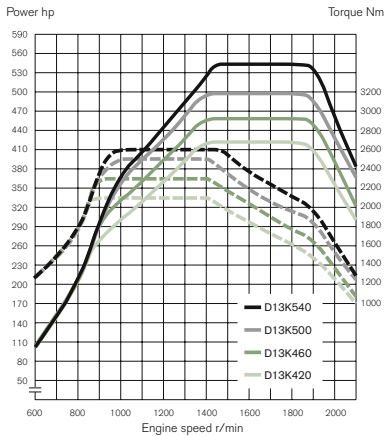


## 2 DRIVELINE

### ENGINE D13K - EURO 6

#### Power/Torque

Net output according to: EC 582/2011



#### □ D13K420 (309 kW)

|                              |         |
|------------------------------|---------|
| Max power at 1400–1800 r/min | 420 hp  |
| Max torque at 860–1400 r/min | 2100 Nm |

#### □ D13K460 (338 kW)

|                              |         |
|------------------------------|---------|
| Max power at 1400–1800 r/min | 460 hp  |
| Max torque at 900–1400 r/min | 2300 Nm |

#### □ D13K500 (368 kW)

|                               |         |
|-------------------------------|---------|
| Max power at 1400–1800 r/min  | 500 hp  |
| Max torque at 1000–1400 r/min | 2500 Nm |

#### □ D13K540 (397 kW)

|                               |         |
|-------------------------------|---------|
| Max power at 1450–1800 r/min  | 540 hp  |
| Max torque at 1000–1450 r/min | 2600 Nm |

### D13K

|                                                                  |                       |
|------------------------------------------------------------------|-----------------------|
| No. of cylinders                                                 | 6                     |
| Displacement                                                     | 12.8 dm <sup>3</sup>  |
| Stroke                                                           | 158 mm                |
| Bore                                                             | 131 mm                |
| Compression ratio                                                | 17.0:1                |
| Economy revs                                                     | 900–1400 r/min        |
| Exhaust braking power (2300 r/min)                               | 200 kW                |
| VEB <sup>+</sup> power (2300 r/min)                              | 375 kW                |
| VEB <sup>+</sup>                                                 | option                |
| Oil filters                                                      | 2 full-flow, 1 bypass |
| Oil change volume, incl. filter                                  | 33 l                  |
| Cooling system, total volume                                     | 38 l                  |
| Oil change interval: Up to 100,000 km, or once a year with VDS4. |                       |

### FUEL PREREQUISITES

Sulphur free fuel only (EN590, max 10 ppm sulphur).

### ENGINE-MOUNTED POWER TAKE-OFFS

Two torque output versions available

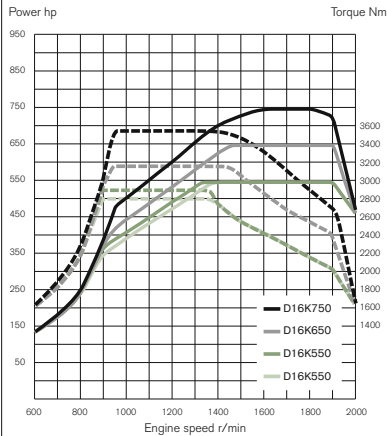
|                        |          |
|------------------------|----------|
| EPTT650, ratio 1.26:1  | 650 Nm*  |
| EPTT1000, ratio 1.26:1 | 1000 Nm* |

\* Torque output both when driving and standing still.

### ENGINE D16K - EURO 6

#### Power/Torque

Net output according to: EC 582/2011



#### □ D16K550 (405 kW) manual gearbox

|                              |         |
|------------------------------|---------|
| Max power at 1350–1900 r/min | 550 hp  |
| Max torque at 900–1350 r/min | 2800 Nm |

#### □ D16K550 (405 kW) I-Shift gearbox

|                              |         |
|------------------------------|---------|
| Max power at 1350–1900 r/min | 550 hp  |
| Max torque at 900–1350 r/min | 2900 Nm |

#### □ D16K650 (479 kW)

|                              |         |
|------------------------------|---------|
| Max power at 1450–1900 r/min | 650 hp  |
| Max torque at 950–1450 r/min | 3150 Nm |

#### □ D16K750 (552 kW)

|                              |         |
|------------------------------|---------|
| Max power at 1600–1800 r/min | 750 hp  |
| Max torque at 950–1400 r/min | 3550 Nm |

### D16K

|                                                                  |                       |
|------------------------------------------------------------------|-----------------------|
| No. of cylinders                                                 | 6                     |
| Displacement                                                     | 16.1 dm <sup>3</sup>  |
| Stroke                                                           | 165 mm                |
| Bore                                                             | 144 mm                |
| Compression ratio                                                | 16.0:1                |
| Economy revs                                                     | 1000–1300 r/min       |
| Exhaust braking power (2200 r/min)                               | 230 kW                |
| VEB <sup>+</sup> power (2200 r/min)                              | 470 kW                |
| VEB <sup>+</sup>                                                 | option                |
| Oil filters                                                      | 2 full-flow, 1 bypass |
| Oil change volume, incl. filter                                  | 42 l                  |
| Cooling system, total volume                                     | 48 l                  |
| Oil change interval: Up to 100,000 km, or once a year with VDS4. |                       |

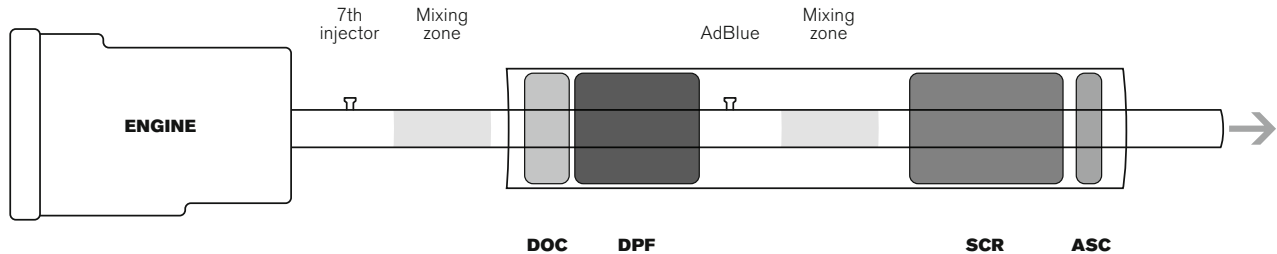
### ENGINE-MOUNTED POWER TAKE-OFFS

Two torque output versions available\*:

|                        |         |
|------------------------|---------|
| EPTT650, ratio 1.26:1  | 650 Nm  |
| EPTT1000, ratio 1.26:1 | 1000 Nm |

\* Torque output both when driving and standing still.

## OUR SOLUTION FOR EURO 6



### ENGINE

The new components in the engine serve one main purpose: To fine tune every step of the gas-flow through the engine and make sure that the exhausts reach the after-treatment system at optimum temperature. Without jeopardising fuel economy or engine performance.

### 7TH INJECTOR

A special diesel injector is used for heat management of the DOC and ensures the efficiency of the DPF and good SCR functionality.

### DIESEL OXIDATION CATALYST (DOC)

The DOC produces the  $\text{NO}_2$  necessary for the DPF to efficiently combust the particulates. In cold conditions, it also provides the heat needed for regeneration.

### DIESEL PARTICULATE FILTER (DPF)

The filter collects particulate matter (PM) and stores it until it's burned off during regeneration. The regeneration is done automatically and the driver doesn't need to take any action.

### SELECTIVE CATALYTIC REDUCTION (SCR)

In the mixing zone, the exhausts are sprayed with AdBlue. When they reach the catalyst, the nitrogen oxides ( $\text{NO}_x$ ) are efficiently transformed into harmless nitrogen gas and water.

### AMMONIA SLIP CATALYST (ASC)

The last step before the tailpipe where the remaining ammonia ( $\text{NH}_3$ ), if any, is removed.

## EUROPEAN EMISSION STANDARDS 1993-2013

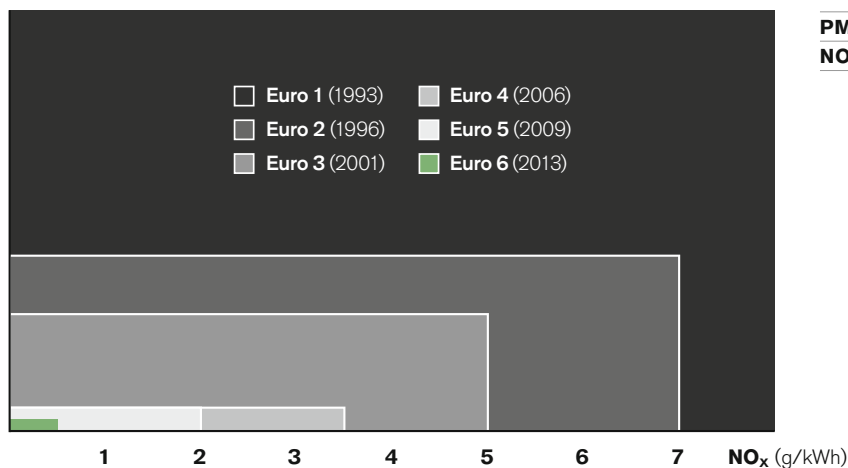
PM (g/kWh)

0.36

0.30

0.20

0.10



PM = Particulate Matter

NO<sub>x</sub> = Nitrogen Oxides

## 2 DRIVELINE

### I-SHIFT

12-speed splitter and range gearbox with automated gearchanging system. I-Shift can be fitted with a compact retarder, power take-off, emergency power steering pump and oil cooler.

#### I-SHIFT

| Type                              | Top gear  | Engine torque (Nm) | GCW approval (tonnes) |
|-----------------------------------|-----------|--------------------|-----------------------|
| <input type="checkbox"/> AT2412E  | Direct    | 2400               | 44                    |
| <input type="checkbox"/> AT2612E  | Direct    | 2600               | 60                    |
| <input type="checkbox"/> ATO2612E | Overdrive | 2600               | 60                    |
| <input type="checkbox"/> AT2812E  | Direct    | 2800               | 44/52                 |
| <input type="checkbox"/> ATO3112E | Overdrive | 3150               | 60                    |
| <input type="checkbox"/> ATO3512E | Overdrive | 3550               | 60                    |

#### I-SHIFT SOFTWARE PACKAGES

|                                                         | <input type="checkbox"/> | <input type="checkbox"/>    | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>         |
|---------------------------------------------------------|--------------------------|-----------------------------|--------------------------|-------------------------------------|----------------------------------|
| Functions                                               | Basic                    | Distribution & Construction | Long Haul & Fuel Economy | Long Haul & Fuel Economy with I-See | Heavy Duty Transport with I-See* |
| Basic Shift Strategy                                    | •                        | •                           | •                        | •                                   | •                                |
| Performance Shift                                       | •                        | •                           | •                        | •                                   | •                                |
| Basic Gear Selection Adjustment                         | •                        | •                           | •                        | •                                   | •                                |
| Gearbox Oil Temperature Monitor                         | •                        | •                           | •                        | •                                   | •                                |
| Enhanced Shift Strategy                                 |                          | •                           | •                        | •                                   | •                                |
| Launch Control                                          |                          | •                           | •                        | •                                   | •                                |
| I-Roll                                                  |                          |                             | •                        | •                                   | •                                |
| Smart Cruise Control                                    |                          |                             | •                        | •                                   | •                                |
| I-See, including I-Cruise                               |                          |                             |                          | •                                   | •                                |
| Heavy Duty GCW Control                                  |                          |                             |                          |                                     | •                                |
| <b>Additional options</b>                               |                          |                             |                          |                                     |                                  |
| Enhanced PTO Functions                                  | •                        | •                           | •                        | •                                   | •                                |
| Enhanced Gear Selection Adjustment, including kick-down |                          | •                           | •                        | •                                   | •                                |
| Enhanced performance – Bad roads                        |                          | •                           | •                        | •                                   | •                                |

\* Only AT2612E.

#### I-SHIFT SOFTWARE PACKAGES

##### BASIC

Supplied as standard with I-Shift and gives the gearbox its basic functions.

##### DISTRIBUTION & CONSTRUCTION

Tailors the gearbox's work for distribution and construction operations. Features include functions that aid the driver when starting and in close-quarter manoeuvring. 

##### LONG HAUL & FUEL ECONOMY

Contains intelligent functions that minimise fuel consumption. This makes the program package particularly suitable for long-haul operations. 

##### LONG HAUL & FUEL ECONOMY WITH I-SEE

Adds I-See, including I-Cruise, to the Long Haul & Fuel Economy package, for even larger fuel savings. 

##### HEAVY DUTY TRANSPORT

Optimises I-Shift for heavy gross combination weights (>85 tonnes). 

##### HEAVY DUTY TRANSPORT WITH I-SEE

Adds I-See, including I-Cruise, to the Heavy Duty Transport package, for even larger fuel savings. 

**DRIVELINE 2****I-SHIFT DUAL CLUTCH**

12-speed dual clutch and range gearbox with automatic gearchanging system. With the dual clutch, rapid, seamless and comfortable powershifting is enabled. I-Shift Dual Clutch can be fitted with a compact retarder, power take-off and emergency power steering pump. An oil cooler is standard.

**I-SHIFT DUAL CLUTCH**

| Type                             | Top gear  | Engine torque (Nm) | GCW approval (tonnes) |
|----------------------------------|-----------|--------------------|-----------------------|
| <input type="checkbox"/> SPO2812 | Overdrive | 2800               | 60                    |

**I-SHIFT DUAL CLUTCH SOFTWARE PACKAGES**

|                                                         | <input type="checkbox"/> | <input type="checkbox"/>            |
|---------------------------------------------------------|--------------------------|-------------------------------------|
| Functions                                               | Basic                    | Long Haul & Fuel Economy with I-See |
| Basic Shift Strategy                                    | •                        | •                                   |
| Performance Shift                                       | •                        | •                                   |
| Basic Gear Selection Adjustment                         | •                        | •                                   |
| Gearbox Oil Temperature Monitor                         | •                        | •                                   |
| Enhanced Shift Strategy                                 |                          | •                                   |
| Launch Control                                          |                          | •                                   |
| I-Roll                                                  |                          | •                                   |
| Smart Cruise Control                                    |                          | •                                   |
| I-See, including I-Cruise                               |                          | •                                   |
| <b>Additional options</b>                               |                          |                                     |
| Enhanced PTO Functions                                  | •                        | •                                   |
| Enhanced Gear Selection Adjustment, including kick-down |                          | •                                   |
| Enhanced performance – Bad roads                        |                          | •                                   |

**I-SHIFT DUAL CLUTCH SOFTWARE PACKAGES****BASIC**

Supplied as standard with I-Shift Dual Clutch and gives the gearbox its basic functions.

**LONG HAUL & FUEL ECONOMY**

Contains intelligent functions that minimise fuel consumption. This makes the program package particularly suitable for long-haul operations. 🇪🇺

**LONG HAUL & FUEL ECONOMY WITH I-SEE**

Adds I-See, including I-Cruise, to the Long Haul & Fuel Economy package, for even larger fuel savings. 🇪🇺

## 2 DRIVELINE

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### **I-SHIFT AND I-SHIFT DUAL CLUTCH FUNCTIONS EXPLAINED**

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#### **BASIC SHIFT STRATEGY**

Automatic selection of the right starting ratio (1st – 6th gear). The choice of starting gear is influenced by gross weight and road gradient.

#### **PERFORMANCE SHIFT**

Gives faster and gentler changes through intelligent utilisation of the engine brake, the dual clutch and a special transmission brake.

#### **BASIC GEAR SELECTION ADJUSTMENT**

Makes it possible to adjust gear selection via the gear lever's buttons during engine braking in automatic mode.

#### **GEARBOX OIL TEMPERATURE MONITOR**

Shows the gearbox oil's temperature in the information display.

#### **ENHANCED SHIFT STRATEGY**

By interacting with EBS and ECS, starting and close-quarter manoeuvring are made easier. Maximises the VEB/VEB<sup>+</sup> braking effect by automatically selecting the right gear so that the engine operates at high revs. When a gearchange is performed with I-Shift Dual Clutch during engine braking, the power shifting will result in no interruption in braking power.

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#### **LAUNCH CONTROL**

Optimises gear selection and EBS functions for manoeuvring at low speeds. Among other things, ensures that the Hill Start Aid function is only activated on uphill gradients.

#### **I-ROLL**

Automatic engagement and disengagement of a freewheel function for the purpose of reducing fuel consumption. I-Roll is used when neither engine power nor engine braking is needed, for instance on flat roads.

#### **SMART CRUISE CONTROL**

Interacts with the vehicle's Brake Cruise and ensures that the auxiliary brakes are not activated unnecessarily. The free-wheel function can thus be utilised to an even greater extent.

#### **I-SEE**

A smart I-Shift software that can store topography data and use this information to save fuel and improve driving comfort. The data is saved in a database available for other I-See users. When ordering I-See, the cruise control I-Cruise is also included. I-Cruise can also be ordered separately.

#### **HEAVY DUTY GCW CONTROL**

Optimises gear selection for high gross combination weights, 85–180 tonnes.

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### **ADDITIONAL OPTIONS**

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#### ☐ **ENHANCED PTO FUNCTIONS**

Several functions that make power take-off use easier.

#### ☐ **ENHANCED GEAR SELECTION**

##### **ADJUSTMENT INCLUDING KICK-DOWN**

Makes it possible to adjust gear selection via the gear lever's buttons during start and when driving in automatic mode. The kick-down function selects the right gear for maximum acceleration.

#### ☐ **ENHANCED PERFORMANCE - BAD ROADS**

Several functions that adjust gearchanging and assist starting and driving in poor road conditions and hilly terrain.

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## DRIVELINE 2

### MANUAL GEARBOXES

14-speed splitter and range manual gearbox. Cable operation - with separate cables for longitudinal and lateral movements - results in short and distinct gear settings. Patented synchromesh with servo function means low gearchanging forces. The gearboxes can be fitted with a compact retarder, power take-off, oil cooler and oil temperature monitoring.

### MANUAL GEARBOXES

| Type                              | Top gear  | Engine torque (Nm) | GCW approval (tonnes) |
|-----------------------------------|-----------|--------------------|-----------------------|
| <input type="checkbox"/> VT2214B  | Direct    | 2200               | 100                   |
| <input type="checkbox"/> VTO2214B | Overdrive | 2200               | 100                   |
| <input type="checkbox"/> VT2514B  | Direct    | 2500               | 100                   |
| <input type="checkbox"/> VTO2514B | Overdrive | 2500               | 100                   |
| <input type="checkbox"/> VT2814B  | Direct    | 2800               | 100                   |
| <input type="checkbox"/> VTO2814B | Overdrive | 2800               | 100                   |

### DRIVELINE COMBINATIONS

| Manual gearbox | D13K420<br>(2100 Nm) | D13K460<br>(2300 Nm) | D13K500<br>(2500 Nm) | D13K540<br>(2600 Nm) | D16K550<br>(2800 Nm) | D16K550<br>(2900 Nm) | D16K650<br>(3150 Nm) | D16K750<br>(3550 Nm) |
|----------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| VT2214B        | •                    | •                    |                      |                      |                      |                      |                      |                      |
| VTO2214B       | •                    | •                    |                      |                      |                      |                      |                      |                      |
| VT2514B        | •                    | •                    | •                    |                      |                      |                      |                      |                      |
| VTO2514B       | •                    | •                    | •                    |                      |                      |                      |                      |                      |
| VT2814B        |                      |                      |                      | •                    | •                    |                      |                      |                      |
| VTO2814B       |                      |                      |                      | •                    | •                    |                      |                      |                      |

### I-Shift

|          |   |   |   |   |   |   |   |   |
|----------|---|---|---|---|---|---|---|---|
| AT2412E  | • | • |   |   |   |   |   |   |
| AT2612E  | • | • | • | • |   |   |   |   |
| ATO2612E | • | • | • | • |   |   |   |   |
| AT2812E  |   |   |   |   | • |   |   |   |
| ATO3112E |   |   |   |   |   | • | • |   |
| ATO3512E |   |   |   |   |   |   |   | • |

### I-Shift Dual Clutch

|         |  |   |   |   |  |  |  |  |
|---------|--|---|---|---|--|--|--|--|
| SP02812 |  | • | • | • |  |  |  |  |
|---------|--|---|---|---|--|--|--|--|

### Single reduction axles

|            |   |   |   |   |   |   |   |   |
|------------|---|---|---|---|---|---|---|---|
| RSS1344C/D | • | • | • | • |   |   |   |   |
| RSS1356    | • | • | • | • | • |   |   |   |
| RSS1360    | • | • | • | • | • | • | • | • |
| RTS2370A   | • | • | • | • | • | • | • | • |
|            |   |   |   |   | • | • | • | • |

### Hub reduction axles

|          |   |   |   |   |   |   |   |   |
|----------|---|---|---|---|---|---|---|---|
| RSH1370F | • | • | • | • | • | • | • | • |
| RTH2610F | • | • | • | • | • | • | • | • |
| RTH3210F | • | • | • | • | • | • | • | • |
| RTH3312  | • | • | • | • | • | • | • | • |

## 2 DRIVELINE

### REAR AXLES

| Type                                | Axle   | Gear               | Max torque (Nm) | Max axle/bogie load (tonnes) | GCW approval (tonnes) |
|-------------------------------------|--------|--------------------|-----------------|------------------------------|-----------------------|
| <b>Single reduction</b>             |        |                    |                 |                              |                       |
| <input type="checkbox"/> RSS1344C/D | Solo   | Hypoid             | 2600            | 13                           | 44                    |
| <input type="checkbox"/> RSS1356    | Solo   | Hypoid             | 2400/2800       | 13                           | 56/44                 |
| <input type="checkbox"/> RSS1360    | Solo   | Hypoid             | 3550            | 13                           | 60                    |
| <input type="checkbox"/> RTS2370A   | Tandem | Hypoid             | 3550            | 23                           | 70                    |
| <b>Hub reduction</b>                |        |                    |                 |                              |                       |
| <input type="checkbox"/> RSH1370F   | Solo   | Conical spiral cut | 3550            | 13                           | 70                    |
| <input type="checkbox"/> RTH2610F   | Tandem | Conical spiral cut | 3550            | 26                           | 100                   |
| <input type="checkbox"/> RTH3210F   | Tandem | Conical spiral cut | 3550            | 32                           | 100                   |
| <input type="checkbox"/> RTH3312    | Tandem | Conical spiral cut | 3550            | 33                           | 120                   |

### REAR AXLE RATIOS

| RSS1344C/D | RSS1356 | RSS1360 | RTS2370A | RSH1370F | RTH2610F | RTH3210F | RTH3312 |
|------------|---------|---------|----------|----------|----------|----------|---------|
| 2.31:1*    | 2.50:1  | 2.47:1  | 2.43:1   | 3.46:1   | 3.33:1   | 3.33:1   | 3.61:1  |
| 2.47:1*    | 2.64:1  | 2.64:1  | 2.57:1   | 3.61:1   | 3.46:1   | 3.46:1   | 3.76:1  |
| 2.64:1     | 2.79:1  | 2.85:1  | 2.83:1   | 3.76:1   | 3.61:1   | 3.61:1   | 4.12:1  |
| 2.85:1     | 3.10:1  | 3.08:1  | 3.09:1   | 4.12:1   | 3.76:1   | 3.76:1   | 4.55:1  |
| 3.08:1     | 3.44:1  | 3.40:1  | 3.40:1   | 4.55:1   | 3.97:1   | 3.97:1   | 5.41:1  |
| 3.36:1     | 3.67:1  | 3.67:1  | 3.78:1   | 5.41:1   | 4.12:1   | 4.12:1   | 7.21:1  |
| 3.70:1     |         | 4.11:1  | 4.13:1   |          | 4.55:1   | 4.55:1   |         |
|            |         |         | 4.50:1   |          | 5.41:1   | 5.41:1   |         |
|            |         |         | 5.14:1   |          |          | 7.21:1   |         |
|            |         |         | 5.67:1   |          |          |          |         |
|            |         |         | 6.17:1   |          |          |          |         |

\* For RSS1344D.

### POWER TAKE-OFFS

There is a wide range of clutch-independent and clutch-dependent power take-offs to drive all sorts of body equipment. 

#### CLUTCH-INDEPENDENT POWER TAKE-OFFS

##### ☐ PTER-DIN

Rear-mounted engine power take-off for direct drive of a hydraulic pump.

##### ☐ PTER1400

Rear-mounted engine power take-off with flange connection for hydraulic pump.

##### ☐ PTER 100

Rear-mounted engine power take-off with flange connection for hydraulic pump.

### CLUTCH-DEPENDENT POWER TAKE-OFFS

##### ☐ PTR-F

Connecting flange attachment and low-rev or high-rev.

##### ☐ PTR-FL/FH

Connecting flange attachment and low-rev or high-rev.

##### ☐ PTR-D/PTR-DM/PTR-DH

Low/medium/high-rev with DIN-connection for direct attachment of a hydraulic pump.

##### ☐ PTRD-F

High-rev with connecting flange attachment for direct-fitted propshaft.

##### ☐ PTRD-D

High-rev with dual drive. DIN connection front and rear for direct attachment of hydraulic pumps.

##### ☐ PTRD-D1

High-rev with dual drive. Connecting flange attachment at the rear and DIN attachment at the front.

##### ☐ PTRD-D2

High-rev with dual drive rear and single drive front. Two connecting flange attachments rear and one DIN attachment at the front.