



norbro 40R
SERIES
MADE IN ENGLAND
NORPRO PNEUMATICS LIMITED, 2018, 10, 11, 12, 13, 14, 15, 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, 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, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.



Norbro

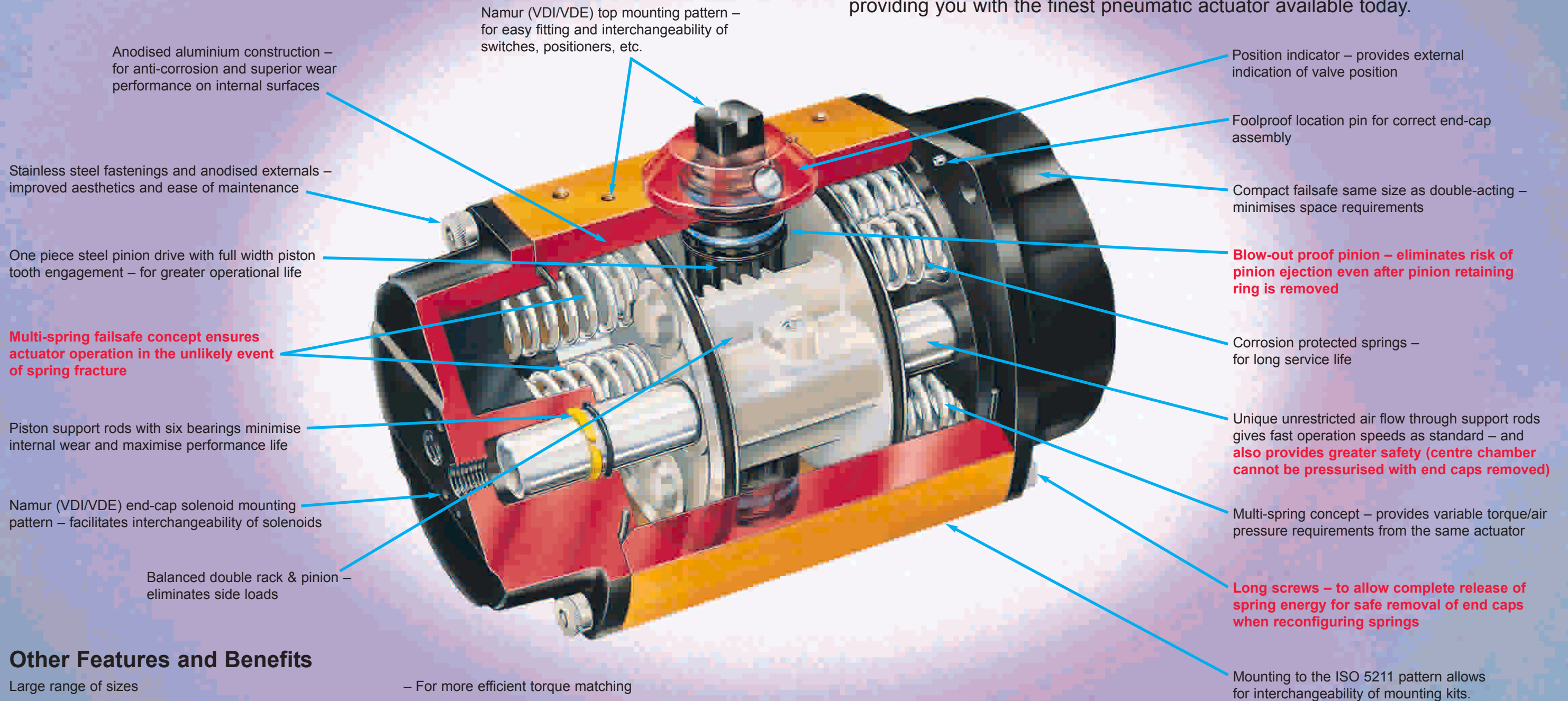
Series 40R Pneumatic Actuator
Double Acting or Spring Return

Since the mid-Sixties the Norbro name has been recognised as the leading quarter turn actuator for industry.

As proof of this, Norbro pneumatic actuators can be found in a range of applications as diverse as the petrochemical industry, food and beverage, steel production, pharmaceuticals and plastics manufacturing.

From the very beginning Norbro has been dedicated to providing high performance actuators which combine reliability, long life and ease of maintenance with operational **safety** and a modular design concept which allows simple attachment of a variety of ancillaries to match customer requirements.

With the latest design of the Norbro Series 40R, all of these factors add up to providing you with the finest pneumatic actuator available today.



Anodised aluminium construction – for anti-corrosion and superior wear performance on internal surfaces

Namur (VDI/VDE) top mounting pattern – for easy fitting and interchangeability of switches, positioners, etc.

Position indicator – provides external indication of valve position

Stainless steel fastenings and anodised externals – improved aesthetics and ease of maintenance

Foolproof location pin for correct end-cap assembly

One piece steel pinion drive with full width piston tooth engagement – for greater operational life

Compact failsafe same size as double-acting – minimises space requirements

Multi-spring failsafe concept ensures actuator operation in the unlikely event of spring fracture

Blow-out proof pinion – eliminates risk of pinion ejection even after pinion retaining ring is removed

Piston support rods with six bearings minimise internal wear and maximise performance life

Corrosion protected springs – for long service life

Namur (VDI/VDE) end-cap solenoid mounting pattern – facilitates interchangeability of solenoids

Unique unrestricted air flow through support rods gives fast operation speeds as standard – and **also provides greater safety (centre chamber cannot be pressurised with end caps removed)**

Balanced double rack & pinion – eliminates side loads

Multi-spring concept – provides variable torque/air pressure requirements from the same actuator

Long screws – to allow complete release of spring energy for safe removal of end caps when reconfiguring springs

Mounting to the ISO 5211 pattern allows for interchangeability of mounting kits.

Other Features and Benefits

Large range of sizes

Failsafe operation in a fire

Option for reversible direction of operation

No special tools required for maintenance

Standard operating temperature range of -20°C to +100°C

All parts sealed and greased for life

– For more efficient torque matching

– Polished support rods retain fire-safe capability even if bearings are fire damaged

– For failsafe open capability on butterfly valves

– Simple to maintain

– Increased applications

– No lubricated air supply required

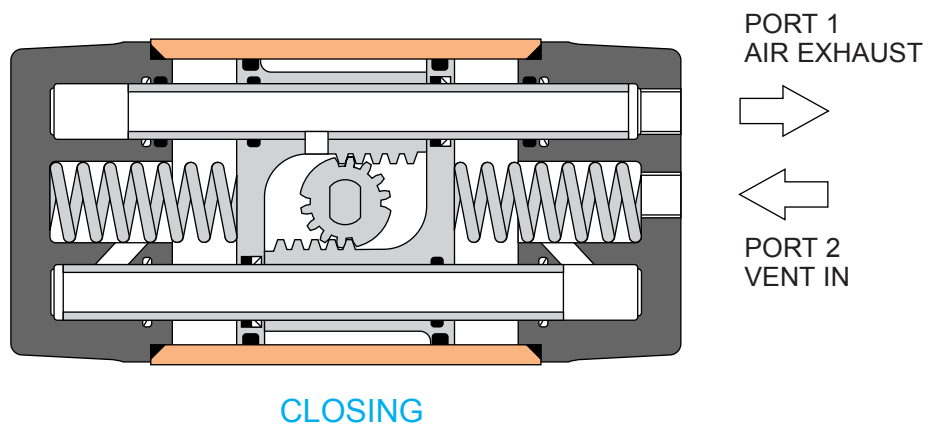
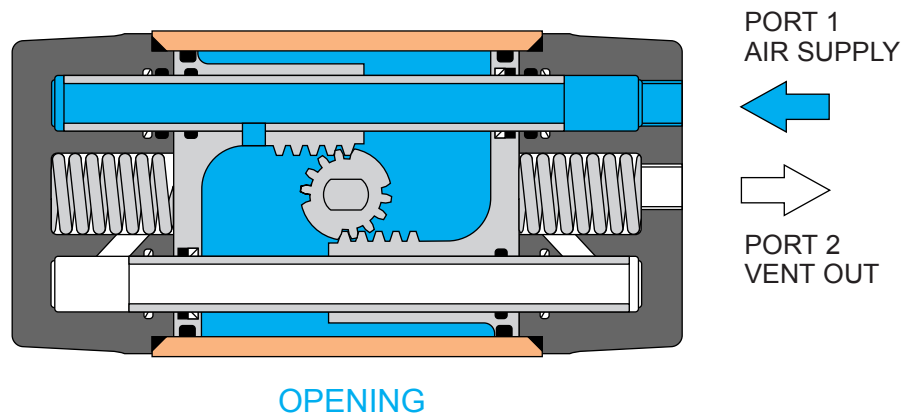
Operating Principle

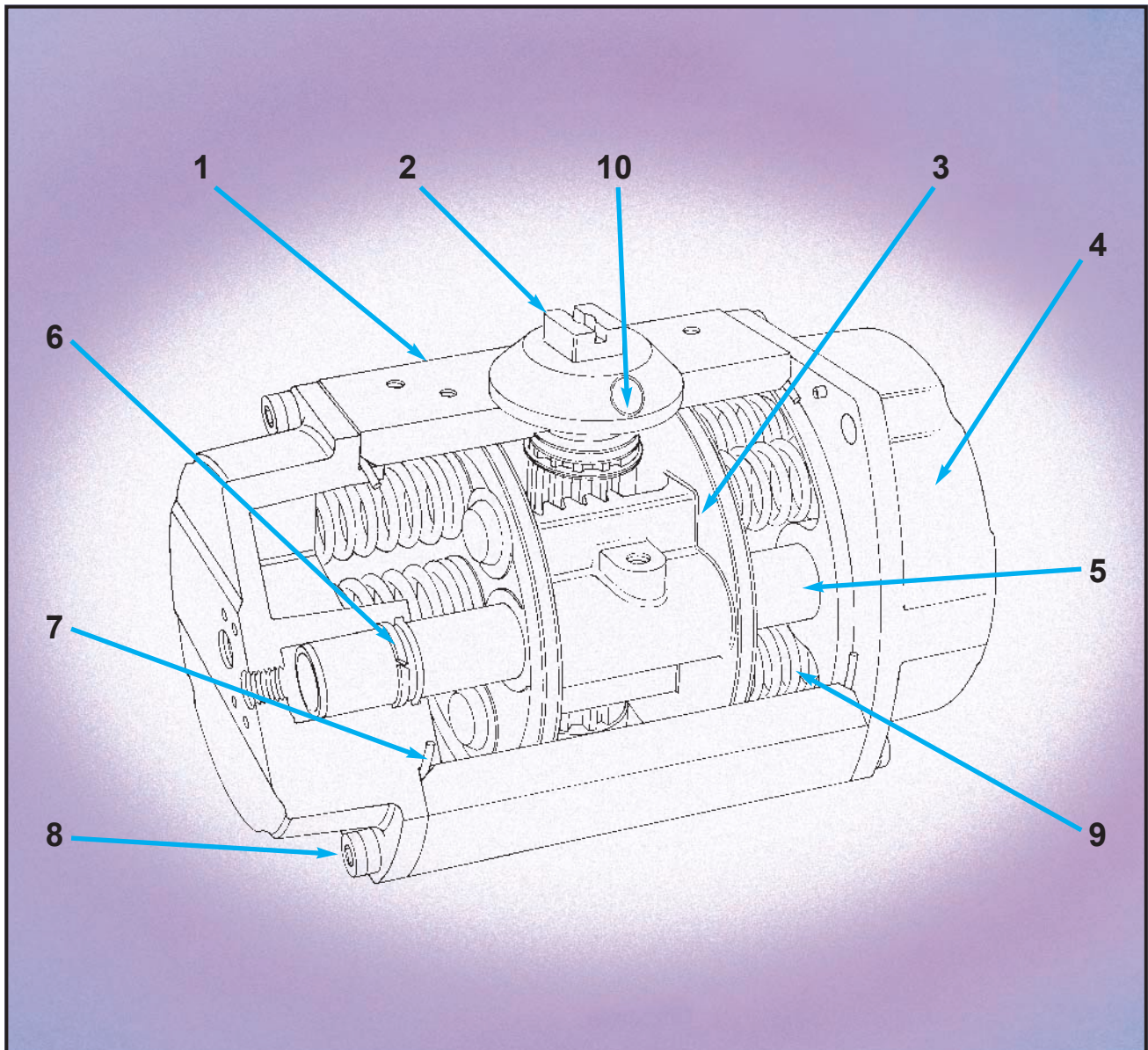
The Norbro 40R pneumatic actuator is based on the opposed double rack and pinion principle utilising piston support rods to minimise friction and wear between pistons and body bore.

In the double acting model, compressed air is applied to Port 1 which is fed via the large bore support rod into the centre chamber. This forces the pistons apart and turns the actuator's output drive anti-clockwise (seen from above) for valve opening, simultaneously venting the air in the end chamber via the second support rod through Port 2. This operation can then be reversed by supplying air into Port 2 for clockwise rotation (valve closing).

With the fail-safe spring return model, air is applied in a similar way to Port 1 for anti-clockwise operation (valve opening) and this position will be maintained until air pressure is released when spring force closes the pistons together for clockwise operation (valve closing).

NOTE: With the size 05 actuator, air is supplied and vented through the body of the actuator as its compact size makes the use of support rods impractical.





Parts List / Materials Specification

| Item No. | Description | Material/Finish |
|----------|--------------------|---|
| 1 | Body | Aluminium (Extrusion) Anodised |
| 2 | Pinion | Carbon Steel (Corrosion Resistant Coated) |
| 3 | Pistons | Aluminium |
| 4 | End Caps | Aluminium Anodised |
| 5 | Support Rods | Stainless Steel |
| 6 | Bearings | Acetal |
| 7 | 'O' Rings | Nitrile Rubber |
| 8 | End Cap Screws | Stainless Steel |
| 9 | Springs | Chrome Silicon Steel (Corrosion Resistant Coated) |
| 10 | Position Indicator | Polyethylene |

Actuator sizing

There are twelve sizes of Norbro double acting or fail safe spring return pneumatic actuators providing a torque range of 11 to 4617 Nm (at an operating pressure of 5.5 bar). This enables efficient and therefore economical torque matching.

The torque tables detailed below provide actual torque values for the range of actuators at typical pressure and spring configurations.

When sizing a valve, we recommend that a factor of safety is applied to its nominal torque.

Alternatively, for more comprehensive sizing calculations, the Norbro/Worcester Actuator/Valve sizing program should be used (available on request).

Torque output (Nm) – Double Acting Actuator

| Size-Series | OPERATING PRESSURE (bar) | | | | | | | | | | |
|-------------|--------------------------|------|------|------|------|------|------|------|------|------|------|
| | 2.0 | 2.5 | 3.0 | 3.5 | 4.0 | 4.5 | 5.0 | 5.5 | 6.0 | 7.0 | 8.0 |
| 05-40R | | | | 7 | 8 | 9.1 | 10.2 | 11.2 | 12.3 | 14.4 | |
| 10-40R | 10.4 | 13.4 | 16.3 | 19.3 | 22.3 | 25.2 | 28.2 | 31.1 | 34.1 | 40 | 46 |
| 15-40R | 19.9 | 25.6 | 31.3 | 37 | 42.7 | 48.5 | 54.1 | 59.8 | 65.5 | 77 | 88.3 |
| 20-40R | 36.5 | 46.9 | 57.4 | 67.7 | 78.2 | 88.7 | 99.1 | 109 | 120 | 141 | 162 |
| 25-40R | 60.9 | 78.3 | 95.7 | 113 | 131 | 148 | 165 | 183 | 200 | 235 | 270 |
| 30-40R | 100 | 129 | 157 | 186 | 214 | 243 | 272 | 300 | 329 | 386 | 443 |
| 33-40R | 196 | 252 | 308 | 363 | 419 | 475 | 531 | 587 | 643 | 755 | 867 |
| 35-40R | 240 | 309 | 377 | 446 | 515 | 583 | 652 | 720 | 789 | 926 | 1063 |
| 40-40R | 383 | 492 | 602 | 711 | 821 | 931 | 1040 | 1149 | 1259 | 1478 | 1697 |
| 42-40R | 665 | 854 | 1044 | 1234 | 1424 | 1615 | 1804 | 1993 | 2184 | 2564 | 2943 |
| 45-40 | 995 | 1280 | 1564 | 1847 | 2133 | 2418 | 2701 | 2984 | 3270 | 3840 | 4407 |
| 50-40 | 1539 | 1979 | 2419 | 2858 | 3299 | 3740 | 4179 | 4617 | 5058 | 5940 | 6818 |

Torque Output (Nm) – Spring Return Actuator

| Size-Series | Number of Springs | Spring Torque | | OPERATING PRESSURE (bar) | | | | | | | | | | | | | | | | | |
|-------------|-------------------|---------------|------|--------------------------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|
| | | | | 2.5 | | 3.0 | | 3.5 | | 4.0 | | 4.5 | | 5.0 | | 5.5 | | 6.0 | | 7.0 | |
| | | Start | End | Start | End | Start | End | Start | End | Start | End | Start | End | Start | End | Start | End | Start | End | Start | End |
| 05-40R | 2* | 4.7 | 3.6 | | | | | 3.2 | 1.9 | 4.1 | 2.8 | 5.1 | 3.7 | 6.1 | 4.6 | | | | | | |
| | 4 | 6 | 4.6 | | | | | | | | | | | 5.1 | 3.4 | 6 | 4.2 | 7 | 5.1 | | |
| 10-40R | 4 | 7.9 | 4.7 | 9.2 | 5.7 | 11.7 | 8.3 | | | | | | | | | | | | | | |
| | 6 | 11.9 | 7.1 | | | 9.6 | 4.5 | 12.4 | 7.2 | 15.2 | 9.8 | | | | | | | | | | |
| | 8 | 15.8 | 9.5 | | | | | | | 12.8 | 6.1 | 15.6 | 8.7 | 18.4 | 11.3 | | | | | | |
| | 10 | 19.8 | 11.8 | | | | | | | | | | | 16 | 7.6 | 18.8 | 10.2 | 21.6 | 12.8 | 27.1 | 18.1 |
| 15-40R | 4 | 13 | 8.4 | 18.3 | 12.9 | 23.7 | 18 | | | | | | | | | | | | | | |
| | 6 | 19.5 | 12.6 | | | 19.5 | 11.8 | 24.8 | 16.9 | 30.1 | 21.9 | | | | | | | | | | |
| | 8 | 26.1 | 16.8 | | | | | | | 25.9 | 15.8 | 31.3 | 20.8 | 36.6 | 25.8 | | | | | | |
| | 10 | 32.6 | 21 | | | | | | | | | | | 32.5 | 19.7 | 37.8 | 24.8 | 43.1 | 29.8 | 53.8 | 39.9 |
| 20-40R | 4 | 23.7 | 15.3 | 33.6 | 23.8 | 43.3 | 33 | | | | | | | | | | | | | | |
| | 6 | 35.6 | 23.9 | | | 35.7 | 21.8 | 45.4 | 31 | 55.2 | 40.3 | | | | | | | | | | |
| | 8 | 47.4 | 30.7 | | | | | | | 47.5 | 29.1 | 57.3 | 38.3 | 67.1 | 47.5 | | | | | | |
| | 10 | 59.3 | 38.3 | | | | | | | | | 49.7 | 27.1 | 59.4 | 36.3 | 69.2 | 45.6 | 79 | 54.8 | 98.5 | 73.3 |
| 25-40R | 4 | 42.8 | 26.2 | 55.4 | 36.7 | 71.7 | 52 | | | | | | | | | | | | | | |
| | 6 | 64.2 | 39.3 | | | 58.6 | 31.9 | 74.9 | 47.3 | 91.2 | 62.7 | | | | | | | | | | |
| | 8 | 85.6 | 52.5 | | | | | | | 78.1 | 42.5 | 94.4 | 57.9 | 111 | 73.3 | | | | | | |
| | 10 | 107 | 65.6 | | | | | | | | | | | 97.6 | 53.1 | 114 | 68.5 | 130 | 83.9 | 163 | 115 |
| 30-40R | 4 | 68.8 | 42 | 91.9 | 61.5 | 119 | 86.8 | | | | | | | | | | | | | | |
| | 6 | 103 | 63.1 | | | 97.7 | 54.4 | 125 | 79.7 | 151 | 105 | | | | | | | | | | |
| | 8 | 138 | 84.1 | | | | | | | 130 | 72.5 | 157 | 97.8 | 184 | 123 | | | | | | |
| | 10 | 172 | 105 | | | | | | | | | | | 163 | 90.6 | 190 | 116 | 217 | 141 | 270 | 192 |
| 33-40R | 4 | 142 | 90.8 | 171 | 113 | 224 | 163 | | | | | | | | | | | | | | |
| | 6 | 213 | 136 | | | 178 | 95.6 | 231 | 145 | 283 | 195 | | | | | | | | | | |
| | 8 | 284 | 182 | | | | | | | 238 | 127 | 290 | 177 | 343 | 226 | | | | | | |
| | 10 | 356 | 227 | | | | | | | | | | | 297 | 159 | 350 | 209 | 402 | 258 | 510 | 357 |
| 35-40R | 4 | 164 | 105 | 217 | 149 | 281 | 210 | | | | | | | | | | | | | | |
| | 6 | 246 | 158 | | | 228 | 132 | 293 | 193 | 357 | 254 | | | | | | | | | | |
| | 8 | 328 | 210 | | | | | | | 304 | 176 | 369 | 237 | 433 | 298 | | | | | | |
| | 10 | 410 | 263 | | | | | | | | | | | 381 | 220 | 445 | 281 | 509 | 342 | 638 | 463 |
| 40-40R | 4 | 281 | 169 | 345 | 219 | 447 | 316 | | | | | | | | | | | | | | |
| | 6 | 421 | 253 | | | 363 | 184 | 465 | 281 | 568 | 377 | | | | | | | | | | |
| | 8 | 562 | 337 | | | | | | | 483 | 245 | 586 | 342 | 689 | 439 | | | | | | |
| | 10 | 702 | 422 | | | | | | | | | | | 604 | 306 | 707 | 403 | 810 | 500 | 1015 | 694 |
| 42-40R | 4 | 496 | 293 | 598 | 372 | 776 | 540 | | | | | | | | | | | | | | |
| | 6 | 744 | 439 | | | 629 | 306 | 807 | 474 | 985 | 642 | | | | | | | | | | |
| | 8 | 992 | 585 | | | | | | | 839 | 408 | 1017 | 576 | 1195 | 744 | | | | | | |
| | 10 | 1240 | 731 | | | | | | | | | | | 1049 | 510 | 1227 | 678 | 1404 | 846 | 1761 | 1182 |
| 45-40 | 8 | 690 | 357 | 976 | 607 | 1242 | 859 | | | | | | | | | | | | | | |
| | 12 | 1035 | 535 | | | 1064 | 532 | 1330 | 785 | | | | | | | | | | | | |
| | 16 | 1380 | 714 | | | | | 1152 | 459 | 1419 | 711 | 1685 | 962 | | | | | | | | |
| | 20 | 1725 | 892 | | | | | | | | | 1507 | 636 | 1773 | 888 | 2040 | 1140 | | | | |
| | 24 | 2070 | 1071 | | | | | | | | | | | 1595 | 562 | 1861 | 814 | 2128 | 1066 | 2661 | 1569 |
| 50-40 | 8 | 1090 | 552 | 1510 | 918 | 1923 | 1307 | | | | | | | | | | | | | | |
| | 12 | 1635 | 827 | 1235 | 403 | 1647 | 793 | 2059 | 1182 | | | | | | | | | | | | |
| | 16 | 2180 | 1103 | | | | | 1783 | 667 | 2196 | 1057 | 2608 | 1446 | | | | | | | | |
| | 20 | 2725 | 1379 | | | | | | | | | 2332 | 931 | 2745 | 1321 | 3157 | 1710 | | | | |
| | 24 | 3270 | 1654 | | | | | | | | | | | 2469 | 806 | 2881 | 1196 | 3294 | 1585 | 4119 | 2364 |

*When using one spring per end-cap, the larger outer spring should be used.

Air pressure below 5.5 bar will not normally be sufficient to compress the full set of springs in each end cap. For lower air pressures the number of springs must, therefore, be adjusted. (IMPORTANT: Refer to Norbro 'Installation, Operating and Maintenance Manual' or to our Sales Office for details.)

Operating Conditions

| | | | |
|--|--|-------------------------------|---|
| Pressure Limitation | 8.3 bar Maximum. For higher pressures contact our sales office. | Travel (all sizes) | Average 92° total travel including nominal 1° overtravel both clockwise and anti-clockwise. |
| Media | Air or non-corrosive fluid | Extended travel option | 180°, 120° - Series 33. For further options consult the Sales Office. |
| Temperature range | Standard -20°C to +100°C Low temperature variant -40°C to +85°C High temperature variant -20°C to +150°C | Adjustable travel stop | Option available to adjust actuator stroke through 20° from each end of travel. |
| Rotation (viewed from the top) | Pinion rotates anti-clockwise when the centre chamber supply port (RHS) is pressurised (see Page 4) | Hydraulic operation | Complete range available for operation with hydraulic fluids at pressure, temperature and torque conditions corresponding to normal air supply. |

Operating Speeds (Seconds) – Actuator with no load – using Solenoid Control Valve – 5.5 bar

| Size-Series | 05-40R | 10-40R | 15-40R | 20-40R | 25-40R | 30-40R | 33-40R | 35-40R | 40-40R | 42-40R | 45-40 | 50-40 |
|--------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|
| Double Acting open and close | 0.2 | 0.2 | 0.3 | 0.4 | 0.7 | 1.0 | 2.1 | 2.4 | 3.7 | 6.0 | 7.0 | 12.0 |
| Spring return spring stroke (Closed) | 0.1 | 0.2 | 0.3 | 0.5 | 0.6 | 1.1 | 2.1 | 2.6 | 4.1 | 7.2 | 9.0 | 15.0 |
| Spring return air stroke (Open) | 0.1 | 0.2 | 0.3 | 0.5 | 1.0 | 1.2 | 2.5 | 2.8 | 4.9 | 8.9 | 12.0 | 21.0 |

Speeds other than those given above are obtainable if required by using additional control equipment.

Note: These times for the actuator are typical and can vary under actual operating conditions. They are given as a guide only.

Air Consumption per stroke – Actual Volume – Litres

| Size-Series | 05-40R | 10-40R | 15-40R | 20-40R | 25-40R | 30-40R | 33-40R | 35-40R | 40-40R | 42-40R | 45-40 | 50-40 |
|-----------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|
| Anti-Clockwise | 0.05 | 0.17 | 0.35 | 0.69 | 1.22 | 1.86 | 3.39 | 3.93 | 6.73 | 12.0 | 13.51 | 23.87 |
| Clockwise (D.A. only) | 0.05 | 0.22 | 0.39 | 0.74 | 1.31 | 2.05 | 4.79 | 5.54 | 8.19 | 13.89 | 20.0 | 30.5 |

To obtain Free Air Displacement (FAD) Volume, multiply actual volumes by absolute working pressure (bar A).

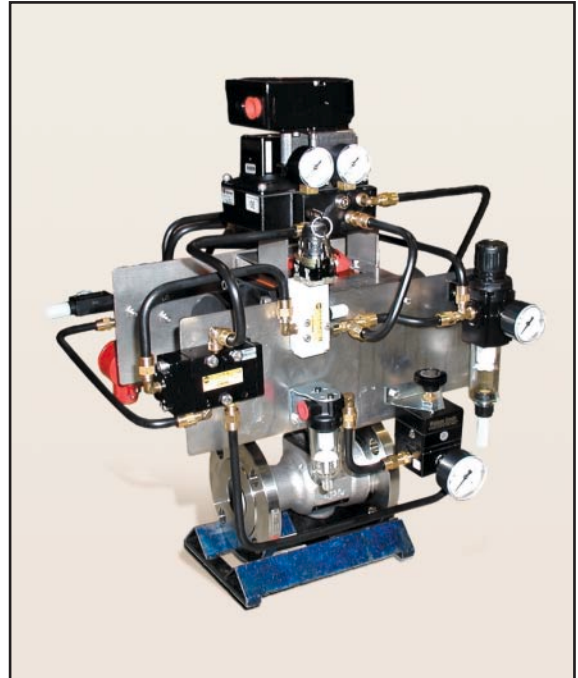
Weight – Kgs

| Size-Series | 05-40R | 10-40R | 15-40R | 20-40R | 25-40R | 30-40R | 33-40R | 35-40R | 40-40R | 42-40R | 45-40 | 50-40 |
|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|
| Double Acting | 0.7 | 1.3 | 2.7 | 4.5 | 7.4 | 11.0 | 22.5 | 26.0 | 43.6 | 71.8 | 97.0 | 138.0 |
| Spring Return | 0.8 | 1.6 | 3.1 | 5.5 | 8.4 | 12.0 | 26.0 | 30.0 | 48.6 | 80.6 | 115.0 | 161.0 |

Accessories and options



Worcester's V-Flow control valve incorporating the 40R actuator provides precise and flexible performance when modulating flow. Further information on this product is available on request.



A wide range of ancillary equipment can be fitted to meet the most exacting customer requirements. This is an area where Worcester has considerable experience and we would be pleased to discuss any process problems.



- **Geared Override**

A retro fittable gearbox is available for manual operation of the valve when power is lost.

- **Fast Acting**

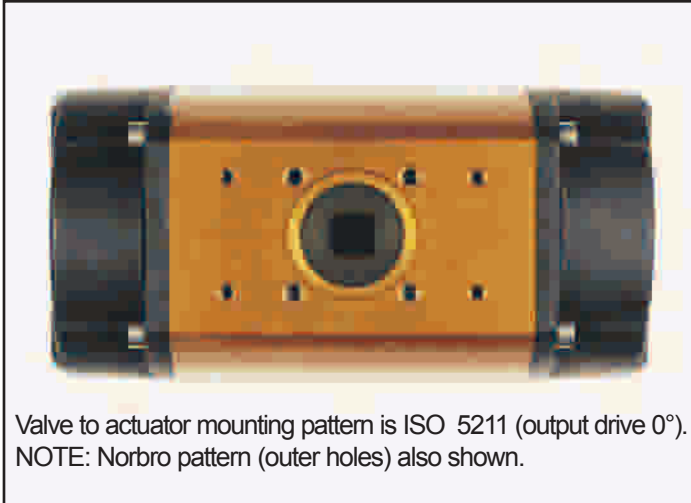
Modifications for quicker opening/closing speeds.

- **Protective Coatings**

Various coatings (eg Epoxy, PVC, etc.) are available for marine, hygienic and spark inhibition applications.

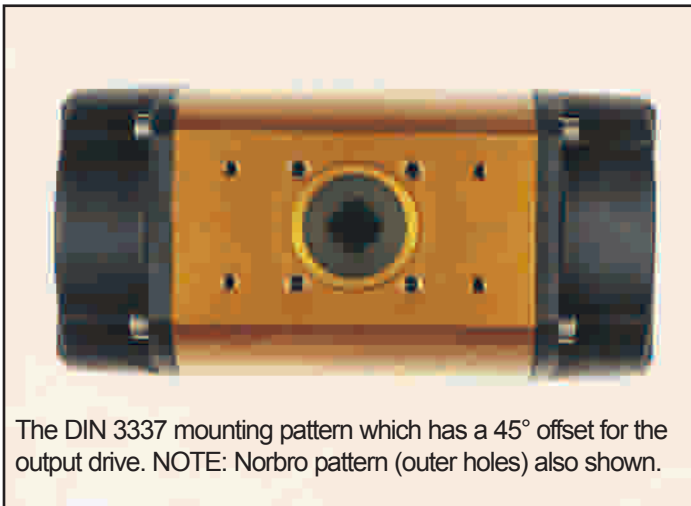
Mounting Configurations (all dimensions in mm)

ACTUATOR / VALVE INTERFACE



ISO 5211

| Size-Series | ISO 5211 |
|-------------|-------------------|
| 05-40R | F03 x 9.00 sq |
| 10-40R | F04 x 11.10 sq |
| 15-40R | F05 x 14.27 sq |
| 20-40R | F07 x 14.27 sq |
| 25-40R | F07 x 19.05 sq |
| 30-40R | F10 x 19.05 sq |
| 33-40R | F12 x 25.40 sq |
| 35-40R | F12 x 25.40 sq |
| 40-40R | F14 x 28.57 sq |
| 42-40R | F16 x 46.00 sq |
| 45-40 | Norbro x 44.45 sq |
| 50-40 | Norbro x 44.45 sq |

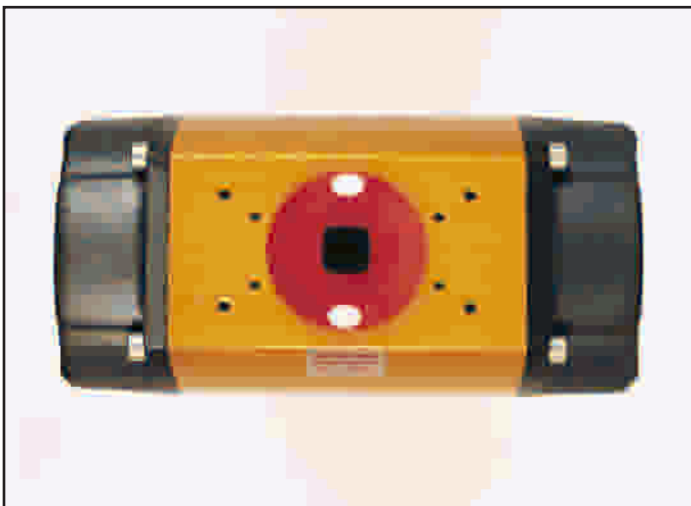


DIN 3337

| Size-Series | DIN 3337 |
|-------------|----------------|
| 05-40R | F03 x 9.00 sq |
| 10-40R | F04 x 11.00 sq |
| 15-40R | F05 x 14.00 sq |
| 20-40R | F07 x 17.00 sq |
| 25-40R | F07 x 17.00 sq |
| 30-40R | F10 x 22.00 sq |
| 33-40R | F12 x 27.00 sq |
| 35-40R | F12 x 27.00 sq |
| 40-40R | F14 x 36.00 sq |
| 42-40R | F16 x 46.00 sq |
| 45-40 | F16 x 46.00 sq |
| 50-40 | F25 x 55.00 sq |



TOP MOUNT INTERFACE



Namur (VDI/VDE 3845) mounting configuration facilitates the fitting and interchangeability of all types of top-mounted ancillaries.



| Size-Series | Pitch - Height |
|-------------|-----------------|
| 05-40R | – |
| 10-40R | 80 x 30 - 20 H |
| 15-40R | 80 x 30 - 20 H |
| 20-40R | 80 x 30 - 20 H |
| 25-40R | 80 x 30 - 30 H |
| 30-40R | 80 x 30 - 30 H |
| 33-40R | 80 x 30 - 30 H |
| 35-40R | 80 x 30 - 30 H |
| 40-40R | 130 x 30 - 50 H |
| 42-40R | 130 x 30 - 50 H |
| 45-40 | 130 x 30 - 50 H |
| 50-40 | 130 x 30 - 50 H |

END MOUNT ACCESSORIES



Norbro's unique end-mounted J-switch enclosure is suitable for any standard 40R actuator (except size 05).



Namur (VDI/VDE 3845 pattern) interface allows direct end-mounting of solenoids (all ports are G¹/₄ except size 05 and 10 which are G¹/₈).



OUTLINE SPECIFICATIONS (For detailed information refer to General Arrangement drawings, available from Sales Office)

| Size-Series | Torque @ 5.5 bar | | Envelope Dimensions | | | |
|-------------|------------------|------------------|---------------------|-----------|----------|-----------|
| | Double Acting Nm | End of Spring Nm | Length mm | Height mm | Width mm | Weight kg |
| 05-40R | 11 | 5 | 138* | 70 | 67 | 0.8 |
| 10-40R | 31 | 12 | 155 | 106 | 77 | 1.6 |
| 15-40R | 60 | 21 | 194 | 124 | 94 | 3.1 |
| 20-40R | 109 | 38 | 235 | 145 | 116 | 5.5 |
| 25-40R | 183 | 66 | 270 | 177 | 136 | 8.4 |
| 30-40R | 300 | 105 | 325 | 198 | 155 | 12.0 |
| 33-40R | 587 | 227 | 397 | 244 | 206 | 26.0 |
| 35-40R | 720 | 263 | 422 | 247 | 213 | 30.0 |
| 40-40R | 1149 | 422 | 508 | 326 | 245 | 48.6 |
| 42-40R | 1993 | 731 | 616 | 366 | 283 | 80.6 |
| 45-40 | 2984 | 1071 | 576 | 424 | 335 | 115.0 |
| 50-40 | 4617 | 1654 | 626 | 474 | 388 | 161.0 |

* Spring return version – double acting length is 106mm.

Basic information on Norbro pneumatic actuators

(For full explanation of product code, refer to Worcester Spec No. 300034 Section F)

| Size (First 2 digits of full product code) | | Number of Springs | | |
|--|---------|----------------------|---|---|
| 05 | (40R) | A = 0 | } (6th digit of full product code) | |
| 10 | | B = 4 | | |
| 15 | | F = 2 | | |
| 20 | (40R) | A = 0 | | } (Digits 19 & 20 of full product code) |
| 25 | | B = 10 | | |
| 30 | | C = 8 | | |
| 33 | | D = 6 | | |
| 35 | | E = 4 | | |
| 40 | (40) | A = 0 | } (Digits 19 & 20 of full product code) | |
| 42 | | B = 24 | | |
| 45 | | P1 = 20 | | |
| 50 | P2 = 16 | | | |
| | | P4 = 12 | | |
| | | P3 = 8 | | |

Variants



Norbros Series 61 two-stage actuator is designed for drum filling applications.



The Series 33 180° actuator provides the perfect solution for Worcester’s range of multi-ported valves.