

# See enlarged chart on pages 2, 3, 4, 5 and 6 of this PDF

## 2019 Heavy-duty diesel engines



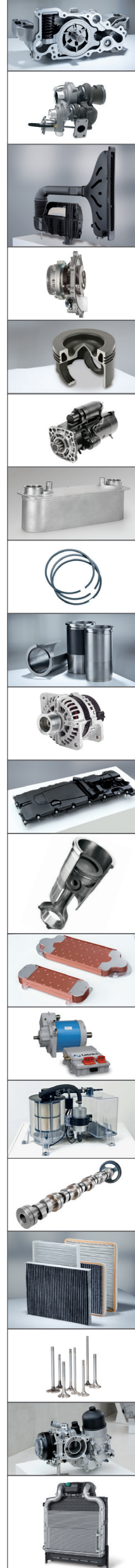
SE TRUCK & OFF-HIGHWAY  
ENGINEERING

MAHLE

North American availability & specifications 37-1492 kW (50-200 hp)

### Product portfolio

Commercial vehicle applications



- #### LEGEND
- AG: Agricultural
  - AE: Direct Injection
  - BE: Indirect Injection
  - GE: Generator Set
  - OE: Original Equipment
  - SE: Industrial/Stationary
  - ME: Marine
  - OC: Oil Cool Gas
  - EC: CR High/Medium
  - TR: Turbo/Boost
  - VC: Valves per Cylinder
  - MA: Mahle
  - MVC: Motor
  - MFC: Manifold
  - ME: Motor
  - MC: Marine
  - OC: Oil Cool Gas
  - EC: CR High/Medium
  - TR: Turbo/Boost
  - VC: Valves per Cylinder

| Brand (Make) | Engine Family | Engine Model      | Displacement (L) | Production Location           | 2018 Production Volume | U.S./EU Emissions Level | Layout    | Cylinder Head/Cyl | Power, kW (hp) | Torque, Nm (lb-ft) | Bore x Stroke, mm (in) | Compression | Application | MHLE Component |
|--------------|---------------|-------------------|------------------|-------------------------------|------------------------|-------------------------|-----------|-------------------|----------------|--------------------|------------------------|-------------|-------------|----------------|
| Category     | C             | C2.2 (Electronic) | 2.2              | Peterborough, UK, Griffin, GA | 7,000                  | Tier 4 Final / Stage V  | 4 In-line | D                 | 30.5 (41.4)    | 105.2 (131)        | 98 x 102.5 (3.9 x 4.0) | 16.0:1      | AG, GS, OH  | ✓              |

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# 2019

# Heavy-duty diesel engines



TRUCK & OFF-HIGHWAY  
ENGINEERING



North American availability & specifications 37-1492 kW (50-2000 hp)

## Product portfolio

Commercial vehicle applications



### LEGEND

- AG:** Agriculture
  - DI:** Direct Injection
  - GS:** Generator Set
  - IDI:** Indirect Injection
  - IS:** Industrial/Stationary
  - M:** Marine
  - NA:** Not Available
  - O&G:** Oil and Gas
  - OH:** Off-Highway Mobile
  - TB:** Truck/Bus/Coach
  - VPC:** Valves per Cylinder
- \* Meet Tier 4 Interim regulations using Transitional Program for Equipment Manufacturers (TPEM). Available in other regulated areas.

| Brand (Maker)      | Engine Family   | Engine Model          | Displacement (L) | Production Location                             | 2018 Production Volume <sup>1</sup> | U.S./EU Emissions Level                               | Layout    | Cylinder Head, VPC | Power, kW (hp) @ rpm              | Torque, N·m (lb·ft) @ rpm                                   | Bore x Stroke, mm (in)    | Compression Ratio | Application    | MAHLE Components |
|--------------------|-----------------|-----------------------|------------------|---|-------------------------------------|---|-----------|--------------------|-----------------------------------|---|---------------------------|-------------------|----------------|------------------|
| <b>Caterpillar</b> |                 |                       |                  |   |                                     |   |           |                    |                                   |   |                           |                   |                |                  |
| Cat                | C               | C2.2 (electronic)     | 2.2              | Peterborough, UK; Griffin, GA                   | 2,000                               | Tier 4 Final / Stage V                                | 4, inline | DI                 | 36.4-55 (48.8-74) @ 2800          | 165-270 (121.6-199) @ 1600-1800                             | 84 x 100 (3.3 x 3.9)      | 18.0:1            | AG, IS, OH     | ✓                |
| Cat                | C               | C2.2                  | 2.2              | Peterborough, UK; Griffin, GA                   | 4,100                               | * Available in other regulated or non-regulated areas | 4, inline | IDI                | 31.4-49.3 (42.1-66.1) @ 2400-3000 | 142.7-208.4 (105.3-153.7) @ 1800                            | 84 x 100 (3.3 x 3.9)      | 23.3:1            | AG, IS, OH     | ✓                |
| Cat                | C               | C2.8                  | 2.8              | Peterborough, UK                                | 75                                  | Tier 4 Final / Stage V                                | 4, inline | DI                 | 45-55 (60-74) @ 2200-2400         | 300 (221) @ 1600 / 380 (280) @ 1380                         | 90 x 110 (3.5 x 4.3)      | 17.0:1            | GS, IS, OH     | ✓                |
| Cat                | C               | C3.4B                 | 3.4              | Turin, Italy                                    | 950                                 | > 56 kW = * Tier 4                                    | 4, inline | DI                 | 63-90 (84.5-121) @ 2200-2500      | 354-490 (261.1-361.4) @ 1400-1600                           | 99 x 110 (3.9 x 4.3)      | 17.0:1            | AG, IS, OH     | ✓                |
| Cat                | C               | C3.6                  | 3.6              | Peterborough, UK                                | 50                                  | Tier 4 Final / Stage V                                | 4, inline | DI                 | 55-100 (74-134) @ 2000-2400       | 550 (406) @ 1500  | 98 x 120 (3.9 x 4.7)      | 17.0:1            | AG, GS, IS, OH | ✓                |
| Cat                | C               | C4.4                  | 4.4              | Peterborough, UK                                | 300                                 | Tier 4 Final / Stage V                                | 4, inline | DI                 | 74-150 (99-201) @ 2000-2200       | 450-825 (332-608) @ 1400                                    | 105 x 127 (4.1 x 5.0)     | 16.5:1            | AG, IS, OH     | ✓                |
| Cat                | C               | C4.4 (LRC)            | 4.4              | Peterborough, UK; Wuxi, China; Curitiba, Brazil | 2,500                               | * Available in other regulated or non-regulated areas | 4, inline | DI                 | 54-83 (72.4-111.3) @ 2200-2400    | 265-418 (195-308) @ 1400                                    | 105 x 127 (4.1 x 5.0)     | 16.2:1            | AG, IS, OH     | ✓                |
| Cat                | C               | C7.1                  | 7.0              | Peterborough, UK                                | 4,500                               | Tier 4 Final / Stage V                                | 6, inline | DI                 | 116-239 (156-321) @ 1800-2200     | 755-1282 (557-946) @ 1400                                   | 105 x 135 (4.1 x 5.3)     | 16.5:1            | AG, IS, OH     | ✓                |
| Cat                | C               | C7.1 (LRC)            | 7.0              | Peterborough, UK; Wuxi, China; Curitiba, Brazil | 800                                 | * Available in other regulated or non-regulated areas | 6, inline | DI                 | 112-162 (150-220) @ 2000-2200     | 672-900 (495-664) @ 1100-1400                               | 105 x 135 (4.1 x 5.3)     | 18.2:1            | AG, IS, OH     | ✓                |
| Cat                | C               | C9 ACERT              | 8.8              | Seguin, TX                                      | 12,000                              | * Available in other regulated or non-regulated areas | 6, inline | DI                 | 205-280 (275-375) @ 1800-2200     | 1225-1668 (904-1230) @ 1400                                 | 112 x 149 (4.41 x 5.87)   | 16.1:1            | AG, IS, OH     | ✓                |
| Cat                | C               | C9.3B                 | 9.3              | Seguin, TX                                      | 500                                 | Tier 4 Final / Stage V                                | 6, inline | DI                 | 250-340 (335-456) @ 1800-2200     | 1537-2088 (1134-1540) @ 1400                                | 115 x 149 (4.53 x 5.87)   | 17.0:1            | AG, IS, OH     | ✓                |
| Cat                | C               | C13                   | 12.5             | Seguin, TX                                      | 1,700                               | Tier 4 Final / Stage V                                | 6, inline | DI                 | 287-388 (385-520) @ 1800-2100     | 1760-2381 (1298-1756) @ 1400                                | 130 x 157 (5.1 x 6.2)     | 17.0:1            | AG, IS, OH     | ✓                |
| Cat                | C               | C13B                  | 12.5             | Seguin, TX                                      | 5,600                               | Tier 4 Final / Stage V                                | 6, inline | DI                 | 340-430 (456-577) @ 1800-2100     | 2082-2634 (1536-1943) @ 1400                                | 130 x 157 (5.1 x 6.2)     | 15.8:1            | AG, IS, OH     | ✓                |
| Cat                | C               | C15                   | 15.2             | Seguin, TX                                      | 13,700                              | Tier 4 Final / Stage V                                | 6, inline | DI                 | 354-433 (475-580) @ 1800-2100     | 2176-2655 (1605-1959) @ 1400                                | 137 x 171 (5.4 x 6.73)    | 17.0:1            | AG, IS, OH     | ✓                |
| Cat                | C               | C18                   | 18.1             | Seguin, TX                                      | 4,800                               | Tier 4 Final / Stage V                                | 6, inline | DI                 | 429-597 (575-800) @ 1800-2000     | 2696-3710 (1988-2736) @ 1300                                | 145 x 183 (5.71 x 7.2)    | 16.0:1            | AG, IS, OH     | ✓                |
| Cat                | C               | C27                   | 27.0             | Griffin, GA                                     | 1,600                               | Tier 4 Final / Stage V                                | V12       | DI                 | 597-783 (800-1050) @ 1800         | 3635-4674 (2681-3447) @ 1200                                | 137.2 x 152.4 (5.4 x 6.0) | 16.0:1            | AG, IS, OH     | ✓                |
| Cat                | C               | C32                   | 32.1             | Griffin, GA                                     | 2,000                               | Tier 4 Final / Stage V                                | V12       | DI                 | 746-839 (1000-1125) @ 1800        | 5184-5499 (3824-4056) @ 1200 / 5054-5861 (3728-4323) @ 1400 | 145 x 162 (5.71 x 6.38)   | 15.0:1 / 16.0:1   | AG, IS, OH     | ✓                |
| Cat                | 3500            | 3508B                 | 34.5             | Lafayette, IN                                   | 150                                 | * Available in other regulated or non-regulated areas | V8        | DI                 | 746-820 (1000-1100) @ 1800        | 4353-4569 (3210-3370) @ 1450                                | 170 x 190 (6.7 x 7.5)     | 14.0:1            | AG, IS, OH     | ✓                |
| Cat                | 3500            | 3512                  | 51.8             | Lafayette, IN                                   | 75                                  | * Available in other regulated or non-regulated areas | V12       | DI                 | 761-1119 (1020-1500) @ 1200-1800  | 6188-6210 (4564-4580) @ 1400                                | 170 x 190 (6.7 x 7.5)     | 13.0:1            | AG, IS, OH     | ✓                |
| Cat                | 3500            | 3512B                 | 51.8             | Lafayette, IN                                   | 1,400                               | * Available in other regulated or non-regulated areas | V12       | DI                 | 1119-1231 (1500-1650) @ 1800      | 6526-7180 (4813-5296) @ 1450                                | 170 x 190 (6.7 x 7.5)     | 14.0:1            | AG, IS, OH     | ✓                |
| Cat                | 3500            | 3516                  | 69.0             | Lafayette, IN                                   | 1,300                               | * Available in other regulated or non-regulated areas | V16       | DI                 | 1011-1492 (1355-2000) @ 1200-1800 | 7032-9211 (5187-6794) @ 1000-1400                           | 170 x 190 (6.7 x 7.5)     | 13.0:1            | AG, IS, OH     | ✓                |
| Cat                | 3500            | 3516E                 | 69.0             | Lafayette, IN                                   | 0                                   | Tier 4 Final / Stage V / * Tier 4                     | V16       | DI                 | 1566 (2100) @ 1650                | 11,220 (8275) @ 1100  | 170 x 215 (6.7 x 8.5)     | 16.5:1            | AG, IS, OH     | ✓                |
| Perkins            | 400             | 404F-E22TA            | 2.2              | Griffin, GA                                     | 1,800                               | Tier 4 Final  | 4, inline | DI                 | 50 (67) @ 2800                    | 208 (153) @ 1800  | 84 x 100 (3.3 x 3.9)      | 18.0:1            | AG, IS, OH     | ✓                |
| Perkins            | 400             | 404D-22 / -22T        | 2.2              | Peterborough, UK; Griffin, GA; Wuxi, China      | 2,900                               | * Tier 4  | 4, inline | IDI                | 31-46 (42-61) @ 2200-3000         | 143 (105) @ 1800  | 84 x 100 (3.3 x 3.9)      | 24.4:1 / 23.3:1   | AG, GS, IS, OH | ✓                |
| Perkins            | Perkins® Syncro | 904J-E28T / -E28TA    | 2.8              | Peterborough, UK                                | 200                                 | Tier 4 Final / Stage V                                | 4, inline | DI                 | 45-55 (60-74) @ 2200-2400         | 300 (221) @ 1600 / 380 (280) @ 1380                         | 90 x 110 (3.5 x 4.3)      | 17.0:1            | GS, IS, OH     | ✓                |
| Perkins            | Perkins® Syncro | 904F-E28T             | 2.8              | Peterborough, UK                                | 800                                 | Tier 4 Final  | 4, inline | DI                 | 45-55 (60-74) @ 2200-2400         | 300 (221) @ 1600  | 90 x 110 (3.5 x 4.3)      | 17.0:1            | GS, IS, OH     | ✓                |
| Perkins            | 854             | 854F-E34T / -E34TA    | 3.4              | Turin, Italy                                    | 1,000                               | Tier 4 Final / Stage IV                               | 4, inline | DI                 | 45-90 (60-121) @ 2200-2500        | 243-490 (179-361) @ 1400-1600                               | 99 x 110 (3.9 x 4.3)      | 17.0:1            | AG, GS, IS, OH | ✓                |
| Perkins            | Perkins® Syncro | 904J-E36TA            | 3.6              | Peterborough, UK                                | 2,000                               | Tier 4 Final / Stage V                                | 4, inline | DI                 | 55-100 (74-134) @ 2000-2400       | 550 (406) @ 1500  | 98 x 120 (3.9 x 4.7)      | 17.0:1            | AG, GS, IS, OH | ✓                |
| Perkins            | 1200            | 1204F-E44TA / -E44TTA | 4.4              | Peterborough, UK                                | 42,000                              | Tier 4 Final / Stage IV                               | 4, inline | DI                 | 70-129 (94-174) @ 2200            | 450-750 (332-553) @ 1400                                    | 105 x 127 (4.1 x 5.0)     | 16.5:1            | AG, IS, OH     | ✓                |
| Perkins            | 1200            | 1204J-E44TA / -E44TTA | 4.4              | Peterborough, UK                                | 30,000                              | Tier 4 Final / Stage V                                | 4, inline | DI                 | 82-150 (83-200) @ 2200            | 347-825 (256-553) @ 1400                                    | 105 x 127 (4.1 x 5.0)     | 16.5:1            | AG, IS, OH     | ✓                |
| Perkins            | 1100            | 1104D-E44T / -E44TA   | 4.4              | Peterborough, UK; Wuxi, China                   | 2,500                               | * Available in other regulated or non-regulated areas | 4, inline | DI                 | 68-106 (91.2-142) @ 2200          | 395-558 (291-412) @ 1400                                    | 105 x 127 (4.1 x 5.0)     | 16.2:1            | AG, GS, IS, OH | ✓                |
| Perkins            | 1100            | 1104C-44              | 4.4              | Peterborough, UK; Curitiba, Brazil              | 1,000                               | * Available in other regulated or non-regulated areas | 4, inline | DI                 | 64 (86) @ 2400                    | 308 (227) @ 1400  | 105 x 127 (4.1 x 5.0)     | 19.3:1            | AG, GS, IS, OH | ✓                |
| Perkins            | 1100            | 1104C-44T / -44TA     | 4.4              | Peterborough, UK; Curitiba, Brazil              | 1,000                               | * Available in other regulated or non-regulated areas | 4, inline | DI                 | 75 (100) @ 2300 / 97 (130) @ 2200 | 415 (306) @ 1350 / 500 (369) @ 1400                         | 105 x 127 (4.1 x 5.0)     | 18.2:1            | AG, GS, IS, OH | ✓                |
| Perkins            | 1100            | 1104D-44T / -44TA     | 4.4              | Peterborough, UK; Wuxi, China; Curitiba, Brazil | 4,000                               | * Available in other regulated or non-regulated areas | 4, inline | DI                 | 56-83 (75-111) @ 2200-2400        | 307-418 (226-308) @ 1400                                    | 105 x 127 (4.1 x 5.0)     | 18.2:1            | AG, GS, IS, OH | ✓                |
| Perkins            | 1200            | 1206F-E70TA / -E70TTA | 7.0              | Peterborough, UK                                | 6,500                               | Tier 4 Final / Stage IV                               | 6, inline | DI                 | 116-240 (156-320) @ 2200          | 755-1274 (557-940) @ 1400                                   | 105 x 135 (4.1 x 5.3)     | 16.5:1            | AG, IS, OH     | ✓                |
| Perkins            | 1200            | 1206J-E70TTA          | 7.0              | Peterborough, UK                                | 1,500                               | Tier 4 Final / Stage V                                | 6, inline | DI                 | 151-240 (202-320) @ 2200          | 890-1257 (656-927) @ 1400                                   | 105 x 135 (4.1 x 5.3)     | 16.5:1            | AG, IS, OH     | ✓                |
| Perkins            | 1100            | 1106D-E70TA           | 7.0              | Peterborough, UK; Wuxi, China; Curitiba, Brazil | 4,000                               | * Available in other regulated or non-regulated areas | 6, inline | DI                 | 116-205 (156-275) @ 2200-2500     | 706-1050 (520-774) @ 1400                                   | 105 x 135 (4.1 x 5.3)     | 16.8:1            | AG, IS, OH     | ✓                |
| Perkins            | 1100            | 1106C-70TA            | 7.0              | Peterborough, UK; Wuxi, China                   | 1,000                               | * Available in other regulated or non-regulated areas | 6, inline | DI                 | 112-162 (150-217) @ 1950-2200     | 687-900 (507-664) @ 1200-1400                               | 105 x 135 (4.1 x 5.3)     | 18.2:1            | AG, IS, OH     | ✓                |
| Perkins            | 1100            | 1106D-70TA            | 7.0              | Wuxi, China                                     | 500                                 | * Available in other regulated or non-regulated areas | 6, inline | DI                 | 112-129 (150-172) @ 1800-2200     | 672-750 (495-552) @ 1100-1300                               | 105 x 135 (4.1 x 5.3)     | 18.2:1            | AG, IS, OH     | ✓                |

<sup>1</sup> Engine production estimates provided by Rhein Associates, Inc.



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# Heavy-duty diesel engines

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**ENGINEERING**

**MAHLE**

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## Product portfolio

Commercial vehicle applications



## LEGEND

- AG:** Agriculture
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- M:** Marine
- NA:** Not Available
- O&G:** Oil and Gas
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- VPC:** Valves per Cylinder

\* Meet Tier 4 Interim regulations using Transitional Program for Equipment Manufacturers (TPEM). Available in other regulated areas.

| Brand (Maker)            | Engine Family            | Engine Model | Displacement (L) | Production Location    | 2018 Production Volume <sup>1</sup> | U.S./EU Emissions Level          | Layout    | Cylinder Head, VPC | Power, kW (hp) @ rpm                         | Torque, N•m (lb•ft) @ rpm            | Bore x Stroke, mm (in)   | Compression Ratio | Application | MAHLE Components |
|--------------------------|--------------------------|--------------|------------------|------------------------|-------------------------------------|----------------------------------|-----------|--------------------|--|--------------------------------------|--------------------------|-------------------|-------------|------------------|
| <b>Deutz (continued)</b> |                          |              |                  |                        |                                     |                                  |           |                    |  |                                      |                          |                   |             |                  |
| Deutz                    | TD 2.9 L4                | -            | 2.9              | Germany                | 12,000                              | Tier 4 Final / Stage V           | 4, inline | -                  | 55.4 (75) @ 2600                             | 260 (192) @ 1600-1800                | 92 x 110 (3.6 x 4.3)     | NA                | OH          | ✓                |
| Deutz                    | G 2.9 L4                 | -            | 2.92             | Germany                | 500                                 | Tier 4 Final / Stage V           | 4, inline | -                  | 54 (72) @ 2800                               | 215 (159) @ 1400-1600                | 92 x 110 (3.6 x 4.3)     | NA                | OH          | ✓                |
| Deutz                    | TCD 3.6 L4 (High Power)  | -            | 3.6              | Germany                | 1,000                               | Tier 4 Final / Stage V           | 4, inline | -                  | 105 (141) @ 2300                             | 550 (406) @ 1600                     | 98 x 120 (3.9 x 4.7)     | NA                | OH          | ✓                |
| Deutz                    | TCD 3.6 L4 (High Torque) | -            | 3.6              | Germany                | 15,000                              | Tier 4 Final / Stage V           | 4, inline | -                  | 55.4 (74) @ 2300                             | 390 (288) @ 1300                     | 98 x 120 (3.9 x 4.7)     | NA                | OH          | ✓                |
| Deutz                    | TD 3.6 L4                | -            | 3.6              | Germany                | 6,000                               | Tier 4 Final / Stage V           | 4, inline | -                  | 55.4 (74) @ 2600                             | 330 (243) @ 1600                     | 98 x 120 (3.9 x 4.7)     | NA                | OH          | ✓                |
| Deutz                    | TCD 3.6 L4               | -            | 3.6              | Germany                | 1,500                               | Tier 4 Final / Stage V           | 4, inline | -                  | 100 (136) @ 2300                             | 500 (3690) @ 1600                    | 98 x 120 (3.9 x 4.7)     | NA                | OH          | ✓                |
| Deutz                    | TCD 4.1 L4               | -            | 4.1              | Germany                | 26,000                              | Tier 4 Final / Stage V           | 4, inline | -                  | 115 (154) @ 2300                             | 610 (450) @ 1600                     | 101 x 126 (4.0 x 5.0)    | NA                | OH          | ✓                |
| Deutz                    | TCD 6.1 L6               | -            | 6.1              | Germany                | 21,000                              | Tier 4 Final / Stage V           | 6, inline | -                  | 180 (241) @ 2300                             | 1000 (738) @ 1450                    | 101 x 126 (4.0 x 5.0)    | NA                | OH          | ✓                |
| Deutz                    | TCD 7.8 L6               | -            | 7.8              | Germany                | 8,000                               | Tier 4 Final / Stage V           | 6, inline | -                  | 260 (348) @ 2200                             | 1400 (1033) @ 1450                   | 110 x 136 (4.3 x 5.4)    | NA                | OH          | ✓                |
| Deutz                    | TCD 9.0 L4               | -            | 9.0              | Germany                | 200                                 | Tier 4 Final / Stage V           | 4, inline | -                  | 300 (402) @ 1700-2100                        | 1700 (1254) @ 1200                   | 135 x 157 (5.3 x 6.2)    | NA                | OH          | ✓                |
| Deutz                    | TCD 12.0 V6              | -            | 11.9             | Germany                | 3,500                               | Tier 4 Final / Stage V           | V6        | -                  | 390 (524) @ 2100                             | 2130 (1571) @ 1400                   | 132 x 145 (5.2 x 5.7)    | NA                | OH          | ✓                |
| Deutz                    | TCD 12.0 L6              | -            | 12.0             | Germany                | 500                                 | Tier 4 Final / Stage V           | 6 inline  | -                  | 400 (536) @ 1700-2100                        | 2500 (1844) @ 1200                   | 130 x 150 (5.1 x 5.9)    | NA                | OH          | ✓                |
| Deutz                    | TCD 13.5 L6              | -            | 13.5             | Germany                | 100                                 | Tier 4 Final / Stage V           | 6 inline  | -                  | 450 (603) @ 1700-2100                        | 2800 (2065) @ 1350                   | 135 x 157 (5.3 x 6.2)    | NA                | OH          | ✓                |
| Deutz                    | TCD 16.0 V8              | -            | 15.9             | Germany                | 300                                 | Tier 4 Final / Stage V           | V8        | -                  | 520 (697) @ 2100                             | 2890 (2132) @ 1400                   | 132 x 145 (5.2 x 5.7)    | NA                | OH          | ✓                |
| Deutz                    | TCD 18.0 L6              | -            | 18.0             | Germany                | 50                                  | Tier 4 Final / Stage V           | 6 inline  | -                  | 835 (623) @ 1700-1900                        | 3650 (2692) @ 1300                   | 148 x 174 (5.83 x 6.85)  | NA                | OH          | ✓                |
| <b>FPT Industrial</b>    |                          |              |                  |                        |                                     |                                  |           |                    |  |                                      |                          |                   |             |                  |
| FPT Industrial           | F1 Series                | F23          | 2.3              | Foggia, Italy          | 20,000                              | Euro 6 d-tmp / VI D              | 4, inline | DI, 4              | 85-130 (116-177) @ 3500-3600                 | 320-400 (236-295) @ 1400-2000        | 88 x 94 (3.46 x 3.7)     | 16.2:1            | TB          | ✓                |
| FPT Industrial           | F1 Series                | F30          | 3.0              | Foggia, Italy          | 22,000                              | EPA 2017 / JP09 / Euro VI D      | 4, inline | DI, 4              | 96-155 (131-211) @ 3500                      | 300-470 (221-347) @ 1300-1600        | 95.8 x 104 (3.77 x 4.09) | 17.2:1            | TB          | ✓                |
| FPT Industrial           | F5 Series                | F32          | 3.2              | Pregnana, Italy        | 13,500                              | Tier 3                           | 4, inline | DI, 2              | 47-70 (63-95) @ 1800                         | NA                                   | 99 x 104 (3.90 x 4.09)   | 17.0:1            | GS          | ✓                |
| FPT Industrial           | F5 Series                | F34          | 3.4              | Torino, Italy          | 14,000                              | Tier 4 Final                     | 4, inline | DI, 2              | 43-55 (58-74) @ 1800-2500                    | 243-318 (179-234) @ 1400-1600        | 99 x 110 (3.90 x 4.33)   | 17.0:1            | AG, IS, OH  | ✓                |
| FPT Industrial           | F5 Series                | F34          | 3.4              | Torino, Italy          | 4,000                               | Tier 4 Final                     | 4, inline | DI, 4              | 61-92 (82-125) @ 2000-2500                   | 334-506 (246-373) @ 1500             | 99 x 110 (3.90 x 4.33)   | 17.0:1            | AG, IS, OH  | ✓                |
| FPT Industrial           | NEF Series               | N45          | 4.5              | Pregnana, Italy        | 15,500                              | Tier 3                           | 4, inline | DI, 2/4            | 57-107 (76-145) @ 1800                       | 608 @ 1600                           | 104 x 132 (4.09 x 5.2)   | 17.5:1            | GS          | ✓                |
| FPT Industrial           | NEF Series               | N45          | 4.5              | Torino, Italy          | 50,000                              | Euro VI D                        | 4, inline | DI, 4              | 118-152 (160-207) @ 2500                     | 580-750 (428-553) @ 1250-1400        | 104 x 132 (4.09 x 5.2)   | 17.0:1            | TB          | ✓                |
| FPT Industrial           | NEF Series               | N45          | 4.5              | Torino, Italy          | 20,000                              | Tier 4 Final                     | 4, inline | DI, 4              | 66-129 (89-173) @ 1800-2200                  | 405-719 (299-530) @ 1200-1600        | 104 x 132 (4.09 x 5.2)   | 17.0:1            | AG, OH      | ✓                |
| FPT Industrial           | NEF Series               | N67          | 6.7              | Pregnana, Italy        | 11,000                              | Tier 3                           | 6, inline | DI, 2/4            | 74-230 (100-313) @ 1500-2500                 | 1070 @ 1600                          | 104 x 132 (4.09 x 5.2)   | 17.5:1            | GS          | ✓                |
| FPT Industrial           | NEF Series               | N67          | 6.7              | Torino, Italy          | 19,000                              | Euro VI D                        | 6, inline | DI, 4              | 162-235 (220-320) @ 2500                     | 800-1100 (590-811) @ 1250            | 104 x 132 (4.09 x 5.2)   | 17.0:1            | TB          | ✓                |
| FPT Industrial           | NEF Series               | N67          | 6.7              | Torino, Italy          | 17,000                              | Stage V / Tier 4 Final           | 6, inline | DI, 4              | 100-260 (136-354) @ 2000                     | 1420 @ 1400                          | 104 x 132 (4.09 x 5.2)   | 17.0:1            | AG, OH      | ✓                |
| FPT Industrial           | Cursor Series            | Cursor 9     | 8.7              | Pregnana, Italy        | 5,000                               | Tier 3                           | 6, inline | DI, 4              | 200-325 (272-442) @ 1900                     | 1625 @ 1800                          | 117 x 135 (4.60 x 5.31)  | 16.5:1            | GS          | ✓                |
| FPT Industrial           | Cursor Series            | Cursor 9     | 8.7              | Chongqing, China       | 43,000                              | Euro VI D                        | 6, inline | DI, 4              | 228-294 (310-400) @ 2200                     | 1300-1700 (959-1254) @ 1200          | 117 x 135 (4.60 x 5.31)  | 16.0:1            | TB          | ✓                |
| FPT Industrial           | Cursor Series            | Cursor 9     | 8.7              | Chongqing, China       | 1,500                               | Stage V / Tier 4 Final           | 6, inline | DI, 4              | 210-330 (286-449) @ 2000-2200                | 1349-1800 (995-1327) @ 1300-1500     | 117 x 135 (4.60 x 5.31)  | 16.0:1            | AG, OH      | ✓                |
| FPT Industrial           | Cursor Series            | Cursor 10    | 10.3             | Pregnana, Italy        | 10                                  | Tier 3                           | 6, inline | DI, 4              | 317 (425) @ 1800                             | NA                                   | 125 x 140 (4.92 x 5.51)  | 16.5:1            | GS          | ✓                |
| FPT Industrial           | Cursor Series            | Cursor 11    | 11.1             | Bourbon-Lancy, France  | 13,000                              | Euro VI D                        | 6, inline | DI, 4              | 309-353 (420-480) @ 1900                     | 1900-2300 (1401-1696) @ 950-1050     | 128 x 144 (5.04 x 5.67)  | 16.5:1            | TB          | ✓                |
| FPT Industrial           | Cursor Series            | Cursor 11    | 11.1             | Bourbon-Lancy, France  | 25                                  | Stage V / Tier 4 Final           | 6, inline | DI, 4              | 300-380 (408-517) @ 2100                     | 2000-2082 (1475-1536) @ 1500         | 128 x 144 (5.04 x 5.67)  | 16.5:1            | AG          | ✓                |
| FPT Industrial           | Cursor Series            | Cursor 13    | 12.9             | Bourbon-Lancy, France  | 16,000                              | Euro VI D                        | 6, inline | DI, 4              | 302-420 (411-570) @ 1900                     | 2100-2500 (1549-1844) @ 1000         | 135 x 150 (5.31 x 5.91)  | 16.5:1            | TB          | ✓                |
| FPT Industrial           | Cursor Series            | Cursor 13    | 12.9             | Bourbon-Lancy, France  | 6,200                               | Stage V / Tier 4 Final           | 6, inline | DI, 4              | 320-515 (429-700) @ 2100                     | 2003-2980 (1477-2197) @ 1400-1500    | 135 x 150 (5.31 x 5.91)  | 16.5:1            | AG, OH      | ✓                |
| FPT Industrial           | Cursor Series            | Cursor 16    | 15.9             | Bourbon-Lancy, France  | 100                                 | Stage V / Tier 4 Final           | 6, inline | DI, 4              | 480-570 (634-764) @ 2100                     | 2751-3323 (2029-2450) @ 1500         | 141 x 170 (5.55 x 6.69)  | 16.5:1            | AG          | ✓                |
| FPT Industrial           | V20                      | V20          | 20.1             | Torino, Italy          | 25                                  | Stage V / Tier 4 Final           | V8        | DI, 4              | 570-670 (775-911) @ 1800                     | 4100 (3024) @ 1500                   | 145 x 152 (5.71 x 5.98)  | NA                | AG          | ✓                |
| <b>Ford</b>              |                          |              |                  |                        |                                     |                                  |           |                    |  |                                      |                          |                   |             |                  |
| Ford                     | Power Stroke             | 6.7L         | 6.7              | Chihuahua, Mexico      | 212,000                             | Interim Tier 3 Bin 340 / Bin 570 | V8        | DI, 4              | 336 (450) @ 2800                             | 1268 (935) @ 1800                    | 99.1 x 108 (3.90 x 4.25) | 16.2:1            | TB          | ✓                |
| <b>General Motors</b>    |                          |              |                  |                        |                                     |                                  |           |                    |  |                                      |                          |                   |             |                  |
| General Motors           | Duramax                  | 6.6L         | 6.6              | Moraine, OH (GM/Isuzu) | 130,000                             | Tier 3 Bin 270 / Bin 400         | V8        | DI, 4              | 332 (445) @ 2800                             | 1234 (910) @ 1600                    | 103 x 99 (4.06 x 3.9)    | 16.0:1            | TB          | ✓                |
| <b>Isuzu Motors</b>      |                          |              |                  |                        |                                     |                                  |           |                    |  |                                      |                          |                   |             |                  |
| Isuzu                    | L                        | 4L-Series    | 2.2              | Japan                  | 38,000                              | Tier 4 Final / Stage IV          | 4, inline | DI                 | 30-49 (40-66) @ 1800<br>36-46 (48-62) @ 2400 | 159 (117) @ 1800<br>215 (159) @ 1800 | NA                       | NA                | IS, OH, GS  | ✓                |
| Isuzu                    | J                        | 4J-Series    | 3.0              | Japan                  | 6,000                               | Tier 4 Final / Stage IV          | 4, inline | DI                 | 52 (70) @ 2000<br>86 (115) @ 2200            | 255 (188) @ 1500<br>375 (277) @ 1800 | NA                       | NA                | IS, OH      | ✓                |

<sup>1</sup> Engine production estimates provided by Rhein Associates, Inc.



