



Теплообменники ОРТІМА FKN/FKH Технические характеристики

По вопросам продаж и поддержки обращайтесь:

Архангельск (8182)63-90-72

Астана +7(7172)727-132

Белгород (4722)40-23-64

Брянск (4832)59-03-52

Владивосток (423)249-28-31

Волгоград (844)278-03-48

Вологда (8172)26-41-59

Воронеж (473)204-51-73

Екатеринбург (343)384-55-89

Иваново (4932)77-34-06

Ижевск (3412)26-03-58

Казань (843)206-01-48

Калининград (4012)72-03-81

Калуга (4842)92-23-67

Кемерово (3842)65-04-62

Киров (8332)68-02-04

Краснодар (861)203-40-90

Красноярск (391)204-63-61

Курск (4712)77-13-04

Липецк (4742)52-20-81

Магнитогорск (3519)55-03-13

Москва (495)268-04-70

Мурманск (8152)59-64-93

Набережные Челны (8552)20-53-41

Нижний Новгород (831)429-08-12

Новокузнецк (3843)20-46-81

Новосибирск (383)227-86-73

Орел (4862)44-53-42

Оренбург (3532)37-68-04

Пенза (8412)22-31-16

Пермь (342)205-81-47

Ростов-на-Дону (863)308-18-15

Рязань (4912)46-61-64

Самара (846)206-03-16

Санкт-Петербург (812)309-46-40

Саратов (845)249-38-78

Смоленск (4812)29-41-54

Сочи (862)225-72-31

Ставрополь (8652)20-65-13

Тверь (4822)63-31-35

Томск (3822)98-41-53

Тула (4872)74-02-29

Тюмень (3452)66-21-18

Ульяновск (8422)24-23-59

Уфа (347)229-48-12

Челябинск (351)202-03-61

Череповец (8202)49-02-64

Ярославль (4852)69-52-93

сайт: www.ciat.nt-rt.ru | эл. почта: cta@nt-rt.ru



Shell and tubes condensers

OPTIMA FKN-FKH

- Compact
- Lower refrigerant charges
- Easy integration
- Optimised design



OPTIMA
2nd generation
diameter 168 to 355

Capacity : 50 to 7000 kW

USE

OPTIMA condensers are particularly well adapted to all medium and high duty refrigeration systems using water cooled condensers (refrigeration units, heat pumps...).

DESCRIPTION

FKN

Compatible with all refrigerants halogenes, zeotropes or azeotropes (R507, R134a, R404A, R407C ...).

The bundle is made of finned copper tubes (A pattern) and benefits from significant increases in efficiency (particularly for R134A). Adapted for NH₃ (R 717).

FKH

Adapted for NH₃ (R 717). Bundle tubes are of steel.

FKH IN

Corrosive fluids : 316L stainless steel shell, tubular plates and corrugated tubes.

QUICK SELECTION

Water inlet Temp = 27 °C

| | | | |
|------------------------|--------------|----------------|-----------------------------------|
| Discharge temperature | 90 °C | Sub cooling | 2 °C |
| Condensing temperature | 35 °C | Fouling factor | 0,00005 m² °C/W |

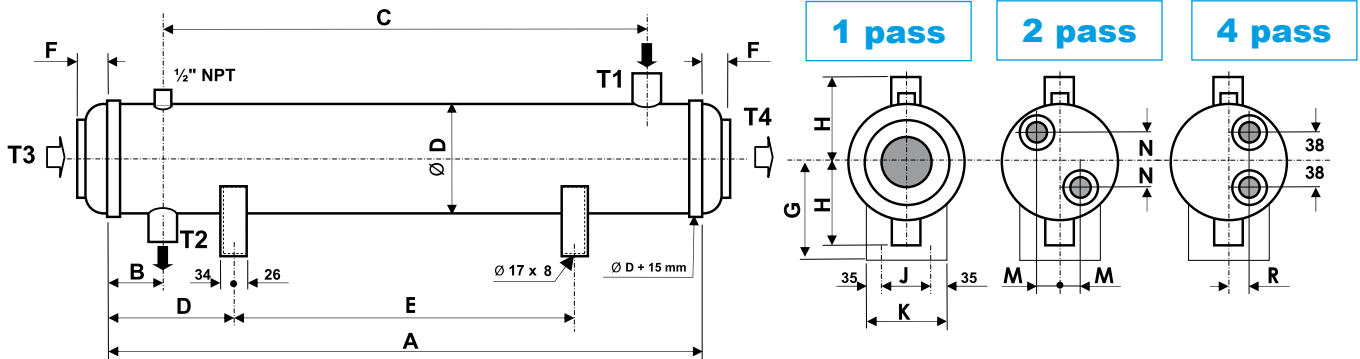
| Power kW | R404A | | | NH ₃ | | |
|----------|-------------------|------------------------|-------------------------|------------------|------------------------|-------------------------|
| | FKN | Flow m ³ /h | Water pressure drop kPa | FKH | Flow m ³ /h | Water pressure drop kPa |
| 100 | 168 20A 2N | 17.3 | 36 | 219 20 2N | 21 | 34 |
| 200 | 219 20A 2N | 35 | 57 | 219 30 2R | 31 | 43 |
| 500 | 273 30A 1N | 100 | 25 | 355 30 2R | 74 | 37 |
| 1000 | 355 30A 1N | 216 | 41 | 406 40 1R | 195 | 26 |
| 1500 | 355 40A 1R | 250 | 47 | 457 50 1R | 260 | 31 |
| 2000 | 406 40A 1R | 333 | 42 | 508 50 1R | 364 | 42 |
| 3000 | 508 40A 1R | 500 | 37 | - | - | - |



Shell and tubes condensers

OPTIMA FKN - FKH

DIMENSIONS OPTIMA 2ND GENERATION DIAMETER 168 TO 355



| Models | A | B | C | D | E | G | H | J | K | M | N | R |
|--------|------|------|------|------|------|-----|-----|-----|-----|----|----|----|
| 168-12 | 1200 | 78 | 1035 | 200 | 800 | 195 | 154 | 70 | 140 | 20 | 35 | 25 |
| 168-20 | 2000 | 78 | 1835 | 500 | 1000 | 195 | 154 | 70 | 140 | 20 | 35 | 25 |
| 219-12 | 1200 | 80 | 1025 | 200 | 800 | 220 | 180 | 110 | 180 | 0 | 47 | 45 |
| 219-20 | 2000 | 80 | 1825 | 500 | 1000 | 220 | 180 | 110 | 180 | 0 | 47 | 45 |
| 219-30 | 3000 | 80 | 2825 | 1000 | 1000 | 220 | 180 | 110 | 180 | 0 | 47 | 45 |
| 273-12 | 1200 | 90 | 1000 | 200 | 800 | 247 | 207 | 110 | 180 | 0 | 62 | - |
| 273-20 | 2000 | 90 | 1800 | 500 | 1000 | 247 | 207 | 110 | 180 | 0 | 62 | - |
| 273-30 | 3000 | 90 | 2800 | 1000 | 1000 | 247 | 207 | 110 | 180 | 0 | 62 | - |
| 273-40 | 4000 | 2000 | 3750 | 1000 | 2000 | 247 | 207 | 110 | 180 | 0 | 62 | - |
| 355-12 | 1200 | 134 | 950 | 250 | 700 | 288 | 248 | 170 | 240 | 0 | 82 | - |
| 355-20 | 2000 | 134 | 1750 | 500 | 1000 | 288 | 248 | 170 | 240 | 0 | 82 | - |
| 355-30 | 3000 | 134 | 2750 | 1000 | 1000 | 288 | 248 | 170 | 240 | 0 | 82 | - |
| 355-40 | 4000 | 2000 | 3750 | 1000 | 2000 | 288 | 248 | 170 | 240 | 0 | 82 | - |

CONNECTIONS

| Models | 1 pass | | | | 2 pass | | | | 4 pass | | | |
|--------|--------|-----------------|---------------|------------------|--------|----------------|---------------|---------|--------|---------------|---------------|-----------|
| | F | T1 | T2 | T3 / T4 | F | T1 | T2 | T3 / T4 | F | T1 | T2 | T3 / T4 |
| 168 | 80 | DN 65 (2"5/8) | DN 40 (1"5/8) | DN 100 Victaulic | 39 | DN 65 (2"5/8) | DN 40 (1"5/8) | 2" GAS | 40 | DN 65 (2"5/8) | DN 40 (1"5/8) | 1"1/4 GAS |
| 219 | 100 | DN 80 (3"1/8) | DN 50 (2"1/8) | DN 150 Victaulic | 50 | DN 80 (3"1/8) | DN 50 (2"1/8) | 3" GAS | 50 | DN 80 (3"1/8) | DN 50 (2"1/8) | 2" GAS |
| 273 | 100 | DN 100 (4"1/8) | DN 65 (2"5/8) | DN 150 Victaulic | 55 | DN 100 (4"1/8) | DN 65 (2"5/8) | 4" GAS | - | - | - | - |
| 355 | 150 | DN 100 (4"1/8)* | DN 80 (3"1/8) | DN 200 Victaulic | 75 | DN 100 (4"1/8) | DN 80 (3"1/8) | 5" GAS | - | - | - | - |

* NOTE: FKN 355-40 and FKH 273-40 are fed by two tubes (T1); the outlet (T2) is located between the support legs.



Shell and tubes condensers

MASSES – CAPACITIES

| Models | | FKN | | | FKH | | |
|--------|---|------------|----------|---------------------|------------|---------------------|-----|
| | | Empty mass | Capacity | | Empty mass | Capacity | |
| | | | kg | Int. fluid (litres) | | Ext. fluid (litres) | kg |
| 168-12 | U | 54 | 4 | 17 | - | - | - |
| | N | 56 | 5 | 16 | - | - | - |
| | R | 61 | 8 | 13 | - | - | - |
| 168-20 | N | 70 | 14 | 23 | 79 | 10 | 25 |
| | R | 75 | 10 | 27 | 81 | 12 | 22 |
| 219-12 | N | 102 | 11 | 27 | - | - | - |
| | R | 109 | 14 | 23 | - | - | - |
| 219-20 | N | 143 | 18 | 45 | 126 | 15 | 47 |
| | R | 154 | 23 | 39 | 147 | 24 | 35 |
| 219-30 | N | 210 | 26 | 69 | 176 | 22 | 71 |
| | R | 193 | 34 | 59 | 207 | 36 | 53 |
| 273-12 | N | 126 | 21 | 40 | - | - | - |
| | R | 134 | 25 | 35 | - | - | - |
| 273-20 | N | 184 | 32 | 68 | 188 | 30 | 66 |
| | R | 197 | 39 | 60 | 199 | 35 | 60 |
| 273-30 | N | 276 | 47 | 103 | 263 | 44 | 100 |
| | R | 256 | 57 | 92 | 279 | 51 | 91 |
| 273-40 | N | - | - | - | 337 | 59 | 135 |
| | R | - | - | - | 359 | 68 | 122 |
| 355-12 | N | 203 | 32 | 65 | - | - | - |
| | R | 224 | 43 | 52 | - | - | - |
| 355-20 | N | 300 | 53 | 111 | 306 | 52 | 108 |
| | R | 336 | 71 | 90 | 339 | 66 | 90 |
| 355-30 | N | 421 | 80 | 170 | 431 | 77 | 165 |
| | R | 476 | 106 | 138 | 479 | 98 | 138 |
| 355-40 | N | 542 | 106 | 228 | 556 | 103 | 222 |
| | R | 615 | 141 | 185 | 620 | 131 | 185 |



Shell and tubes condensers

OPTIMA FKN - FKH

DIMENSIONS OPTIMA DIAMETER 406 TO 558

Fig. 491

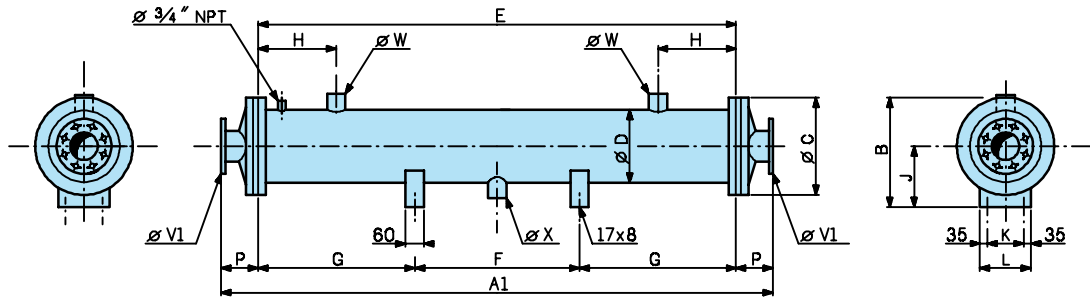
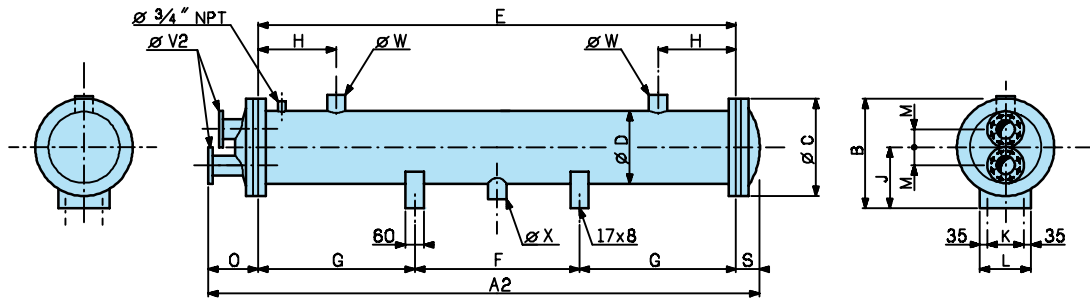


Fig. 492

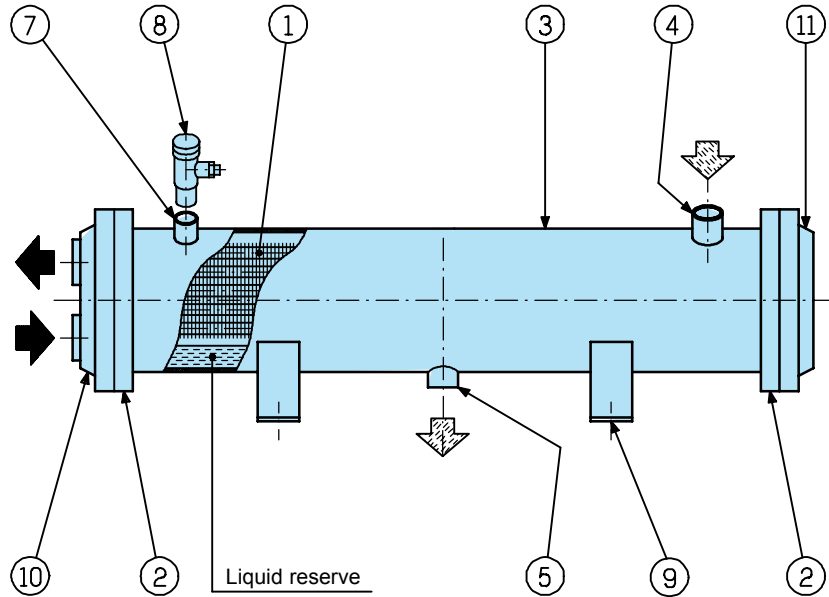


| Models | B | C | D | E | F | G | H | J | K | L | O | S | FKN | | | | FKH | | | |
|--------|-----|-----|-----|------|------|------|-----|-----|-----|-----|-----|-----|------|------|-----|-----|------|------|-----|-----|
| | | | | | | | | | | | | | A1 | A2 | M | P | A1 | A2 | M | P |
| 406 30 | 551 | 477 | 406 | 3000 | 1500 | 750 | 500 | 313 | 230 | 300 | 250 | 76 | 3360 | 3326 | 100 | 180 | 3360 | 3326 | 100 | 180 |
| 406 40 | 551 | 477 | 406 | 4000 | 2000 | 1000 | 500 | 313 | 230 | 300 | 250 | 76 | 4360 | 4326 | 100 | 180 | 4360 | 4326 | 100 | 180 |
| 457 30 | 609 | 540 | 457 | 3000 | 1500 | 750 | 500 | 339 | 230 | 300 | 280 | 88 | 3380 | 3368 | 105 | 190 | 3380 | 3368 | 105 | 190 |
| 457 40 | 609 | 540 | 457 | 4000 | 2000 | 1000 | 500 | 339 | 230 | 300 | 280 | 88 | 4380 | 4368 | 105 | 190 | 4380 | 4368 | 105 | 190 |
| 457 50 | 609 | 540 | 457 | 5000 | 3000 | 1000 | 500 | 339 | 230 | 300 | 280 | 88 | - | - | - | - | 5380 | 5368 | 105 | 190 |
| 508 40 | 664 | 600 | 508 | 4000 | 2000 | 1000 | 500 | 364 | 230 | 300 | 300 | 100 | 4400 | 4400 | 125 | 200 | 4400 | 4400 | 125 | 200 |
| 508 50 | 664 | 600 | 508 | 5000 | 3000 | 1000 | 500 | 364 | 230 | 300 | 300 | 100 | 5400 | 5400 | 125 | 200 | 5400 | 5400 | 125 | 200 |
| 558 40 | 800 | 645 | 558 | 4000 | 2000 | 1000 | 500 | 400 | 230 | 300 | 380 | 120 | 4500 | 4500 | 150 | 250 | - | - | - | - |
| 558 50 | 800 | 645 | 558 | 5000 | 3000 | 1000 | 500 | 400 | 230 | 300 | 380 | 120 | 5500 | 5500 | 150 | 250 | - | - | - | - |

CONNECTIONS - CAPACITIES - MASSES

| Models | FKN | | | | | | FKH | | | | | | | | |
|----------|-------------|----------|---|----------|-----------------|-----------------|-------------|----------|-----|----------|-----------------|-----------------|-------|-------|------|
| | Connections | | | Capacity | | Mass | Connections | | | Capacity | | Mass | | | |
| | Internal | External | | Internal | External | kg | Internal | External | | Internal | External | kg | | | |
| V1 | V2 | V4 | W | X | dm ³ | dm ³ | V1 | V2 | W | X | dm ³ | dm ³ | | | |
| 406 30 N | 150 | 100 | - | 2 x 89 | 100 | 129 | 203 | 765 | - | - | - | - | - | - | |
| 406 30 R | 150 | 100 | - | 2 x 89 | 100 | 150 | 176 | 820 | 150 | 100 | 2 x 89 | 100 | 115.6 | 204.7 | 886 |
| 406 40 N | 150 | 100 | - | 2 x 100 | 100 | 166 | 271 | 865 | - | - | - | - | - | - | |
| 406 40 R | 150 | 100 | - | 2 x 100 | 100 | 193 | 235 | 940 | 150 | 100 | 2 x 100 | 100 | 154.1 | 272.9 | 1029 |
| 457 30 N | 200 | 125 | - | 2 x 100 | 125 | 167 | 267 | 1055 | - | - | - | - | - | - | |
| 457 30 R | 200 | 125 | - | 2 x 100 | 125 | 190 | 236 | 1120 | 200 | 125 | 2 x 100 | 125 | 151.5 | 257.9 | 1230 |
| 457 40 N | 200 | 125 | - | 2 x 125 | 125 | 222 | 346 | 1315 | - | - | - | - | - | - | |
| 457 40 R | 200 | 125 | - | 2 x 125 | 125 | 245 | 315 | 1380 | 200 | 125 | 2 x 125 | 125 | 202 | 343.8 | 1526 |
| 457 50 R | - | - | - | - | - | - | - | - | 200 | 125 | 2 x 125 | 125 | 252.6 | 429.8 | 1823 |
| 508 40 N | 200 | 150 | - | 2 x 125 | 125 | 273 | 443 | 1650 | - | - | - | - | - | - | |
| 508 40 R | 200 | 150 | - | 2 x 125 | 125 | 305 | 400 | 1740 | 200 | 150 | 2 x 125 | 125 | 248.2 | 406.3 | 1933 |
| 508 50 N | 200 | 150 | - | 2 x 125 | 125 | 340 | 543 | 2020 | - | - | - | - | - | - | |
| 508 50 R | 200 | 150 | - | 2 x 125 | 125 | 372 | 500 | 2110 | 200 | 150 | 2 x 125 | 125 | 310.3 | 507.9 | 2351 |
| 558 40 R | 300 | 200 | - | 2 x 125 | 125 | 418 | 490 | 2200 | - | - | - | - | - | - | |
| 558 50 R | 300 | 200 | - | 2 x 125 | 125 | 522 | 612 | 2700 | - | - | - | - | - | - | |

TECHNICAL DATA



- Bundle (1) of OPTIMA PROFIL A copper tubes (FKN) or corrugated steel tubes (FKH) flanged onto 2 carbon steel tube plates (2)

- Carbon steel shell (3) includes :

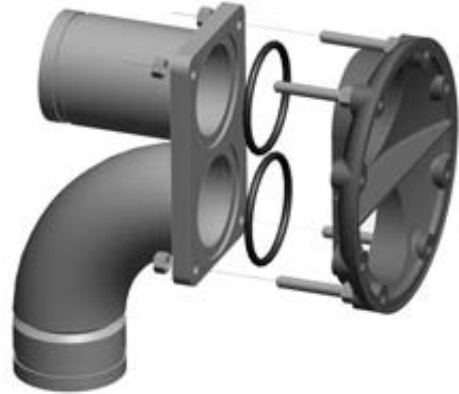
- The gas intake (4) and fluid outlet (5) refrigerant connections to be brazed or welded
- a boss (7) for safety valve not supplied (8) connection,
- supports (9)

- Water headers (10) in cast iron or carbon steel model FKN 406.

Connections: Victaulic couplings, gas tapplings or flanges depending on model.

- As an option: quick connection kits allowing Victaulic® hinged clamps or equivalent to be used.

These are used to adapt shell and tube condensers from the OPTIMA FKN range to the water circuit and are available for 2-pass units in sizes 273 and 355.



OPERATING LIMITS

| Unit | Circuit inside core | | Circuit outside core | |
|-------------------------------|---------------------|-------------|----------------------|-------------|
| | Liquid | PS | Refrigerant fluid | PS |
| OPTIMA condenser FKN - FKH | -10 / 90 °C | 10 b | 0 / 120 °C | 30 b |

PS : Maximum allowable pressure as per Dir. 97/23 CE.
Exchangers without retesting according to DM-TP 32974



По вопросам продаж и поддержки обращайтесь:

Архангельск (8182)63-90-72

Астана +7(7172)727-132

Белгород (4722)40-23-64

Брянск (4832)59-03-52

Владивосток (423)249-28-31

Волгоград (844)278-03-48

Вологда (8172)26-41-59

Воронеж (473)204-51-73

Екатеринбург (343)384-55-89

Иваново (4932)77-34-06

Ижевск (3412)26-03-58

Казань (843)206-01-48

Калининград (4012)72-03-81

Калуга (4842)92-23-67

Кемерово (3842)65-04-62

Киров (8332)68-02-04

Краснодар (861)203-40-90

Красноярск (391)204-63-61

Курск (4712)77-13-04

Липецк (4742)52-20-81

Магнитогорск (3519)55-03-13

Москва (495)268-04-70

Мурманск (8152)59-64-93

Набережные Челны (8552)20-53-41

Нижний Новгород (831)429-08-12

Новокузнецк (3843)20-46-81

Новосибирск (383)227-86-73

Орел (4862)44-53-42

Оренбург (3532)37-68-04

Пенза (8412)22-31-16

Пермь (342)205-81-47

Ростов-на-Дону (863)308-18-15

Рязань (4912)46-61-64

Самара (846)206-03-16

Санкт-Петербург (812)309-46-40

Саратов (845)249-38-78

Смоленск (4812)29-41-54

Сочи (862)225-72-31

Ставрополь (8652)20-65-13

Тверь (4822)63-31-35

Томск (3822)98-41-53

Тула (4872)74-02-29

Тюмень (3452)66-21-18

Ульяновск (8422)24-23-59

Уфа (347)229-48-12

Челябинск (351)202-03-61

Череповец (8202)49-02-64

Ярославль (4852)69-52-93

сайт: www.ciat.nt-rt.ru | эл. почта: cta@nt-rt.ru