

CAS/ATEX

Centrifugal single-inlet, high-pressure fans with ATEX certification



Centrifugal high-pressure fans with ATEX certification, CEE ExII2G Ex e, explosion-proof and CEE ExII2G Ex d, Ex tc, or Ex tb flame-resistant to work in explosive atmospheres.

Fan:

- Steel sheet casing
- Impeller with backward-facing blades made from galvanised sheet steel, except models 242-248-254-260-640-645-650 which have a cast aluminium impeller.
- Spark-proof inlet ring in copper or aluminium

Motor:

- Class F motors with ball bearings and ATEX certification, Ex e explosion-proof and Ex d, Ex tc, or Ex tb flame-resistant
- Three phase, 50Hz, 230/400V motors up to and including 4kW. 400/690V over 4kW
- Max. air temperature to transport: -20°C+ 80°C

Finish:

- Rust retardant finish with ATEX paint, containing no ferrous components, in polyester resin polymerised at 190°C, after phosphate free pre-treatment

On request:

- Built-in motors with PTC
- Special windings for different electrical supplies and frequencies
- ATEX construction for different categories
- Fans with two-speed motor.



Ex "e" marked: $\text{CE} \text{Ex} \text{II} 2\text{G} \text{Ex} \text{e}$
 Ex "d" marked: $\text{CE} \text{Ex} \text{II} 2\text{G} \text{Ex} \text{d}$
 Ex tc marked: $\text{CE} \text{Ex} \text{II} 3\text{D} \text{Ex} \text{tc}$
 Ex tb marked: $\text{CE} \text{Ex} \text{II} 2\text{D} \text{Ex} \text{tb}$
 Notified authority: L.O.M
 Identification No: LOM4ATEX007

Order code



Marked:
 $\text{CE} \text{Ex} \text{II} 2\text{G} \text{c}$
 $\text{CE} \text{Ex} \text{II} 2\text{D} \text{c}$
 $\text{CE} \text{Ex} \text{II} 3\text{D} \text{c}$

Centrifugal single-inlet, high-pressure fans with ATEX certification

Impeller size

Number of motor pole
 T=Three-phase
 2=2900 r/min. 50 Hz

Motor power (HP)

Ex-e: marked:
 $\text{CE} \text{Ex} \text{II} 2\text{G} \text{Ex} \text{e} \text{IIB} \text{T}3$
 Ex "d" marked:
 $\text{CE} \text{Ex} \text{II} 2\text{G} \text{Ex} \text{d} \text{IIB} \text{T}5$
 Ex tc marked:
 $\text{CE} \text{Ex} \text{II} 3\text{D} \text{Ex} \text{tc}$
 Ex tb marked:
 $\text{CE} \text{Ex} \text{II} 2\text{D} \text{Ex} \text{tb}$

Technical characteristics

| Model | Speed (r/min) | Maximum current admissible (A) | | | Installed power (kW) | Maximum airflow (m³/h) | Sound pressure level dB(A) | Approx. weight (Kg) |
|-----------------------|------------------|--------------------------------|-------|-------|-------------------------|---------------------------|-------------------------------|------------------------|
| | | 230V | 400V | 690V | | | | |
| CAS/ATEX-242-2T-0.33 | 2740 | 1.73 | 1.00 | | 0.25 | 450 | 73 | 30.0 |
| CAS/ATEX-242-2T-0.5 | 2770 | 2.08 | 1.20 | | 0.37 | 650 | 73 | 31.0 |
| CAS/ATEX-248-2T-0.75 | 2710 | 2.94 | 1.70 | | 0.55 | 420 | 74 | 43.5 |
| CAS/ATEX-248-2T-1 | 2820 | 3.46 | 2.00 | | 0.75 | 500 | 75 | 45.0 |
| CAS/ATEX-248-2T-1.5 | 2850 | 4.50 | 2.60 | | 1.10 | 990 | 76 | 46.5 |
| CAS/ATEX-254-2T-1.5 | 2850 | 4.50 | 2.60 | | 1.10 | 600 | 76 | 56.5 |
| CAS/ATEX-254-2T-2 | 2800 | 6.24 | 3.60 | | 1.50 | 800 | 78 | 61.5 |
| CAS/ATEX-254-2T-3 | 2860 | 8.66 | 5.00 | | 2.20 | 1300 | 80 | 63.0 |
| CAS/ATEX-260-2T-2 | 2800 | 6.24 | 3.60 | | 1.50 | 500 | 77 | 75.0 |
| CAS/ATEX-260-2T-3 | 2860 | 8.66 | 5.00 | | 2.20 | 900 | 79 | 78.0 |
| CAS/ATEX-463-2T-5.5 | 2910 | 15.42 | 8.90 | | 4.00 | 1150 | 82 | 88.5 |
| CAS/ATEX-463-2T-7.5 | 2880 | | 10.50 | 6.09 | 5.50 | 2000 | 83 | 95.5 |
| CAS/ATEX-467-2T-7.5 | 2880 | | 10.50 | 6.09 | 5.50 | 1550 | 84 | 117.5 |
| CAS/ATEX-467-2T-10 | 2880 | | 15.70 | 9.06 | 7.50 | 2600 | 85 | 122.5 |
| CAS/ATEX-571-2T-10 | 2880 | | 15.70 | 9.06 | 7.50 | 2000 | 86 | 144.0 |
| CAS/ATEX-571-2T-15 | 2930 | | 22.00 | 12.70 | 11.00 | 3450 | 87 | 175.0 |
| CAS/ATEX-640-2T-2 | 2800 | 6.24 | 3.60 | | 1.50 | 2600 | 77 | 51.5 |
| CAS/ATEX-645-2T-3 | 2860 | 8.66 | 5.00 | | 2.20 | 2000 | 76 | 62.5 |
| CAS/ATEX-645-2T-4 | 2845 | 12.12 | 7.00 | | 3.00 | 3000 | 81 | 69.5 |
| CAS/ATEX-650-2T-5.5 | 2910 | 15.42 | 8.90 | | 4.00 | 3500 | 81 | 89.0 |
| CAS/ATEX-650-2T-7.5 | 2880 | | 10.50 | 6.09 | 5.50 | 4750 | 83 | 96.0 |
| CAS/ATEX-852-2T-7.5 | 2880 | | 10.50 | 6.09 | 5.50 | 3500 | 81 | 96.0 |
| CAS/ATEX-852-2T-10 | 2880 | | 15.70 | 9.06 | 7.50 | 5500 | 85 | 101.0 |
| CAS/ATEX-856-2T-15 | 2930 | | 22.00 | 12.70 | 11.00 | 7500 | 85 | 157.5 |
| CAS/ATEX-863-2T-15 | 2930 | | 22.00 | 12.70 | 11.00 | 4000 | 84 | 168.0 |
| CAS/ATEX-863-2T-20 | 2935 | | 27.40 | 15.90 | 15.00 | 7000 | 86 | 179.0 |
| CAS/ATEX-971-2T-25 | 2930 | | 32.40 | 18.70 | 18.50 | 5800 | 87 | 299.0 |
| CAS/ATEX-971-2T-30 | 2935 | | 38.00 | 22.00 | 22.00 | 8100 | 88 | 324.0 |
| CAS/ATEX-971-2T-40 | 2940 | | 50.00 | 29.00 | 30.00 | 12000 | 89 | 380.0 |
| CAS/ATEX-1250-2T-15/A | 2930 | | 22.00 | 12.70 | 11.00 | 12000 | 84 | 220.0 |

Technical characteristics

| Model | Speed (r/min) | Maximum current admissible (A) | | | Installed power (kW) | Maximum airflow (m³/h) | Sound pressure level dB(A) | Approx. weight (Kg) |
|------------------------|------------------|-----------------------------------|--------|-------|----------------------------|------------------------------|----------------------------------|---------------------------|
| | | 230V | 400V | 690V | | | | |
| CAS/ATEX-1456-2T-25/A | 2930 | | 32.40 | 18.70 | 18.50 | 18000 | 87 | 286.0 |
| CAS/ATEX-1663-2T-50/A | 2940 | | 64.00 | 37.00 | 37.00 | 25000 | 92 | 425.0 |
| CAS/ATEX-1671-2T-60/A | 2940 | | 76.00 | 44.00 | 45.00 | 27000 | 93 | 575.0 |
| CAS/ATEX-2071-2T-100/A | 2970 | | 123.00 | 71.00 | 75.00 | 33600 | 95 | 750.0 |
| CAS/ATEX-2080-2T-125/A | 2970 | | 151.00 | 87.00 | 90.00 | 42600 | 96 | 820.0 |
| CAS/ATEX-790-2T-20 | 2935 | | 27.40 | 15.90 | 15.00 | 2100 | 88 | 245.0 |
| CAS/ATEX-980-2T-30 | 2935 | | 38.00 | 22.00 | 22.00 | 4800 | 87 | 340.0 |
| CAS/ATEX-990-2T-50 | 2940 | | 64.00 | 37.00 | 37.00 | 6000 | 90 | 485.0 |
| CAS/ATEX-1080-2T-40 | 2940 | | 50.00 | 29.00 | 30.00 | 5400 | 88 | 420.0 |
| CAS/ATEX-1090-2T-60 | 2940 | | 76.00 | 44.00 | 45.00 | 6000 | 91 | 530.0 |

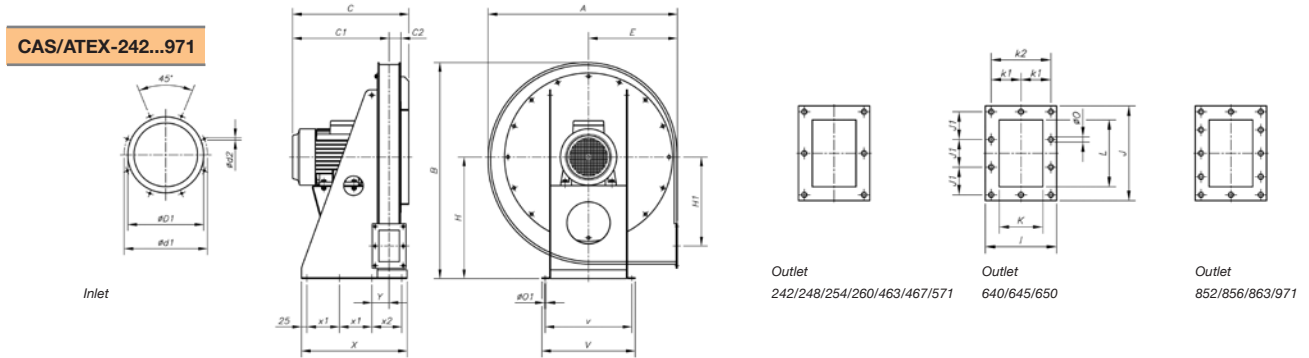
Acoustic features

The specified values are determined according to free field measurements of pressure and sound levels in dB(A) at an equivalent distance of twice the fan's span plus the turbine's diameter, with a minimum of 1.5 m.

Sound power Lw(A) spectrum in dB(A) via frequency band in Hz.

| Model | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
|----------|----|-----|-----|-----|------|------|------|------|
| CAS | | | | | | | | |
| 242 | 50 | 61 | 67 | 76 | 83 | 82 | 79 | 72 |
| 248-0.75 | 51 | 62 | 68 | 77 | 84 | 83 | 80 | 73 |
| 248-1 | 52 | 63 | 69 | 78 | 85 | 84 | 81 | 74 |
| 248-1.5 | 53 | 64 | 70 | 79 | 86 | 85 | 82 | 75 |
| 254-1.5 | 55 | 66 | 71 | 81 | 88 | 87 | 84 | 77 |
| 254-2 | 57 | 68 | 73 | 83 | 90 | 89 | 86 | 79 |
| 254-3 | 56 | 68 | 76 | 85 | 90 | 92 | 89 | 82 |
| 260-2 | 53 | 69 | 69 | 83 | 88 | 88 | 85 | 78 |
| 260-3 | 55 | 71 | 71 | 85 | 90 | 90 | 87 | 80 |
| 463-5.5 | 57 | 69 | 82 | 91 | 93 | 93 | 89 | 80 |
| 463-7.5 | 58 | 70 | 83 | 92 | 94 | 94 | 90 | 81 |
| 467-7.5 | 69 | 74 | 83 | 95 | 95 | 97 | 93 | 85 |
| 467-10 | 70 | 75 | 84 | 96 | 96 | 98 | 94 | 86 |
| 571-10 | 64 | 76 | 86 | 96 | 99 | 99 | 94 | 86 |
| 571-15 | 65 | 77 | 87 | 97 | 100 | 100 | 95 | 87 |
| 640 | 56 | 67 | 75 | 82 | 88 | 84 | 83 | 76 |
| 645-3 | 55 | 66 | 74 | 81 | 87 | 83 | 82 | 75 |
| 645-4 | 55 | 66 | 77 | 86 | 90 | 91 | 87 | 79 |
| 650-5.5 | 59 | 75 | 84 | 90 | 93 | 90 | 85 | 78 |
| 650-7.5 | 52 | 68 | 81 | 91 | 96 | 93 | 85 | 78 |

Dimensions in mm

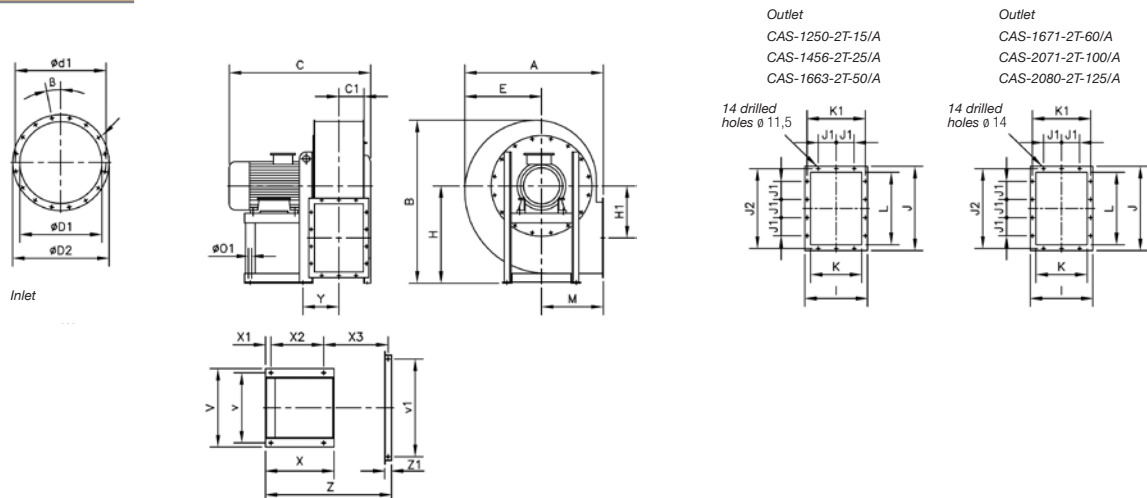


| Model | A | B | C | C1 | C2 | øD1 | ød1 | ød2 | E | H | H1 | I | J | J1 | K | k1 | k2 | L | øO | øO1 | V | v | X | x1 | x2 | Y |
|------------------------|------|------|-----|-------|------|-----|-----|-----|-----|-----|-------|-----|-----|------|-----|-------|-----|-----|----|-----|-----|-----|-----|-----|-----|------|
| CAS/ATEX-242-2T-0'33 | 576 | 662 | 282 | 219 | 33 | 100 | 130 | M8 | 270 | 375 | 270 | 120 | 155 | 65 | 60 | - | 95 | 95 | 11 | 12 | 305 | 275 | 260 | 75 | - | 61 |
| CAS/ATEX-242-2T-0'5 | 576 | 662 | 310 | 247 | 33 | 100 | 130 | M8 | 270 | 375 | 270 | 120 | 155 | 65 | 60 | - | 95 | 95 | 11 | 12 | 305 | 275 | 260 | 75 | - | 61 |
| CAS/ATEX-248-2T-0'75 | 639 | 728 | 315 | 249 | 36 | 112 | 140 | M8 | 300 | 410 | 297 | 126 | 165 | 70 | 66 | - | 101 | 105 | 11 | 12 | 320 | 290 | 300 | 90 | - | 64 |
| CAS/ATEX-248-2T-1'1'5 | 639 | 728 | 340 | 274 | 36 | 112 | 140 | M8 | 300 | 410 | 297 | 126 | 165 | 70 | 66 | - | 101 | 105 | 11 | 12 | 320 | 290 | 300 | 90 | - | 64 |
| CAS/ATEX-254-2T-1'5 | 699 | 788 | 365 | 294.5 | 40.5 | 125 | 155 | M8 | 330 | 440 | 322 | 135 | 175 | 75 | 75 | - | 110 | 115 | 11 | 14 | 340 | 310 | 330 | 100 | - | 68.5 |
| CAS/ATEX-254-2T-2 | 699 | 788 | 413 | 342.5 | 40.5 | 125 | 155 | M8 | 330 | 440 | 322 | 135 | 175 | 75 | 75 | - | 110 | 115 | 11 | 14 | 340 | 310 | 330 | 100 | - | 68.5 |
| CAS/ATEX-254-2T-3 | 699 | 788 | 443 | 372.5 | 40.5 | 125 | 155 | M8 | 330 | 440 | 322 | 135 | 175 | 75 | 75 | - | 110 | 115 | 11 | 14 | 340 | 310 | 330 | 100 | - | 68.5 |
| CAS/ATEX-260-2T-2/3 | 782 | 875 | 419 | 343.5 | 47.5 | 150 | 175 | M8 | 370 | 485 | 362 | 145 | 185 | 80 | 85 | - | 120 | 125 | 11 | 14 | 380 | 350 | 370 | 115 | - | 73.5 |
| CAS/ATEX-463-2T-5'5 | 782 | 875 | 459 | 383.5 | 45.5 | 200 | 240 | M8 | 370 | 485 | 362 | 145 | 185 | 80 | 85 | - | 120 | 125 | 11 | 14 | 380 | 350 | 370 | 115 | - | 73.5 |
| CAS/ATEX-463-2T-7'5 | 782 | 875 | 517 | 441.5 | 45.5 | 200 | 240 | M8 | 370 | 485 | 362 | 145 | 185 | 80 | 85 | - | 120 | 125 | 11 | 14 | 380 | 350 | 370 | 115 | - | 73.5 |
| CAS/ATEX-467-2T-7'5/10 | 833 | 945 | 530 | 442 | 48 | 224 | 258 | M8 | 390 | 530 | 395 | 150 | 190 | 82.5 | 90 | - | 125 | 130 | 11 | 14 | 405 | 375 | 300 | 125 | - | 76 |
| CAS/ATEX-571-2T-10 | 873 | 995 | 536 | 445.5 | 50.5 | 250 | 275 | M8 | 410 | 560 | 410 | 155 | 205 | 90 | 95 | - | 130 | 145 | 11 | 14 | 430 | 400 | 350 | 150 | - | 79.5 |
| CAS/ATEX-571-2T-15 | 873 | 995 | 671 | 580.5 | 50.5 | 250 | 275 | M8 | 410 | 560 | 410 | 155 | 205 | 90 | 95 | - | 130 | 145 | 11 | 14 | 430 | 400 | 410 | 180 | - | 79.5 |
| CAS/ATEX-640-2T-2 | 639 | 728 | 446 | 350.5 | 65.5 | 250 | 275 | M8 | 300 | 410 | 250 | 185 | 260 | 78 | 125 | 80 | - | 200 | 11 | 14 | 340 | 310 | 350 | 100 | - | 93.5 |
| CAS/ATEX-645-2T-3 | 699 | 788 | 461 | 358 | 73 | 250 | 275 | M8 | 330 | 440 | 267.5 | 200 | 284 | 86 | 140 | 87.5 | - | 224 | 11 | 14 | 380 | 350 | 380 | 115 | - | 101 |
| CAS/ATEX-645-2T-4 | 699 | 788 | 491 | 388 | 73 | 250 | 275 | M8 | 330 | 440 | 267.5 | 200 | 284 | 86 | 140 | 87.5 | - | 224 | 11 | 14 | 380 | 350 | 380 | 115 | - | 101 |
| CAS/ATEX-650-2T-5'5 | 782 | 875 | 534 | 421 | 83 | 250 | 275 | M8 | 370 | 485 | 300 | 220 | 310 | 95 | 160 | 97.5 | - | 250 | 11 | 14 | 405 | 375 | 490 | 125 | 190 | 111 |
| CAS/ATEX-650-2T-7'5 | 782 | 875 | 572 | 459 | 83 | 250 | 275 | M8 | 370 | 485 | 300 | 220 | 310 | 95 | 160 | 97.5 | - | 250 | 11 | 14 | 405 | 375 | 490 | 125 | 190 | 111 |
| CAS/ATEX-852-2T-7'5/10 | 833 | 945 | 603 | 470 | 94.5 | 380 | 310 | M8 | 390 | 530 | 320 | 240 | 340 | 78 | 180 | 107.5 | - | 280 | 11 | 14 | 430 | 400 | 540 | 150 | 190 | 122 |
| CAS/ATEX-856-2T-15 | 833 | 945 | 708 | 575 | 93 | 355 | 395 | M8 | 390 | 530 | 320 | 240 | 340 | 78 | 180 | 107.5 | - | 280 | 11 | 14 | 430 | 400 | 600 | 180 | 190 | 122 |
| CAS/ATEX-863-2T-15/20 | 873 | 995 | 728 | 585 | 103 | 355 | 410 | M8 | 410 | 560 | 325 | 260 | 375 | 87.5 | 200 | 117.5 | - | 315 | 11 | 14 | 430 | 400 | 620 | 180 | 210 | 132 |
| CAS/ATEX-971-2T-25 | 1012 | 1170 | 759 | 598 | 116 | 400 | 450 | M10 | 460 | 670 | 420 | 294 | 425 | 100 | 224 | 132 | - | 355 | 11 | 14 | 550 | 510 | 715 | 150 | 215 | 145 |
| CAS/ATEX-971-2T-30 | 1012 | 1170 | 881 | 720 | 116 | 400 | 450 | M10 | 460 | 670 | 420 | 294 | 425 | 100 | 224 | 132 | - | 355 | 11 | 14 | 550 | 510 | 715 | 150 | 215 | 145 |
| CAS/ATEX-971-2T-40 | 1012 | 1170 | 948 | 787 | 116 | 400 | 450 | M10 | 460 | 670 | 420 | 294 | 425 | 100 | 224 | 132 | - | 355 | 11 | 14 | 550 | 510 | 715 | 150 | 215 | 145 |

The measures correspond to the Ex "e" version

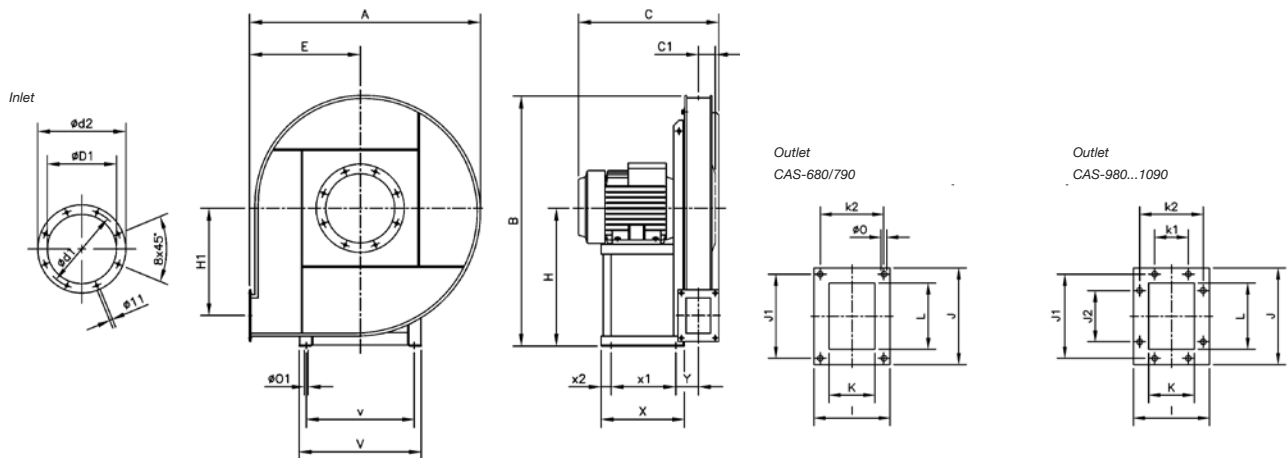
Dimensions in mm

CAS/ATEX-1250...2080



| Model | A | B | C | C1 | $\phi D1$ | $\phi D2$ | $\phi d1$ | x ϕ | β | E | H | H1 | I | J | J1 | J2 | K | K1 | L | M | $\phi O1$ | V | v | v1 | X | X1 | X2 | X3 | Y | Z | Z1 |
|-------------------|------|------|------|-----|-----------|-----------|-----------|----------|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------|-----|-----|-----|-----|----|-----|-----|-----|------|----|
| CAS-1250-2T-15/A | 865 | 1055 | 885 | 160 | 361 | 441 | 405 | 8x11.5 | 22°30' | 510 | 630 | 365 | 360 | 480 | 125 | 448 | 280 | 332 | 400 | 355 | 14 | 440 | 400 | - | 425 | 30 | 340 | - | 202 | - | - |
| CAS-1456-2T-25/A | 970 | 1185 | 900 | 163 | 456 | 535 | 497 | 12x12 | 15° | 555 | 710 | 410 | 395 | 530 | 125 | 497 | 315 | 366 | 450 | 400 | 14 | 440 | 400 | - | 425 | 30 | 340 | - | 219 | - | - |
| CAS-1663-2T-50/A | 1010 | 1280 | 1035 | 183 | 568 | 668 | 629 | 16x11.5 | 11°15' | 560 | 800 | 380 | 435 | 580 | 125 | 551 | 355 | 405 | 500 | 450 | 16 | 570 | 510 | - | 500 | 40 | 385 | - | 263 | - | - |
| CAS-1671-2T-60/A | 1130 | 1340 | 1160 | 206 | 638 | 738 | 698 | 16x13 | 11°15' | 630 | 800 | 430 | 500 | 660 | 160 | 629 | 400 | 464 | 560 | 500 | 19 | 626 | 565 | 800 | 550 | 40 | 425 | 530 | 292 | 1025 | 60 |
| CAS-2071-2T-100/A | 1130 | 1340 | 1290 | 206 | 638 | 738 | 698 | 16x13 | 11°15' | 630 | 800 | 430 | 500 | 660 | 160 | 629 | 400 | 464 | 560 | 500 | 21 | 760 | 680 | 800 | 700 | 50 | 550 | 545 | 307 | 1125 | 60 |
| CAS-2080-2T-125/A | 1270 | 1505 | 1345 | 231 | 718 | 818 | 775 | 16x13 | 11°15' | 710 | 900 | 486 | 550 | 730 | 160 | 698 | 450 | 513 | 630 | 560 | 24 | 760 | 680 | 900 | 700 | 50 | 550 | 595 | 333 | 1225 | 60 |

CAS/ATEX-680...1090

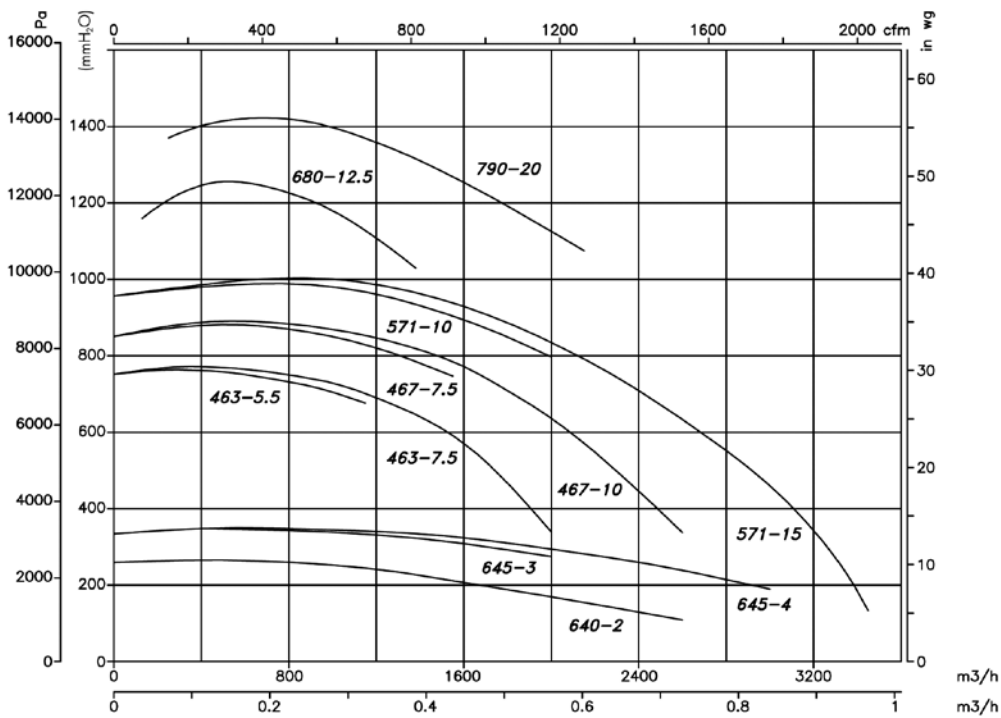
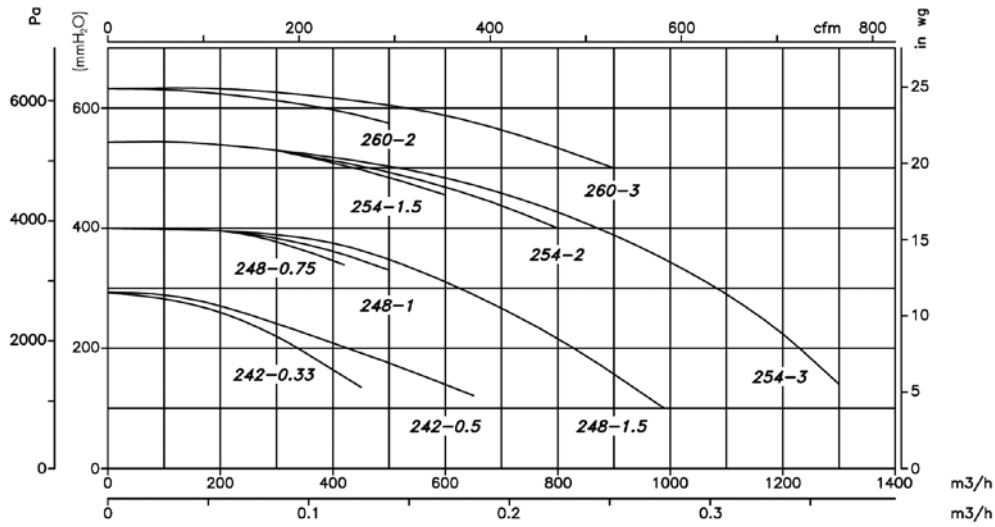


| Model | A | B | C | C1 | $\phi D1$ | $\phi d1$ | $\phi d2$ | E | H | H1 | I | J | J1 | J2 | K | k1 | k2 | L | ϕO | $\phi O1$ | V | v | X | x1 | x2 | Y |
|-----------------|------|------|-----|-----|-----------|-----------|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------|-----------|-----|-----|-----|-----|----|-----|
| CAS-680-2T-12'5 | 925 | 995 | 550 | 50 | 165 | 200 | 235 | 450 | 530 | 430 | 131 | 160 | 125 | - | 71 | - | 100 | 100 | 9 | 12 | 392 | 360 | 320 | 250 | 25 | 87 |
| CAS-790-2T-20 | 1100 | 1180 | 650 | 58 | 185 | 219 | 255 | 530 | 630 | 520 | 140 | 172 | 140 | - | 80 | - | 112 | 112 | 9 | 14 | 440 | 400 | 425 | 340 | 30 | 103 |
| CAS-980-2T-30 | 1120 | 1250 | 725 | 90 | 255 | 292 | 325 | 530 | 710 | 530 | 210 | 270 | 241 | 112 | 140 | 112 | 182 | 200 | 11.5 | 14 | 440 | 400 | 425 | 340 | 35 | 145 |
| CAS-990-2T-50 | 1250 | 1400 | 900 | 100 | 286 | 332 | 366 | 600 | 800 | 600 | 230 | 294 | 265 | 112 | 160 | 112 | 200 | 224 | 11.5 | 16 | 570 | 510 | 500 | 385 | 40 | 165 |
| CAS-1080-2T-40 | 1120 | 1250 | 850 | 90 | 255 | 392 | 325 | 530 | 710 | 530 | 210 | 270 | 241 | 112 | 140 | 112 | 182 | 200 | 11.5 | 16 | 570 | 510 | 500 | 385 | 40 | 155 |
| CAS-1090-2T-60 | 1250 | 1400 | 930 | 100 | 286 | 332 | 366 | 600 | 800 | 600 | 230 | 294 | 265 | 112 | 160 | 112 | 200 | 224 | 11.5 | 16 | 626 | 565 | 550 | 425 | 40 | 175 |

Characteristic Curves

Q = Airflow in m³/h, m³/s and cfm.

Pe= Static pressure in mmH₂O, Pa and inwg.



Accessories

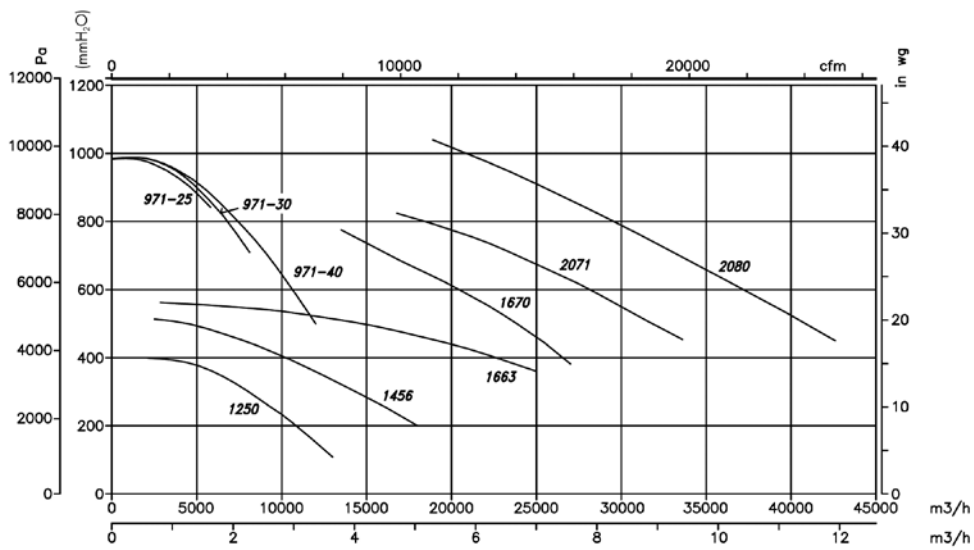
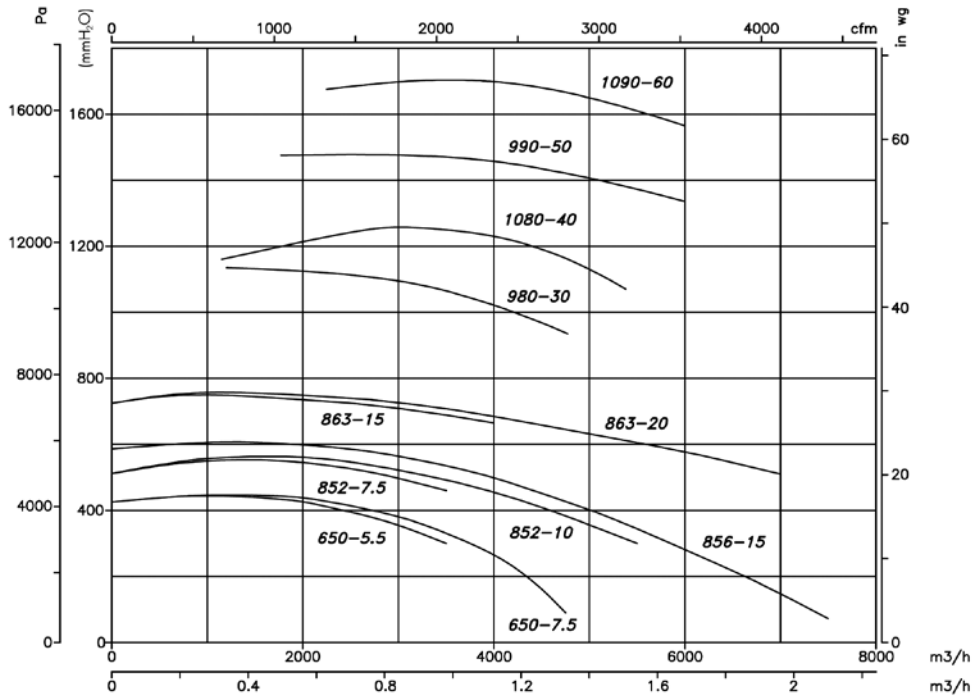
See accessories section.



Curvas Características

Q= Caudal en m³/h, m³/s y cfm.

Pe= Presión estática en mmH₂O, Pa e inwg.



Positions

LG 270 standard supply
LG 180 positions on request
and with special fixing measurements.



Supplied on request
RD 180 positions with special
fixing measurements.

