

Proven Worldwide in Millions  
of Applications.  
Fluid Couplings for Diesel and  
Gas Engine Drives





# Drive Solutions with Voith Fluid Couplings

Voith fluid couplings (turbo couplings) for diesel and gas engines are used in a variety of industrial applications and areas:

- Agriculture
- Recycling and waste handling
- Construction materials processing
- Oil and gas industry
- Ship building

The Voith Turbo focus is on the following machinery:

- Tractors
- Shredders, crushers, chippers and grinders
- Pumps
- Compressors and fans
- Ships
- Suction dredgers



- 1 Agricultural tractor
- 2 Shredder
- 3 Suction excavator
- 4 Ferry
- 5 Tub grinder

#### Agricultural tractor with 460 TD

- Effective damping of torsional vibrations in the driveline
- Up to 25 % higher transmission of power
- Smooth acceleration similar to automatic transmissions
- Protection against stalling of the engine
- Easy and robust drive concept without the need for external control or monitoring systems

#### Shredder with 562 TDM-SAE

- Virtually load free starting of the diesel engine
- Longer service life of the drive system; all components are protected by the damping characteristics of the fluid coupling
- Adverse effects due to operating errors are reduced to a minimum

#### Suction Excavator with 366 TVYRI

- Fan acceleration without any problem
- Protection against diesel engine stalling upon fan switching-in
- Higher service time of drive, all components are protected by the turbo coupling damping qualities

#### Ferry with 650 TDM-SAE

- Damping of torsional vibrations in the driveline
- Cost savings owing to longer maintenance intervals and low repair requirements

#### Tub Grinder with 562 TPKD-SAE

- Virtually wear-free clutching and declutching of the drive at any engine speed
- Damping characteristics of the hydrodynamic clutch increase material throughput
- Long service life and protection of all drive components

- 1 TD fluid coupling
- 2 TPD-SAE/TPKD-SAE fluid coupling
- 3 TDM-SAE fluid coupling

# The Solution for all Start-up and Clutching Problems.

## Voith Fluid Couplings

Voith fluid couplings of the series TD, TDM-SAE and TDVFM-SAE are start-up and damping couplings for easy installation to diesel engines. The series TPD-SAE and TPKD-SAE additionally offers a clutching function.

The transmission of torque in the Voith fluid couplings occurs contact-free by the flow of the operating fluid in the circuit – usually standard hydraulic oil. The main components of the fluid coupling – pump wheel (impeller) and turbine wheel (runner) – do not touch.

The connecting dimensions of the ... SAE types comply with SAE standards. Apart from traditional diesel engines, super-charged diesel engines and gas engines can be started up load-free, and heavy masses can be accelerated without problems.





1



3



2

## Customer Benefits

The fluid coupling in drives with diesel or gas engines provides multiple benefits. With just one component, it always offers you a choice of the following functions: damping – starting – overload protection – clutching.

### TD fluid coupling

- For damping, starting, overload protection
- Automatic start-up of the driven machine
- Operating errors largely absorbed by coupling without adverse effect
- Minimum maintenance and service requirements
- Long service life
- Easy installation

### TDM-SAE fluid coupling

- For damping and starting
- Automatic start-up of the driven machine
- Operating errors largely absorbed without adverse effects
- Minimum maintenance and service requirements
- Long service life
- Easy installation

### TPD-SAE/TPKD-SAE fluid coupling

- For damping, starting, clutching
- Engagement possible at any speed
- Operating errors largely absorbed without adverse effects
- Minimum maintenance and service requirements
- Long service life
- Easy installation

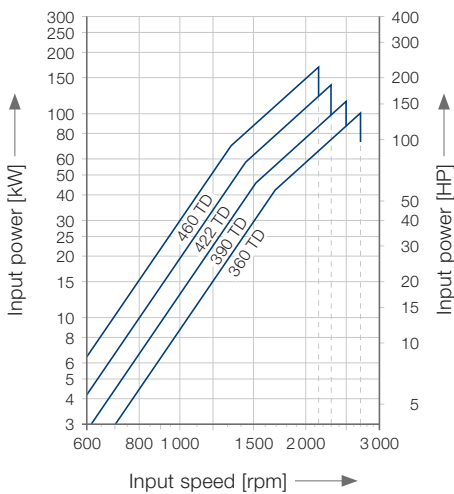
# Coupling Types

## Type TD

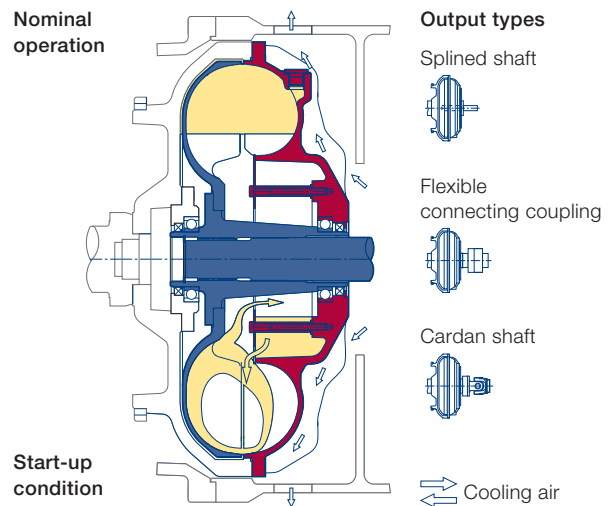
Voith fluid couplings type TD are constant-fill, surface-cooled start-up and damping couplings for direct installation onto the flywheel of the diesel engine.

The output is via a splined shaft, a flexible connecting coupling or via a cardan shaft. Space requirements are reduced to a minimum. Voith TD fluid couplings are well suited for vehicle and industrial applications.

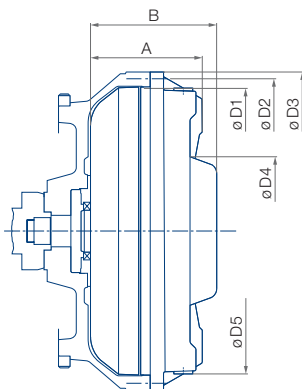
### Characteristic curves



### Sectional drawing type TD



### Dimensions



### Series TD

Size	D1	D2	D3	D4	D5	A	B
360	365	386	403	188	362	141.5	138
390	397	420	438	212	382	142	145
422	428	450	470	208	408	159	184
460	468	492	512	314	447	175	205

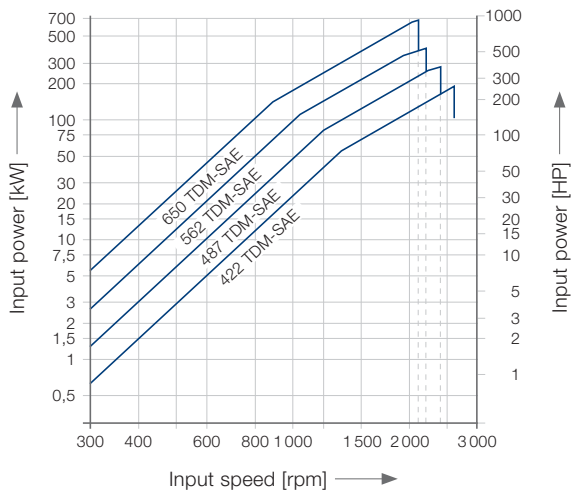
Dimensions in mm  
SAE-connections upon request

# Type TDM-SAE

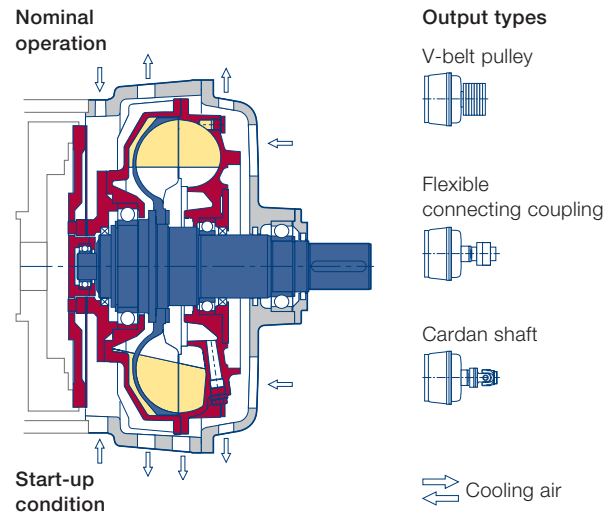
Voith fluid couplings type TDM-SAE are constant-fill, surface-cooled start-up and damping couplings for installation to the SAE flywheel housing of the diesel engine. They are well suited for accelerating medium-heavy masses.

At the engine side, a wear-free steel diaphragm transmits torque from the diesel engine to the fluid coupling. At the output side, a v-belt pulley, a cardan shaft or a flexible connecting coupling can be added.

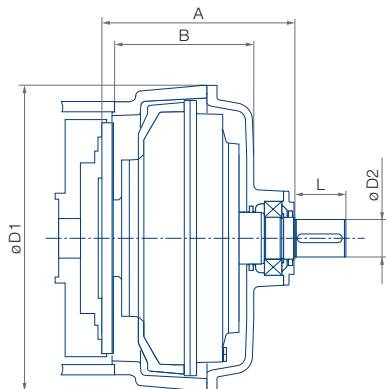
## Characteristic curves



## Sectional drawing type TDM-SAE



## Dimensions



## Series TDM-SAE

Size	SAE	A	B	D1	L	D2
422	11,5/2	367	240	539	110	70
422	11,5/3	367	240	539	110	70
487	14/1	397	282	618	120	80
562	14/1	452	314	706	150	95
650	14/0 <sup>1</sup>	570	430	830	160	110
650	18/0 <sup>1</sup>	570	430	830	160	110

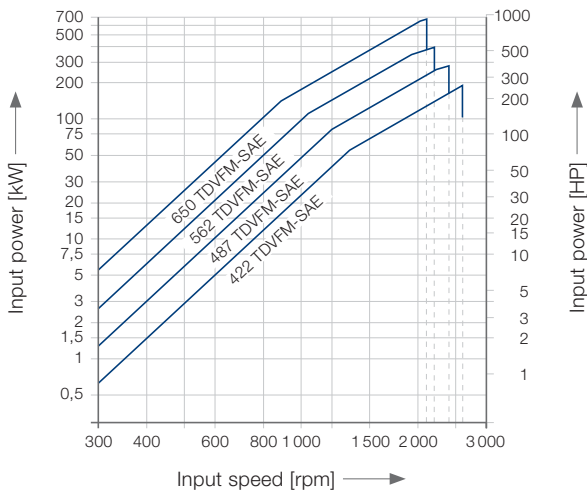
Dimensions in mm  
<sup>1</sup> Subject to modifications

# Type TDVFM-SAE

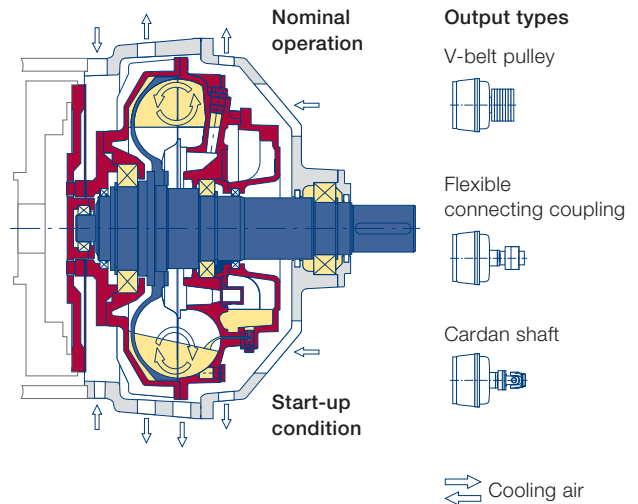
Voith fluid couplings type TDVFM-SAE are based on type TDM-SAE. Owing to an additional delay chamber and centrifugal valves, they are well suited for accelerating heavy masses with high break-away torques.

At the engine side, a wear-free steel diaphragm transmits torque from the diesel engine to the fluid coupling. At the output side, a v-belt pulley, a cardan shaft or a flexible connecting coupling can be added.

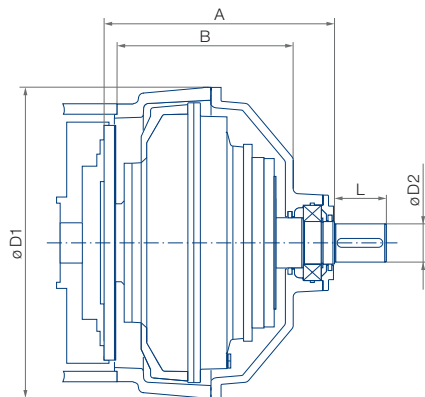
## Characteristic curves



## Sectional drawing type TDVFM-SAE



## Dimensions



## Series TDVFM-SAE

Size	SAE	A	B	D1	L	D2
422	11,5/2	421	293	539	110	70
422	11,5/3	421	293	539	110	70
487	14/1	465	350	618	120	80
562	14/1	530	393	706	150	95
650	14/0 <sup>1</sup>	670	530	830	160	110
650	18/0 <sup>1</sup>	670	530	830	160	110

Dimensions in mm  
<sup>1</sup> Subject to modifications

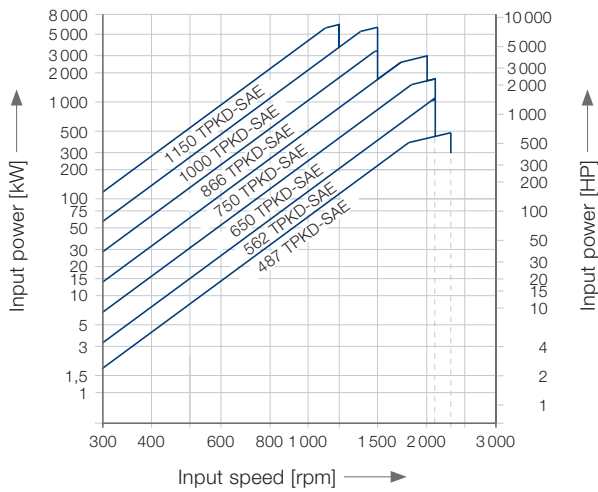


# Type TPD-SAE/TPKD-SAE

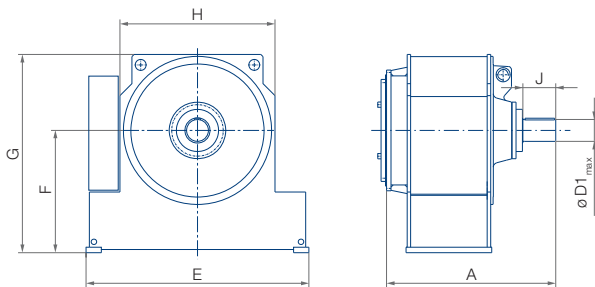
Voith fluid couplings type TPD-SAE/TPKD-SAE are externally cooled clutches that can be filled and drained during operation and are ideal for installation to the SAE flywheel housing of a diesel engine.

By filling and draining, this Voith fluid coupling allows virtually wear-free engagement and disengagement of the driven machine. It is particularly suited for accelerating extremely heavy masses with high break-away torques.

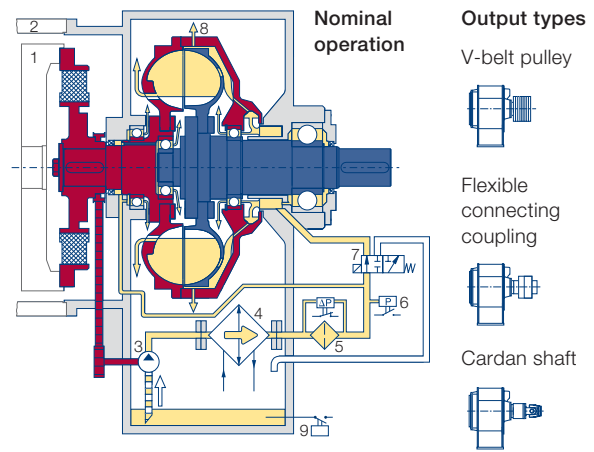
## Characteristic curves



## Dimensions



## Sectional drawing type TPD-SAE



- 1 Flywheel
- 2 Flywheel housing
- 3 Fill pump
- 4 Cooler
- 5 Filter with differential pressure switch
- 6 Pressure monitoring
- 7 Valve
- 8 Drain nozzles
- 9 Tank temperature monitoring

## Series TPD-SAE/TPKD-SAE

Size	SAE	A	E	F	G	H	J	D1
487 TPD-SAE	14/1	739	692	600	917	692	170	90
562 TPKD-SAE	18/0	925	1130	611	1004	800	254	110
650 TPKD-SAE	18/0	1009	1330	705	1150	880	254	120

Sizes 750, 866, 1000 and 1150 upon request

## Special design suitable for high belt loads; without oil tank

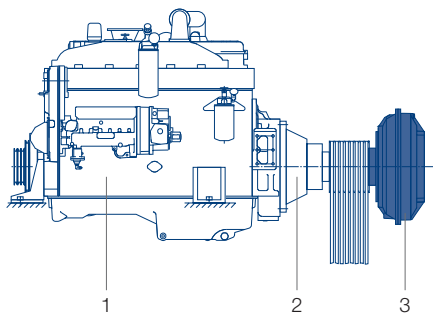
Size	SAE	A	E	F	G	H	J	D1
562 TPKD-SAE-X	18/0	948	1010	475	906	800	192	120
650 TPKD-SAE-X	18/0	993	1126	515	1005	906	215	120

Dimensions in mm

## Other Designs

Depending on the application, diesel engine drives can also be equipped with a range of fluid couplings from our T-series. The following sketches provide a summary showing the types of frequently installed drive designs:

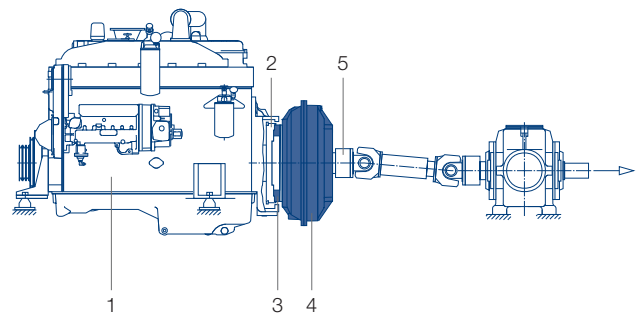
### Output via belt pulley



- 1 Diesel engine
- 2 Mechanical clutch
- 3 Fluid coupling with belt pulley

Fluid coupling and belt pulley are bolted together to form a compact unit. This version can be used for diesel engines with mechanical clutch.

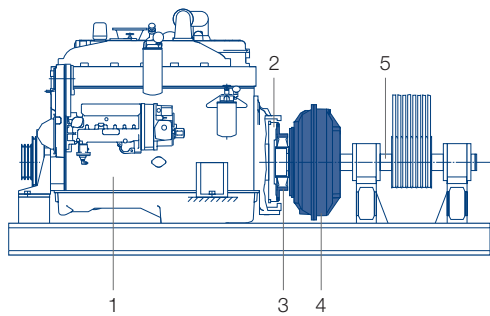
### Output via cardan shaft



- 1 Diesel engine
- 2 Flywheel
- 3 Intermediate flange
- 4 Fluid coupling
- 5 Output flange

The fluid coupling is directly mounted to the flywheel of the diesel engine via an intermediate flange. Diesel engine and driven machine are located on different foundations.

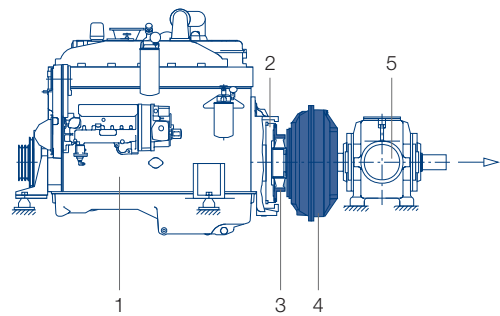
### Output via countershaft



- |                                |                                 |
|--------------------------------|---------------------------------|
| 1 Diesel engine                | 4 Fluid coupling                |
| 2 Flywheel                     | 5 Countershaft with belt pulley |
| 3 Flexible connecting coupling |                                 |

The fluid coupling is mounted to the flywheel of the diesel engine via a flexible connecting coupling. Diesel engine and working machine are mounted on the same base frame.

### Fluid coupling with gearbox



- |                                |                  |
|--------------------------------|------------------|
| 1 Diesel engine                | 4 Fluid coupling |
| 2 Flywheel                     | 5 Gearbox        |
| 3 Flexible connecting coupling |                  |

The fluid coupling is mounted to the flywheel of the diesel engine via a flexible connecting coupling. Diesel engine and gearbox are located on a common foundation.

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