



Tenute Meccaniche Nautica  
Nautical Mechanical Seals

FLUITEN LEADER IN DESIGN AND MANUFACTURE  
OF MECHANICAL SEALS FOR OVER 50 YEARS



## Would you like to receive our complete technical manual?

Fill in the fields in the **format above**, you will receive them via e-mail within **48 hours of the request**.

no get missing

This demonstrates Fluiten's flexibility and technological competence in facing challenging or unusual operating conditions.

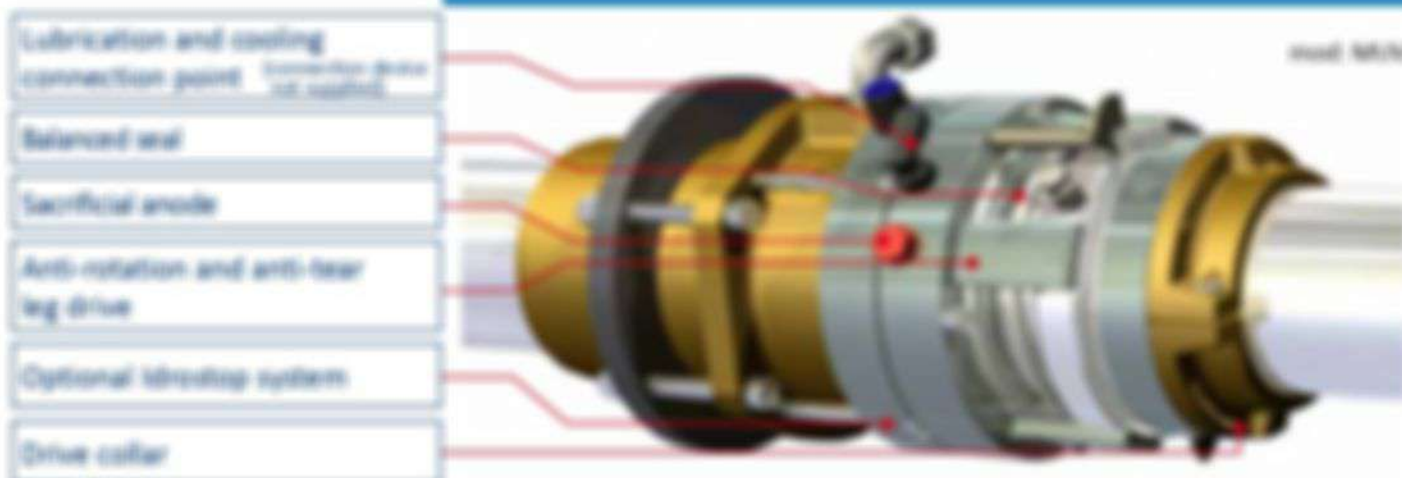
For over 20 years we have used this expertise in the marine sector to produce seals of incomparable reliability which ensure maximum safety in the water.



On request seals can be certified by any of the major maritime institutions. Fluiten engineers customise mechanical seals according to the needs and specifications of each customer. Our customers can be assured of using a safe and technologically advanced sealing system.



## MARINE MECHANICAL SEALS



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leakage of any polluting substance into the environment thus avoiding ecological damage. Another advantage is the reduction of fuel consumption. Fluiten seals are designed to comply with all the customer's specifications, to minimize power absorption, to eliminate the wear of the shaft and the periodic adjustments which other seal systems require.

life. As there is no need to remove barnacles, maintenance costs are reduced.

### SELF-ALIGNING ROTATING RING

The seal designed by Fluiten has a rotating ring with an unusual geometry and drive pin to guarantee perfect perpendicularity between the propeller shaft and the sliding surfaces. This is essential for the correct functioning of the seal even when the shaft is of large dimensions and of high speed. Furthermore, the drive system does not leave any scratches on the shaft and no scoring does not occur during dismantling.

### COST REDUCTION

The Fluiten mechanical seal does not have any parts which could cause friction on the shaft and therefore the wear which is present in other systems, such as packing and lip, does not occur. With regards to power absorption saving, the Fluiten seal is hydraulically balanced and absorbs less energy than the aforementioned devices and enhances performance.



## MUV-MUSV MECHANICAL SEALS

The MUV and MUSV models can be installed on shafts from 40mm to 125mm; in these cases the seal ring of the stationary element is in special graphite (231) and that of the rotating element is in chrome molybdenum steel (X12) or silicon carbide (SiC). On request seals can be certified by any of the major maritime institutions.



## Features

- Optional pneumatic seal-off system, EMOSEAL
- Lubrication and cooling connection
- Rotating ring in anti-wear material for better resistance to abrasion
- Balanced stationary ring to reduce power absorption; available also in split version
- Self-aligning drive collar
- Multiple setting plate for easy and correct assembling



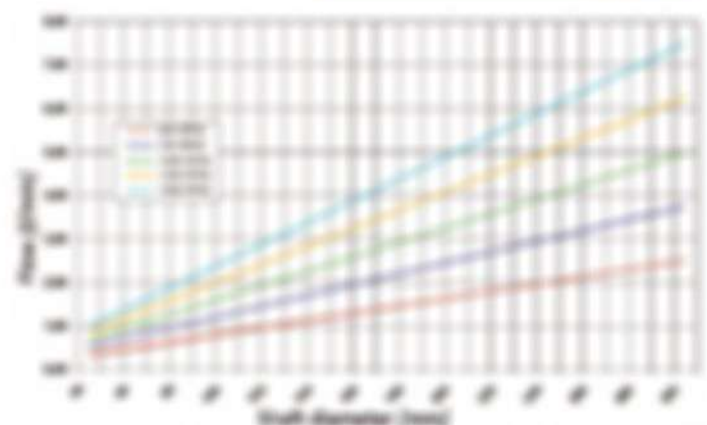
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## Operating Limits

|                  |                  |
|------------------|------------------|
| DIMENSION (mm)   | 40MM-60 TO 125   |
| SPEED (rpm)      | ≤ 50             |
| TEMPERATURE (°C) | -5 TO 80         |
| PRESSURE (bar)   | FROM VACUUM TO 5 |

Operating conditions which differ from those indicated can be evaluated by our Sales Engineers. Speed and pressure values indicated are not strictly guaranteed; they should be determined by calculating the P<sub>1</sub> bearing in mind the temperature as well as the physical and chemical characteristics of the sealed fluid.



MICRO-MECHANICAL SEALS



HIGH TEMPERATURE OR WATER, ACID, ALKALI



NO LEAKAGE TO ATMOSPHERE



SPECIAL TECHNICAL SEALS

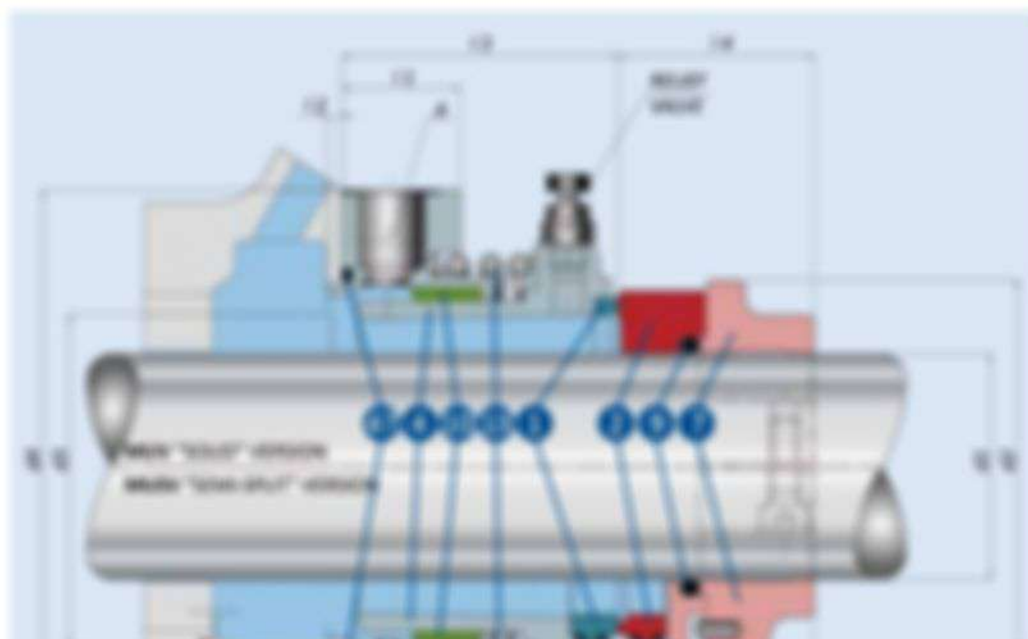


SPECIAL SHAFT CONNECTIONS



FLANGE SEALS

Images and dimensions may differ slightly from those indicated in the literature



## Start list

[illegible]

- 1) **Interspersed** (tag)  
2nd: **Non-Integrated** fragments  
2nd: **4th-5th** = **Extensively**  
**Integrated** fragments
- 2) **Scattered** (tag)  
1st: **Chromosomal**  
2nd: **Below 1-particle**
- 3) **Real** (tag)  
1: **4th-5th**  
2d: **Whole** (tag)
- 4) **Gene** (tag)  
1d: **Whole** (tag)  
2: **Whole** (tag)
- 5) **Scattered** (tag) (tag)  
1st: **Chromosomal**
- 6) **Interspersed** (tag) (tag)  
1st: **Chromosomal**



**Would you like to receive our complete technical manual?**

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- 86 Number of missing, top level  
split: *Phaeocystis*
- 88 Number of missing, top level  
split: *Phaeocystis*
- 100 Number of stationary, top level  
split: *Phaeocystis*
- 106 Number of stationary, top level  
split: *Phaeocystis*
- 110 Spring  
2 sets data
- 112 Year levels, quarter  
split: *Phaeocystis*

[illegible]

Reprints are available. For more information about this book, please contact the Technical Department at 01470 606000.

## MMS MECHANICAL SEAL

The Fluiten MMS seal is ideal for marine shafts from 100 mm to 300 mm. Equipped with multi springs which guarantee a uniform load and tolerance of axial and radial movement and vibrations. In emergencies, the worn parts of the MMS seal can be replaced with the semi-split component spare part kit, without dismantling the shaft.



## Features

- a) Optional pneumatic sealable system "Subsealcap"
- b) Connection for lubrication and cooling
- c) Balanced stationary ring to reduce power absorption
- d) Rotation ring in rotation resistant anti-wear material
- e) Self-aligning drive collar
- f) Reliable positioners for water and correct installation
- g) Tool ready in marine forces for improved safety and resistance



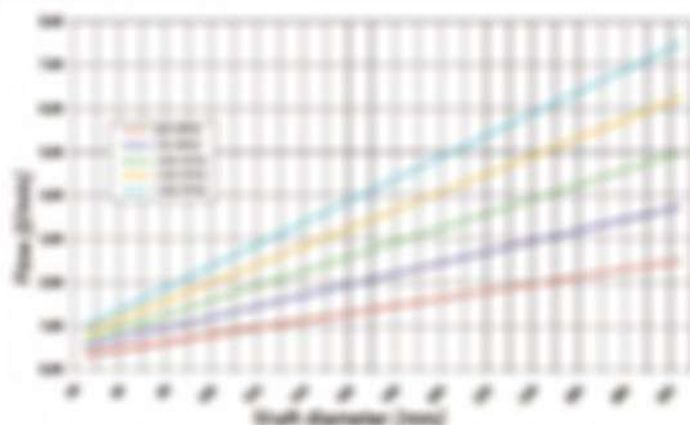
**Would you like to receive our complete technical manual?**

Fill in the fields in the **format above**, you will receive them via e-mail within **48 hours** of the request.

## Operating Limits

|                  |                  |
|------------------|------------------|
| DIMENSION (mm)   | FROM 100 TO 300  |
| SPEED (m/s)      | ≤ 50             |
| TEMPERATURE (°C) | -5 TO 80         |
| PRESSURE (bar)   | FROM VACUUM TO 5 |

Operating conditions which differ from those indicated can be evaluated by our Sales Engineers. Speed and pressure values indicated are not absolute values. They should be determined by calculating them. It's bearing in mind the temperature as well as the physical and chemical characteristics of the sealed fluid.



MMS MECHANICAL SEAL



MMS-1 MECHANICAL SEAL



MMS-2 MECHANICAL SEAL

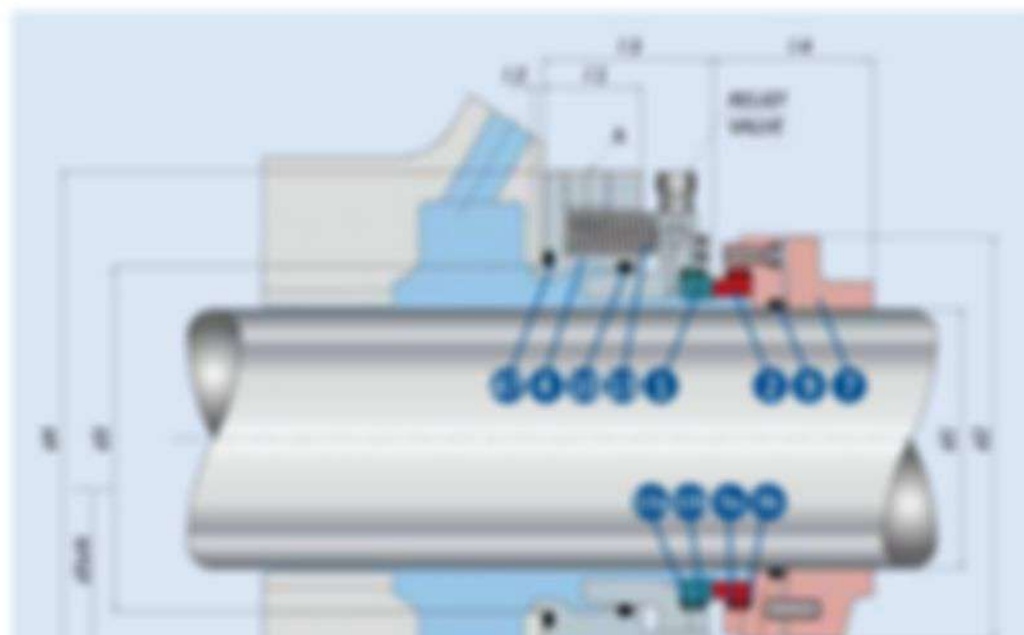


MMS-3 MECHANICAL SEAL



MMS-4 MECHANICAL SEAL

Images and dimensions may differ slightly from those indicated in the literature.



## Part list

## SEALS 100%

- 1. Rotating ring (100%)
- 2. Stationary ring (100%)
- 3. Rotating ring (100%)
- 4. Stationary ring (100%)
- 5. Rotating ring (100%)
- 6. Stationary ring (100%)
- 7. Rotating ring (100%)
- 8. Stationary ring (100%)
- 9. Rotating ring (100%)
- 10. Stationary ring (100%)
- 11. Rotating ring (100%)
- 12. Stationary ring (100%)



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| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 132 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 | 143 | 144 | 145 | 146 | 147 | 148 | 149 | 150 | 151 | 152 | 153 | 154 | 155 | 156 | 157 | 158 | 159 | 160 | 161 | 162 | 163 | 164 | 165 | 166 | 167 | 168 | 169 | 170 | 171 | 172 | 173 | 174 | 175 | 176 | 177 | 178 | 179 | 180 | 181 | 182 | 183 | 184 | 185 | 186 | 187 | 188 | 189 | 190 | 191 | 192 | 193 | 194 | 195 | 196 | 197 | 198 | 199 | 200 | 201 | 202 | 203 | 204 | 205 | 206 | 207 | 208 | 209 | 210 | 211 | 212 | 213 | 214 | 215 | 216 | 217 | 218 | 219 | 220 | 221 | 222 | 223 | 224 | 225 | 226 | 227 | 228 | 229 | 230 | 231 | 232 | 233 | 234 | 235 | 236 | 237 | 238 | 239 | 240 | 241 | 242 | 243 | 244 | 245 | 246 | 247 | 248 | 249 | 250 | 251 | 252 | 253 | 254 | 255 | 256 | 257 | 258 | 259 | 260 | 261 | 262 | 263 | 264 | 265 | 266 | 267 | 268 | 269 | 270 | 271 | 272 | 273 | 274 | 275 | 276 | 277 | 278 | 279 | 280 | 281 | 282 | 283 | 284 | 285 | 286 | 287 | 288 | 289 | 290 | 291 | 292 | 293 | 294 | 295 | 296 | 297 | 298 | 299 | 300 | 301 | 302 | 303 | 304 | 305 | 306 | 307 | 308 | 309 | 310 | 311 | 312 | 313 | 314 | 315 | 316 | 317 | 318 | 319 | 320 | 321 | 322 | 323 | 324 | 325 | 326 | 327 | 328 | 329 | 330 | 331 | 332 | 333 | 334 | 335 | 336 | 337 | 338 | 339 | 340 | 341 | 342 | 343 | 344 | 345 | 346 | 347 | 348 | 349 | 350 | 351 | 352 | 353 | 354 | 355 | 356 | 357 | 358 | 359 | 360 | 361 | 362 | 363 | 364 | 365 | 366 | 367 | 368 | 369 | 370 | 371 | 372 | 373 | 374 | 375 | 376 | 377 | 378 | 379 | 380 | 381 | 382 | 383 | 384 | 385 | 386 | 387 | 388 | 389 | 390 | 391 | 392 | 393 | 394 | 395 | 396 | 397 | 398 | 399 | 400 | 401 | 402 | 403 | 404 | 405 | 406 | 407 | 408 | 409 | 410 | 411 | 412 | 413 | 414 | 415 | 416 | 417 | 418 | 419 | 420 | 421 | 422 | 423 | 424 | 425 | 426 | 427 | 428 | 429 | 430 | 431 | 432 | 433 | 434 | 435 | 436 | 437 | 438 | 439 | 440 | 441 | 442 | 443 | 444 | 445 | 446 | 447 | 448 | 449 | 450 | 451 | 452 | 453 | 454 | 455 | 456 | 457 | 458 | 459 | 460 | 461 | 462 | 463 | 464 | 465 | 466 | 467 | 468 | 469 | 470 | 471 | 472 | 473 | 474 | 475 | 476 | 477 | 478 | 479 | 480 | 481 | 482 | 483 | 484 | 485 | 486 | 487 | 488 | 489 | 490 | 491 | 492 | 493 | 494 | 495 | 496 | 497 | 498 | 499 | 500 | 501 | 502 | 503 | 504 | 505 | 506 | 507 | 508 | 509 | 510 | 511 | 512 | 513 | 514 | 515 | 516 | 517 | 518 | 519 | 520 | 521 | 522 | 523 | 524 | 525 | 526 | 527 | 528 | 529 | 530 | 531 | 532 | 533 | 534 | 535 | 536 | 537 | 538 | 539 | 540 | 541 | 542 | 543 | 544 | 545 | 546 | 547 | 548 | 549 | 550 | 551 | 552 | 553 | 554 | 555 | 556 | 557 | 558 | 559 | 560 | 561 | 562 | 563 | 564 | 565 | 566 | 567 | 568 | 569 | 570 | 571 | 572 | 573 | 574 | 575 | 576 | 577 | 578 | 579 | 580 | 581 | 582 | 583 | 584 | 585 | 586 | 587 | 588 | 589 | 590 | 591 | 592 | 593 | 594 | 595 | 596 | 597 | 598 | 599 | 600 | 601 | 602 | 603 | 604 | 605 | 606 | 607 | 608 | 609 | 610 | 611 | 612 | 613 | 614 | 615 | 616 | 617 | 618 | 619 | 620 | 621 | 622 | 623 | 624 | 625 | 626 | 627 | 628 | 629 | 630 | 631 | 632 | 633 | 634 | 635 | 636 | 637 | 638 | 639 | 640 | 641 | 642 | 643 | 644 | 645 | 646 | 647 | 648 | 649 | 650 | 651 | 652 | 653 | 654 | 655 | 656 | 657 | 658 | 659 | 660 | 661 | 662 | 663 | 664 | 665 | 666 | 667 | 668 | 669 | 670 | 671 | 672 | 673 | 674 | 675 | 676 | 677 | 678 | 679 | 680 | 681 | 682 | 683 | 684 | 685 | 686 | 687 | 688 | 689 | 690 | 691 | 692 | 693 | 694 | 695 | 696 | 697 | 698 | 699 | 700 | 701 | 702 | 703 | 704 | 705 | 706 | 707 | 708 | 709 | 710 | 711 | 712 | 713 | 714 | 715 | 716 | 717 | 718 | 719 | 720 | 721 | 722 | 723 | 724 | 725 | 726 | 727 | 728 | 729 | 730 | 731 | 732 | 733 | 734 | 735 | 736 | 737 | 738 | 739 | 740 | 741 | 742 | 743 | 744 | 745 | 746 | 747 | 748 | 749 | 750 | 751 | 752 | 753 | 754 | 755 | 756 | 757 | 758 | 759 | 760 | 761 | 762 | 763 | 764 | 765 | 766 | 767 | 768 | 769 | 770 | 771 | 772 | 773 | 774 | 775 | 776 | 777 | 778 | 779 | 780 | 781 | 782 | 783 | 784 | 785 | 786 | 787 | 788 | 789 | 790 | 791 | 792 | 793 | 794 | 795 | 796 | 797 | 798 | 799 | 800 | 801 | 802 | 803 | 804 | 805 | 806 | 807 | 808 | 809 | 810 | 811 | 812 | 813 | 814 | 815 | 816 | 817 | 818 | 819 | 820 | 821 | 822 | 823 | 824 | 825 | 826 | 827 | 828 | 829 | 830 | 831 | 832 | 833 | 834 | 835 | 836 | 837 | 838 | 839 | 840 | 841 | 842 | 843 | 844 | 845 | 846 | 847 | 848 | 849 | 850 | 851 | 852 | 853 | 854 | 855 | 856 | 857 | 858 | 859 | 860 | 861 | 862 | 863 | 864 | 865 | 866 | 867 | 868 | 869 | 870 | 871 | 872 | 873 | 874 | 875 | 876 | 877 | 878 | 879 | 880 | 881 | 882 | 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| 1186 | 1187 | 1188 | 1189 | 1190 | 1191 | 1192 | 1193 | 1194 | 1195 | 1196 | 1197 | 1198 | 1199 | 1200 | 1201 | 1202 | 1203 | 1204 | 1205 | 1206 | 1207 | 1208 | 1209 | 1210 | 1211 | 1212 | 1213 | 1214 | 1215 | 1216 | 1217 | 1218 | 1219 | 1220 | 1221 | 1222 | 1223 | 1224 | 1225 | 1226 | 1227 | 1228 | 1229 | 1230 | 1231 | 1232 | 1233 | 1234 | 1235 | 1236 | 1237 | 1238 | 1239 | 1240 | 1241 | 1242 | 1243 | 1244 | 1245 | 1246 | 1247 | 1248 | 1249 | 1250 | 1251 | 1252 | 1253 | 1254 | 1255 | 1256 | 1257 | 1258 | 1259 | 1260 | 1261 | 1262 | 1263 | 1264 | 1265 | 1266 | 1267 | 1268 | 1269 | 1270 | 1271 | 1272 | 1273 | 1274 | 1275 | 1276 | 1277 | 1278 | 1279 | 1280 | 1281 | 1282 | 1283 | 1284 | 1285 | 1286 | 1287 | 1288 | 1289 | 1290 | 1291 | 1292 | 1293 | 1294 | 1295 | 1296 | 1297 | 1298 | 1299 | 1300 | 1301 | 1302 | 1303 | 1304 | 1305 | 1306 | 1307 | 1308 | 1309 | 1310 | 1311 | 1312 | 1313 | 1314 | 1315 | 1316 | 1317 | 1318 | 1319 | 1320 | 1321 | 1322 | 1323 | 1324 | 1325 | 1326 | 1327 | 1328 | 1329 | 1330 | 1331 | 1332 | 1333 | 1334 | 1335 | 1336 | 1337 | 1338 | 1339 | 1340 | 1341 | 1342 | 1343 | 1344 | 1345 | 1346 | 1347 | 1348 | 1349 | 1350 | 1351 | 1352 | 1353 | 1354 | 1355 | 1356 | 1357 | 1358 | 1359 | 1360 | 1361 | 1362 | 1363 | 1364 | 1365 | 1366 | 1367 | 1368 | 1369 | 1370 | 1371 | 1372 | 1373 | 1374 | 1375 | 1376 | 1377 | 1378 | 1379 | 1380 | 1381 | 1382 | 1383 | 1384 | 1385 | 1386 | 1387 | 1388 | 1389 | 1390 | 1391 | 1392 | 1393 | 1394 | 1395 | 1396 | 1397 | 1398 | 1399 | 1400 | 1401 | 1402 | 1403 | 1404 | 1405 | 1406 | 1407 | 1408 | 1409 | 1410 | 1411 | 1412 | 1413 | 1414 | 1415 | 1416 | 1417 | 1418 | 1419 | 1420 | 1421 | 1422 | 1423 | 1424 | 1425 | 1426 | 1427 | 1428 | 1429 | 1430 | 1431 | 1432 | 1433 | 1434 | 1435 | 1436 | 1437 | 1438 | 1439 | 1440 | 1441 | 1442 | 1443 | 1444 | 1445 | 1446 | 1447 | 1448 | 1449 | 1450 |
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## ASSEMBLY AND MAINTENANCE

## MAINTAINING THE SEAL FACES

1. Handle the seal carefully in a very clean place in order to prevent shock and contact with dirty parts. The seal surfaces are micro-lepped; scratches or knicks could damage them. Verify the shaft dimensions.
2. Slide the seal body onto the shaft including the stationary ring while ensuring that the O-ring between the seal body and stem tube fits in its seat.
3. Position the body so that the vent valve is on top.
4. Screw on tightly the mechanical seal onto the stem tube using the appropriate screws.



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10. Secure the drive collar onto the shaft, tightening the screws as indicated in the User Manual (107007).
11. For the M42/M42D seals rotate the setting plate (see p. 11) then retighten the nuts. For M42S seals, loosen the nuts and slide 10mm (see p. 10).



12. Connect the flushing tube to the appropriate connection located on the seal body. Open the water valve and vent using the appropriate valve (See fig. 10).
13. It is advisable to arrange a T fitting with a fresh water and sea water outlets. Both connections have close/open taps which simplify the flushing/washing of the seal.

When the craft is in dry-dock, wash the seal with fresh water.

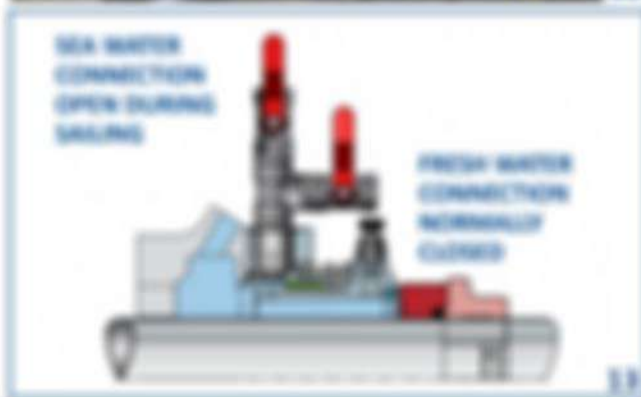
The seal should be washed periodically when the craft is stationary (as in the case of the shaft bushings) with a fresh water connection. Before starting the engine, ensure that the seal is clean both inside and outside.

The seal must be carefully washed if there are any dirt.



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## DROSTOP PNEUMATIC SAFETY SYSTEM

To improve safety, Fluiten **WMA** and **WMS** seals can be equipped on request with the **DROSTOP**; this device blocks the infiltration of water from the stern tube when inflated.

The barrier is created by a special silicone rubber air chamber, shaped and inserted into a specially dimensioned flange. An internal valve allows air to be blown in which in turn inflates the drostop, and makes it adhere to the shaft, preventing water infiltration when the shaft is still. The inflation kit is not included. The inflation pressure must be 2 barg.

In the case of mechanical failure, the drostop makes it possible to bring the craft into port. It's important to block the shaft to avoid damage to the air chamber of the drostop.



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temperature detection kit has been developed to monitor the functioning of the seals.

By monitoring the temperature of the seal rings it is possible to:

- prevent dry-running
- prevent catastrophic failure
- detect any abnormalities in the cooling system
- detect signs of ring breakage.

The optional basic kit includes a K type thermocouple, electrically insulated so as not to be affected by stray currents and to guarantee perfect functioning. When placed near the seal rings, the thermocouple monitors temperature and any possible damage that may occur. The kit can comprise just the thermocouple for detection, or can include a specially customised control panel.



*Example of a customised control panel*

## RE-ENGINEERING OF ALL TYPES OF SEALS

Fluiten offers its clients the possibility of improving and updating the seal system on the propeller shaft of their craft. It is now possible to improve the level of security of any craft; we have optimised our organisation so that we can now offer:

- Repair of any type of propeller shaft mechanical seal
- Conversion and updating of different seal systems
- Installation service
- Training courses (theoretical and practical) for maintenance staff.

When choosing Fluiten seals, customers can be assured that our experienced and highly specialised technical



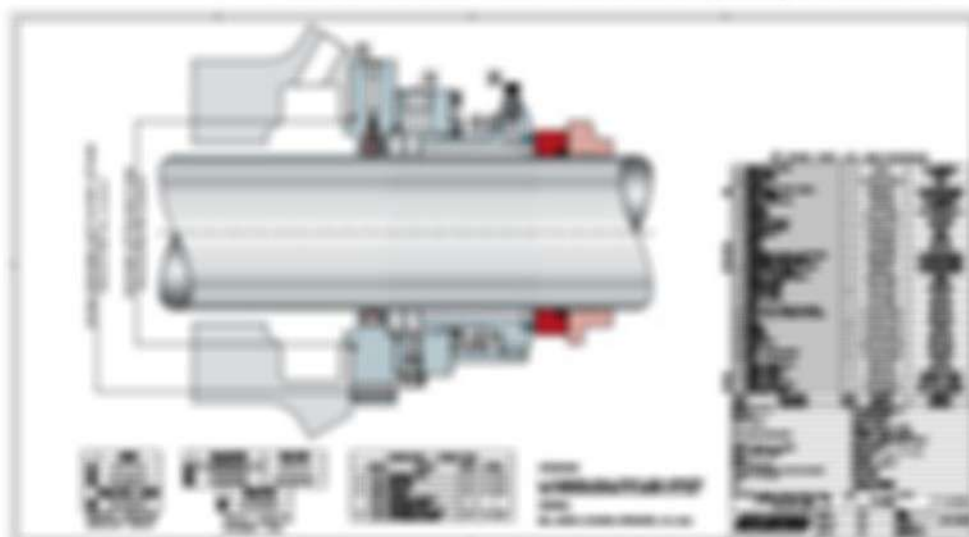
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suitable Fluiten seal with the necessary modifications to ensure maximum safety in the water.



Examples of seals Fluiten seals to be completely substituted





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