Original ATE master brake cylinders
OEM quality since the 1920s

- Expansion port TMC
- Central valve TMC
- Plunger TMC
Original ATE master brake cylinders

Since the mid-1920s Continental has been supplying hydraulic brake master cylinders for motor vehicles. In addition, as brake system supplier, Continental utilizes its direct experience in overall hydraulic brake design.

The complete OEM experience and technology thus are incorporated into brake master cylinders of the ATE brand. Owing to the high quality standard and the painstaking quality assurance measures, these parts comply with all current safety requirements.

ATE brake hydraulics are found in many cars, trucks and buses, are used in racecars, special-purpose vehicles and in general mechanical engineering. Many motor vehicle manufacturers decide to avail themselves of our expertise.

We offer TMCs in central valve design and in the very compact plunger design, for all required diameters and strokes as well as for various brake circuit designs (smooth or stepped).

They "transform" the driver's leg pressure into hydraulic pressure. For safety reasons these master cylinders have a dual-circuit design today.
History of original ATE master brake cylinders

1906: Founding of firm Alfred Teves GmbH (ATE), which merged with the German Continental AG in 1998

1917: Malcolm Loughead patents a hydraulic wheel brake cylinder for motor vehicles which is actuated by brake fluid. This was installed for the first time in the 1920s in an Adler Standard 6. Hydraulic ATE dual-circuit tandem master cylinders and the hydraulic ATE stepped master cylinder with pressure-dependent variable ratio are newly developed

1955: Manufacture of a tandem master cylinder for Mercedes Benz and racecars (example: Mercedes SLR and Monoposto)

1958 - 1961: ATE begins development work on a lockup-free brake system (ATE Anti-Skid – known as ABS later)

1969: Teves presents the first generation of the electronically controlled Anti-Skid

1972 - 1974: ATE introduces a further fundamental new development and commences series production of the Twintax special tandem master cylinder

Since the end of the 1990s we also produce plunger-type TMCs for motor vehicles
Every vehicle equipped with a hydraulic brake system features a tandem master cylinder (TMC). It "transforms" the driver's leg pressure into hydraulic pressure. For safety reasons these brake master cylinders have a dual-circuit design today.
Brake system splitting concepts

Diagonal split (X)

Advantage:
- If one brake circuit fails, the wheels diagonally opposite each other on each axle will be braked

Drawback:
- If one brake circuit fails, high yaw moments occur because braking power is much higher on the front wheel brakes

Front/rear split (II)

Advantage:
- If one brake circuit fails, only small yaw moments occur owing to the per-axle braking effect

Drawback:
- If the front axle circuit fails, the remaining braking power will be low

The are the two main, most frequently used brake system variants. Of course, there are also others, for example the vertical split system.
Example of construction of a brake master cylinder

1 Reservoir plugs
2 Cylinder housing
3 Secondary piston, complete
4 Primary piston, complete
5 Secondary sealing, complete
How a brake master cylinder works
as exemplified by a tandem master cylinder with 2 central valves

Insert slideshow
ATE brake master cylinder variants

Master cylinder
Use in single-axle brake systems, e.g. combine harvester, fork truck

Tandem- master cylinder, expansion port variant
Use for non-ABS

Tandem master cylinder with central valve
Use with ABS, ESP, TCS, etc.

Plunger design Generation 1 + 2
Use with ABS, ESP, TCS, etc.
Compact design

Special types of tandem master cylinders such as the Twintax TMC or tandem master cylinders of lightweight construction also are available.
Characteristics of tandem master cylinders

The tandem master cylinder is the basic unit for dual-circuit brake systems and consists of two series-connected master cylinders in one housing. Operation usually is assisted by upstream devices such as brake boosters. We offer tandem master cylinders in expansion port and central valve versions.

Advantages/qualities

- Short closing paths
- Low volume uptake
- High efficiency
- Low throttling / after-suction resistance
- Small pressure differential between primary and secondary circuits
- Good bleedability
- Cr6-free surfaces for vehicles built in 07/2003 and after (as required by law)
- Central valve version suitable for ABS
Plunger II - Characteristics

As the basis for a standardized ATE concept for future tandem master cylinders, we have developed a new plunger generation that offers all the functions of the previous tandem master cylinder and beyond that features many technical enhancements and advantages:

- Compact design - ideal for installation in small spaces
- Reduced weight - by roughly 20% compared to conventional central valve technology
- Fewer components - almost half as many compared to conventional technologies
- Modular system - diameters from 20.64 to 31.75 mm and strokes of up to 46 mm
- Low volume uptake - minimized elastic deformations due to smaller seals
- Sealing cups supported in the housing => robustness against soiling and wear; longer life
- Cr6-free surfaces for vehicles built in 07/2003 and after (as required by law)
- Suitable for ABS
We offer TMCs in central valve design and in the very compact plunger design for all required diameters and strokes as well as for various brake circuit designs (smooth or stepped).

The first hydraulic brakes were designed and manufactured in the USA, which is why even today sizes are stated in inches (1/16 inch gradations).

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Components, tools & accessories

Components

Load-sensitive brake force reducing valve
For ideal adjustment of braking forces to avoid overbraking and/or skidding and to ensure steerability of the vehicle.

Booster
We supply boosters in single or tandem designs and in all common sizes. The units normally are made of steel, but are also available in weight-reduced aluminum versions.

Accessories

- Stop-light switches
- Stop-light sensors
- Pressure differential warning devices
- Pressure sensor