

# PNEUMATIC ACTUATOR EB-SYS, SINGLE-ACTING



EB-SYS single-acting pneumatic actuators are available in either "spring opens" and "spring closes" versions.

## TECHNICAL DATA

|   |   |
|---|---|
| Torque:                                     | 35 - 3590 Nm  |
| Limit of travel:                            | exactly adjustable between $-8^{\circ}/+3^{\circ}$  |
| Limit switches and solenoid valve mounting: | VDI / VDE 3845  |
| Supply pressure:                            | min. 2,5 bar, max. 8 bar  |
| Supply quality:                             | Filtered compressed air dry or lubricated.<br>The pressure condensation point in accordance with (ISO 8573-1:2010, Class3) has to be $\geq -20^{\circ}\text{C}$ or $10^{\circ}\text{C}$ under ambient temperature.<br>The maximum particle size in accordance with (ISO 8573-1:2010, Class 5) should not exceed $40\ \mu\text{m}$ .<br>For cycles $\geq 4$ /min please lubricate. |
| Temperature range:                          | $-20^{\circ}\text{C}$ to $+80^{\circ}\text{C}$ (standard)<br>$-40^{\circ}\text{C}$ to $+80^{\circ}\text{C}$ (low temperature)<br>$-15^{\circ}\text{C}$ to $+120^{\circ}\text{C}$ (high temperature)   |
| Valve interface:                            | EN ISO 5211   |
| Actuator cylinder:                          | Anodized aluminium,<br>Other coatings upon request.   |

## FEATURES

- Maintenance-free
- Suitable for all  $\frac{1}{4}$  turn valves
- Blow-out proofed shaft
- Torques in agreement with EN ISO 5211
- Optical position indicator with integrated operator for limit switches
- All fasteners made of stainless steel
- SIL 2 (SIL 3 as redundant system) acc. to IEC 61508

## KEY BENEFITS

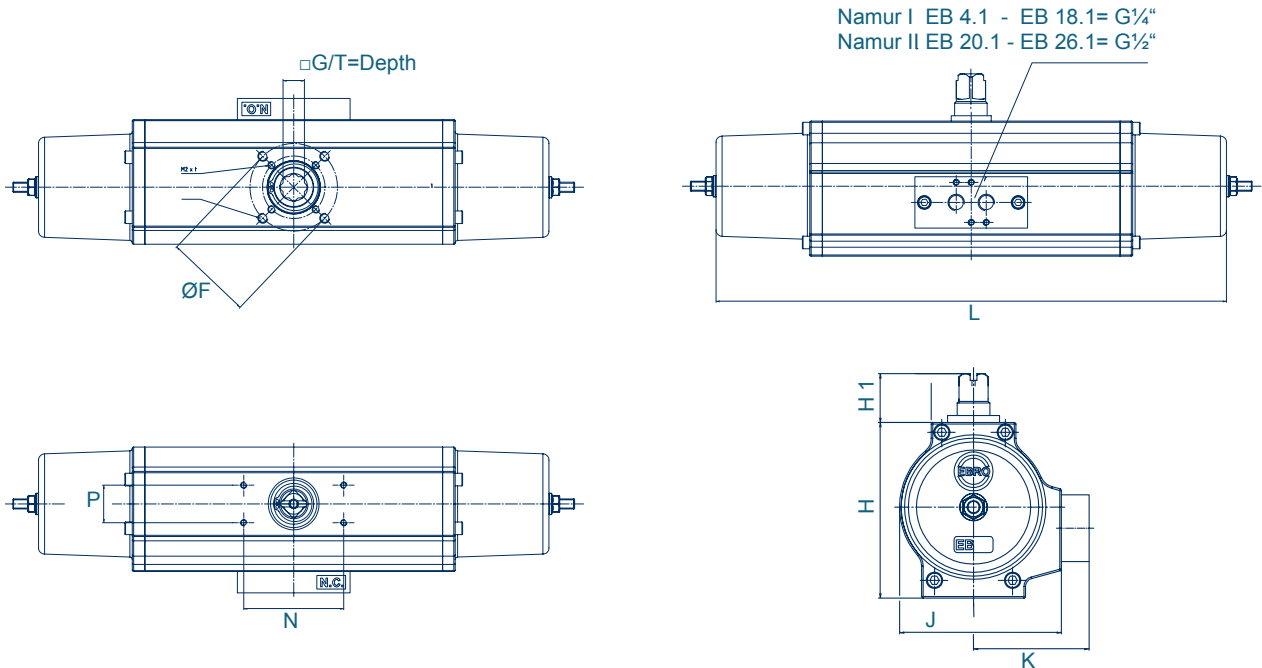
- High opening- and closing- torques provided by scotch-yoke concept
- Ideal sliding properties provided by low friction multiple piston guides
- Operational safety and long service life assured by precise machining of parts
- Spring cartridges ensure safe and easy maintenance without special tools
- ATEX: EX II 2 GD c Tx



The EBRO Speed Control block allows the adjustment of closing/ opening times up to 60 sec. (depending on actuator size). It can be mounted directly onto the actuator.

# PNEUMATIC ACTUATOR EB-SYS, SINGLE-ACTING

EB5.1-SYS - EB26.1-SYS



| Type    | ØF          | G              | Dimensions [mm] |    |     |     |      |    |    |       | Weight [kg] |
|---------|-------------|----------------|-----------------|----|-----|-----|------|----|----|-------|-------------|
|         |             |                | H               | H1 | J   | K   | L    | N  | P  | T     |             |
| EB 5.1  | F04/05*     | 10/11/12/14    | 77              | 30 | 72  | 57  | 280  | 80 | 30 | 13/16 | 2,4         |
| EB 6.1  | F04/05/07*  | 11/12/14/16/17 | 91              | 30 | 88  | 65  | 351  | 80 | 30 | 19    | 4,3         |
| EB 8.1  | F05/07/10   | 12/14/16/17/22 | 108             | 30 | 100 | 71  | 408  | 80 | 30 | 19    | 6,3         |
| EB 9.1  | F07/10      | 14/16/17/22    | 120             | 30 | 113 | 78  | 476  | 80 | 30 | 24    | 9,3         |
| EB 10.1 | F07/10      | 14/16/17/22    | 129             | 30 | 122 | 82  | 557  | 80 | 30 | 24    | 12,5        |
| EB 12.1 | F10/12      | 17/22/24/27    | 156             | 30 | 145 | 93  | 661  | 80 | 30 | 29    | 21,1        |
| EB 14.1 | F12/16/25** | <b>36</b>      | 189             | 30 | 148 | 102 | 697  | 80 | 30 | 38    | 32,8        |
| EB 16.1 | F12/16/25** | <b>46</b>      | 212             | 30 | 150 | 102 | 856  | 80 | 30 | 48    | 48,0        |
| EB 18.1 | F12/16/25** | <b>46</b>      | 243             | 30 | 196 | 103 | 902  | 80 | 30 | 48    | 63,7        |
| EB 20.1 | F12/16/25** | <b>46</b>      | 272             | 30 | 234 | 120 | 1027 | 80 | 30 | 48    | 94,3        |
| EB 22.1 | F16/25**    | <b>55</b>      | 283             | 30 | 244 | 125 | 1127 | 80 | 30 | 59    | 114,9       |
| EB26.1  | F16/25**    | <b>55</b>      | 350             | 30 | 336 | 168 | 1472 | 80 | 30 | 59    | 228,6       |

\* F04/F05 no combined flange available (Standard = **BOLD**)

\*\* F25 up to 4,000 Nm transferable

## CLOSING TIME\* AND AIR CONSUMPTION

| Type  | EB 5.1 | EB 6.1 | EB 8.1 | EB 9.1 | EB 10.1 | EB 12.1 | EB 14.1 | EB 16.1 | EB 18.1 | EB 20.1 | EB 22.1 | EB 26.1 |
|---|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|
| Closing time EB-SYS in sec.*                        | 0,15   | 0,20   | 0,45   | 0,48   | 0,50    | 0,70    | <1,5    | <1,5    | <1,5    | <1,5    | <2,0    | <2,0    |
| Filling volume<br>Standard liter/stroke at 1 atm:** | 0,27   | 0,56   | 0,89   | 1,40   | 1,95    | 3,37    | 4,52    | 6,49    | 10,00   | 13,64   | 17,50   | 36,20   |

\* closing times with unthrottled air exhaust and air supply, 6 bar control pressure at no load operation

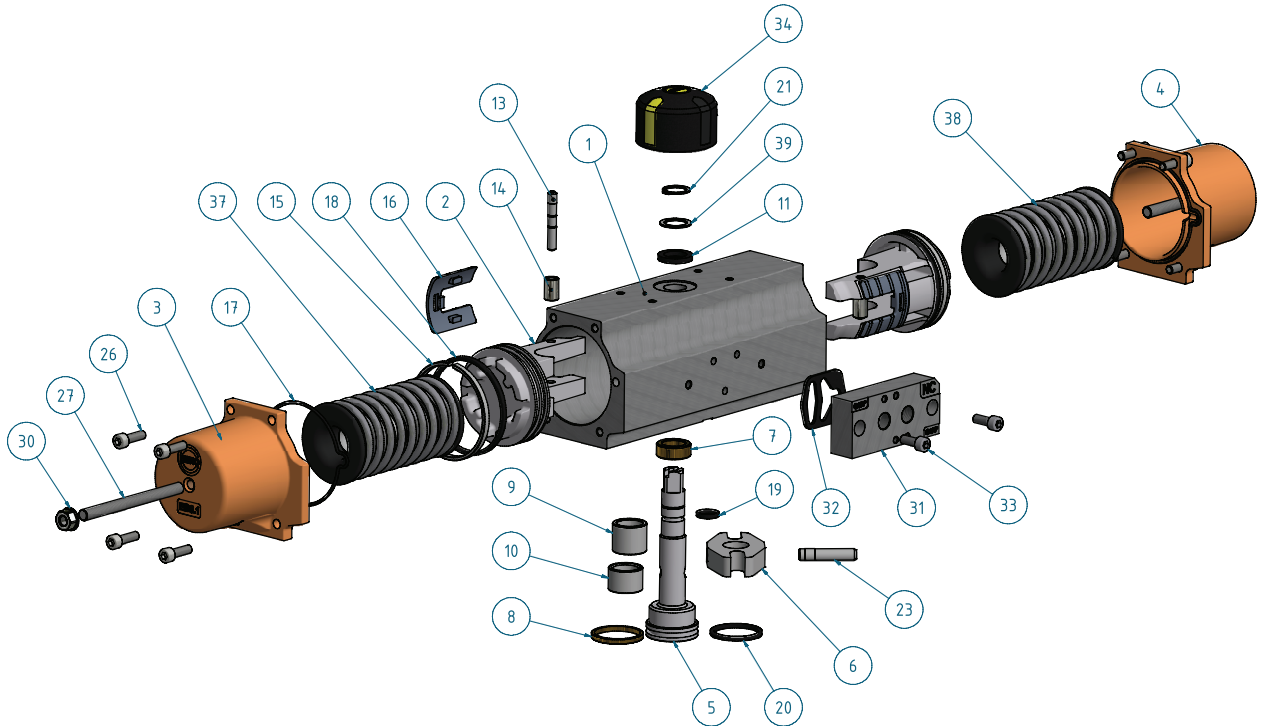
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\*\* air consumption = filling volume x control pressure

Closing-/ opening times can be adjusted up to 60 sec. by using the EBRO speed control block (depending on type of actuator).

# PNEUMATIC ACTUATOR EB-SYS, SINGLE-ACTING

Only for EB-SYS (4.1 - 12.1)



## COMPONENT PARTS

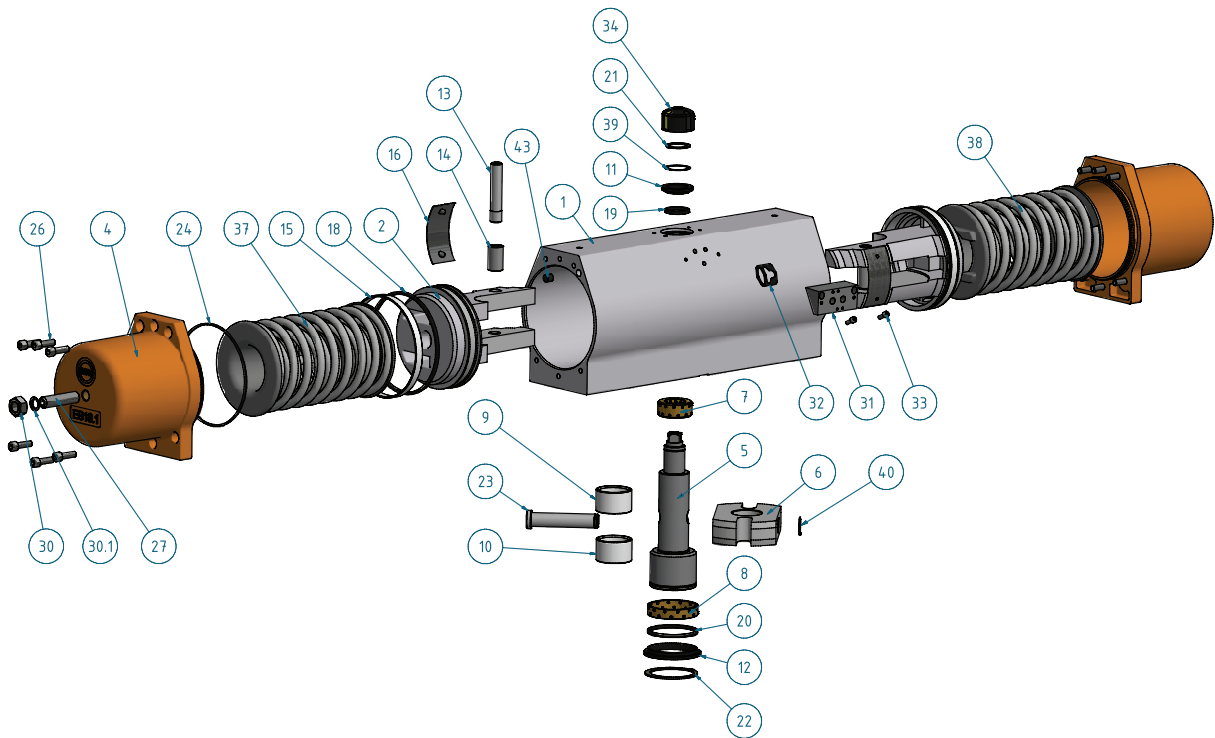
| Pt. | Description          | Qty. | Material            | Pt. | Description            | Qty. | Material       |
|-----|----------------------|------|---------------------|-----|------------------------|------|----------------|
| 1   | Actuator cylinder    | 1    | EN AW 6063 - T6     | 18D | Piston O-Ring          | 2    | NBR 70         |
| 2   | Piston               | 2    | EN AC 46000         | 19D | O-Ring, upper shaft    | 1    | NBR 70         |
| 3   | End cover L SYS      | 1    | EN AC 46000         | 20D | O-Ring, lower shaft    | 1    | NBR 70         |
| 4   | End cover R SYS      | 1    | EN AC 46000         | 21D | Safety ring            | 1    | 1.1248         |
| 5   | Drive shaft          | 1    | 1.7131              | 23  | Bolt                   | 1    | 1.7225         |
| 6   | Yoke                 | 1    | 1.7131 / Sint - D30 | 26  | Hex. socket screw      | 8    | A2 - 70        |
| 7   | Upper shaft bearing  | 1    | Sint - B50          | 27  | Stroke adjusting screw | 2    | A2 - 70        |
| 8   | Lower shaft bearing  | 1    | Sint - B50          | 30  | Seal nut               | 2    | A2 - 70        |
| 9   | Upper piston bearing | 1    | Technical polymer   | 31  | Valve connection plate | 1    | EN AC 46000    |
| 10  | Lower piston bearing | 1    | Technical polymer   | 32D | Shaped gasket          | 1    | NBR 70         |
| 11  | Washer bearing       | 1    | Technical polymer   | 33  | Hex. socket screw      | 2    | A2 - 70        |
| 13  | Piston bolt          | 2    | 1.7131              | 34  | Position indicator     | 1    | techn. Polymer |
| 14  | Roller               | 2    | 1.3505              | 37  | Spring package         | 1    | FD SiCr / A2   |
| 15  | Guide band           | 2    | Technical polymer   | 38  | Spring package         | 1    | FD SiCr / A2   |
| 16  | Slidepad             | 2    | Technical polymer   | 39  | Washer                 | 1    | A2             |
| 17D | End cover sealing    | 2    | NBR 70              |     |                        |      |                |

The spare parts marked with D are integrated in the standard seal set.

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# PNEUMATIC ACTUATOR EB-SYS, SINGLE-ACTING

Only for EB-SYS (14.1 - 26.1)



## COMPONENT PARTS

| Pt. | Description          | Qty. | Material          | Pt.  | Description            | Qty. | Material          |
|-----|----------------------|------|-------------------|------|------------------------|------|-------------------|
| 1   | Actuator cylinder    | 1    | EN AW 6063 - T6   | 21D  | Upper safety ring      | 1    | 1.1248            |
| 2   | Piston               | 2    | EN AC 46000       | 22D  | Lower safety ring      | 1    | 1.1248            |
| 4   | End cover SYS        | 2    | EN AC 46000       | 23   | swing bolt             | 1    | 1.7225            |
| 5   | Drive shaft          | 1    | 1.7131            | 24D  | Cover O-ring           | 2    | NBR 70            |
| 6   | Yoke                 | 1    | 1.7131            | 26   | Hex. socket screw      | 8/16 | A2 - 70           |
| 7   | Upper shaft bearing  | 1    | Ms & Graphit      | 27   | Stroke adjusting screw | 2    | A2 - 70           |
| 8   | Lower shaft bearing  | 1    | Ms & Graphit      | 30   | Seal nut               | 2    | A2 - 70           |
| 9   | Upper piston bearing | 1    | technical polymer | 30.1 | O - Ring               | 2    | NBR 70            |
| 10  | Lower piston bearing | 1    | technical polymer | 31   | Valve connection plate | 1    | EN AC 46000       |
| 11  | Upper washer bearing | 1    | technical polymer | 32D  | Shaped gasket          | 1    | NBR 70            |
| 12  | Lower washer bearing | 1    | technical polymer | 33   | Hex. socket screw      | 2    | A2 - 70           |
| 13  | Piston bolt          | 2    | 1.7131            | 34   | Position indicator     | 1    | technical polymer |
| 14  | Roller               | 2    | 1.3505            | 37   | Spring package         | 1    | FD SiCr / A2      |
| 15  | Guide band           | 2    | technical polymer | 38   | Spring package         | 1    | FD SiCr / A2      |
| 16  | Slidepad             | 2    | technical polymer | 39   | Washer                 | 1    | A2                |
| 18D | Piston O-Ring        | 2    | NBR 70            | 40   | Safety ring            | 1    | 1.1248            |
| 19D | O-Ring, upper shaft  | 1    | NBR 70            | 43   | sealing plugs          | 2    | NBR 70            |
| 20D | O-Ring, lower shaft  | 1    | NBR 70            |      |                        |      |                   |

The spare parts marked with D are integrated in the standard seal set.

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# PNEUMATIC ACTUATOR EB-SYS, SINGLE-ACTING (SPRING OPEN)

## ACTUATOR TORQUE

| Type          | Spring<br>-package | Spring<br>Md in Nm |      | Eff. air torque in Nm at control pressure |      |       |      |       |      |       |      |       |       |
|---------------|--------------------|--------------------|------|---|------|-------|------|-------|------|-------|------|-------|-------|
|               |                    | 0°                 | 90°  | 4 bar                                     |      | 5 bar |      | 6 bar |      | 7 bar |      | 8 bar |       |
|               |                    |                    |      | 0°  | 90°  | 0°    | 90°  | 0°    | 90°  | 0°    | 90°  | 0°    | 90°   |
| EB 5.1 SYS25  | VI                 | 20                 | 12   | 31  | 39   | 43    | 51   | 56    | 64   | 69    | 77   | 81    | 89    |
| EB 5.1 SYS30  | V                  | 27                 | 17   |   |      | 36    | 46   | 49    | 59   | 62    | 72   | 74    | 84    |
| EB 5.1 SYS40  | IV                 | 35                 | 22   |   |      |       |      | 41    | 54   | 54    | 67   | 66    | 79    |
| EB 6.1 SYS25  | VI                 | 45                 | 27   | 59  | 77   | 85    | 103  | 111   | 129  | 137   | 155  | 163   | 181   |
| EB 6.1 SYS30  | V                  | 57                 | 35   |   |      | 73    | 95   | 99    | 121  | 125   | 147  | 151   | 173   |
| EB 6.1 SYS40  | IV                 | 74                 | 45   |   |      |       |      | 82    | 111  | 108   | 137  | 134   | 163   |
| EB 8.1 SYS25  | VI                 | 67                 | 40   | 100                                       | 127  | 141   | 168  | 183   | 210  | 225   | 252  | 266   | 293   |
| EB 8.1 SYS30  | V                  | 82                 | 48   |   |      | 126   | 160  | 168   | 202  | 210   | 244  | 251   | 285   |
| EB 8.1 SYS40  | IV                 | 111                | 65   |   |      |       |      | 139   | 185  | 181   | 227  | 222   | 268   |
| EB 9.1 SYS25  | VI                 | 100                | 55   | 152                                       | 197  | 215   | 260  | 278   | 323  | 341   | 386  | 404   | 449   |
| EB 9.1 SYS30  | V                  | 127                | 69   |   |      | 188   | 246  | 251   | 309  | 314   | 372  | 377   | 438   |
| EB 9.1 SYS40  | IV                 | 153                | 89   |   |      |       |      | 225   | 289  | 288   | 352  | 351   | 415   |
| EB 10.1 SYS25 | VI                 | 151                | 89   | 202                                       | 264  | 291   | 353  | 379   | 441  | 467   | 529  | 556   | 618   |
| EB 10.1 SYS30 | V                  | 182                | 107  |   |      | 260   | 335  | 348   | 423  | 436   | 511  | 525   | 600   |
| EB 10.1 SYS40 | IV                 | 231                | 145  |   |      |       |      | 299   | 385  | 387   | 473  | 476   | 562   |
| EB 12.1 SYS25 | VI                 | 224                | 155  | 386                                       | 455  | 538   | 607  | 691   | 760  | 843   | 912  | 978   | 1065  |
| EB 12.1 SYS30 | V                  | 309                | 185  |   |      | 453   | 577  | 606   | 730  | 758   | 882  | 911   | 1035  |
| EB 12.1 SYS40 | IV                 | 392                | 241  |   |      |       |      | 523   | 674  | 675   | 826  | 828   | 979   |
| EB14.1 SYS25  | VI                 | 312                | 199  | 579                                       | 692  | 802   | 915  | 1025  | 1138 | 1248  | 1361 | 1470  | 1583  |
| EB14.1 SYS30  | V                  | 401                | 257  |   |      | 713   | 857  | 936   | 1080 | 1159  | 1303 | 1381  | 1525  |
| EB14.1 SYS40  | IV                 | 491                | 314  |   |      |       |      | 846   | 1023 | 1069  | 1246 | 1291  | 1468  |
| EB16.1 SYS25  | VI                 | 513                | 343  | 835                                       | 1005 | 1172  | 1342 | 1509  | 1679 | 1846  | 2016 | 2183  | 2353  |
| EB16.1 SYS30  | V                  | 648                | 433  |   |      | 1037  | 1252 | 1374  | 1589 | 1711  | 1926 | 2048  | 2263  |
| EB16.1 SYS40  | IV                 | 782                | 523  |   |      |       |      | 1240  | 1499 | 1577  | 1836 | 1914  | 2173  |
| EB18.1 SYS25  | VI                 | 623                | 371  | 1133                                      | 1385 | 1572  | 1824 | 2011  | 2263 | 2450  | 2702 | 2889  | 3141  |
| EB18.1 SYS30  | V                  | 803                | 476  |   |      | 1392  | 1719 | 1831  | 2158 | 2270  | 2597 | 2709  | 3036  |
| EB18.1 SYS40  | IV                 | 979                | 581  |   |      |       |      | 1655  | 2053 | 2094  | 2492 | 2533  | 2931  |
| EB20.1 SYS25  | VI                 | 894                | 550  | 1572                                      | 1916 | 2188  | 2532 | 2806  | 3150 | 3422  | 3766 | 4038  | 4382  |
| EB20.1 SYS30  | V                  | 1139               | 705  |   |      | 1943  | 2377 | 2561  | 2995 | 3177  | 3611 | 3793  | 4227  |
| EB20.1 SYS40  | IV                 | 1384               | 860  |   |      |       |      | 2316  | 2840 | 2932  | 3456 | 3548  | 4072  |
| EB22.1 SYS25  | VI                 | 1106               | 712  | 2294                                      | 2688 | 3144  | 3538 | 3994  | 4388 | 4844  | 5238 | 5694  | 6088  |
| EB22.1 SYS30  | V                  | 1477               | 950  |   |      | 2773  | 3300 | 3623  | 4150 | 4473  | 5000 | 5323  | 5850  |
| EB22.1 SYS40  | IV                 | 1849               | 1188 |   |      |       |      | 3251  | 3912 | 4101  | 4762 | 4951  | 5612  |
| EB26.1 SYS25  | VI                 | 2640               | 1478 | 3872                                      | 5034 | 5500  | 6662 | 7218  | 8290 | 8756  | 9918 | 10384 | 11546 |
| EB26.1 SYS30  | V                  | 3168               | 1795 |   |      | 4972  | 6345 | 6600  | 7973 | 8228  | 9601 | 9856  | 11229 |
| EB26.1 SYS40  | IV                 | 3696               | 2112 |   |      |       |      | 6072  | 7656 | 7700  | 9284 | 9328  | 10912 |