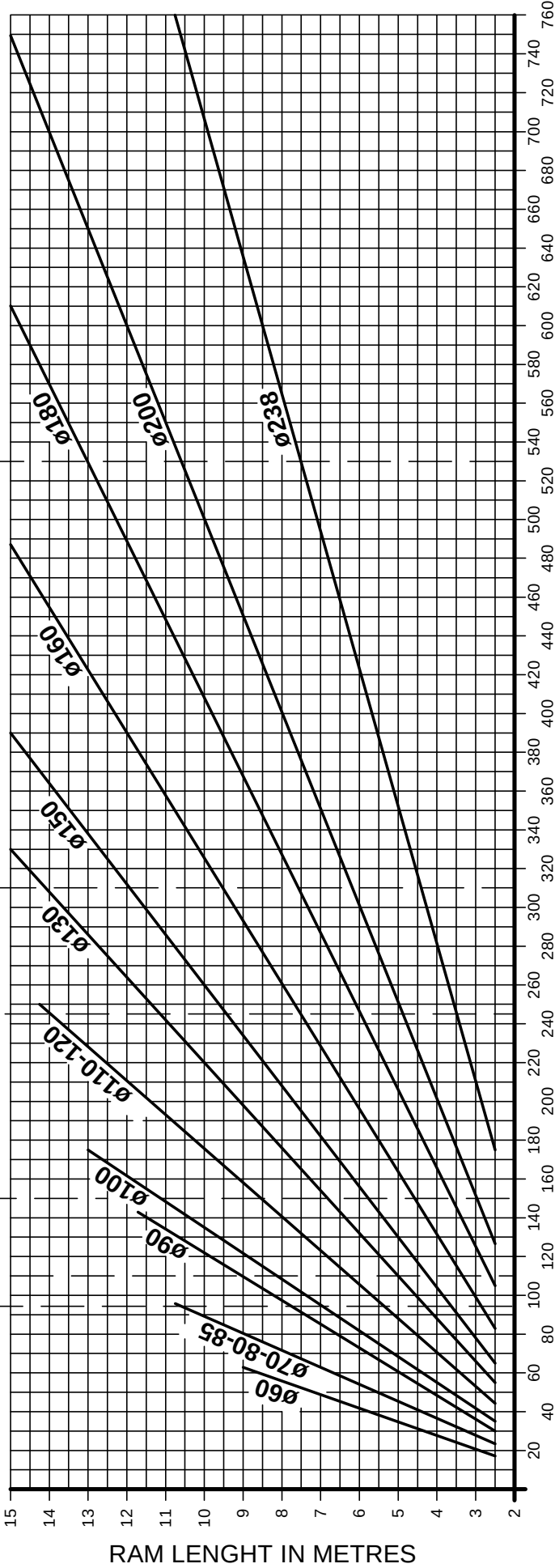
|    |  |
|----|--|
| UT |  |
|    |  |

TEST FOR OIL AMOUNT  
IN POWER UNIT

|        |        |
|--------|--------|
| DATE   | 02/07  |
| DWG Nr | 9215/1 |

NOTE: O.P.M.L. = OIL PER  
MINIMUM LEVEL

|                                     |                   |          |
|-------------------------------------|-------------------|----------|
| POWER UNIT TYPE "CG"                | (TOTAL OIL)       |          |
|                                     | WORKING OIL-LEVEL | O.P.M.L. |
| POWER UNIT TYPE "CA/A"              | (TOTAL OIL)       |          |
|                                     | WORKING OIL-LEVEL | O.P.M.L. |
| POWER UNIT TYPE "CA" (TOTAL OIL)    |                   |          |
|                                     | WORKING OIL-LEVEL | O.P.M.L. |
| POWER UNIT TYPE "CM" (TOTAL OIL)    |                   |          |
|                                     | WORKING OIL-LEVEL | O.P.M.L. |
| POWER UNIT TYPE "CM/320 + CM/320-A" |                   |          |
|                                     | WORKING OIL-LEVEL | O.P.M.L. |
| POWER UNIT TYPE "CM/320-AR"         |                   |          |
|                                     | WORKING OIL-LEVEL | O.P.M.L. |



## CALCULATION OF TOTAL OIL AMOUNT IN INSTALLATION

$$Q_t = Q_c + Q_r + Q_p = \text{LITRES}$$

$Q_c$  = MINMUM OIL AMOUNT NEEDED IN THE POWER UNIT IN ORDER TO SUBMERGE THE PUMP/MOTOR UNIT, DEPENDING ON THE UNIT TYPE.

|               |                    |
|---------------|--------------------|
| TYPE CM/320   | $Q_c = 40$ LITRES  |
| TYPE CM/320-A | $Q_c = 40$ LITRES  |
| TYPE CM       | $Q_c = 50$ LITRES  |
| TYPE CA       | $Q_c = 50$ LITRES  |
| TYPE CA/A     | $Q_c = 160$ LITRES |
| TYPE CG       | $Q_c = 220$ LITRES |

$Q_r$  = OIL AMOUNT IN PIPELINES, RELATIVE TO THE DIAMETER AND LENGHT OF PIPING, ACCORDING TO UNIT TYPE.

|            |                       |
|------------|-----------------------|
| Øe 35 PIPE | $Q_r = 0,65$ LITRES/M |
| Øe 42 PIPE | $Q_r = 1$ LITRES/M    |
| Øe 2" PIPE | $Q_r = 2,16$ LITRES/M |

$Q_p$  = OIL AMOUNT CONTAINED IN RAM: IT CAN BE CALCULATED USING THE GRAPH OF DRAWING N° 9215/1.

|    |  |                                      |         |        |
|----|--|--------------------------------------|---------|--------|
| UT |  | TEST FOR OIL AMOUNT<br>IN POWER UNIT | DATE    | 01/16  |
|    |  |                                      | DWG Nr. | 9215/2 |

- A) THE POWER UNIT MUST LAID ON VIBRATION-DAMPING MATERIAL  
(SEE ADJUSTABLE FEET INSIDE THE UNIT).
- B) TAKE CARE FOR INSTALLING THE FEED PIPE.
- CHOOSE THE SHORTEST PATH USING 90 DEGREES ELBOWS, OR COLD BEND THE PIPE USING A PIPE BANDER.
  - SEE DRAWING Nr. 9300.
- C) CHECK THAT THERE AREN'T TRACES OF CONDENSATION OR DAMPNESS INSIDE THE UNIT, OTHERWISE WARM IT.
- D) WHEN THE CONNECTION ARE TERMINATED, FILL THE UNIT TANK WITH OIL; THE MAXIMUM LEVEL IS INDICATED ON THE MOTOR SUPPORTING BRACKET.
- E) DURING THE FIRST MOTOR/PUMP STARTUP, CHECK WHETHER THE NOISE IS TOO HIGH, IN THIS CASE THE PHASES BY THE ELECTRIC BOARD INPUT MUST BE INVERTED.
- F) BLEED THE AIR OUT OF THE CYLINDER, BY LOOSENING INTERMITTENTLY THE BLEEDING SCREW PLACED ON THE CYLINDER HEAD; CONTINUE AT LOW SPEED UNTIL THE OIL COMES OUT AIRLESS.
- THIS OPERATION MUST BE REPEATED SEVERAL TIMES AFTER THE INSTALLATION TO BLEED ALL THE AIR.
- G) WITH THE ROD COMPLETELY EXTENDED, CHECK THAT THE MINIMUM OIL LEVEL ISN'T BELOW THE MARK ON THE MOTOR SUPPORTING BRACKET (THE MOTOR/PUMP MUST BE IMMersed).

UT

## INSTRUCTION FOR POWER UNIT ASSEMBLING

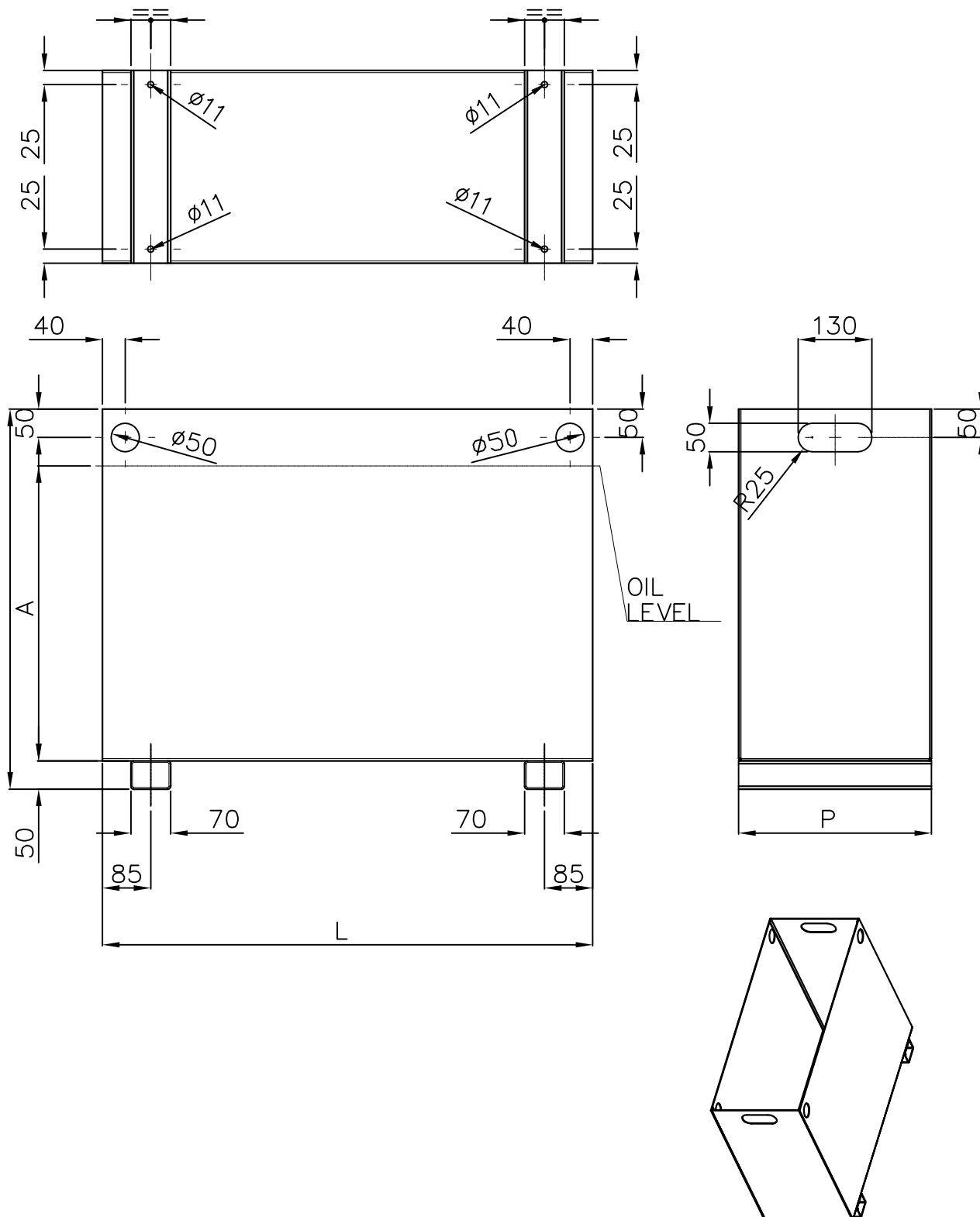
DATE

01/16

DWG Nr.

9280

A+100+50



| POWER UNIT             | CODE        | CAPACITY LITERS | L mm | A mm | P mm | WEIGHT Kg |
|------------------------|-------------|-----------------|------|------|------|-----------|
| CM-320-R               | 0948/R-VSP  | 130             | 714  | 615  | 340  | 27,6      |
| CM                     | 0003/CM-VPS | 200             | 954  | 508  | 485  | 39,7      |
| CA                     | 0461-VSP    | 300             | 1014 | 573  | 595  | 48,8      |
| CA/A                   | 0532 - VSP  | 470             | 1534 | 590  | 595  | 66,4      |
| EPOXY PAINTED RAL 5008 |             |                 |      |      |      |           |

UT

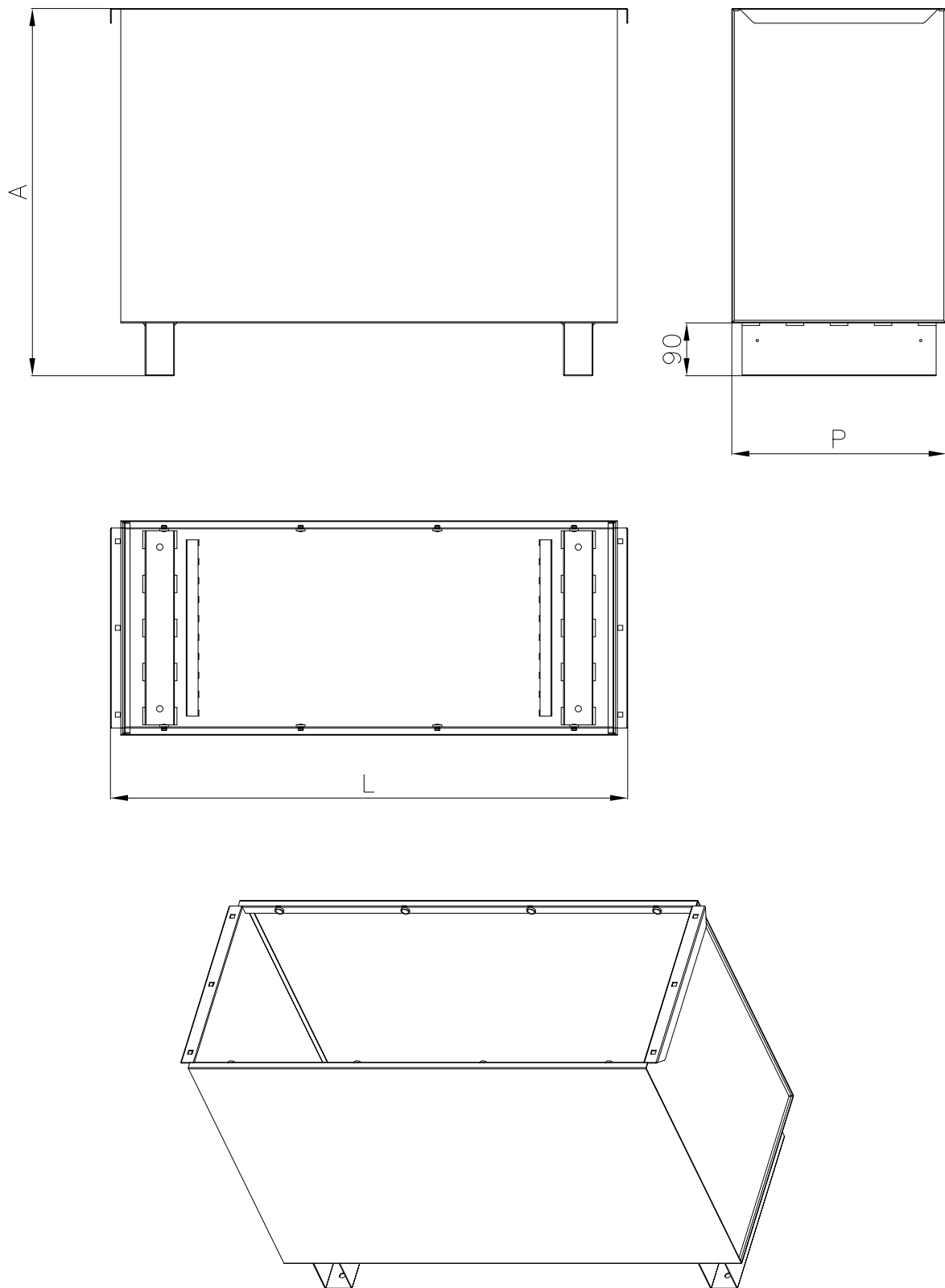
AUXILIARY TANK AGAINST  
POWER UNIT OIL SPILLS EN 81.20

DATE

11/17

DWG N.

9290



| POWER UNIT             | CODE              | CAPACITY<br>LITERS | L mm | A mm | P mm | WEIGHT<br>Kg |
|------------------------|-------------------|--------------------|------|------|------|--------------|
| CM-320-MK2             | H000308AA-A0-COMM | 130                | 880  | 625  | 365  | 21,9         |
| EPOXY PAINTED RAL 5008 |                   |                    |      |      |      |              |

|    |  |                                                          |  |        |       |
|----|--|----------------------------------------------------------|--|--------|-------|
| UT |  | AUXILIARY TANK AGAINST<br>POWER UNIT OIL SPILLS EN 81.20 |  | DATE   | 11/17 |
|    |  |                                                          |  | DWG N. | 9291  |