

WHEELS & BRAKES

high performance for Aircraft



Quality and performance since 1985

1985 **Gilbert Béringer** created BERINGER Company, helped by his wife **Véronique**. He has been manufacturing wheels, forks and side cars for motorbikes, and then brakes, in the same spirit of quality and performance for 27 years. BERINGER braking products for motorbikes and cars have been accepted by the well-known racing teams for their exceptional reliability, allowing BERINGER to be used by many teams in the World Endurance Championships with many World Champion titles. This was all made possible by a team of exceptional mechanical engineers who have studied and developed new products whose performance/weight ratio is without precedent, for each specific use.

2002 **BERINGER Wheels & Brakes** was born, when Gilbert Béringer, also a pilot and aircraft builder fond of aviation, decided to apply his patented high performance braking solutions to the aeronautical world.

2007 **Rémi Béringer**, son of Gilbert and Véronique, joined the Company after he graduated as Mechanical Dipl. Engineer. Also fond of aviation, he designed with Gilbert most of the products dedicated to light-sport aircraft, Formula One Racers, gliders and various fast machines.

2009 BERINGER Company sold motorbike and car activities to focus on the development of wheels & brakes for aircraft. **BERINGER AERO** was born.

2011 BERINGER AERO moved to the airport of Gap-Tallard in the south of France, in a new building dedicated to aviation, with a direct access to the runway. This new plant consists of offices, workshops, and test room with the dyno and test benches designed by Rémi. A hangar welcomes the aircraft receiving the wheel & brake prototypes for the tests.



Claire BERINGER, daughter of Gilbert and Véronique, joined the Company after she graduated as Aeronautical & Energy Dipl. Engineer (including 5 months at Oakland University–Detroit, MI) topped with a Master's degree in Commercial and Management Operations..



Rémi Claire Loïc Sibylle Gilbert Véronique

Loïc and **Sibylle**, two young people from Gap, have also joined the Company.

A FLYING FAMILY

In the Béringer family, everybody flies: Gilbert, Véronique and Rémi fly their homebuilt tail dragger as well as gliders; and Claire flies gliders.

AN ADVANCED TECHNOLOGY

BERINGER makes wheels and braking systems for a wide range of aircraft, from light aircraft up to its now-standard STC for the Pilatus PC-6, plus complete kits for many popular aircraft, that include everything for a bolt-on conversion.

These innovations are covered by many patents and have allowed BERINGER brakes to take a decisive technological lead.

QUALITY and CERTIFICATIONS

Of course, BERINGER® controls product quality to ensure total reliability to the users of wheels and brakes. This is evidenced by the Alternative Procedures to Design Organisation Agreement given by EASA in 2006 and by the Production Organisation Agreement given by DGAC in 2008.



APDOA
Certification d'Organisation
(EASA)



AUTORITÉ DE
SURVEILLANCE

Certification
d'Organisation de
Production

BERINGER AERO's commitment to sustainable development

Respect for the Environment

- At BERINGER, toxic substances and non recyclable materials are eliminated from the fabrication process
- Workshop trash is sorted prior to disposal.
- An environmental awareness campaign is in force and consistently reviewed.

Reduction of Energy Consumption

- Our specially-designed bioclimatic building (BBC) made of local wood only consumes only 10% of the energy required to heat or cool a conventional steel building.
- 98% of the energy used to heat our water is solar-powered
- BERINGER employs vehicles using propane (LPG): they have reduced CO2 emissions and have no particulate emissions.

Eco-Designs for Products

- BERINGER products are designed to have a virtually unlimited service life, because pieces that are worn down can be replaced.
- Components are 99% recyclable.
- 98% of the products are made in France, within a radius of 200 miles; this process reduces transportation and energizes local industrial bases.

Respect for Human Dignity in the Workplace

- From one end of the assembly line to another, from in-house to subcontractors, BERINGER staff members work in optimal conditions following the regulations of OIT (International Work Organization).
- BERINGER does not award contracts based on "lowest-cost," and does not use outsourcing.

Respect for the Ethics of Economics

- BERINGER partners (suppliers, subcontractors, banks, clients) are chosen based on ethical criteria, not only the lowest price
- BERINGER commits to projects based on their moral philosophy :
 - BERINGER wheels are not involved in projects that could intentionally threaten human life.
 - BERINGER has partnerships in eco-friendly projects (e.g., Green challenge, SolarImpulse).

Zero Compromise on Quality

At BERINGER, quality is not only respect for procedures that the EASA certifies, such as the Design Approval Organization and the Production Approval Organization (Part 21G). Quality is a pledge of trust to our clients: our clients entrust us with their lives. To remain worthy of this trust, we offer a life-time warranty (liability insurance) on materials and craftsmanship on all our products.

BERINGER AERO integrates its partners in its projects, from the design stage to commercialization

- AeroProviders : a group of suppliers for Light Aviation manufacturers
- PEGASE : innovation and development group of companies working for Aviation
- Hautes Alpes Développement: Development Agency for local companies In Hautes Alpes department (region) of France.



Beginning in 2010 and continuing now, the MADE IN RESPECT label recognizes BERINGER AERO's commitment to sustainable development



On February 24, 2012, BERINGER AERO won the Trophée RSE PACA TPE (Social Responsibility of the Companies).

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CAN'T FIND WHAT YOU NEED ? LET US HELP

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e-mail: contact@beringer-aero.com

Fax: **+33 (0) 492 526 966**

Commercial e-mail address: sales@beringer-aero.com

Company hours : **Mon. - Fri. : 8:30am—12:30am and 1:30pm - 6:00pm**

Postal address : **BERINGER AERO - Aéroport - 05130 Tallard - France**

WARNING: the mounting and the maintenance of the wheels and brakes must be done by an authorized **BERINGER SERVICE CENTER** (and by a certified Part 145 workshop for certified aircraft). **BERINGER Company** is not responsible of troubles due to a wrong mounting, not in accordance with **BERINGER** instruction (available on our website) and with State of the Art.

CAUTION: **BERINGER®** and **AEROTEC®** are registered trademarks.

BERINGER® owns 9 different world patents protecting its unique technology on master cylinders, calipers, discs, brake regulators and aircraft wheels.

INFRINGEMENTS WILL BE PROSECUTED

■ How can I order BERINGER parts ?

- You can order directly from BERINGER or from our distributors and Service Centers
- Download the order form on our website
- Call us or send an e-mail contact@beringer-aero.com at any time and we will return some ideas.

■ I have a technical question. Who can help ?

- Our Service Centers are able to answer many technical questions, but for a precise technical or engineering question, please contact BERINGER directly.

■ Why are most BERINGER wheels made for tubeless tires?

- Tubeless has many advantages compared to tube type:

- safer (less risk of puncture)
- weight saving (a tube weights around 1 to 2 lbs)
- cost effective (no tube means no tube to buy)

These are the same reasons why nowadays you find tubeless wheels on cars, motorcycles, and all commercial airplanes. Tubeless designs have specific design to be airtight (most designs use o-rings) and precise machining to ensure proper contact between tire and wheel.

■ How can I choose the correct wheels, tires and brakes?

1. First, select your tires according to your use: What kinds of runways: grass, concrete, unimproved?
2. Match the wheel to the tires. (See our tire-wheel application chart in the catalog.)

The brakes you need will depend mostly on the weight of the aircraft and the landing speed, though tire size can come into play at the extremes of the size ranges: to get close, use the formula to calculate the Kinetic energy needed (see the catalogue p12). Many popular setups are already listed.

■ How do I know the type of brake fluid to fill my brake system ?

- The type of brake fluid to use is most of the time written directly on the brake caliper and on master cylinders. DOT4 usually has yellow to amber color and MINERAL ("Mil spec" or "aviation") brake fluid is red. If you have any doubt please contact BERINGER.

■ I filled my brake system with the wrong brake fluid what can I do ?

- The wrong brake fluid will damage the seals after only few minutes of contact. This is potentially dangerous because after a short period your brakes can lock or leak or stop working properly. If you have put the wrong fluid into the system, you will have to change all the seals of the entire system. (Note: this is true, regardless which brand of brake parts you use.) If you have a BERINGER system, ask BERINGER for repair kits or send the parts back to BERINGER service for repair.

■ If I switch to BERINGER Wheels & Brakes do I also need to change my master cylinders ?

- If they are compatible with the brake fluid then you still need to check the hydraulic ratio: with our brakes we recommend using master cylinders with a piston bore of 1/2" (9/16" maximum). If the bore of the master cylinders is too big, they cannot produce enough pressure to provide enough braking torque on the wheels. Some master cylinders are so crude (or just so old) that the inherent smoothness and feel of BERINGER calipers can be masked in operation; for this reason, we recommend using only BERINGER master cylinders.

■ I want to improve my Wheel & Brake system but BERINGER prices are too high.

- BERINGER systems are a little more expensive than ordinary products but thanks to their exceptional reliability and life, the operating cost is much more economical. It is often possible to pay back your investment in 1 or 2 years, with brake components that last, lines that don't leak, pads that have 3-5 times the life of legacy pads, quicker and simpler pad replacements, no tube expenses, no bearing maintenance, and (with ALIR), fewer flat-spotted tires and straighter, shorter stops. And all that time, you are enjoying better, smoother braking. (And BERINGER wheels save weight and look good, too.)

WHEEL & BRAKE COMPLETE SETS

Upgrade your aircraft and save 3 to 5 kg with high performance BERINGER® wheels and brakes. Complete main wheel and brake sets are designed to mount directly, replacing original equipment. Wheels are aluminum red anodized, fully CNC machined, with O-rings for Tubeless mounting. Brake calipers use sintered metallic pads and stainless steel discs for increased life.

Wheel & brake set includes:

- 2 wheels with calipers and stainless steel discs
- 2 tires (mounted and pressure tested)
- 2 axles or 2 sets of adaptation parts (as required)
- master cylinders & 2 fluid reservoirs
- 1 parking brake valve (only in Homebuild kits)
- 1 anti-lock regulator or pressure limiter
- stainless steel brake lines
- detailed instructions

Depending on the aircraft, the parking brake valve is included or not. Some kits include two pedal master cylinders and other kits only 2.



Aircraft Type	Wheel Part n°	Tires	Other parts	Brake fluid	SET Part number	Price euro
For homebuild						
Van's RV6, 7, 9	JA-51-HE1	Michelin Aviator 5,00-5", 10ply	4 m. cylinders MP-002	MIL	SRV01	2 632
Van's RV6, 7, 9	JA-51-HE1	Michelin Aviator 5,00-5", 10ply	2 m. cylinders MP-002 No parking brake valve	MIL	SRV06	2 202
Van's RV6A, 7A, 9A	JA-51-HE1	Michelin Aviator 5,00-5", 10ply	4 m. cylinders MP-002	MIL	SRV02	2 632
Van's RV6A, 7A, 9A	JA-51-HE1	Michelin Aviator 5,00-5", 10ply	2 m. cylinders MP-002 No parking brake valve	MIL	SRV05	2 202
Van's RV8	JA-51-HE1	Michelin Aviator 5,00-5", 10ply	2 m. cylinders MP-002 No parking brake valve	MIL	SRV03	2 223
Van's RV8A	JA-51-HE1	Michelin Aviator 5,00-5", 10ply	2 m. cylinders MP-002 No parking brake valve	MIL	SRV04	2 256
Lancair 320/360 (retractable LG)	JA-52-HE1	11x4.00-5", 8ply	4 m. cylinders MP-003	MIL	SLC02	2 285
Lancair 320/360 (retractable LG)	JA-52-HE1	11x4.00-5", 8ply	2 m. cylinders MP-003 No parking brake valve	MIL	SLC04	1 864
Lancair legacy (retractable LG)	JA-51-HE2	Michelin Aviator 5,00-5", 10ply	4 m. cylinders MP-003	MIL	SLC01	2 640
Lancair legacy (retractable LG)	JA-51-HE2	Michelin Aviator 5,00-5", 10ply	2 m. cylinders MP-003 No parking brake valve	MIL	SLC03	2 174
Glasair III (retractable LG)	JA-51-HE2	Michelin Aviator 5,00-5", 10ply	4 m. cylinders MP-003	MIL	SGL01	2 591
Glasair III (retractable LG)	JA-51-HE2	Michelin Aviator 5,00-5", 10ply	2 m. cylinders MP-003 No parking brake valve	MIL	SGL02	2 174
Falco	JA-51-HE2	Michelin Aviator 5,00-5", 10ply	2 m. cylinders MP-003	MIL	SFA01	2 632
Furio	JA-51-HE2	Michelin Aviator 5,00-5", 10ply	2 m. cylinders MP-003	MIL	SFU01	2 632
Norécrin, Nord 1200, 1201, 1202, 1203	JAB01	6.00-6	4 rudder m. cylinders MP-002	DOT4	SNR01	2189

FINISH: Red anodizing is standard color for wheels, brakes and master cylinders. Other colors are available on special order with an extra delay at an additional cost of **65€** per batch of parts: **silver, black, yellow, titanium grey**. Colors may vary.

WHEEL & BRAKE COMPLETE SETS

Aircraft Type	Wheel Part number	Tires	Other parts	Brake fluid	SET Part number	Price euro
For Ultralight and LSA (parking brake valve is not included)						
Air Création Tanarg	-	-	1 regulator with brake lines	DOT4	SAC01	349
BOT Speedcruiser	JAA02	4.00-6" 6 ply	1 rudder m. cylinder MP-002	DOT4	SBT01	1569
Breezer	JA-01	5.00-5" 10ply	2 rudder m. cylinders MP-002	DOT4	SBR01	1659
C42 COMCO Ikarus	JAA02	15 x 6.00-6" 6ply	1 hand m. cylinder HAB02	DOT4	SCC01	1491
Dynamic WT9	JAA02	15 x 6.00-6" 6ply	1 rudder m. cylinder MP-002	DOT4	SAE02	1695
Dynamic WT9 Speed	JAA02	15 x 6.00-6" 6ply	1 rudder m. cylinder MP-002	DOT4	SAE01	1789
Eurostar EVEKTOR	JAA02	15 x 6.00-6" 6ply	2 rudder m. cylinders MP-002	DOT4	SEU01	1743
Flight Design CTSW 2007	JAA02	15 x 6.00-6" 6ply	2 rudder m. cylinders MP-002	DOT4	SFD01	1577
Gaz'Aile	JA-02	11X4.00-5" 8 ply	1 hand m. cylinder HAB02	DOT4	SGZ01	1439
FK9- FK14	JAA02	4.00-6" 6 ply	1 hand m. cylinder HAB02	DOT4	SFK01	1577
G1 aviation	JAA02	8.00-6" 4ply	1 hand m. cylinder HAB02	DOT4	SGA01	1577
Ibis	JA-02	11X4.00-5" 8 ply	1 central mounting m. cylinder	DOT4	SIB01	1455
Jabiru J400/J430	JA-51	5.00-5" 10ply	2 rudder m. cylinders MP-002	DOT4	SJU01	2046
Jabiru J400/J430	JA-51	5.00-5" 10ply	1 hand m. cylinder HAB02	DOT4	SJU05	1881
Jabiru J170	JAA02	4.00-6" 6 ply	2 rudder m. cylinders MP-002	DOT4	SJU03	1826
Jabiru J170	JAA02	4.00-6" 6 ply	1 hand m. cylinder HAB02	DOT4	SJU04	1660
Jodel D20 ULM	JA-01	5.00-5" 10ply	2 rudder m. cylinders MP-002	DOT4	SJD01	1743
Lambada	JAA02	4.00-6" 6 ply	1 hand m. cylinder HAB02	DOT4	SLA01	1491
Magni GYRO	JAA02	4.00-6" 6 ply	1 MP-002 + 1 MP-004.1 lever	DOT4	SMG01	1439
MCR01 (rudder)	JA-02	11X4.00-5" 8 ply	2 rudder m. cylinders MP-002	DOT4	SDY01	1750
MCR01 (hand)	JA-02	11X4.00-5" 8 ply	1 hand m. cylinder HAB02	DOT4	SDY02	1599
Mysky NG4	JA-01	5.00-5" 10ply	2 rudder m. cylinders MP-002	DOT4	SMS01	1764
Norécrin, Nord 1200, 1201, 1202, 1203	JAB01	6.00-6	4 rudder m. cylinders MP-002	DOT4	SNR01	2189
Pioneer 300	JAA02	4.00-6" 6 ply	1 rudder m. cylinder MP-002	DOT4	SPI01	1733
RANS Coyote	JAA02	15 x 6.00-6" 6ply	2 rudder m. cylinders HBA02	DOT4	SRA02	1709
RANS Coyote 1st type	JAA02	15 x 6.00-6" 6ply	2 rudder m. cylinders HBA02	DOT4	SRA01	1709
Savannah (hand brake)	JAA02	15 x 6.00-6" 6ply	1 hand m. cylinder HAB02	DOT4	SSV02	1512
Savannah (pedal brake)	JAA02	15 x 6.00-6" 6ply	2 rudder m. cylinders HBA02	DOT4	SSV01	1716
Pipistrel Sinus, Virus	JAA02	4.00-6" 6 ply	2 rudder m. cylinders MP-002	DOT4	SPP01	1739
Pipistrel Sinus, Virus	JAA02	4.00-6" 6 ply	4 rudder m. cylinders MP-002	DOT4	SPP01	2090
Skyleader	JA-02	11X4.00-5" 8 ply	1 hand m. cylinder HAB02	DOT4	SKY01	1495
Skyranger - Nynja	JAA02	4.00-6" 6 ply	1 hand m. cylinder HAB02	DOT4	SSK01	1439
Sting Carbon TL	JA-02	11X4.00-5" 8 ply	1 hand m. cylinder HAB02	DOT4	SSC01	1639
STORM Century	JA-02	11X4.00-5" 8 ply	1 hand m. cylinder HAB02	DOT4	STR01	1386
Super Guépard	JAA02	13x5.00-6 8 ply	1 hand m. cylinder HAB02	DOT4	SGU01	1476
Tecnam P92	JA-01	5.00-5" 10ply	1 rudder m. cylinder MP-002	DOT4	STP01	1522
Tecnam P92	JAA02	4.00-6" 6 ply	4 rudder m. cylinders MP-003	DOT4	STP02	1950
Vampyr Century	JAA02	4.00-6" 6 ply	1 hand m. cylinder HAB02	DOT4	SVA01	1439
VL3 AVEKO	JAA02	4.00-6" 6ply	2 rudder m. cylinders MP-002	DOT4	SVK01	1743
Zenair CH601XL	JAA02	15x6,00-6" 6ply	2 rudder m. cylinders MP-002	DOT4	SZH05	1736
Zlin Savage 5 (tire < 29 ")	JAA01	-	2 rudder m. cylinders HBA03	DOT4	SSA01	1826
Zlin Savage 5 (tire > 29 ") + 2 extra calipers	JAA-01	-	2 rudder m. cylinders HBA03	DOT4	SSA02	2078

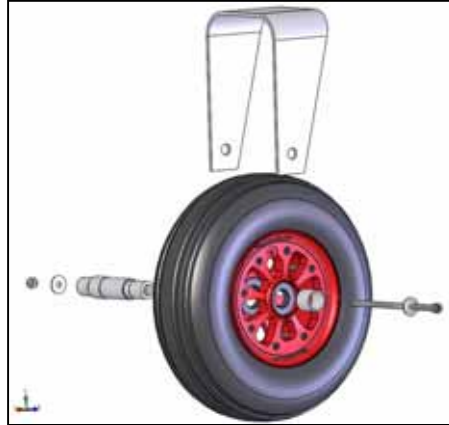
NOSE WHEEL KIT

Save up to 1.5 kg on your experimental aircraft with lightweight BERINGER® nose wheel. Nose Wheels are aluminum red anodized, machined from billet on CNC, with O-rings for Tubeless mounting.

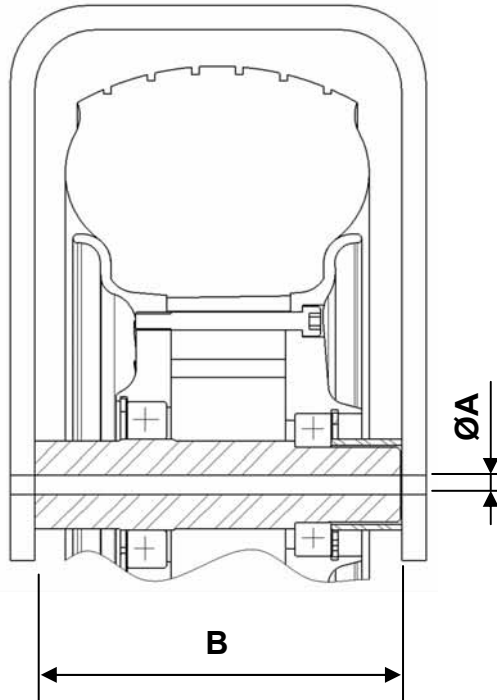
The NOSE WHEEL KIT includes:

- 1 nose wheel
- 1 tire (mounted on rim, pressure tested)
- 1 aluminium axle with bearing spacer

TUBELESS WHEELS



Other kits are available.
Please ask us.



Aircraft Type	Wheel size	Tire	Ø A	axle B	Weight of the set kg	set part number	Price euro
Lancair 320, 360 (retractable LG)	4.00-5"	11x4.00-5" 8ply	1/4"	4.35"	2,890	SLC02A	366
Lancair legacy (retractable LG)	4.00-5"	11x4.00-5" 8ply	1/4"	4.35"	2,890	SLC01A	366
Glasair III (retractable LG)	4.00-5"	11x4.00-5" 8ply	1/4"	4.75"	2,890	SGL01A	366
Van's RV6A, 7A, 9A	4.00-5"	11x4.00-5" 8ply	3/8"	4.53"	2,890	SRV02A	366
Van's RV10	5.00-5"	Michelin Aviator 5,00-5" 10ply	3/8"	5.16"	4,140	SRV07A	418
MCR 01	4.00-5"	11x4.00-5" 8ply	20mm	129mm	2,890	SDY01A	366
MCR 01	3.50-4"	3.00-4 4PLY	6mm	100mm	1,250	SDY02A	238
Zenair CH 601XL	4.00-6"	13x5.00-6" 4ply	5/16"	141mm	2,830	SZH02A	386
Standard BERINGER	5.00-5"	Michelin Aviator 5,00-5" 10ply	20mm	137-145mm	3,990	SST03	418
Standard BERINGER	4.00-6"	13x5,00-6" 4 ply	20mm	125-145mm	2,830	SST04	366
Standard BERINGER	4.00-5"	11x4.00-5" 8ply	20mm	115-129mm	2,890	SST02	313
Standard BERINGER	4.00-5"	11x4.00-5" 8ply	12mm	108mm	2,890	SST02	313
Standard BERINGER	3.50-4"	4.00-4 4PLY	6mm	111mm	1.680	SST05	238
Standard BERINGER	3.50-4"	3.00-4 4PLY	6mm	111mm	1.250	SST06	238
Standard BERINGER	3.50-4"	4.00-4 4PLY	8mm	111mm	1,680	SST07	238

WHEEL AND BRAKE COMPLETE SET for Gliders

Upgrade your glider and save 1.5 to 3.5 kg with high performances BERINGER® wheels and brakes. These complete wheel and brake sets are designed to mount directly, replacing original equipment. Wheels are aluminum red anodized, fully CNC machined, with O-rings for Tubeless mounting. Brake calipers use sintered metallic pads and stainless steel discs for increased life time.

The wheel & brake set includes:

- 1 wheel with caliper 2P and stainless steel disc
- 1 tire + 1 axle
- 1 master cylinder with reservoir
- 1 ultra light pressure limiter
- Stainless steel brake line
- Detailed mounting procedure



Type of glider	Wheel Part number	tire	Other parts	Brake fluid	Price euro
Glasflügel H201Libelle	JA-02	11x4.00-5	1 hand master cylinder HAB02	DOT4	*
HPH 304S	JA-01	5.00-5	1 rudder master cylinder HBA01	DOT4	*
Jonker JS1	JA-01	5.00-5	1 hand master cylinder HAB02	DOT4	*
LAK-17BT	JA-01	5.00-5	1 hand master cylinder HAB02	DOT4	*
Neukom Elfe S4	JA-02	11x4.00-5	1 hand master cylinder HAB02	DOT4	*
Nimbus 3 et 4	JA-01	380x150-5	1 master cylinder hydr/cable HAC01	DOT4	*
Pégase with EASA FORM1	JA-01	5.00-5	1 hand master cylinder HAB02	DOT4	*
Stemme S6	JA-01	5.00-5	2 hand master cylinders HAB02	DOT4	*
Schempp Hirth Ventus 2	JA-02	5.00-5	1 master cylinder hydr/cable HAC01	DOT4	*
Schempp Hirth Duo, Arcus	JA-01	380x150-5	1 master cylinder hydr/cable HAC01	DOT4	*
Schleicher ASW17	JA-02	5.00-5	1 hand master cylinder HAB02	DOT4	*
Schleicher ASW20	JA-01	5.00-5	1 hand master cylinder HAB02	DOT4	*
Schleicher ASW22	JA-01	5.00-5	1 hand master cylinder HAB02	DOT4	*
Test Bonus	JA-01	5.00-5	2 hand master cylinders HAB02	DOT4	*

* ask us



TUBELESS WHEELS

WE RECOMMEND FIRST MOUNTING OF TIRES ON WHEELS IN OUR PLANT. This service, free of charge, includes a pressure test, ensuring maximum security of the assembly.

FINISH: Red anodizing is standard color for wheels, brakes and master cylinders. Other colors are available on special order with an extra delay at an additional cost of **65€** per batch of parts: **silver, black, yellow, titanium grey**. Colors may vary.

NOSE WHEELS - TAIL WHEELS

Beringer WHEELS without brake for nose wheel or tail wheel are:

- High strength aluminum alloy machined from solid on CNC
- TUBELESS (except JC-01) two or three pieces plus O-ring and rigid valve
- sealed ball bearings for optimal durability:
- Use BERINGER tapered axles with those wheels (except 200x50 version)

TAIL WHEEL 200x50 JC-01

- red anodised
- tyre 200x50 with tube
- for 5/16" bolt
- weight : 260g
- Only fork mounting
- Suitable for Pipistrel Sinus

NEW

830g



Delivered mounted with 6ply tyre and tube

TUBE TYPE

4 " Ultralight WHEEL

- Bush Tail wheel
- nose wheel for LSA ULM
- High load rating
- Cantilever OR fork mounting
- Perfect for ultralight aircraft

TUBELESS



540g



5 " NOSE WHEEL

for homebuild aircraft

TUBELESS



6" LIGHT NOSE WHEEL

for ultralight aircraft and LSA

TUBELESS



Part number	size	Weight kg	Static load lbs (kg)	Limit load lbs (kg)	Price euro
TAIL WHEEL for SINUS					
JC-01	200 x 50 tail wheel, with tyre 200x50 6ply and tube	0.830 Including tyre & tube	300 (137)	1,050 (477)	158
4" ULTRALIGHT WHEEL					
RA-003	3.50-4"	0.545	418 (190)	1163 (528)	169
5" WHEELS					
JB-01	5.00-5"	1.220	1,430 (650)	5731 (2605)	248
JB-02	4.00-5"	1.120	1,430 (650)	5731 (2605)	248
6" LIGHT WHEELS					
JBA01	6.00-6 light	1.409	881 (400)	3526 (1603)	282
JBA02	4.00-6 light	1.240	881 (400)	3526 (1603)	282

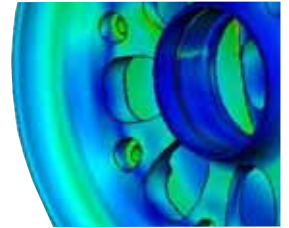
BERINGER WHEELS and BRAKES for main gear are designed to provide the best stopping power and the reliability you are expecting from a safe braking system. We will help you to choose the dimension and brake torque adapted to your aircraft. We have a large range of assemblies: wheel / brake caliper / brake pad / brake disc. We also design and manufacture the optimal upstream components: reservoirs, master cylinders, the ALIR anti-skid system, and parking brakes. All these are tied together with top-quality braided stainless steel Teflon lines and proper fittings. Components and complete systems are available.



BERINGER WHEELS : advanced technology

- High strength aluminum alloy machined from solid on CNC, anodized for optimal corrosion resistance
- TUBELESS wheel with O-rings and rigid valve
- SEALED BALL BEARINGS for optimal durability: greased for life, no maintenance
- Very low rolling resistance

During the design of a wheel we focus on three criteria: strength, weight, and durability. First, we assess the overall design and apply our experience and some hand calculations. Then we build a 3D model on CAD software and run FEM (finite element analysis) in the optimizing process, where we remove material from one side to add it on another, etc... till the result is satisfying for us with an optimized strength/weight ratio.



FEM calculated and checked



Hydraulic press
44,000 lbs

Then we make prototypes and start the qualifying process on our own bench machines.

The **BERINGER R&D laboratory** is dedicated to Research, Development and Certification tests.

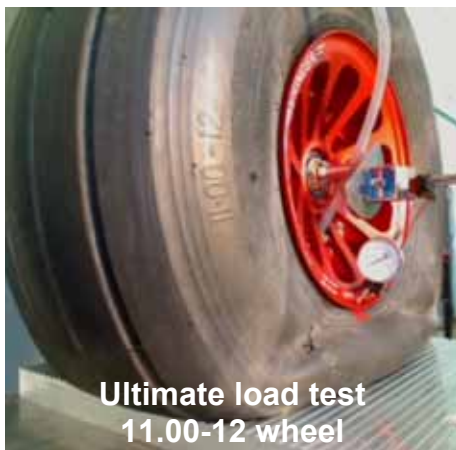
On the wheel itself we do 3 different tests :

- **Load test:** we apply different loadings on the wheel and tire (radial and side load) to check the strength and load rating of the wheel. Ultimate load tests go up to 6 times the static load using our 40,000lb hydraulic press capacity.
- **Pressure test:** Mounted tire is inflated with water up to 3.5 times the maximum inflation pressure to check bolts' strength and wheel stiffness.
- **Roll test :** Wheel is pressed on a rotating drum for 1000 miles at maximum static load to detect eventual fatigue problem or bearing failure, etc...



Ultimate load test
3.50-4 wheel

When the wheel has passed all the tests then we install the wheel on an aircraft for ground and flight checks.



Ultimate load test
11.00-12 wheel

Note: when the wheel's design work for the Solar Impulse was occurring, BERINGER's proprietary dynamometer was employed, because of the Beringer wheel' strength and our dyno's exceptional ability to load and measure the tire. On the aircraft, that tire and its Beringer wheel (5.00-5) were of course run tubeless, at a pressure of 10 bar (over 140psi) and a static load of 3,850lbs (2.7 times more than rated load).



BRAKE CALIPERS :

- Covered by AEROTEC® Patents
- 2 or 3 stainless steel polished pistons
- Body made of aerospace alloy to withstand high temperatures (>200Mpa at 200°C)
- available for DOT4 fluid **OR** for MINERAL (MIL FLUID) (seals are different; specify and never mix)
- 2 inputs, thread size M10x1
- Full metallic brake pads (no rivets) for extended life



BRAKE DISCS :

- Covered by AEROTEC® patents
- Stainless steel disc or high strength steel disc with coating
- Brake discs are made of highest quality material for thermal stability and long life



Many tests are done to certify brake calipers and discs. One of those tests is the dynamic torque test; for this test we use our dynamometer. The kinetic energy capacity is tested with this machine. The dyno allows us to push the brake system to its limits. Many sensors are installed to measure temperatures. All these tests are performed to ensure the total safety and reliability of the brake system.

Kinetic energy values indicated in the next pages are not only calculated but measured and checked on real tests.



The endurance test is also a proof of quality and durability. The purpose of this test is to verify the life of the parts. The certification test requires 100,000 cycles at maximum operating pressure, but we test our parts to a minimum 200,000 cycles. This represents more cycles than the brake system will be subjected to in the aircraft life.

How to choose your wheel & brake system:

- Select the size of tire that you need
- Then select the wheel size required for this tire (use our application chart page 18)
- Check the static load rating : this is the weight on each wheel (at maximum static aircraft weight) that the wheel is capable of supporting.
- Check the kinetic energy rating : the first function of a brake system is to transform aircraft kinetic energy into heat. This heat is absorbed and dissipated mostly by the disc (a thicker disc will absorb more heat energy).

The kinetic energy required to stop an aircraft is a function of the mass of the aircraft and its landing speed. You can calculate the kinetic energy requirement of your aircraft by using the following formula:

$$\text{Kinetic Energy [FT-LBS]} = \frac{0.044 \times W \times V^2}{N}$$

W = Landing weight (lbs)

V = Braking speed (kts)

N = Number of wheels with brakes

The kinetic energy values shown in the chart on page 14 are maximum values in case of an RTO (Rejected Take Off). This RTO value should be 30% higher than the value calculated above.

If you are not sure what system is right for your aircraft, give us a call

5" WHEEL & BRAKE - STANDARD SERIE

- Static load rating of 1,430 lbs (650kg)
- sizes : 5.00-5 and 4.00-5
- 2 piston standard brake
- Lightweight stainless steel disc
- Suitable for LSA and gliders

**TUBELESS
WHEELS**



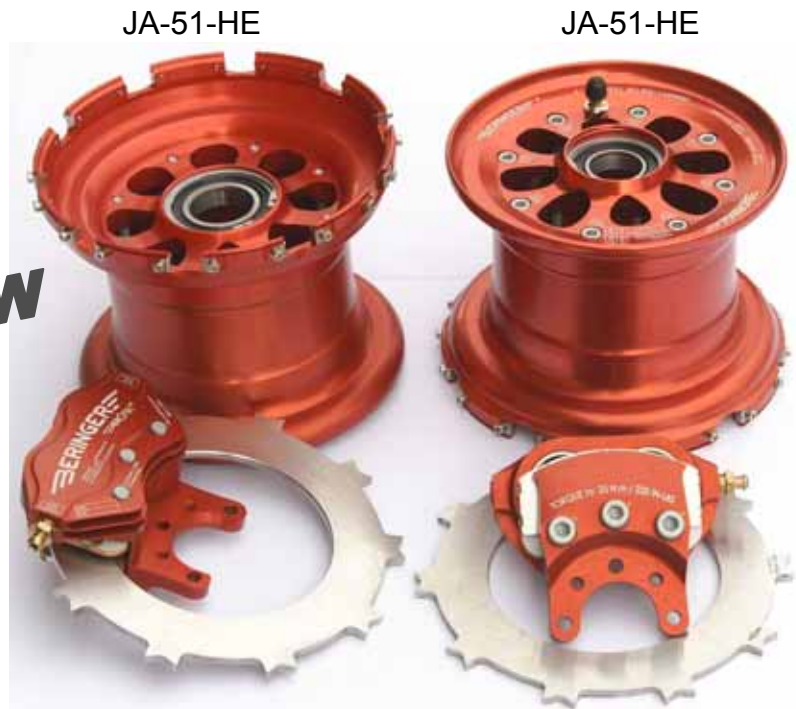
5" WHEEL & BRAKE - HE SERIES

(HE means High Energy)

- Static load rating of 1,430 lbs (650kg)
- sizes : 5.00-5 and 4.00-5
- HE caliper 2 piston with cooling thins
- + 40% braking torque
- 2 types of high strength discs
- Insulated full metallic brake pad
- HE1 suitable for 2 seat aircraft (RV's, Aerobatic)
- HE2 (thicker disc) suitable for high landing speed aircraft (Lancair, Glasair,...)

NEW

PATENTED



WHEEL CAP

- Anodized cap for wheel
- Alloy: 2017 (AU4G) machined from billet on CNC



6" WHEEL & BRAKE - LIGHT SERIES

- Static load rating of 881 lbs (400kg)
- sizes : 4.00-6 and 6.00-6
- 2 piston standard brake
- Lightweight stainless steel disc
- Suitable for ultralight aircraft and LSA

**TUBELESS
WHEELS**



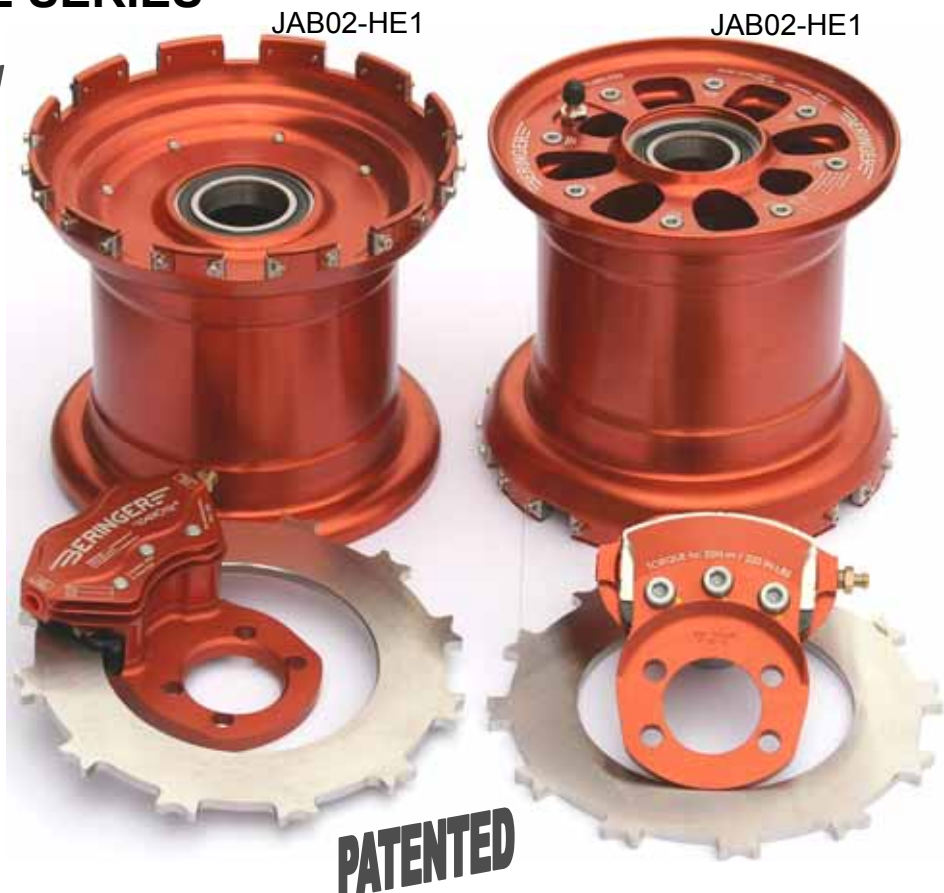
Photo:
4.00-6 LIGHT

6" WHEEL & BRAKE - HE SERIES

- Static load rating of 2,090 lbs (950kg)
- size : 6.00-6
- HE caliper 2 piston with cooling fins
- doubled braking torque compare to LIGHT series
- 2 types of high strength discs
- Insulated full metallic brake pad
- HE1 suitable for 2 seat aircraft (Taildragger, Champion, Glasair)
- HE2 (thicker disc) suitable for 4 seat aircraft (Lancair IV, Cirrus SR20)
- HE3 dual caliper for increased braking torque : ultra short braking distance, suitable for Cirrus SR22, DA42,...

NEW

(HE means High Energy)



WHEEL CAP

- Anodized cap for wheel
- Alloy: 2017 (AU4G) machined from billet on CNC



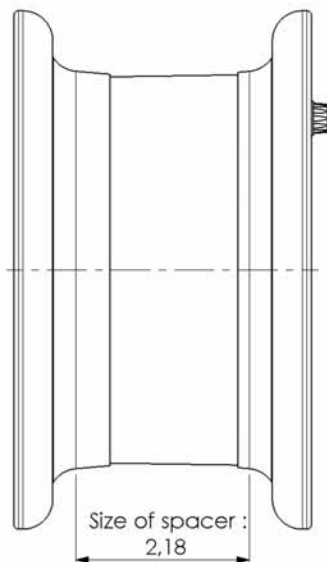
WHEELS & BRAKES

Assy. number	Wheel number	size	Static load kg	Limit load kg	Caliper number	Disc number	Braking torque inch.-lbs	Max RTO Energy ft.-lbs	Weight kg	Price for 1 wheel euro
5" WHEELS - STANDARD series										
JA-01	RF-002	5.00-5"	650	2600	EA-006	DSC-006	2,450	140,000	1.977	369
JA-02	RF-007	4.00-5"	650	2600	EA-006	DSC-006	2,450	140,000	1.881	369
5" WHEELS - HE series										
JA-51-HE1	RF-005	5.00-5"	650	2600	EA-002	DSC-008	3,500	210,000	2.445	439
JA-51-HE2	RF-005	5.00-5"	650	2600	EA-002.2	DSC-008.2	3,500	361,000	2.681	479
JA-52-HE1	RF-005	4.00-5"	650	2600	EA-002	DSC-008	3,500	210,000	2.318	439
JA-52-HE2	RF-005	4.00-5"	650	2600	EA-002.2	DSC-008.2	3,500	361,000	2.590	479
ZJB01	cap	-	-	-	-	-	-	-	0.030	39
6" WHEELS - LIGHT series										
JAA01	-	6.00-6	400	1600	EA-006	DSC-006	2,450	140,000	2.104	397
JAA02	RF-004	4.00-6	400	1600	EA-006	DSC-006	2,450	140,000	1.931	397
ZJB02	cap	-	-	-	-	-	-	-	0.030	39
6" WHEELS - HE series										
JAB02-HE1	RF-006	6.00-6"	950	3400	EA-003	DSC-009	4,900	355,000	3.772	559
JAB02-HE2	RF-006	6.00-6"	950	3400	EA-003.3	DSC-009.3	4,900	500,000	4.136	599
JAB02-HE3	RF-006	6.00-6"	950	3400	EA-003.4	DSC-009.3	9,800	550,000	4.909	729
ZJB03	cap	-	-	-	-	-	-	-	0.030	45

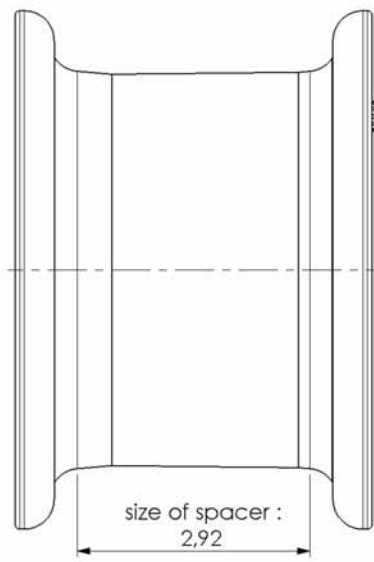
1 lbs ↔ 0.45 kg
1 kg ↔ 2.2 lbs

CAUTION: static load valid only with appropriate tire

4.00-5" Wheel



5.00-5" Wheel



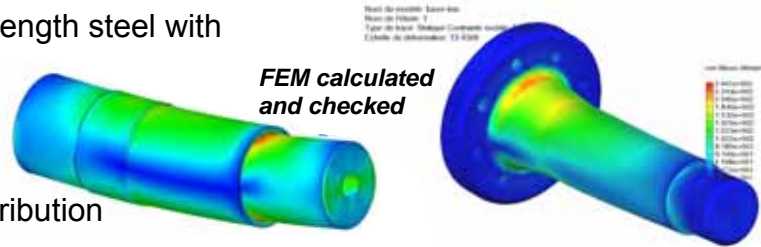
WE RECOMMEND FIRST MOUNTING OF TIRES ON WHEELS IN OUR PLANT. This service, free of charge, includes a pressure test, ensuring maximum security of the assembly.

FINISH: Red anodizing is standard color for wheels, brakes and master cylinders. Other colors are available on special order with an extra delay at an additional cost of **65€** per batch of parts: **silver, black, yellow, titanium grey**. Colors may vary.

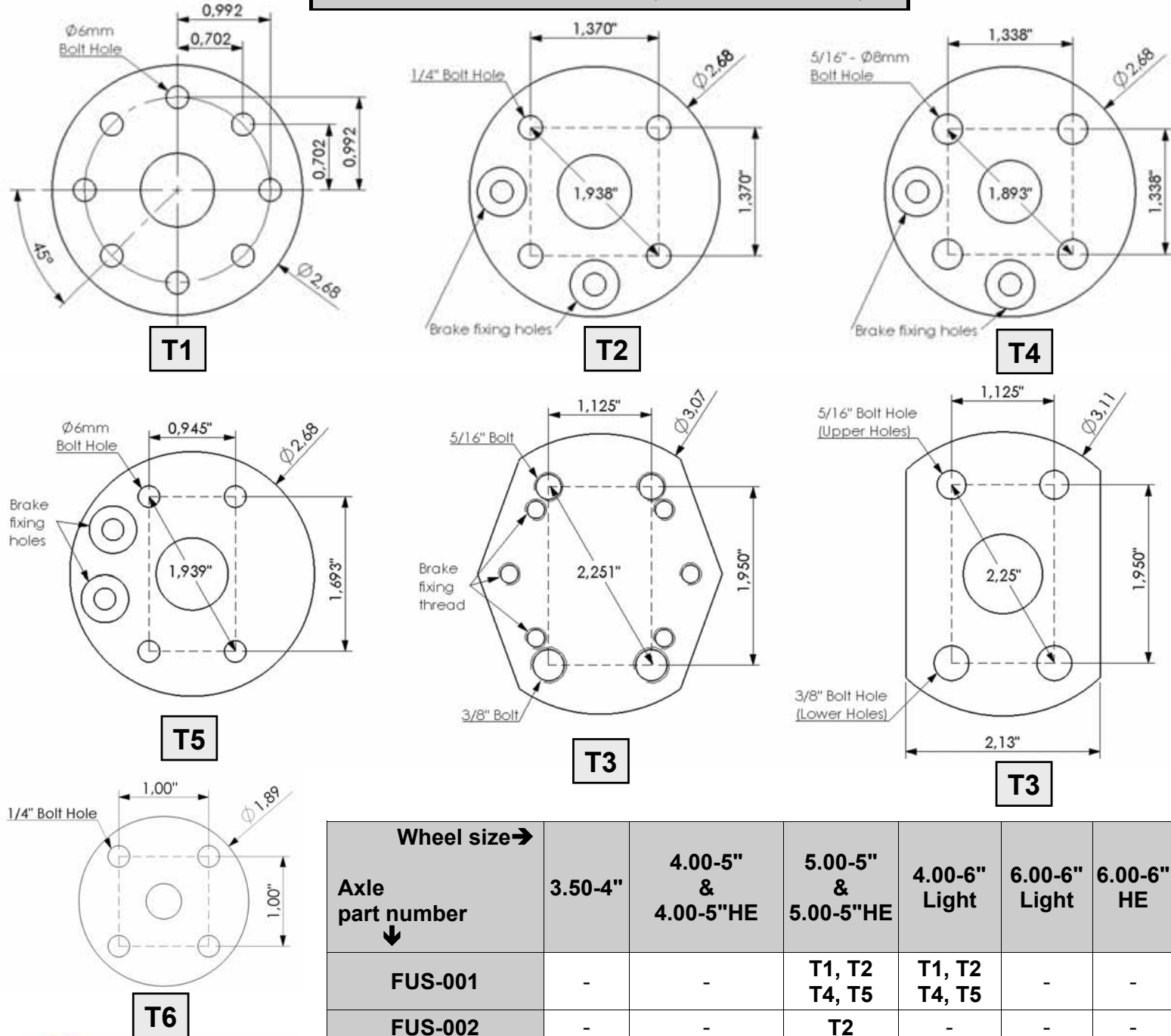
AXLES

Material: High strength anodized aluminum or high strength steel with nickel coating

- Different types of axle available:
 - for wheel fork (supported at both ends)
 - for cantilever installation
- FEM calculated for optimized weight and stress distribution and optimized weight



AXLE BOLT TEMPLATES (dimensions are inches)

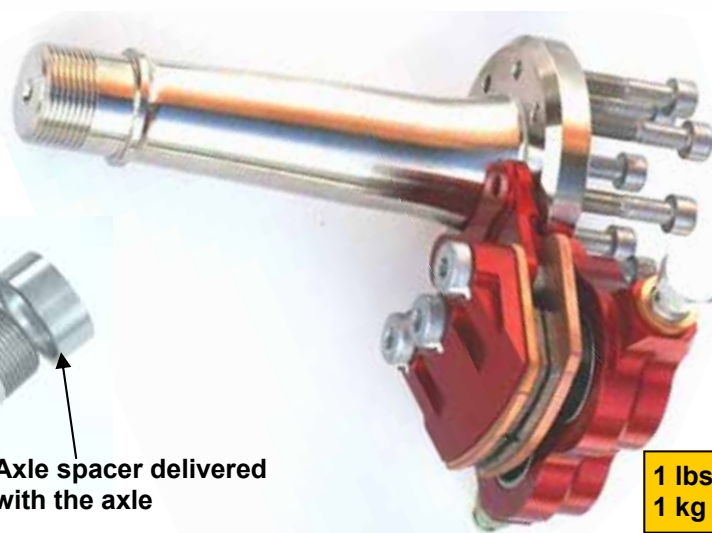
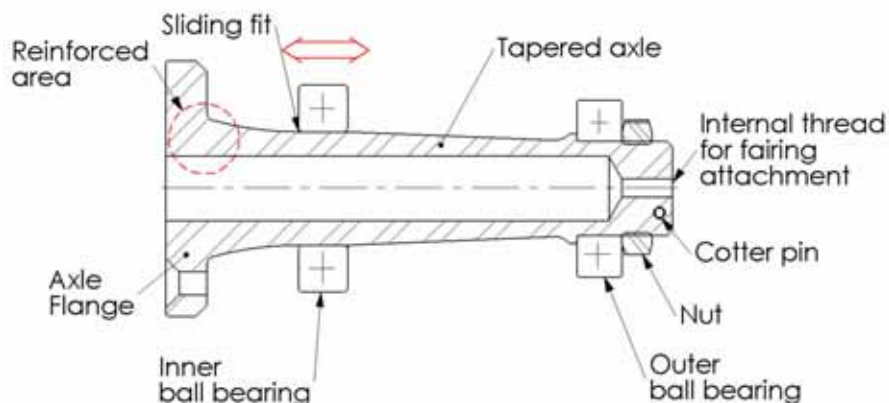


Wheel size→ Axle part number ↓	3.50-4"	4.00-5" & 4.00-5"HE	5.00-5" & 5.00-5"HE	4.00-6" Light	6.00-6" Light	6.00-6" HE
FUS-001	-	-	T1, T2 T4, T5	T1, T2 T4, T5	-	-
FUS-002	-	-	T2	-	-	-
FUS-003	-	-	-	-	T1, T2 T4, T5	-
FUS-004	-	-	T2	-	-	-
FUS-005	-	T1, T2 T4, T5	-	-	-	-
FUS-006	T6	-	-	-	-	-
FUS-007	-	-	-	-	-	T3
FUS-008	-	-	-	-	T3	-

Other axles are available, give us a call



AXLES



1 lbs ↔ 0.45 kg
1 kg ↔ 2.2 lbs

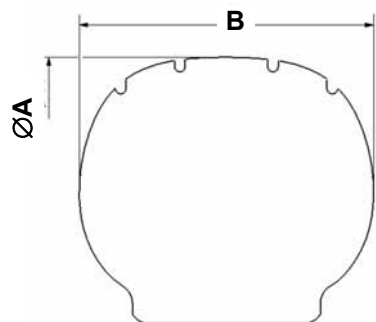
Part number	DESCRIPTION (all aluminium axles are anodized)	Axle thread	Static load rating per axle kg	Limit load kg	Weight kg	Price euro
FUS-001-T1	Tapered Aluminum Axle	M25x1.5	340	1,182	0.240	64
FUS-001-T2	Tapered aluminum Axle	M25x1.5	340	1,182	0.240	64
FUS-001-T4	Tapered aluminum Axle	M25x1.5	340	1,182	0.240	64
FUS-001-T5	Tapered aluminum Axle	M25x1.5	340	1,182	0.240	64
FUS-002-T2	Tapered aluminum Axle	M25x1.5	500	1,750	0.240	139
FUS-003-T1	Tapered aluminum Axle	M25x1.5	300	1,050	0.400	98
FUS-003-T2	Tapered aluminum Axle	M25x1.5	300	1,050	0.400	98
FUS-003-T4	Tapered aluminum Axle	M25x1.5	300	1,050	0.400	98
FUS-003-T5	Tapered aluminum Axle	M25x1.5	300	1,050	0.400	98
FUS-004-T2	Tapered steel Axle <i>Nickel coated</i>	M25x1.5	650	2,300	0.620	129
FUS-005-T1	Tapered aluminum Axle	M25x1.5	430	1,545	0.210	64
FUS-005-T2	Tapered aluminum Axle	M25x1.5	430	1,545	0.210	64
FUS-005-T4	Tapered aluminum Axle	M25x1.5	430	1,545	0.210	64
FUS-005-T5	Tapered aluminum Axle	M25x1.5	430	1,545	0.210	64
FUS-006-T6	Tapered aluminum Axle	M15x1	182	0,636	0.040	59
ZSC01	Steel nut M15x1	M15x1	-	-	0.010	4
FUS-007-T3	Tapered aluminum Axle	M25x1.5	750	2,625	0.500	179
FUS-008-T3	Tapered aluminum Axle	M25x1.5	300	1,050	0.400	98
ZSA01	Aluminum nut M25x1,5	M25x1.5	-	-	0.005	7
ZSB01	Aluminum nut M35x1,5	M35x1.5	-	-	0.010	14

TIRES

BERINGER wheels are tubeless. We can deliver the wheels with the tire on. The pressure of each wheel is tested during 24 hours.



1 lbs ↔ 0.45 kg 1 inch ↔ 25.4mm
1 kg ↔ 2.2 lbs



* Mounting may be possible for special application (contact BERINGER)

4.00-5"
A : Outside diameter of tyre (inches)
B : Tyre width (inches)
C : Inside diameter of tyre (inches)

15x6.00-6"
A : Outside diameter of tyre (inches)
B : Tyre width (inches)
C : Inside diameter of tyre (inches)



Part number	Description	Static load lbs	Ø A (inch)	B (inch)	Weight kg	Price euro
PAG05	200X50 tire and tube	non certified	7.9	2	0.5	39
PAG04	2.80/2.50-4"	non certified	9	2.75	0.8	45
PAG02	3.00-4" 4 ply	non certified	10.35	3.54	0.6	22
PAG01	4.00-4" 4 ply	non certified	11.9	3.93	1.0	22
PAG03	4.00-4" 8 ply	non certified	12	4.3	1.3	65
PAC01	11x4.00-5" 8 ply	non certified	11.6	3.78	1.7	46
PAA02	5.00-5" 10 ply TUBELESS Michelin Aviator	2150	14.2	4.65	2.6	138
PAB01	380x150-5" 6 ply (15x6.00-5) Michelin Air	1598	14.96	5.5	3.0	128
PAC03	13x5.00-6" 4 ply	non certified	13.4	4.65	1.3	38
PAC04	13x5.00-6" 8 ply	non certified	13.4	4.65	1.5	38
PAC02	15x6.00-6" 6 ply	non certified	14.75	5.1	2.2	33
PAD01	4.00-6" 6 ply	non certified	14.5	4.4	1.3	35
PAD03	4.00-6" 6 ply reinforced AeroClassic	non certifié	14.5	4.4	1.68	49
PAC05	15x6.00-6" 6 ply AirTrac	1950	15	5.3	2.8	112
PAB03	6.00-6", 4 ply AirTrac	1150	17.5	6.3	3.06	98
PAE01	8.00-6" 4ply Carlisle	non certified	17.7	7.1	3.9	89
PAF03	21x8.00-6" 4 ply AeroClassic	800	20.5	7.1	5.4	99
PAD02	8.00-6" 4 ply AirTrac	1350	18.5	7	4.6	148
PAF01	22x8.50-6" (22") AirTrac	2275	21.2	7.8	7.2	218
PAF02	26" 6 ply Good Year		24.4	9	10.8	530

Notes: dimensions A and B may change depending on wheel size and also on batches of tires

26" BUSH WHEEL with TIRE

Thanks to their incredible 620mm diameter and very low pressure (0,6 bar), the new BUSH WHEELS will allow you to approach landings across water, to land on riverbeds, and on soft or rough terrain. They offer you a new dimension of freedom.

The BUSH WHEEL includes the famous BERINGER 2-piston brake, fully capable of delivering all the torque required by the large-diameter tire. You will be able to stop your aircraft within meters and still be able to hold against full power with the brakes.



22" BUSH WHEEL with TIRE

With a 540mm diameter and low pressure (0,8 bar), the BERINGER 22" BUSH WHEEL is able to handle soft or rough terrain, expanding your landing possibilities.

With a 9.3kg weight (wheel+brake+tire), the 540mm assembly is 3.5kg lighter than the 620mm wheel above. It reduces weight and cost while maintaining high performance bush capability. Allowed for landing on concrete.



29" and bigger BUSH WHEEL without TIRE

wheel with double caliper system : double the braking torque Suitable for 29 and 31 inch bushwheel.

NEW



Part number	DESCRIPTION	Weight kg	Price euro
BUSH26	wheel & brake (caliper, pads, disc) + tire 26"	12.9	927
BUSH22	wheel & brake (caliper, pads, disc) + tire 22"	9.4	615
PAF02	26" TUBELESS 6 ply	10.8	530
PAF01	850-6" (22" bush) Air Trac	7.8	218
JAA01-29	Wheel & brake (2 x calipers, pads, disc) without tire	2.8	522

Brake fluid is critical to the function and performance of your brake system. Choosing the right brake fluid will insure trouble free functioning for many years. Conversely, the wrong brake fluid will damage seals and cause the failure of your brake system. There are two predominant “families” of brake fluid in use worldwide:



A. The first family is polyethylene-glycol based and is compatible with only EPDM seals.

These fluids have been developed for the hydraulic brakes of motor vehicles and are called DOT3, DOT4, DOT5 or DOT5.1

DOT3 has lower performance and has been replaced by DOT4. DOT4 is the most commonly used fluid in motor vehicles. DOT5 is usually silicone-based, but is not commonly used, and is not miscible (“mixable”) with DOT3 or DOT4. DOT5.1 is not miscible with DOT5 and may also be not miscible with DOT3 or DOT4.

The primary objection to DOT 3 and 4 fluids was that they are hygroscopic (they absorb water). However, in a sealed reservoir, in a corrosion-resistant brake system, DOT4 fluids will remain usable for minimum 10 years. Additionally DOT3 and 4 brake fluids are aggressive with paint. Continent systems and care in handling remove this negative.

In the “DOT” family, we recommend using DOT4 and only DOT4 because the performance is adequate, and all DOT4 brands are miscible with each other.

DOT4 is used on many ultralight aircraft. You can purchase DOT4 almost everywhere around the globe as it is used on all recent cars and most motorcycles.



B. The second family is mineral-oil based and compatible with only* NBR (Nitrile) seals.

The hydraulic fluid MIL-H-5606 has been commonly used in general aviation for many years.

The major deficiencies of MIL-H-5606 are its high flammability and a relatively low boiling point.

In the “mineral” or “MIL” family we recommend using the MIL-PRF-87257 as a replacement of the MIL-H-5606. These 2 fluids are compatible and miscible each other. MIL-PRF-87257 is fire resistant and synthetic-hydrocarbon based, it has also a higher boiling point than MIL-H-5606.

FLUID	FLUID Color	SEALS	
		EPDM	NBR (Nitrile)
DOT4	colorless to amber	ok	Not compatible
MIL-H-5606	red	Not compatible	ok
MIL-PRF-87257	red	Not compatible	ok

***NBR (Nitrile) seals → mineral fluid → red color → MIL-PRF-87257 recommended
EPDM seals → DOT4 brake fluid → colorless to amber color → DOT4 only***

Notes:

EPDM seals are very sensitive to petroleum based solvent: few minutes of contact can completely damage the EPDM seals. That is why we recommend cleaning the parts only with a dry cloth or soap and water.

* These fluids may be compatible with other seal materials (contact us for more information)

MASTER CYLINDERS

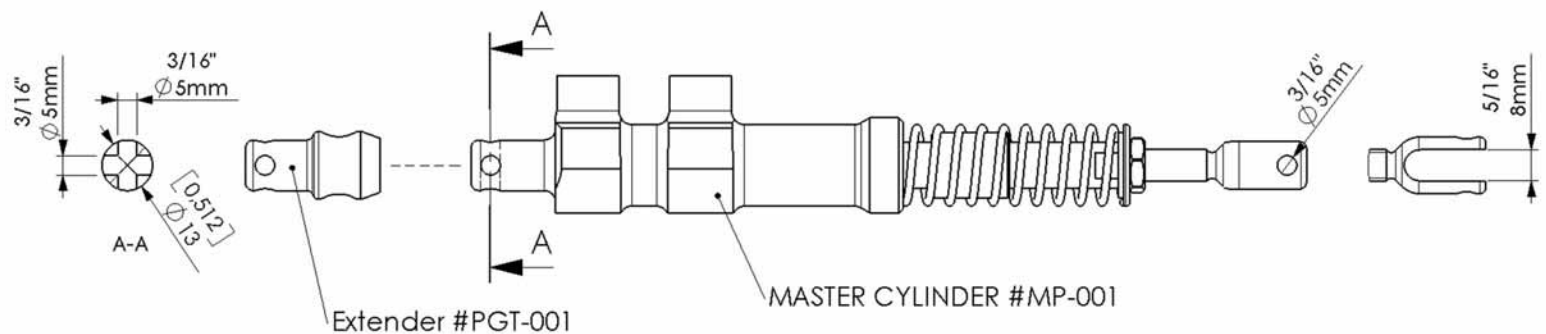
These master cylinders have been designed for a very long life and assure very long trouble free service. We have tested them over 100,000 cycles with success. The piston is protected from dust by a lipseal.

- available for DOT4 fluid **OR** for MINERAL (MIL FLUID) (seals are different, never mix)
- high quality aluminum alloy machined from solid on CNC
- 100% protected from corrosion: anodized coating and stainless steel components
- Light weight: more than 30% of weight saving compare to standard master cylinder
- Ultralow friction for improved efficiency

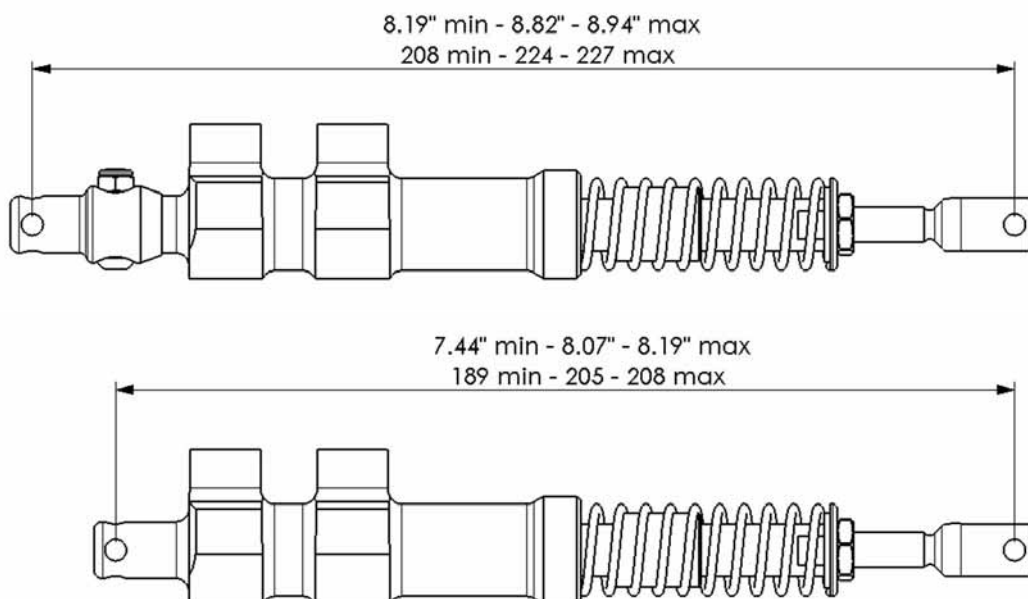


MP-001 series - BORE 9/16"

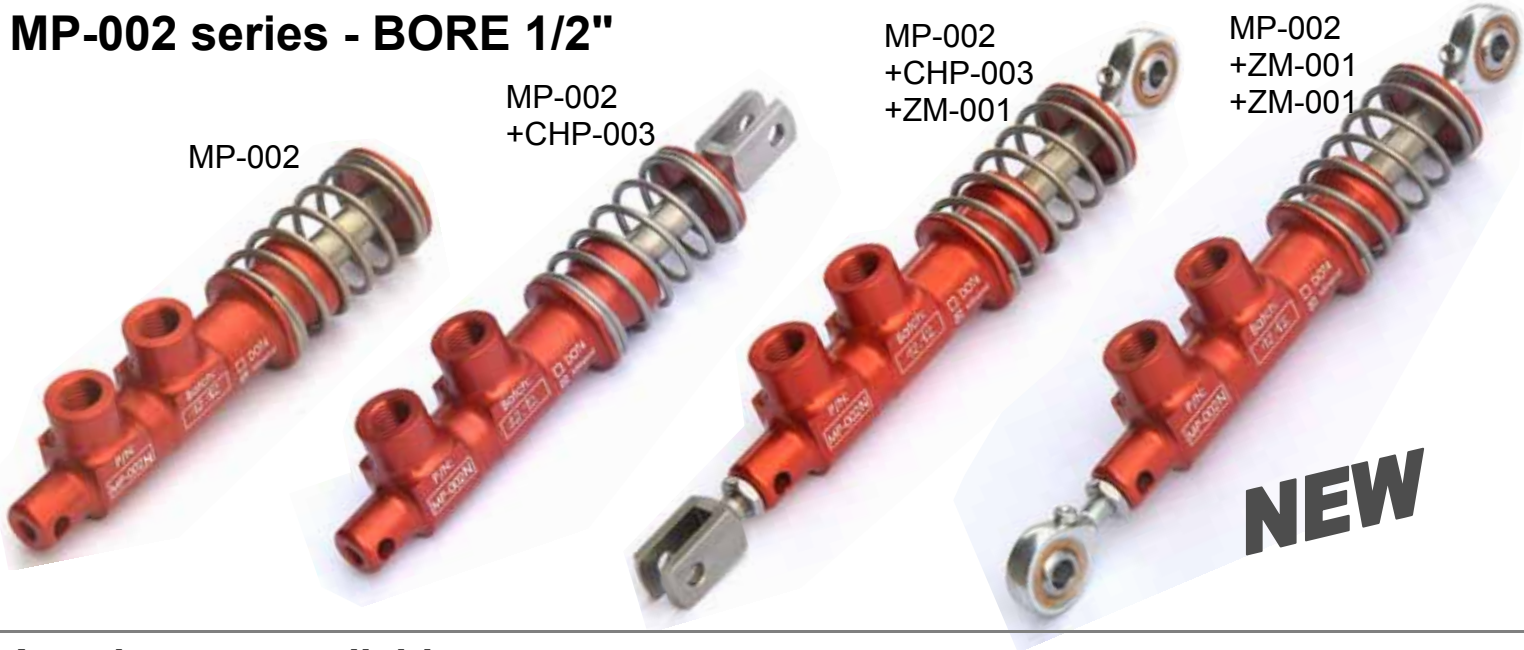
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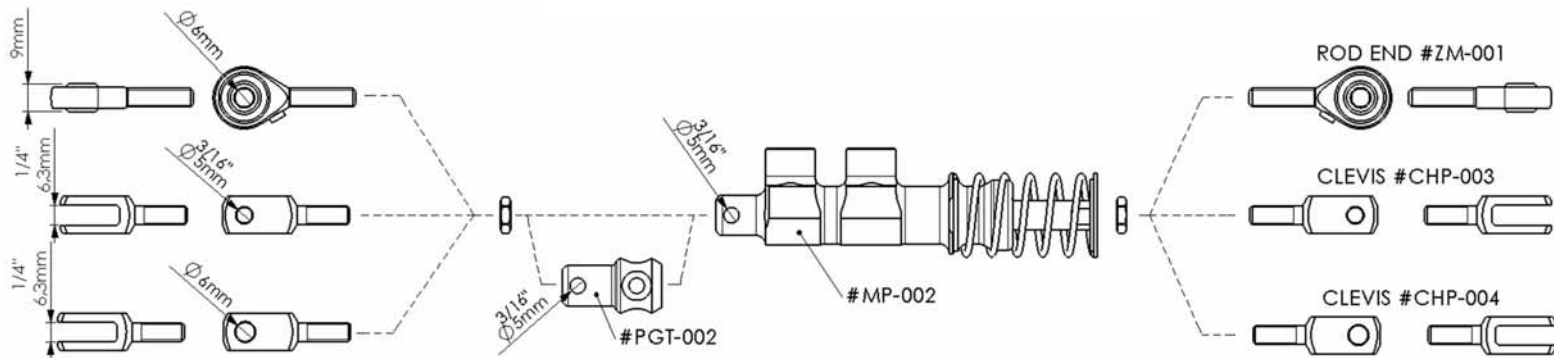
Pin-to-Pin length



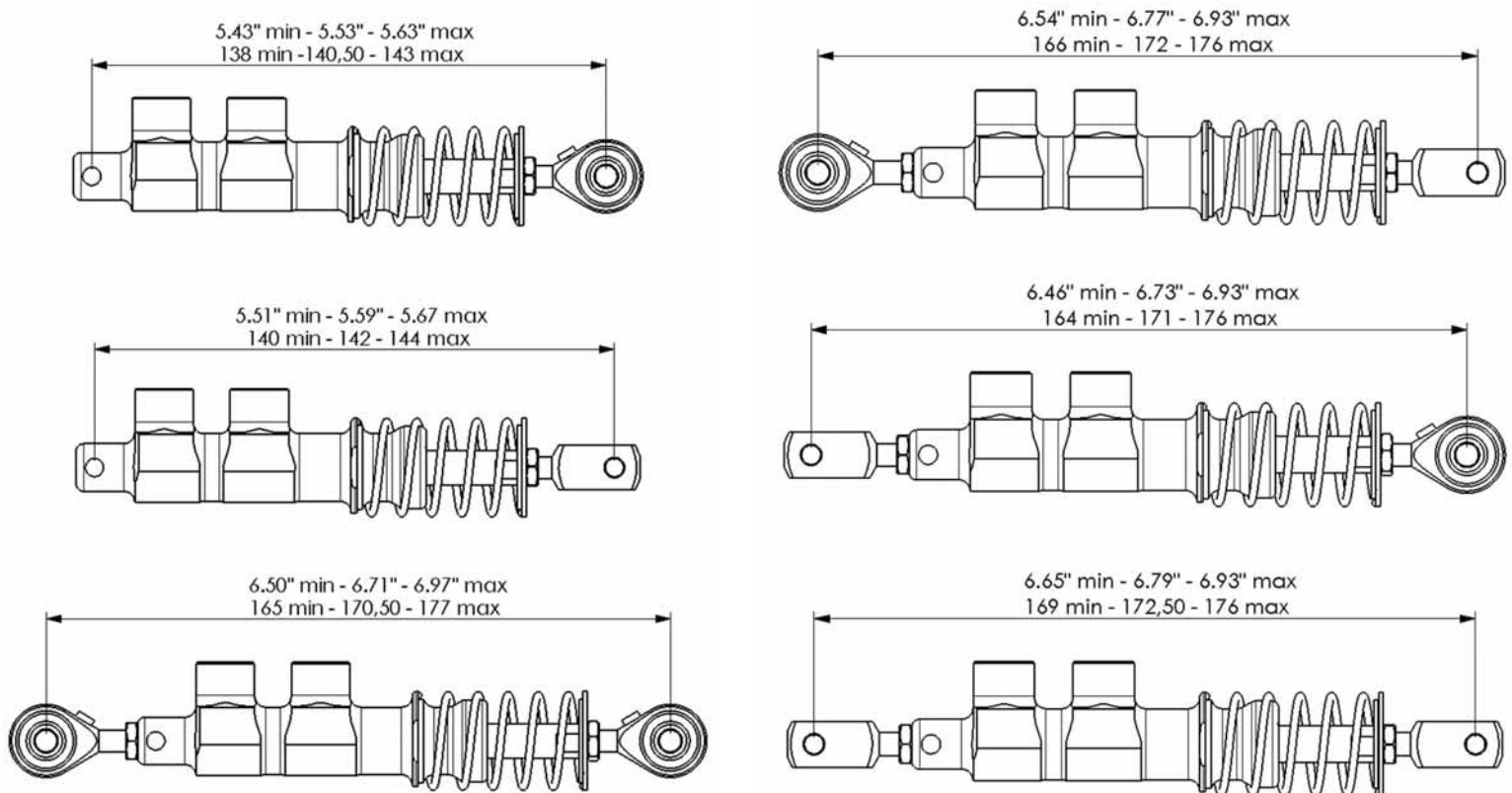
MP-002 series - BORE 1/2"



Attachments available



MP-002 : Pin-to-Pin length



MASTER CYLINDERS

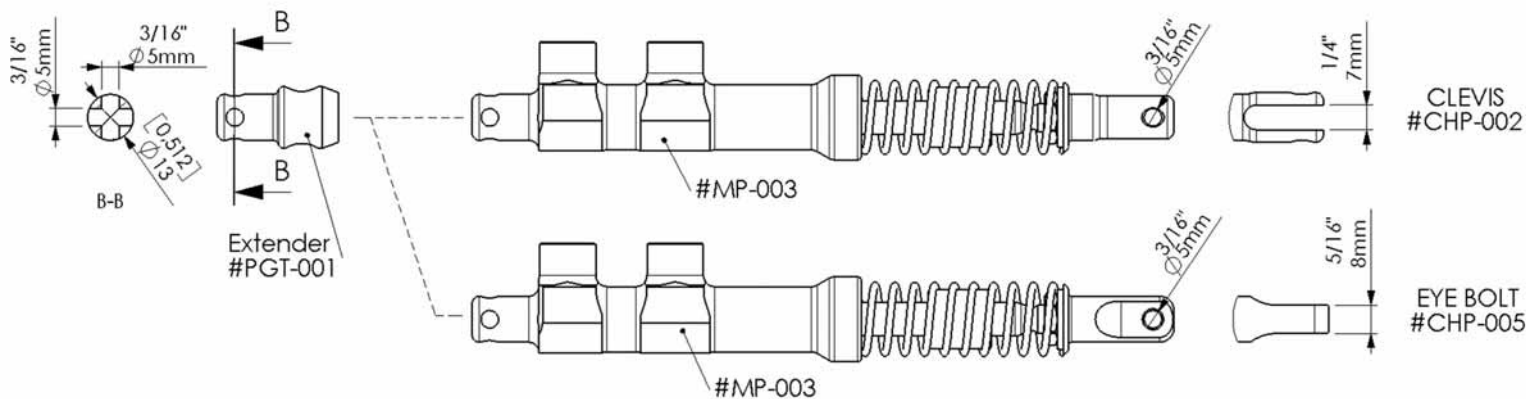
MP-003 series - BORE 1/2"

NEW

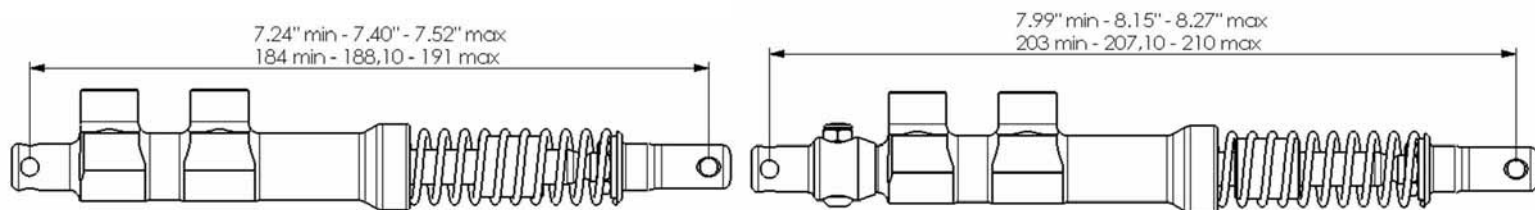


MP-003+CHP-002

Attachments available



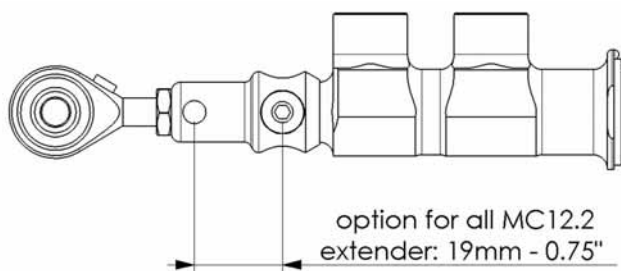
Pin-to-Pin length



MASTER CYLINDERS extenders and adapters

Extenders can bring all master cylinders to a longer pin-to-pin distance.

- for MP-001 and MP-003 use PGT-001
- for MP-002 use PGT-002



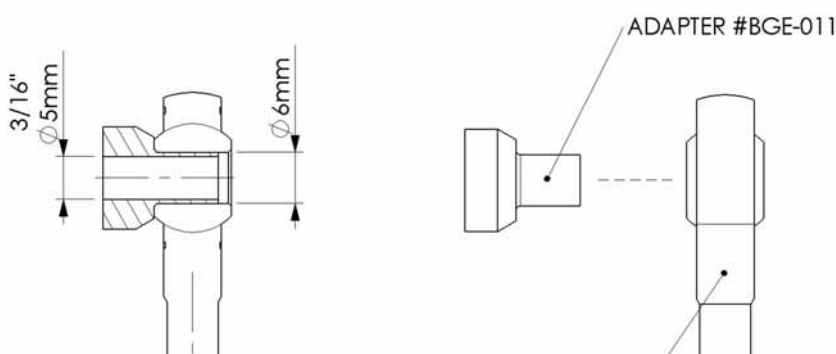
E-HN-002

Extender
PGT-002

V-BHC-003

Adapter for rod ends:

our rod ends are only metric Ø6mm. For connexion with 3/16" bolts, please order the adapter P/N: BGE-011



LEVER MASTER CYLINDERS

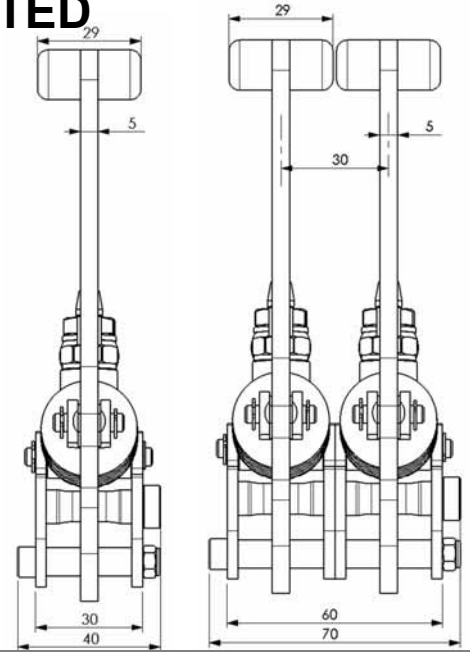
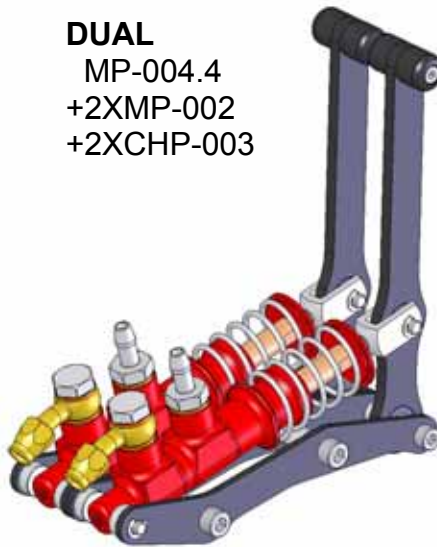
LEVER MASTER CYLINDER - HAND OPERATED

SINGLE
MP-004.3
+MP-002
+CHP-003

NEW

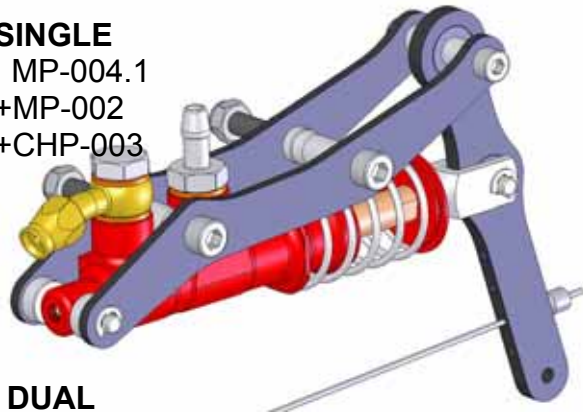


DUAL
MP-004.4
+2XMP-002
+2XCHP-003

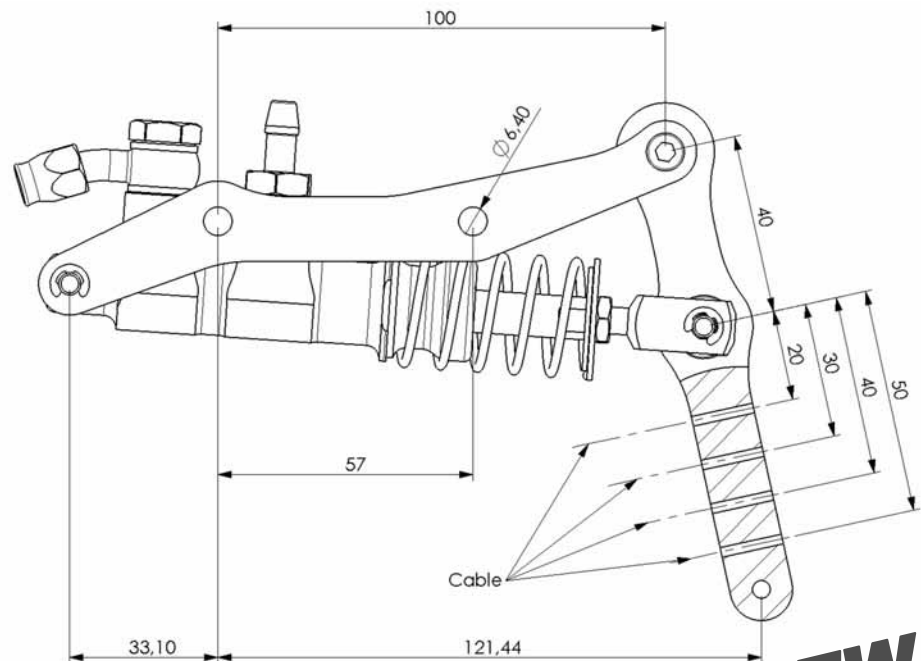
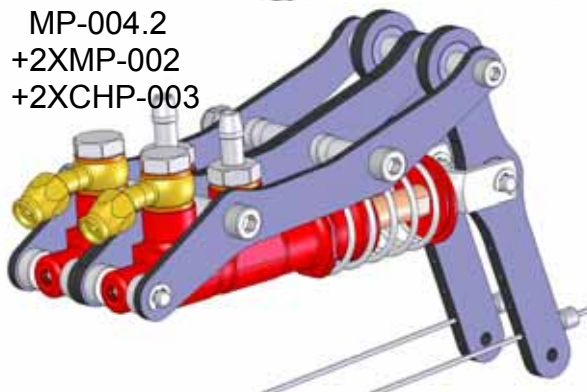


LEVER MASTER CYLINDER - CABLE OPERATED

SINGLE
MP-004.1
+MP-002
+CHP-003



DUAL
MP-004.2
+2XMP-002
+2XCHP-003



NEW

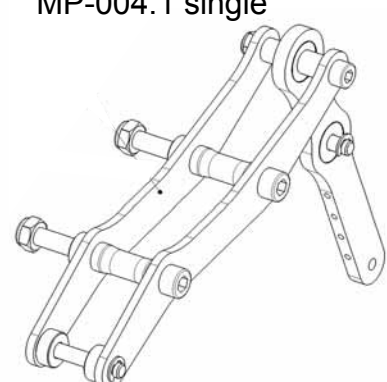
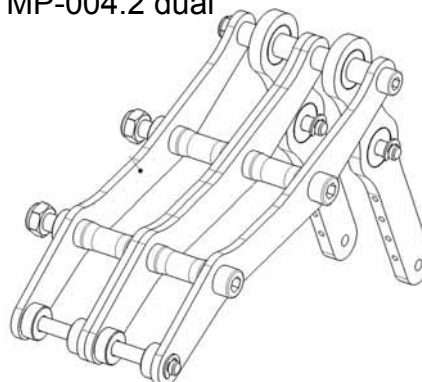
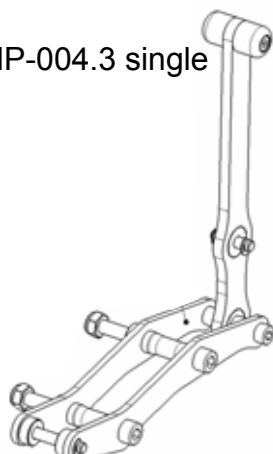
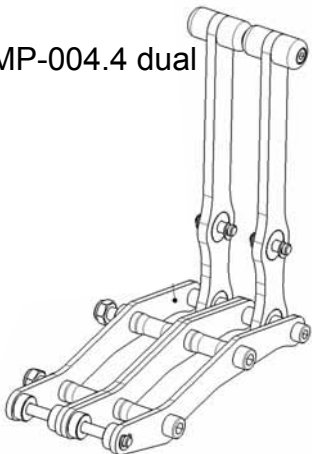
KITS for MP-002

MP-004.4 dual

MP-004.3 single

MP-004.2 dual

MP-004.1 single



MASTER CYLINDERS & LEVER MASTER CYLINDERS

CAUTION:

- The seals inside the MASTER BRAKE CYLINDERS are specific for each type of brake fluid.
- It is not possible to put DOT4 brake fluid in a master cylinder with seals for MINERAL (MIL) fluid and it is not possible to put MINERAL brake fluid in a master cylinder with seals for DOT4 brake fluid.
- The letter **E** means for DOT4 brake fluid
- The letter **N** means for MINERAL (MIL) brake fluid

MP-002E or MP-002N



Part Number	Description	Brake fluid	Note	Piston bore inch	Standard pressure PSI	Max pressure PSI	Weight g	Unit Price euro
MP-001E	master cylinder	DOT4		9/16	870	870	159	175
MP-001N	master cylinder	Mineral		9/16	870	870	159	175
MP-002E	master cylinder	DOT4	*	1/2	870	1450	94	139
MP-002N	master cylinder	Mineral	*	1/2	870	1450	94	139
MP-003E	master cylinder	DOT4	*	1/2	870	1450	113	145
MP-003N	master cylinder	Mineral	*	1/2	870	1450	113	145
MP-004.1	Single Lever kit - cable operated		**	-	-	-	159	49
MP-004.2	Dual lever kit - cable operated		**	-	-	-	318	94
MP-004.3	Single lever kit - hand operated		***	-	-	-	139	59
MP-004.4	Dual lever kit - hand operated		***	-	-	-	272	109
PGT-001	Extender with bolt for MP-001 and MP-003			-	-	-	0	14
PGT-002	Extender with bolt for MP-002			-	-	-	9	14
ZM-001	Rod end			-	-	-	23	14
CHP-002	Clevis for MP-003			-	-	-	7	12
CHP-003	Clevis for MP-002			-	-	-	14	12
CHP-004	Clevis for MP-002			-	-	-	14	12
CHP-005	Eye bolt for MP-003			-	-	-	9	12
BGE-011	Adapter for rod end			-	-	-	4	4

* For MP-002 and MP-003 the ends must be ordered separately

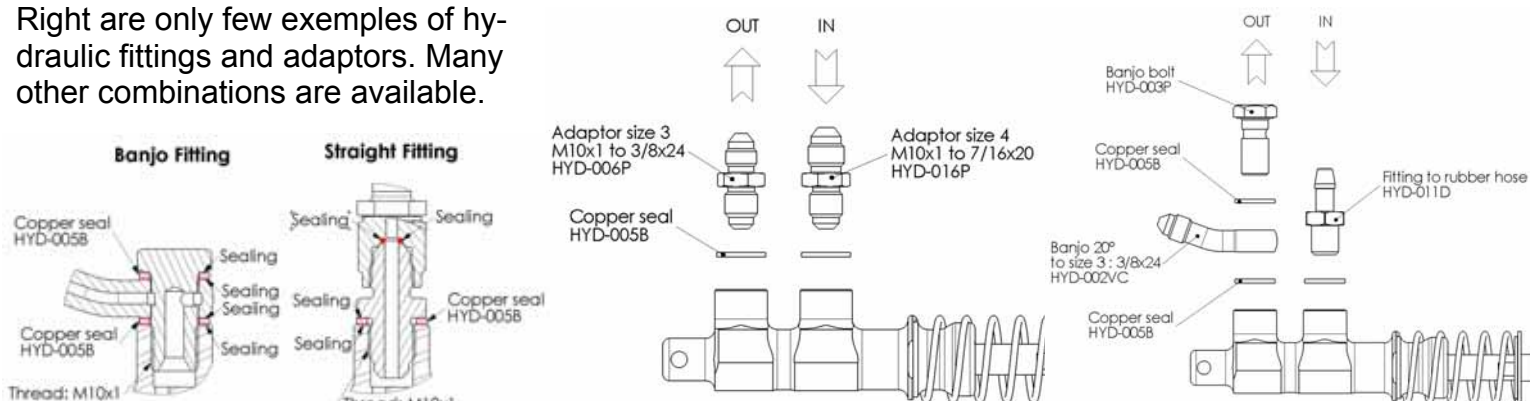
1 bar ↔ 14.5 psi - 1 psi ↔ 0.069 bar

** Master cylinder is not included in the kit. Please order one MP-002 (E or N) and one CHP-003

*** Master cylinders are not included in the kit. Please order two MP-002 (E or N) and two CHP-003

Hydraulic fittings for MASTER CYLINDERS

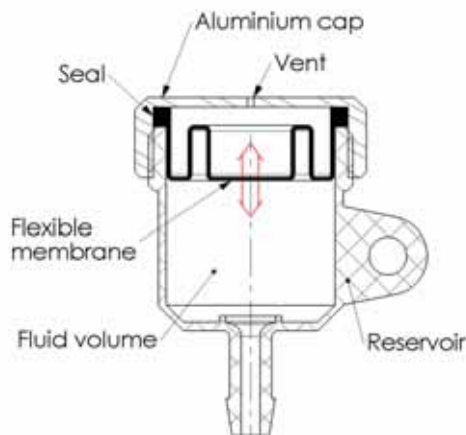
Right are only few exemples of hydraulic fittings and adaptors. Many other combinations are available.



REMOTE BRAKE FLUID RESERVOIR

Transparent reservoir with CNC aluminium cover and visible fluid level
Incorporates tight bellows - with mounting kit and hose

- With mounting kit and hose
- Only available for DOT4 brake fluid only
- 100% tight, no leak
- each master cylinder requires a reservoir
- do not install close to the engine (install only inside the cockpit)
- Delivered with 0.50m of EPDM tube



INTEGRAL BRAKE FLUID RESERVOIR

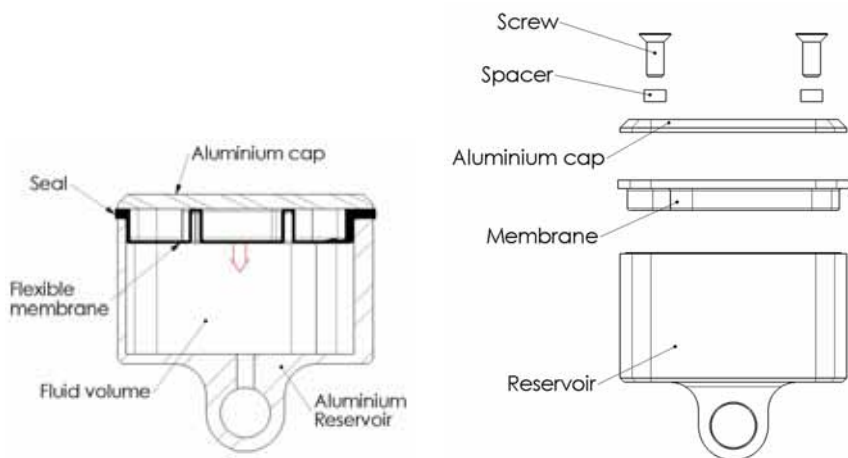
Vertical or horizontal mounting

Available for DOT4 OR MINERAL brake fluid

- CNC machined from aluminium billet
- Incorporates tight bellows
- Attaches directly to the master cylinder, 180° rotatable
- Weight : 55g (2 oz)
- 100% tight, no leak
- Perfect for aerobatic use
- each master cylinder requires a reservoir



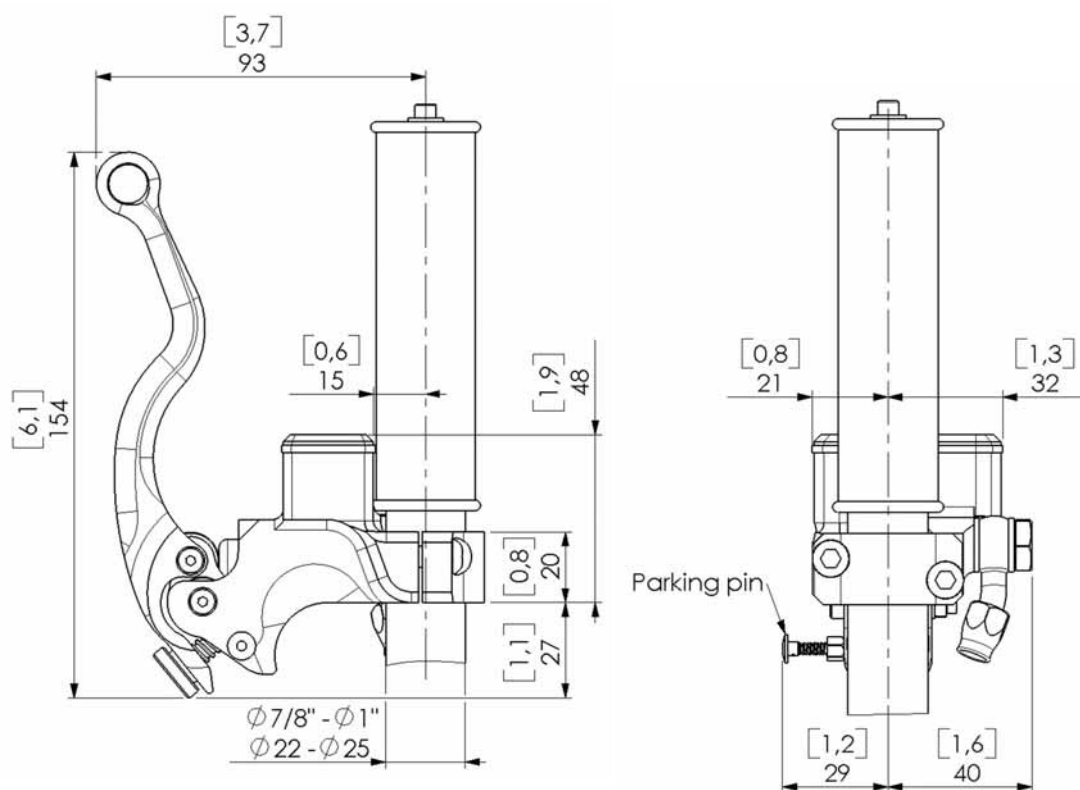
OR



Part number	DESCRIPTION	weight g	brake fluid	Price euro
HFA01E	Remote reservoir kit	39	DOT4	33
HFA02E	Integral reservoir CNC machined	55	DOT4	48
HFA02N	Integral reservoir CNC machined	55	MINERAL	48

HAND MASTER CYLINDER AEROTEC®

- built-in reservoir
- parking brake pin optional
- three ball bearing for smooth operation, long life
- Covered with the world-wide AEROTEC® patents, it brings exceptional brake feeling
- Machined from billet on CNC
- To install on 22mm (7/8") or 25mm (1") axle or directly on flat surface with 2 screws



MASTER CYLINDER - CABLE OPERATED

- Built-in reservoir, delivered with aluminium support
- Actuated with sleeved cable
- only available for DOT4



MASTER CYLINDER - HAND OPERATED

All in one: lever, master cylinder, sealed reservoir. To be mounted on Ø22mm axle or on support with two 6mm screws.



Part number	DESCRIPTION	Weight g	brake fluid	Price euro
HAB01	Built-in master cylinder	295	DOT4	237
HAB02	Built-in master cylinder with mechanical parking brake pin	295	DOT4	254
HAA03	Additional master cylinder to mount in serie (double braking control). To be used with primary HAB01 or HAB02	284	DOT4	254
HAC01	Master cylinder CABLE actuated with support	295	DOT4	237
HAB04	Master cylinder built-in reservoir	295	DOT4	254

PRESSURE LIMITER

Ultra lightweight PRESSURE LIMITER for symetrical braking on two wheels or one wheel system

- Limits progressively the pressure in the braking system from 25, 35, 45 or 60bars
- Highly recommended to avoid over pressure and damage to the brake system
- must be used with hand master cylinder
- outlet M10x1
- Machined from solid on CNC
- For DOT4 brake fluid OR MIL (on demand)
- Anodized for corrosion resistance

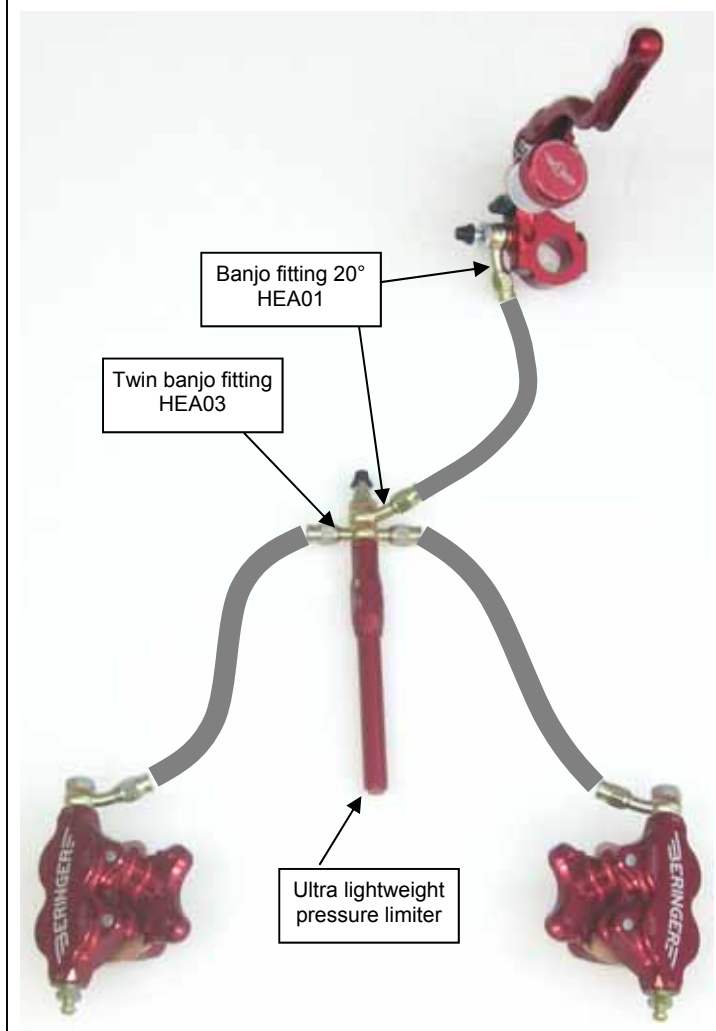


HZA01-HZA02-HZA03-HZA04

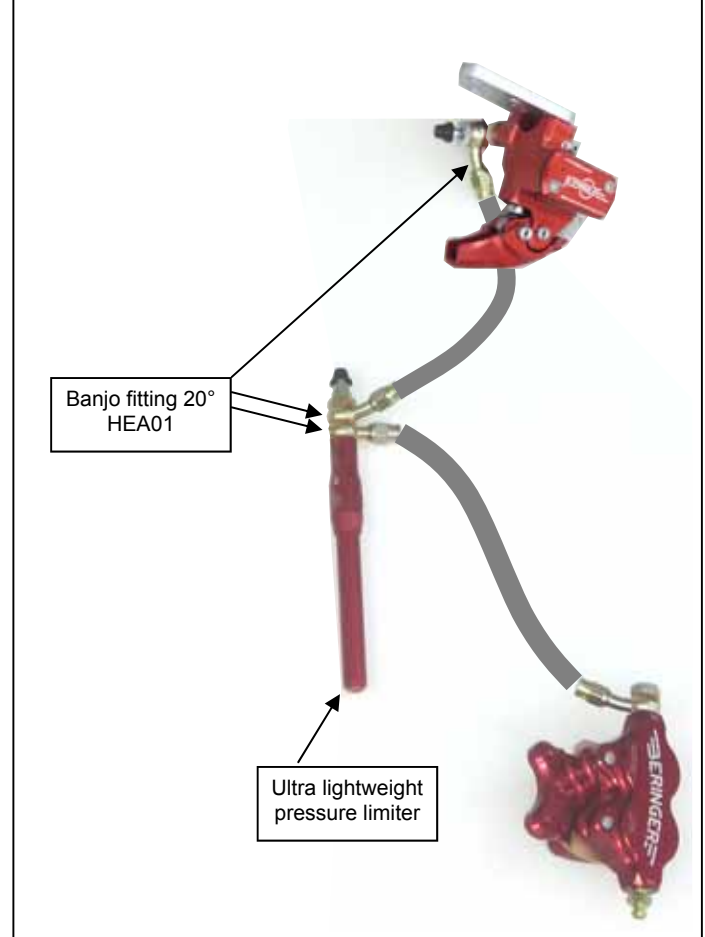
Part number	DESCRIPTION	weight g	brake fluid	Price euro
HZA04	Ultralight pressure limiter 25 bar	65	DOT4	83
HZA01	Ultralight pressure limiter 35 bar	65	DOT4	83
HZA02	Ultralight pressure limiter 45 bar	65	DOT4	83
HZA03	Ultralight pressure limiter 60 bar	65	DOT4	83

BRAKE SCHEMATICS with ultralightweight limiter

symmetrical braking on two wheels (hand master cylinder + limiter)



braking on one wheel (master cylinder cable operated + limiter) (glider)



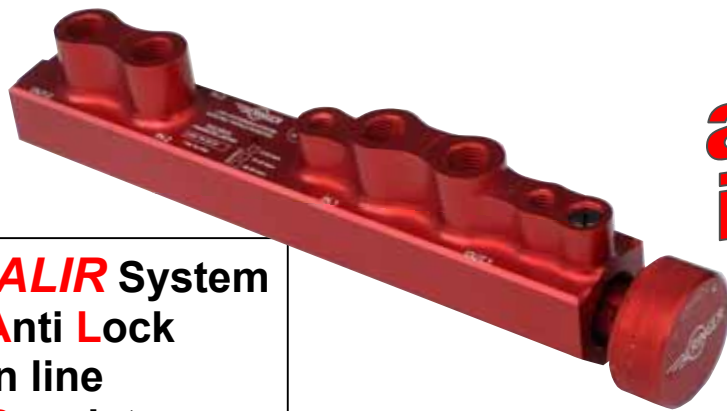
Many accidents occurring on the ground are due to a bad control of the brakes

Avoid all these risks with the BERINGER ALIR on your aircraft

The BERINGER ALIR system improves the control of the brakes and helps the pilot to control the brakes.

This Anti-skid in Line Regulator allows the control of the direction on the ground with differential braking. It avoids wheel locking and risk of nose over when applying full effort on the braking pedals. It reduces the stopping distance.

The BERINGER ALIR system is included in most of the wheel & brake kits.



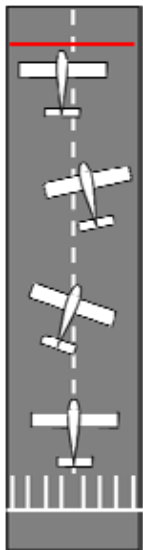
ALIR System
Anti Lock
In line
Regulator

**a real advance
in term of safety**

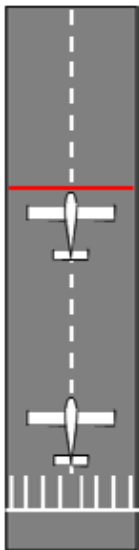
ALIR PRESSURE REGULATOR allowing a ± 1 bar maximum reference pressure and an equipressure left-right

EMERGENCY BRAKING : comparison of:

- blue curve : with ALIR: the pilot applies full braking without any control (similar to a car ABS)
 - red curve: without ALIR: no regulation, the pilot must control the braking
- (in both cases, conditions are the same: same plane, same brakes)
Weight of the aircraft: 1200 kg, braking speed: 70 Kt



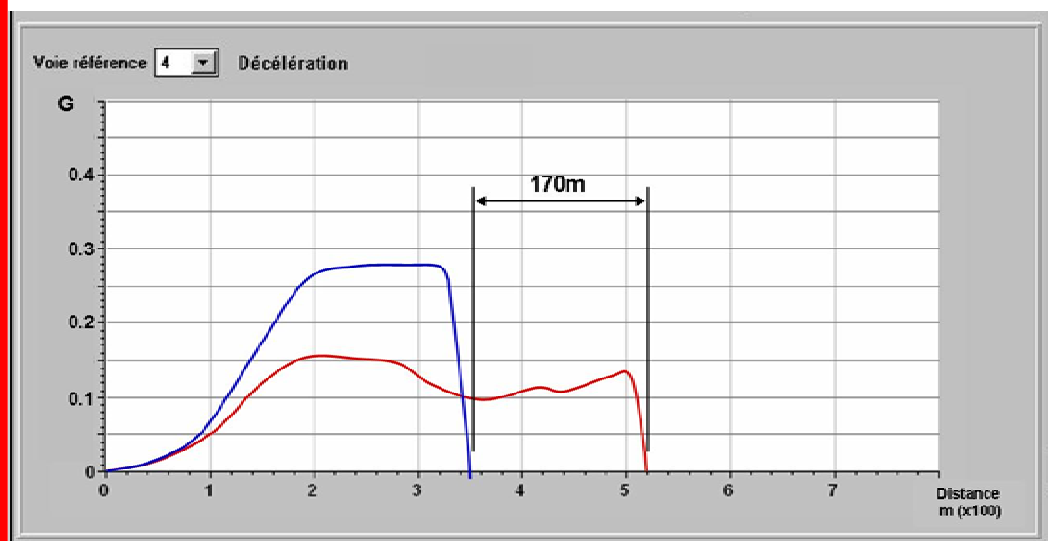
Without ALIR



with ALIR

The ALIR system allows the control of the direction on the ground with differential braking.

The system can be installed on certain old aircraft.



Nota: BERINGER brake pads used in the ALIR system have a friction coefficient that increases with the temperature allowing an increase of the deceleration when the lift decreases on the wings.

ANTI-SKID - pressure regulators - PARKING BRAKE VALVE

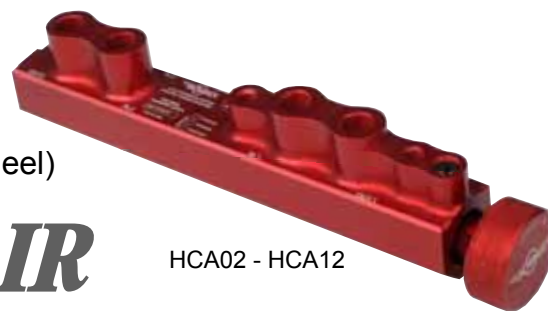
ALIR : In-line BALANCED ANTI-LOCK REGULATOR

Installs in-line; regulates in case of emergency overpressure

- low hysteresis
- Adjustment range: 10 to 40 bars (or 20 to 50 bars, with thumbwheel)
- Machined from solid on CNC
- For DOT4 OR MINERAL (MIL) brake fluid
- 2 inputs, 2 outputs (thread : M10x1)

ALIR

HCA02 - HCA12



ANTI-LOCK REGULATOR

- Low hysteresis
- Adjustment range: 10 to 40 bars (or 20 to 50 bars, with thumbwheel)
- Threaded connection: M10x1
- Machined from solid on CNC
- For DOT4 OR MINERAL (MIL) brake fluid
- Weight: 270g



OR



HCA01 - HCA11



Part number	DESCRIPTION	weight g	brake fluid	Price euro
HCA01E	Anti-lock regulator 10 to 40 bar	270	DOT4	129
HCA01N	Anti-lock regulator 10 to 40 bar	270	MINERAL	129
HCA02E	In-line balanced anti-lock regulator 10 to 40 bar	330	DOT4	129
HCA02N	In-line balanced anti-lock regulator 10 to 40 bar	330	MINERAL	129
HCA12E	In-line balanced anti-lock regulator 20 to 50 bar	330	DOT4	129
HCA12N	In-line balanced anti-lock regulator 20 to 50 bar	330	MINERAL	129

PARKING BRAKE VALVE

Available for DOT4 OR MINERAL (MIL) brake fluid

- Open/close quarter turn lever operated
- CNC machined from billet, red anodized
- Max. input pressure: 1500PSI (100 bar)
- Optimized for long life
- 100% protected from corrosion: anodized coating and stainless steel components



OR

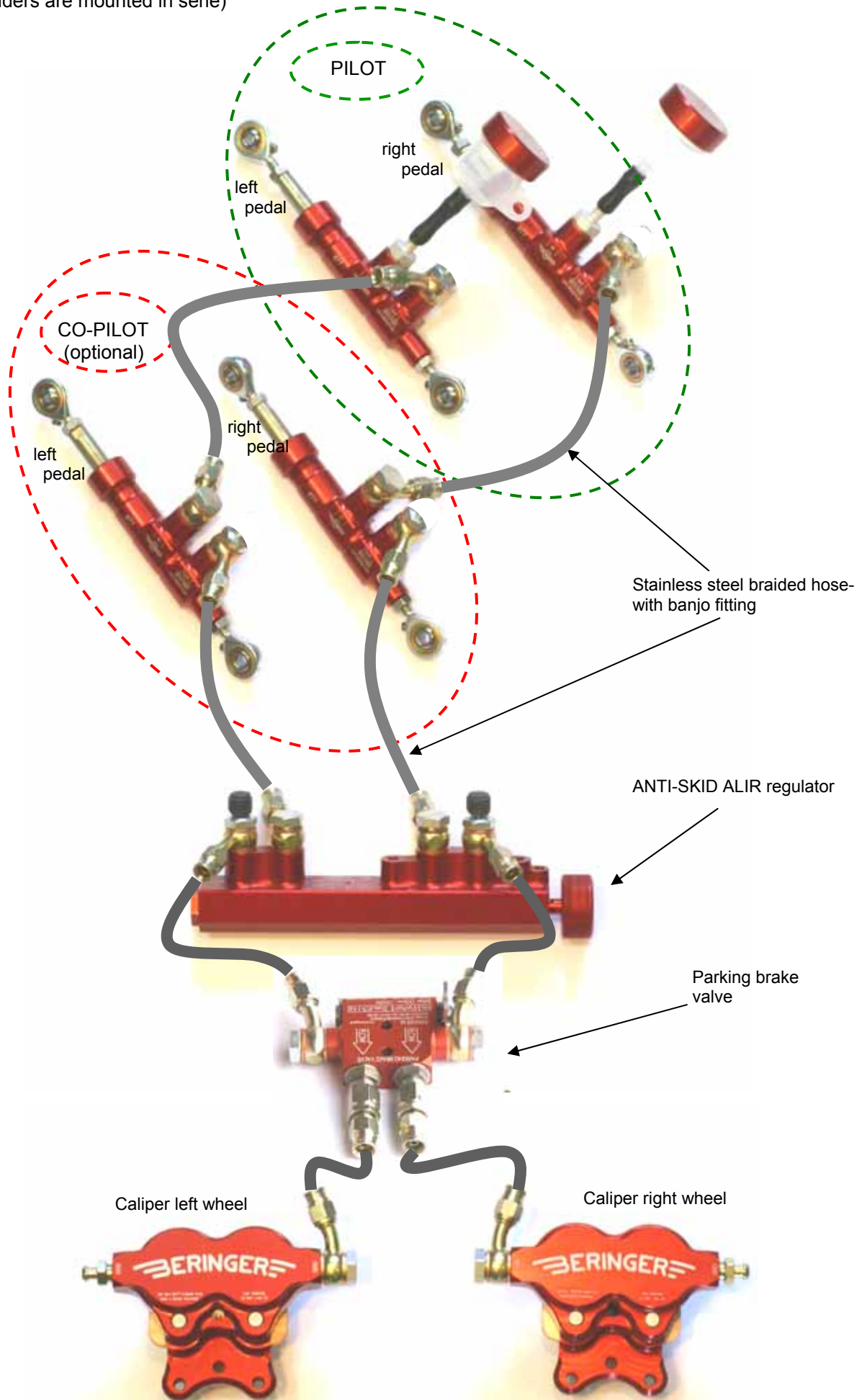


Part number	DESCRIPTION	Weight g	Outlet port	brake fluid	Price euro
HVA01E	Parking brake valve	200	-3 Flare (3/8x24)	DOT4	195
HVA01N	Parking brake valve	200	-3 Flare (3/8x24)	MINERAL	195
HVA02E	Parking brake valve	200	-4 Flare (7/16x20)	DOT4	195
HVA02N	Parking brake valve	200	-4 Flare (7/16x20)	MINERAL	195

BRAKING SYSTEM SCHEMATIC

Differential braking system with in-line balanced anti-lock regulator (anti-skid & in-line braking) and parking brake valve

(master cylinders are mounted in serie)

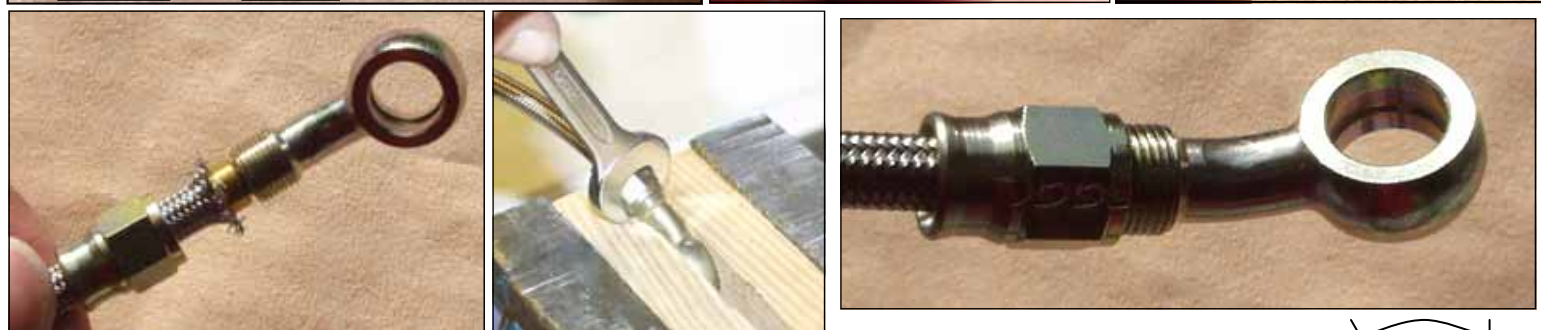
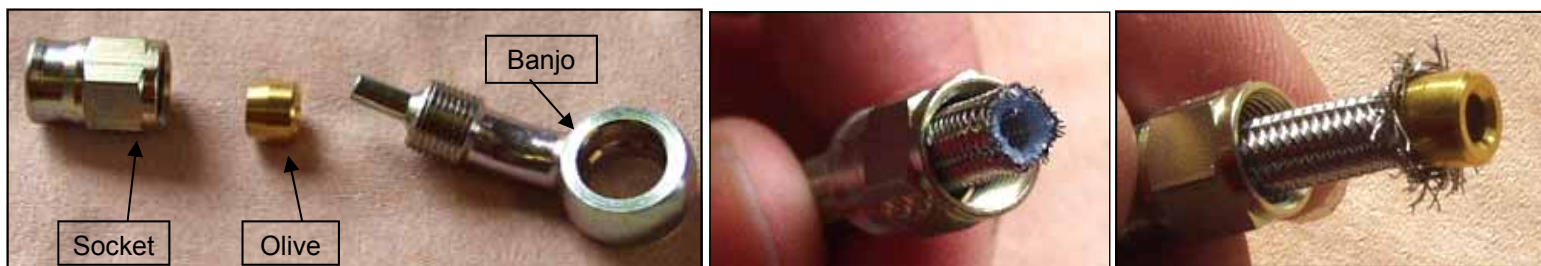


BRAKE HOSE - BRAKE HOSE FITTINGS - DO IT YOURSELF

BERINGER Brake hose is stainless steel braided with PTFE inner tube and stainless fittings.

- provides consistent brake pedal pressure without spongy feeling.
- flexibility allows landing gear leg movements and avoids leakage that appears with hardline tube.
- ends can be straight fittings, female concave seat: 7/16x20 or 3/8x24 (steel plated or stainless)
- operating pressure up to 3000 PSI - burst pressure 9000PSI

SCREW IT YOURSELF: You order brake hose and brake fittings separately and you follow the «assembly instructions» delivered with the parts.



STAINLESS STEEL



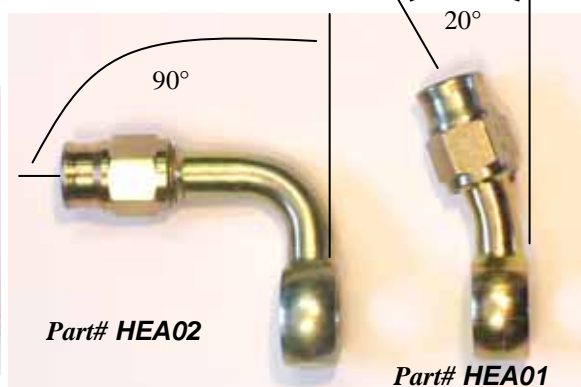
Part# HEA08 and HEA09



Part# HEA05



Part# HEA04



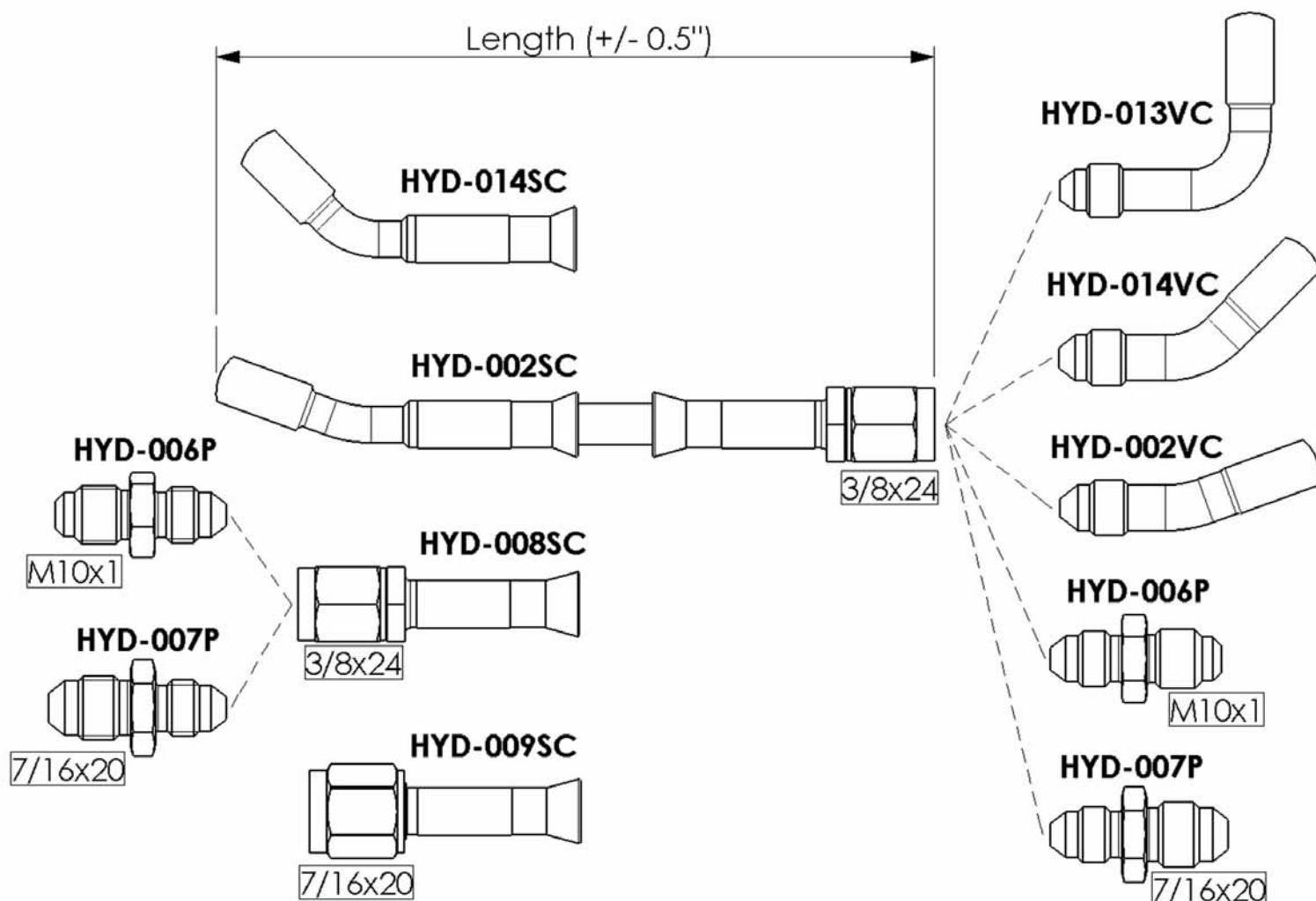
Part# HEA02

Part# HEA01

Part number	DESCRIPTION	Price euro	
HDA01	EPDM hose for reservoir, specific for DOT4 brake fluid	Per meter	4.20
HDB01	Stainless steel hose, braided, PTFE high temperature inner tube	Per meter	10.00
HEA01	Banjo fitting 20°		8.80
HEA02	Banjo fitting 90°		17.60
HEA03	Banjo twin		33.60
HEA04	Straight fitting, male M10x1		13.00
HEA05	Brake adaptor Metric M10x1 to JIC 7/16x20		9.40
HEA08	Straight fitting, female concave seat 7/16x20 (stainless)		36.80
HEA09	Straight fitting, female concave seat 3/8x24 (stainless)		30.45
ZGA01	Cushioned tube clamps for stainless steel hose	(contains 10 clamps)	7.35
HJA01	High performance Brake fluid DOT4	(0.33L)	16.50
HJA02	High performance Brake fluid DOT5 Silicone base (longer life time) DOT5 cannot be mixed with DOT4.	(0.33L)	23.50

BRAKE HOSE - BRAKE HOSE FITTINGS - ASSEMBLIES

Choose your fittings, your length and order your brake hose assembly ready to use. The assembly is checked. Do not hesitate to contact us, we will help you.



Ask for special brake line ORDER FORM

BRAKING HOSE ASSEMBLIES for Van's

Retrofit your RV with stainless brake lines. It provides consistent brake pedal pressure without spongy feeling. The flexibility allows landing gear leg movements and avoids leakage that appears with hardline tube

- stainless steel braided hose with PTFE inner tube
- stainless steel fittings.
- Connects the brake caliper to fuselage connector: straight fittings, female concave seat 7/16x20.
- pressure tested and delivered with certificate.



Part number	DESCRIPTION	Length mm	Price euro
HED01	Set of 2 Brake lines for RV6, 7, 9	1100mm (x2)	144
HED02	Set of 2 Brake lines for RV6A, 7A, 9A	850mm (x2)	144

1 inch \leftrightarrow 25,4mm

BRAKE DISCS for BERINGER wheels

Part number	DESCRIPTION	Price euro
DSC-006	Stainless steel brake disc for Aerotec® caliper EA-006 (3.2mm)	56
DSC-008	Stainless steel brake disc for Aerotec® caliper EA-002 (4.2mm)	59
DSC-008.2	Steel brake disc for Aerotec® caliper EA-002.2 (7.2 mm)	109
DSC-009	Stainless steel brake disc for Aerotec® caliper EA-003 (5.6mm)	89
DSC-009.3	Steel brake disc for Aerotec® caliper EA-003.3 (9mm)	129



BRAKE DISCS for ROBIN DR400

- Designed and produced following the ADOA et POA (PART21G) agreement
- high resistance CRO-MO steel
- Fully machined on CNC
- Stabilizing heat treatment to limit heat distorsion
- Anticorrosion coating for easy running

CRO-MO alloy

**longer life
maintenance reduced**



Part number	DESCRIPTION	Price euro
AV-ROB-001	Brake disc for ROBIN DR400	195

Delivered with EASA Form1

BRAKE PADS

- Friction material: sintered metallic
- High coefficient of friction - Very long life - high temperature resistant 600°C



Part number	DESCRIPTION (a set includes 2x pads for 1 caliper procedure)	Price euro
ZEA01	pads for BERINGER standard caliper EA-006 or EA-001	35
ZEA02	pads for BERINGER reinforced caliper EA-03	47
ZEA03	pads for BERINGER HE caliper EA-002 and EA-002.2	54
ZEA04	pads for BERINGER HE caliper EA-003 and EA-003.3	59

PATENTED

SPARE CLIPS

Stainless steel clips between wheel rim and disc. Includes: 10 left and 10 right (set for 1 wheel) & procedure

Part number	DESCRIPTION	Price euro
KCA01	Spare CLIPS for one 5" wheel (10 left and 10 right)	20
KCA02	Spare CLIPS for one 6" Light wheel (10 pieces)	20



O'ring SEALS

You must change the o'ring seals at each tire changing.

Part number	DESCRIPTION	Price euro
KDF01	O-ring seals for 5" wheel (set for one wheel)	8.50
KDF02	O-ring seals for 6" and 6" light wheel (set for one wheel)	8.50
KDF02C	O-ring seals for 6" CLASSIC (set for one wheel)	8.50
ZPA01	Safety wire stainless steel (roll of 450g)	33.60



O'ring
KDF01
KDF02

BERINGER® TOOL for tire changing

Specific tire change tool for BERINGER® wheels with conical aluminum spacer : eases mounting of tire on wheel half.

- Plywood flanges steady tire while positioning second wheel half with the O-ring.
- Includes: Plywood flanges, bolts with butterfly nut and conical aluminum spacer

Part number	DESCRIPTION	Price euro
OPA01	Tire change tool for 5" wheels	82
OPA02	Tire change tool for 6" wheels	97



REPAIR KITS

Repair kits are available for BERINGER® master cylinders, 2 and 3 piston calipers. They include all piston seals, specific grease, bearings (for master cylinders), copper seals, and instructions.



Part number	DESCRIPTION	Price euro
KAA01	Repair kit for BERINGER® hand master cylinders HAA03, HAB01, HAB02	49
KAB01	Repair kit for rudder pedal master cylinder HBA01, HBA02, HBA03	76
KBA01	Repair kit for 2 piston calipers EA-01 and EA-03	49
KBA02	Repair kit for 3 piston caliper EA-02	65

BRAKE BLEEDER TANK

helps the bleeding by sending the brake fluid under pressure in the line. Delivered with manometer, hose and fittings

TIRE LUBRICANT

Spray of professional liquid soap, Michelin BIB'UP

SPRAY ANTI-PUNCTURE

to spray into the tire in case of puncture

Brake bleeder tank



Part number	DESCRIPTION	Price euro
ONA01	Spray Tyre Up	20
ONB01	Spray anti-puncture	20
ONC01	Pressure bleeder pump	73

DOT4 brake fluid

High performance DOT4 brake fluid with dry boiling point at 440°F minimum meets FMVSS 116/DOT4 specifications.

DOT4 is yellow colored and it is not compatible with brake system designed for mineral base fluids.



Part number	DESCRIPTION	Price euro
HJA01	High performance Brake fluid DOT4 0.33L	16.50
HJA02	High performance Brake fluid DOT5 Silicone base DOT5 cannot be mixed with DOT4. 0.33L	23.50

BERINGER WHEELS & BRAKES for the Pilatus PC-6

Switch to a high performance Wheel & Brake System, and reduce your maintenance cost.



tubeless



**QUALITY
OPTIMUM PERFORMANCE
DURABILITY**

New Performance for Pilatus PC-6



The complete Wheel & brake kit consists of:

- 2 main wheels (aluminium CNC machined)
- 2 calipers (3 pistons)
- 2 discs (steel)
- pads (sintered metal)
- hoses and hydraulic connection
- 1 tail wheel with axle
- 2 master cylinders
- 1 hydraulic regulator
- specific tools for maintenance

**Investment paid off
in less than 1000 hours
(from 2 to 3 years of use)**

Part number	DESCRIPTION	Price euro without tax
STC-002.1	Complete wheel & brake set for Pilatus PC-6 - single seat braking	16900
STC-002.2	Complete wheel & brake set for Pilatus PC-6 - dual braking	17900



contact@beringer-aero.com