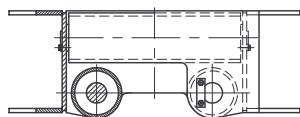
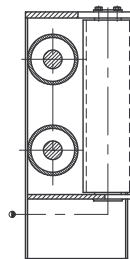
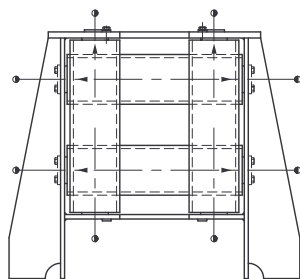


## roller fair leads

0.1

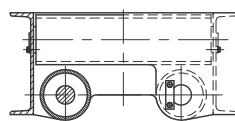
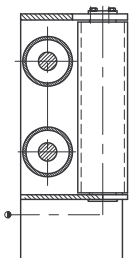
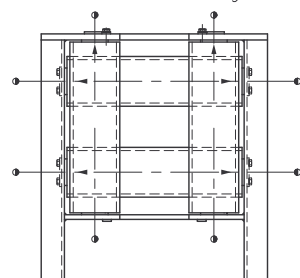
| type   | nom. towing pull (kN) | rope $\phi$ (mm) | roller $\phi$ (mm) |
|--------|-----------------------|------------------|--------------------|
| HAS 1  | 10                    | – 10             | 60                 |
| HAS 2  | 20                    | – 12             | 83                 |
| HAS 3  | 30                    | – 16             | 102                |
| HAS 5  | 50                    | – 20             | 127                |
| HAS 8  | 80                    | – 24             | 140                |
| HAS 12 | 120                   | – 32             | 178                |
| HAS 16 | 160                   | – 36             | 194                |
| HAS 20 | 200                   | – 40             | 244                |
| HAS 32 | 320                   | – 48             | 298                |

mounting: free on deck or welded into bulwark



● lubrication nibble  
→ direction to disassemble axle

mounting: welded into bulwark



|           |     |
|-----------|-----|
| HAS...-4  | 1.1 |
| outboard  |     |
| HAS...-5R | 2.1 |
| HAS...-5L | 2.1 |
| HAS...-6  | 2.1 |
| HAS...-7  | 3.1 |
| HAS...-8R | 4.1 |
| HAS...-8M | 4.1 |
| HAS...-8L | 4.1 |
| HAS...-9R | 4.1 |
| HAS...-9A | 4.1 |
| HAS...-9L | 4.1 |
| HAS...-10 | 4.1 |

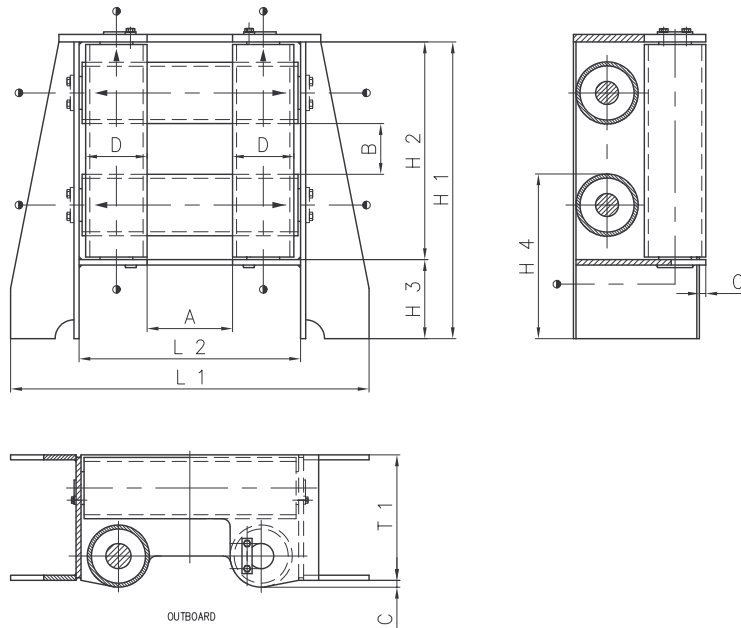
|             |     |
|-------------|-----|
| HAS...-4-H  | 1.2 |
| outboard    |     |
| HAS...-5R-H | 2.2 |
| HAS...-5L-H | 2.2 |
| HAS...-6-H  | 2.2 |
| HAS...-7-H  | 3.2 |
| HAS...-8R-H | 4.2 |
| HAS...-8M-H | 4.2 |
| HAS...-8L-H | 4.2 |
| HAS...-9R-H | 4.2 |
| HAS...-9A-H | 4.2 |
| HAS...-9L-H | 4.2 |
| HAS...-10-H | 4.2 |

| type      | page      |
|-----------|-----------|
| pictorial | outline   |
| top-view  | side-view |

circuit angle : max. 90  
 casing : welded construction  
 treatment : 1 x shop-primer  
 lub. nipples : M10x1 DIN 71 412-brass or AM 10x1 DIN 3404-brass  
 bearing : bronze bush on steel shaft or poliamid bush on bronze Rg7 liner

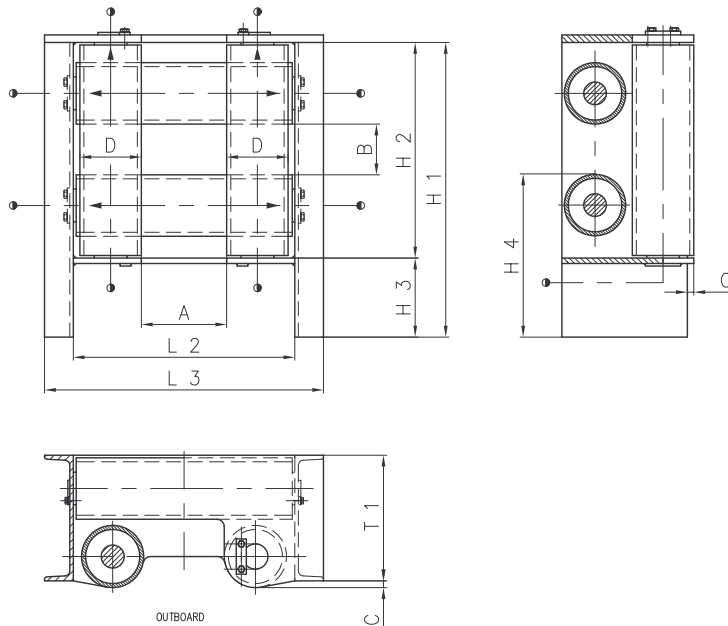
### form A

mounting: welded into bulwark  
or free on deck



### form B

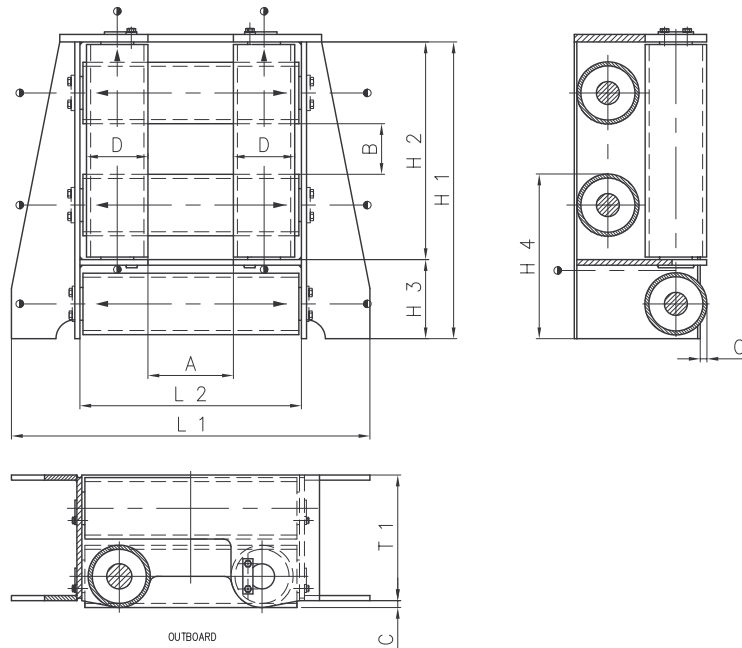
mounting: welded into bulwark



| type   | dimensions (mm) |     |    |     |      |      |     |     |      |      |     |     |
|--------|-----------------|-----|----|-----|------|------|-----|-----|------|------|-----|-----|
|        | A               | B   | C  | D   | H 1  | H 2  | H 3 | H 4 | L 1  | L 2  | L 3 | T 1 |
| HAS 1  | 160             | 100 | 10 | 60  | 385  | 300  | 85  | 185 | 530  | 300  | 410 | 120 |
| HAS 2  | 180             | 100 | 10 | 83  | 470  | 370  | 100 | 235 | 650  | 370  | 500 | 160 |
| HAS 3  | 230             | 130 | 15 | 102 | 560  | 460  | 100 | 265 | 800  | 460  | 610 | 200 |
| HAS 5  | 250             | 160 | 15 | 127 | 680  | 540  | 140 | 330 | 980  | 540  | 720 | 260 |
| HAS 8  | 280             | 160 | 20 | 140 | 720  | 580  | 140 | 350 | 1000 | 580  | 770 | 280 |
| HAS 12 | 300             | 160 | 25 | 178 | 840  | 680  | 160 | 420 | 1200 | 680  | 880 | 350 |
| HAS 16 | 320             | 180 | 30 | 194 | 920  | 740  | 180 | 460 | 1260 | 740  | 945 | 380 |
| HAS 20 | 340             | 180 | 35 | 244 | 1040 | 860  | 180 | 520 | 1350 | 860  | —   | 470 |
| HAS 32 | 400             | 250 | 45 | 298 | 1230 | 1030 | 200 | 590 | 1700 | 1030 | —   | 570 |

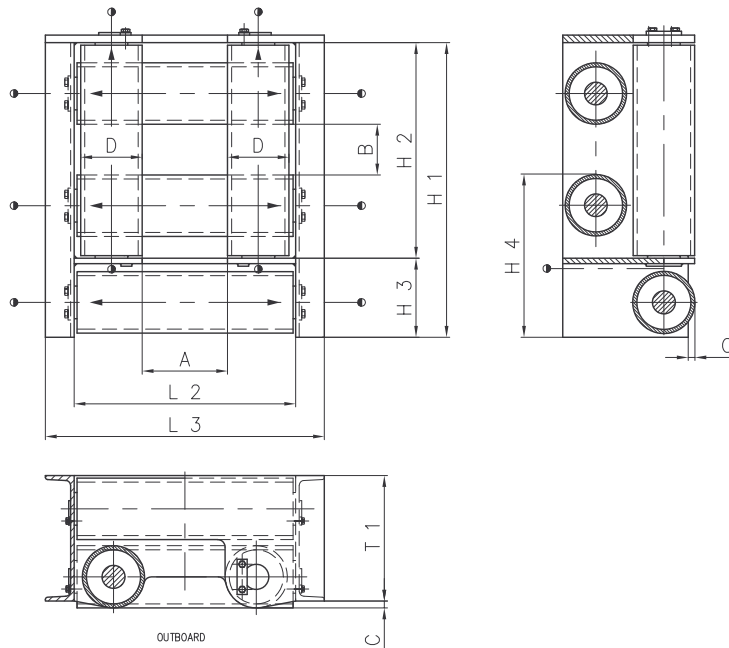
### form A

mounting: welded into bulwark  
or free on deck



### form B

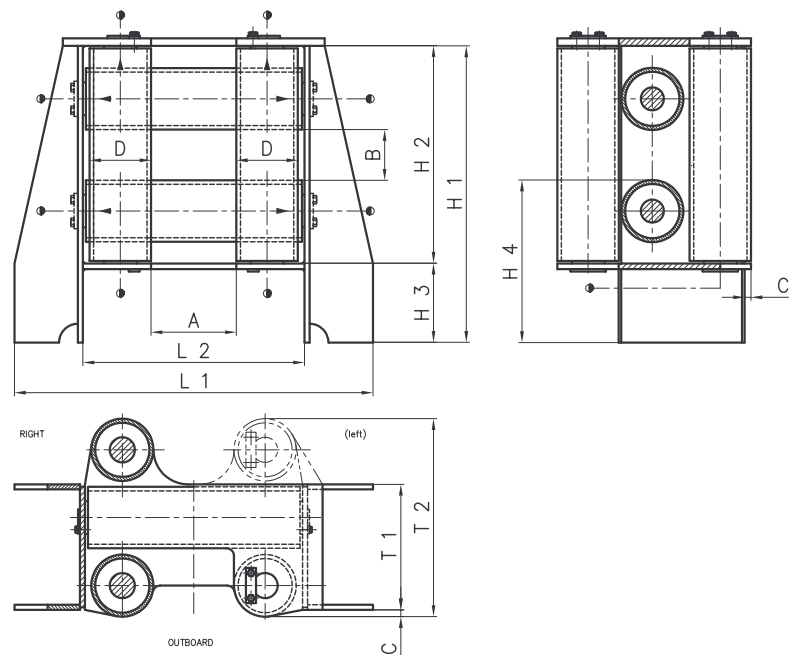
mounting: welded into bulwark



| type   | dimensions (mm) |     |    |     |      |      |     |     |      |      |     |     |
|--------|-----------------|-----|----|-----|------|------|-----|-----|------|------|-----|-----|
|        | A               | B   | C  | D   | H 1  | H 2  | H 3 | H 4 | L 1  | L 2  | L 3 | T 1 |
| HAS 1  | 160             | 100 | 10 | 60  | 430  | 300  | 130 | 230 | 530  | 300  | 410 | 120 |
| HAS 2  | 180             | 100 | 10 | 83  | 530  | 370  | 160 | 295 | 650  | 370  | 500 | 160 |
| HAS 3  | 230             | 130 | 15 | 102 | 640  | 460  | 180 | 345 | 800  | 460  | 610 | 200 |
| HAS 5  | 250             | 160 | 15 | 127 | 750  | 540  | 210 | 400 | 980  | 540  | 720 | 260 |
| HAS 8  | 280             | 160 | 20 | 140 | 820  | 580  | 240 | 450 | 1000 | 580  | 770 | 280 |
| HAS 12 | 300             | 160 | 25 | 178 | 960  | 680  | 280 | 540 | 1200 | 680  | 880 | 350 |
| HAS 16 | 320             | 180 | 30 | 194 | 1040 | 740  | 300 | 580 | 1260 | 740  | 945 | 380 |
| HAS 20 | 340             | 180 | 35 | 244 | 1210 | 860  | 350 | 690 | 1350 | 860  | -   | 470 |
| HAS 32 | 400             | 250 | 45 | 298 | 1440 | 1030 | 410 | 800 | 1700 | 1030 | -   | 570 |

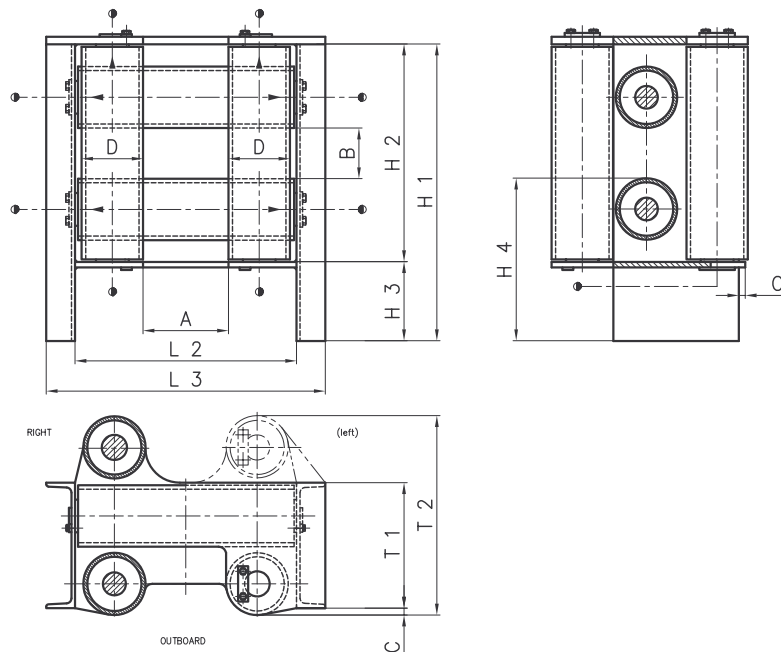
### form A

mounting: welded into bulwark  
or free on deck



### form B

mounting: welded into bulwark



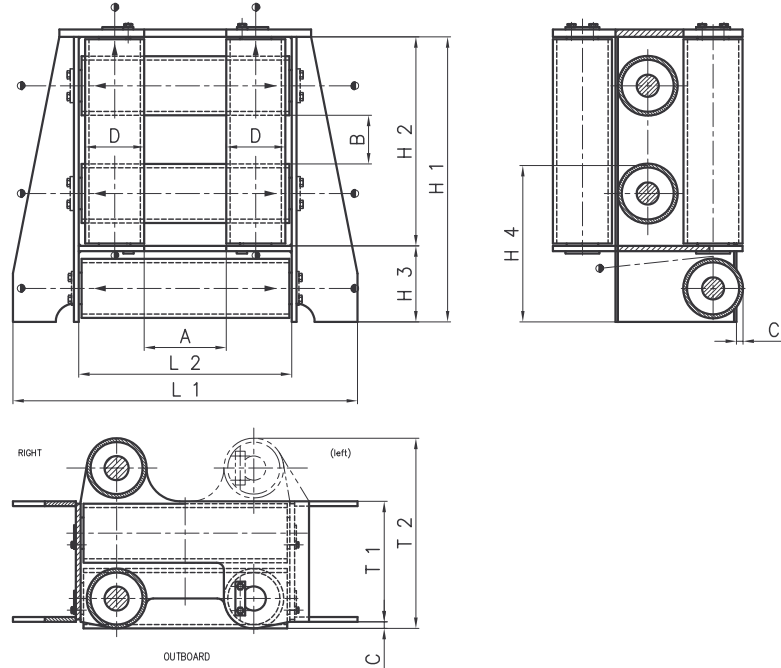
| type   | dimensions (mm) |     |    |     |      |      |     |     |      |      |     |     |     |
|--------|-----------------|-----|----|-----|------|------|-----|-----|------|------|-----|-----|-----|
|        | A               | B   | C  | D   | H 1  | H 2  | H 3 | H 4 | L 1  | L 2  | L 3 | T 1 | T 2 |
| HAS 1  | 160             | 100 | 10 | 60  | 385  | 300  | 85  | 185 | 530  | 300  | 410 | 120 | 200 |
| HAS 2  | 180             | 100 | 10 | 83  | 470  | 370  | 100 | 235 | 650  | 370  | 500 | 160 | 280 |
| HAS 3  | 230             | 130 | 15 | 102 | 560  | 460  | 100 | 265 | 800  | 460  | 610 | 200 | 335 |
| HAS 5  | 250             | 160 | 15 | 127 | 680  | 540  | 140 | 330 | 980  | 540  | 720 | 260 | 410 |
| HAS 8  | 280             | 160 | 20 | 140 | 720  | 580  | 140 | 350 | 1000 | 580  | 770 | 280 | 450 |
| HAS 12 | 300             | 160 | 25 | 178 | 840  | 680  | 160 | 420 | 1200 | 680  | 880 | 350 | 570 |
| HAS 16 | 320             | 180 | 30 | 194 | 920  | 740  | 180 | 460 | 1260 | 740  | 945 | 380 | 615 |
| HAS 20 | 340             | 180 | 35 | 244 | 1040 | 840  | 180 | 520 | 1350 | 860  | -   | 470 | 765 |
| HAS 32 | 400             | 250 | 45 | 298 | 1230 | 1030 | 200 | 590 | 1700 | 1030 | -   | 570 | 930 |

## roller fair leads HAS ...-5R(L)-H

2.2

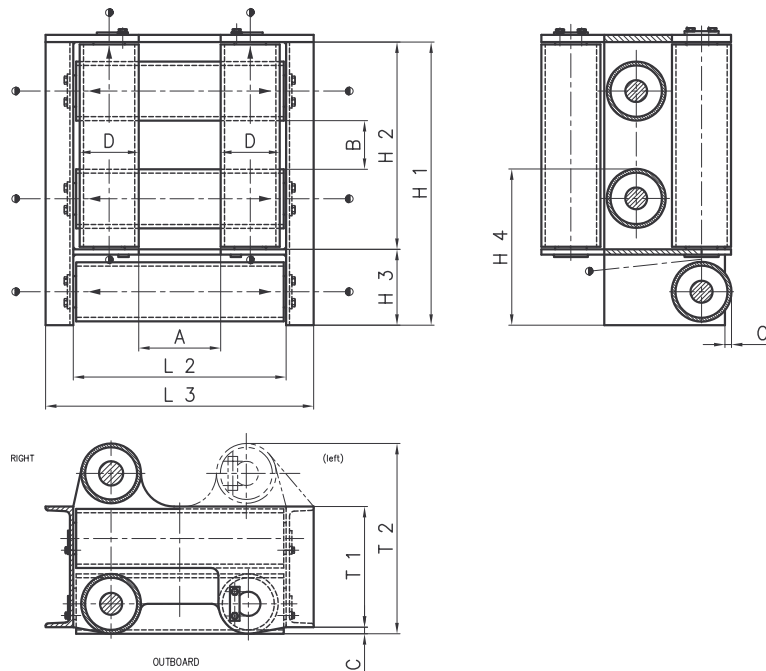
### form A

mounting: welded into bulwark  
or free on deck



### form B

mounting: welded into bulwark



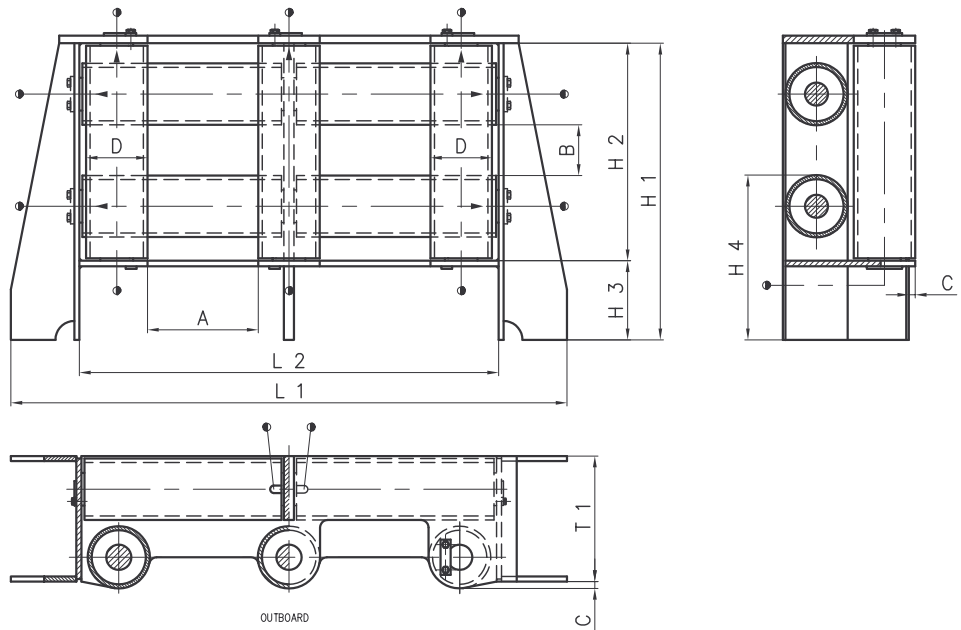
| type   | dimensions (mm) |     |    |     |      |      |     |     |      |      |     |     |     |
|--------|-----------------|-----|----|-----|------|------|-----|-----|------|------|-----|-----|-----|
|        | A               | B   | C  | D   | H 1  | H 2  | H 3 | H 4 | L 1  | L 2  | L 3 | T 1 | T 2 |
| HAS 1  | 160             | 100 | 10 | 60  | 430  | 300  | 130 | 230 | 530  | 300  | 410 | 120 | 200 |
| HAS 2  | 180             | 100 | 10 | 83  | 530  | 370  | 160 | 295 | 650  | 370  | 500 | 160 | 280 |
| HAS 3  | 230             | 130 | 15 | 102 | 640  | 460  | 180 | 345 | 800  | 460  | 610 | 200 | 335 |
| HAS 5  | 250             | 160 | 15 | 127 | 750  | 540  | 210 | 400 | 980  | 540  | 720 | 260 | 410 |
| HAS 8  | 280             | 160 | 20 | 140 | 820  | 580  | 240 | 450 | 1000 | 580  | 770 | 280 | 450 |
| HAS 12 | 300             | 160 | 25 | 178 | 960  | 680  | 280 | 540 | 1200 | 680  | 880 | 350 | 570 |
| HAS 16 | 320             | 180 | 30 | 194 | 1040 | 740  | 300 | 580 | 1260 | 740  | 945 | 380 | 615 |
| HAS 20 | 340             | 180 | 35 | 244 | 1210 | 860  | 350 | 690 | 1350 | 860  | —   | 470 | 765 |
| HAS 32 | 400             | 250 | 45 | 298 | 1440 | 1030 | 410 | 800 | 1700 | 1030 | —   | 570 | 930 |

## roller fair leads HAS ...-7

3.1

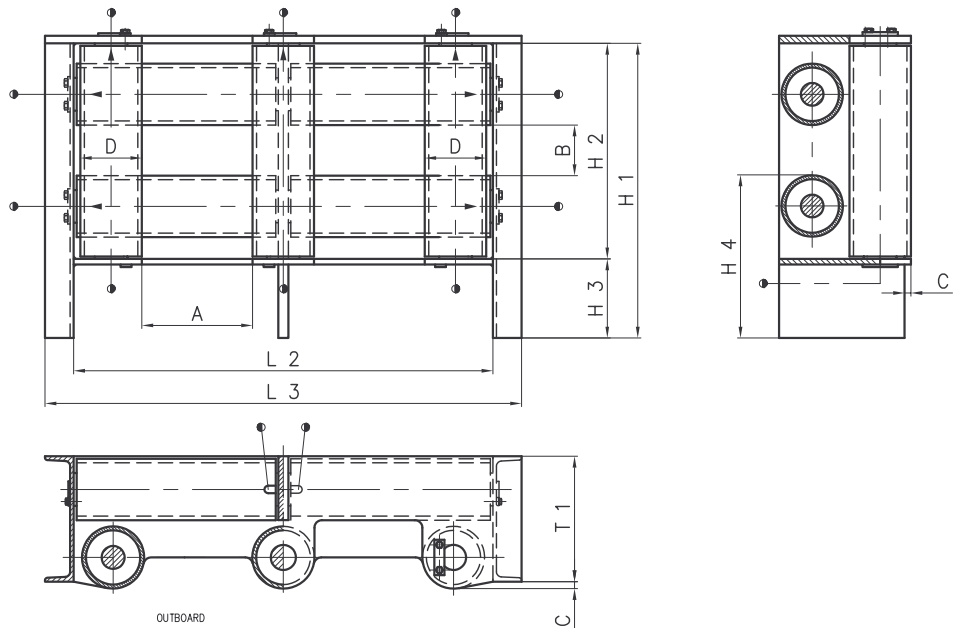
### form A

mounting:  
welded into bulwark  
or free on deck



### form B

mounting:  
welded into bulwark



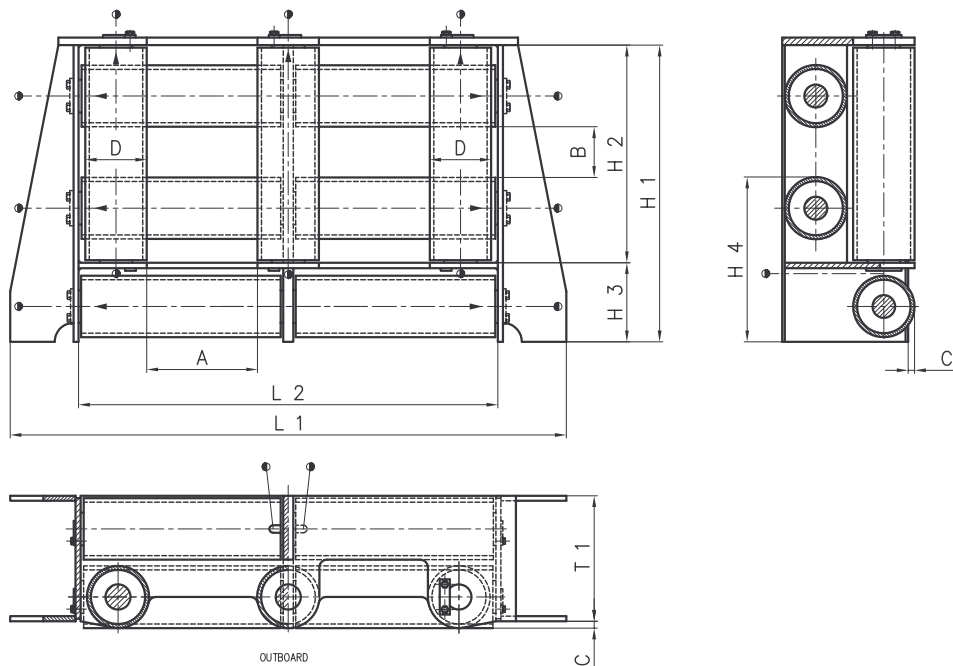
| type   | dimensions (mm) |     |    |     |      |      |     |     |      |      |      |     |
|--------|-----------------|-----|----|-----|------|------|-----|-----|------|------|------|-----|
|        | A               | B   | C  | D   | H 1  | H 2  | H 3 | H 4 | L 1  | L 2  | L 3  | T 1 |
| HAS 1  | 160             | 100 | 10 | 60  | 385  | 300  | 85  | 185 | 630  | 400  | 510  | 120 |
| HAS 2  | 180             | 100 | 10 | 83  | 470  | 370  | 100 | 235 | 915  | 635  | 765  | 160 |
| HAS 3  | 230             | 130 | 15 | 102 | 560  | 460  | 100 | 265 | 1135 | 795  | 945  | 200 |
| HAS 5  | 250             | 160 | 15 | 127 | 680  | 540  | 140 | 330 | 1360 | 920  | 1100 | 260 |
| HAS 8  | 280             | 160 | 20 | 140 | 720  | 580  | 140 | 350 | 1420 | 1000 | 1190 | 280 |
| HAS 12 | 300             | 160 | 25 | 178 | 840  | 680  | 160 | 420 | 1680 | 1160 | 1360 | 350 |
| HAS 16 | 320             | 180 | 30 | 194 | 920  | 740  | 180 | 460 | 1775 | 1255 | 1460 | 380 |
| HAS 20 | 340             | 180 | 35 | 244 | 1040 | 860  | 180 | 520 | 1935 | 1445 | —    | 470 |
| HAS 32 | 400             | 250 | 45 | 298 | 1230 | 1030 | 200 | 590 | 2400 | 1730 | —    | 570 |

## roller fair leads HAS ...-7-H

3.2

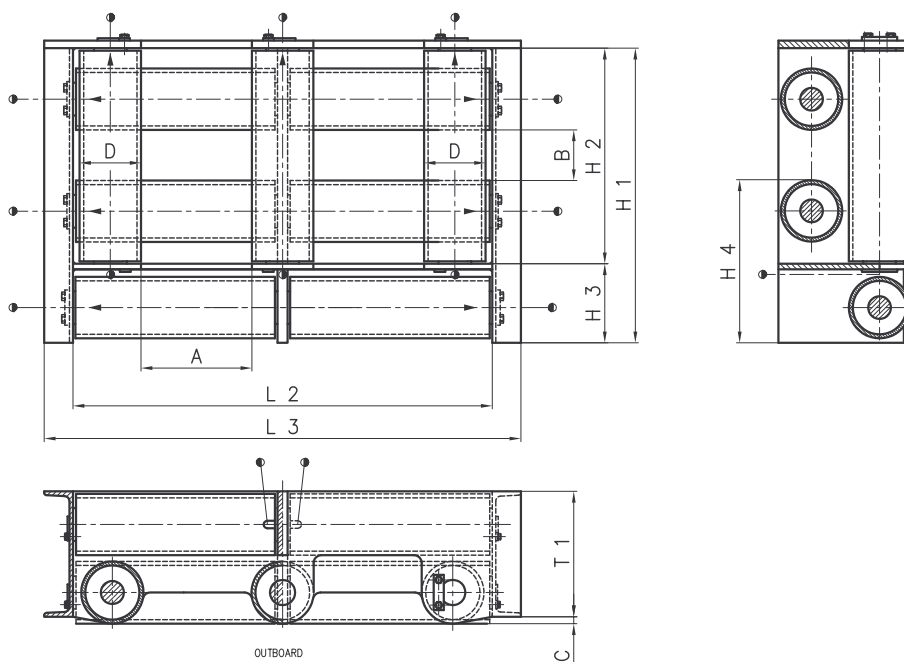
### form A

mounting:  
welded into bulwark  
or free on deck



### form B

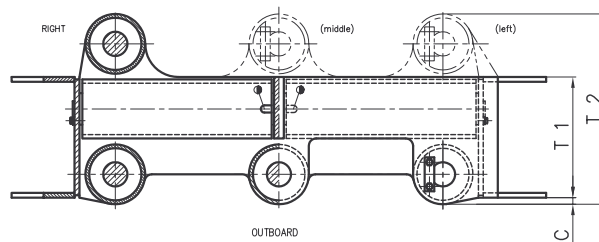
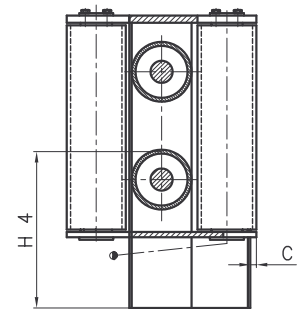
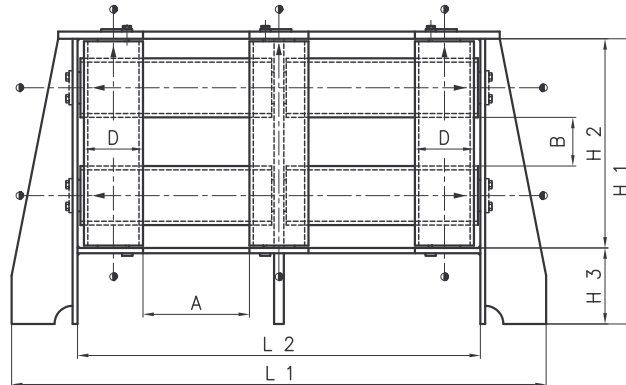
mounting:  
welded into bulwark



| type   | dimensions (mm) |     |    |     |      |      |     |     |      |      |      |     |
|--------|-----------------|-----|----|-----|------|------|-----|-----|------|------|------|-----|
|        | A               | B   | C  | D   | H 1  | H 2  | H 3 | H 4 | L 1  | L 2  | L 3  | T 1 |
| HAS 1  | 160             | 100 | 10 | 60  | 430  | 300  | 130 | 230 | 630  | 400  | 510  | 120 |
| HAS 2  | 180             | 100 | 10 | 83  | 530  | 370  | 160 | 295 | 915  | 635  | 765  | 160 |
| HAS 3  | 230             | 130 | 15 | 102 | 640  | 460  | 180 | 345 | 1135 | 795  | 945  | 200 |
| HAS 5  | 250             | 160 | 15 | 127 | 750  | 540  | 210 | 400 | 1360 | 920  | 1100 | 260 |
| HAS 8  | 280             | 160 | 20 | 140 | 820  | 580  | 240 | 450 | 1420 | 1000 | 1190 | 280 |
| HAS 12 | 300             | 160 | 25 | 178 | 960  | 680  | 280 | 540 | 1680 | 1160 | 1360 | 350 |
| HAS 16 | 320             | 180 | 30 | 194 | 1040 | 740  | 300 | 580 | 1775 | 1255 | 1460 | 380 |
| HAS 20 | 340             | 180 | 35 | 244 | 1210 | 860  | 350 | 690 | 1935 | 1445 | —    | 470 |
| HAS 32 | 400             | 250 | 45 | 298 | 1440 | 1030 | 410 | 800 | 2400 | 1730 | —    | 570 |

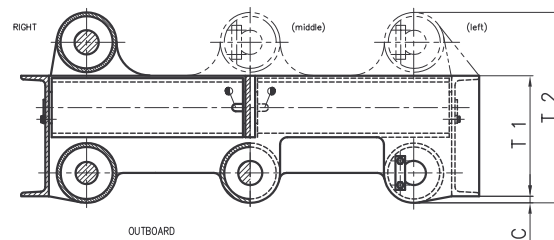
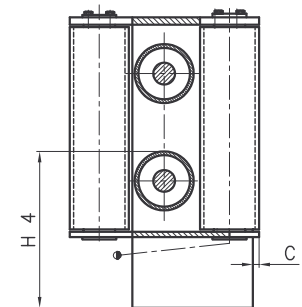
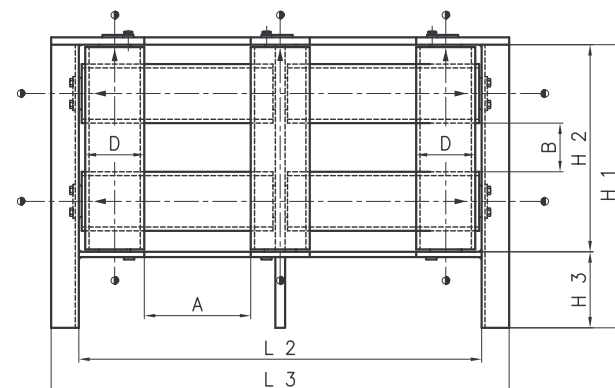
### form A

mounting:  
welded into bulwark  
or free on deck



### form B

mounting:  
welded into bulwark

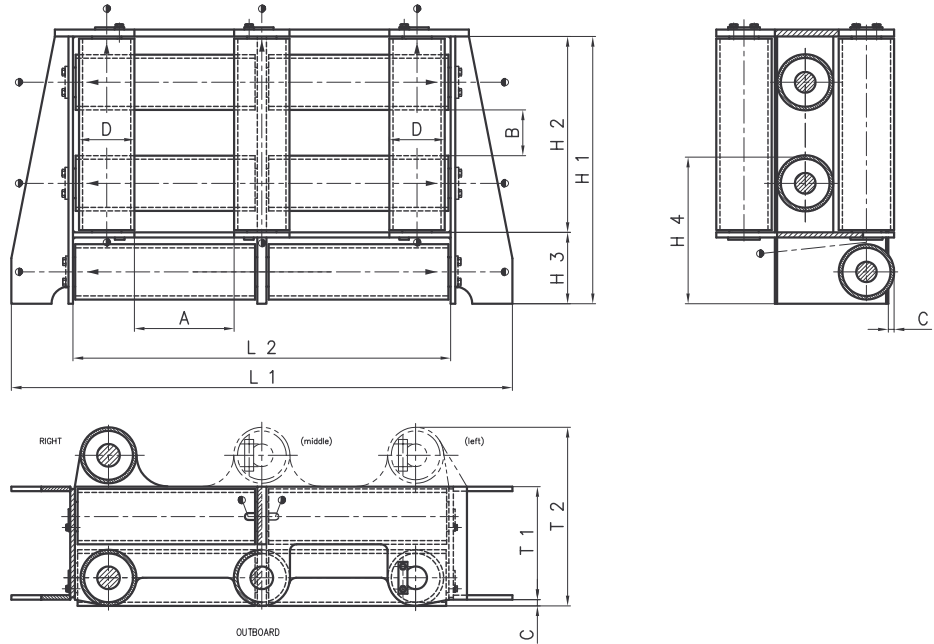


| type   | dimensions (mm) |     |    |     |      |      |     |     |      |      |      |     |     |
|--------|-----------------|-----|----|-----|------|------|-----|-----|------|------|------|-----|-----|
|        | A               | B   | C  | D   | H 1  | H 2  | H 3 | H 4 | L 1  | L 2  | L 3  | T 1 | T 2 |
| HAS 1  | 160             | 100 | 10 | 60  | 385  | 300  | 85  | 185 | 630  | 400  | 510  | 120 | 200 |
| HAS 2  | 180             | 100 | 10 | 83  | 470  | 370  | 100 | 235 | 915  | 635  | 765  | 160 | 280 |
| HAS 3  | 230             | 130 | 15 | 102 | 560  | 460  | 100 | 265 | 1135 | 795  | 945  | 200 | 335 |
| HAS 5  | 250             | 160 | 15 | 127 | 680  | 540  | 140 | 330 | 1360 | 920  | 1100 | 260 | 410 |
| HAS 8  | 280             | 160 | 20 | 140 | 720  | 580  | 140 | 350 | 1420 | 1000 | 1190 | 280 | 450 |
| HAS 12 | 300             | 160 | 25 | 178 | 840  | 680  | 160 | 420 | 1680 | 1160 | 1360 | 350 | 570 |
| HAS 16 | 320             | 180 | 30 | 194 | 920  | 740  | 180 | 460 | 1775 | 1255 | 1460 | 380 | 615 |
| HAS 20 | 340             | 180 | 35 | 244 | 1040 | 840  | 180 | 520 | 1935 | 1445 | —    | 470 | 765 |
| HAS 32 | 400             | 250 | 45 | 298 | 1230 | 1030 | 200 | 590 | 2400 | 1730 | —    | 570 | 930 |



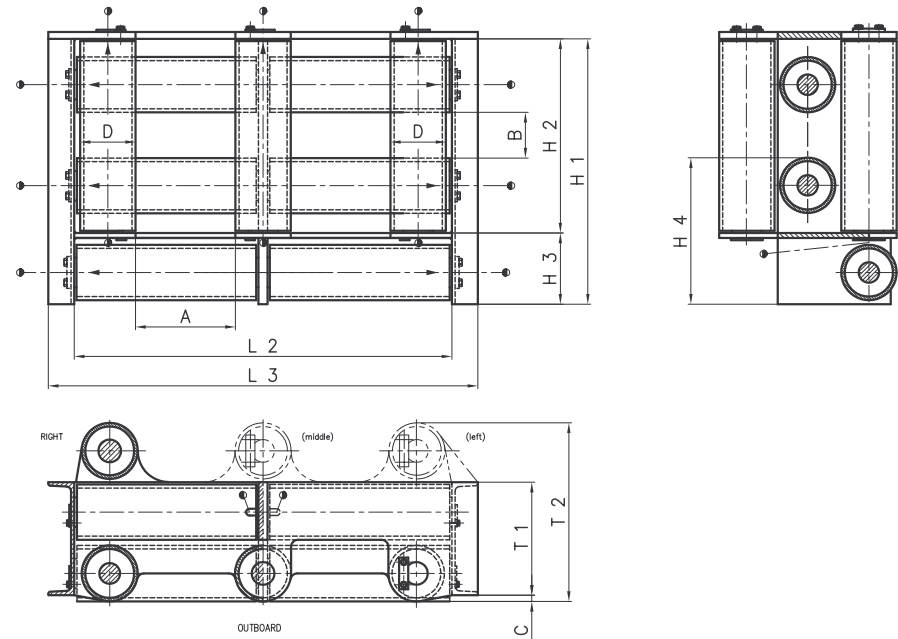
### form A

mounting:  
welded into bulwark  
or free on deck



### form B

mounting:  
welded into bulwark



| type   | dimensions (mm) |     |    |     |      |      |     |     |      |      |      |     |     |
|--------|-----------------|-----|----|-----|------|------|-----|-----|------|------|------|-----|-----|
|        | A               | B   | C  | D   | H 1  | H 2  | H 3 | H 4 | L 1  | L 2  | L 3  | T 1 | T 2 |
| HAS 1  | 160             | 100 | 10 | 60  | 430  | 300  | 130 | 230 | 630  | 400  | 510  | 120 | 200 |
| HAS 2  | 180             | 100 | 10 | 83  | 530  | 370  | 160 | 295 | 915  | 635  | 765  | 160 | 280 |
| HAS 3  | 230             | 130 | 15 | 102 | 640  | 460  | 180 | 345 | 1135 | 795  | 945  | 200 | 335 |
| HAS 5  | 250             | 160 | 15 | 127 | 750  | 540  | 210 | 400 | 1360 | 920  | 1100 | 260 | 410 |
| HAS 8  | 280             | 160 | 20 | 140 | 820  | 580  | 240 | 450 | 1420 | 1000 | 1190 | 280 | 450 |
| HAS 12 | 300             | 160 | 25 | 178 | 960  | 680  | 280 | 540 | 1680 | 1160 | 1360 | 350 | 570 |
| HAS 16 | 320             | 180 | 30 | 194 | 1040 | 740  | 300 | 580 | 1775 | 1255 | 1460 | 380 | 615 |
| HAS 20 | 340             | 180 | 35 | 244 | 1210 | 860  | 350 | 690 | 1935 | 1445 | —    | 470 | 765 |
| HAS 32 | 400             | 250 | 45 | 298 | 1440 | 1030 | 410 | 800 | 2400 | 1730 | —    | 570 | 930 |