

**Accessories for
light commercial
vehicles and
trucks**



Accessories

2010 | 2011



BOSCH

Bosch accessories for commercial vehicles from one single source: Quality that shows.



Bosch has the solution

Bosch is the world leader in new ideas and innovative products, and in the development and production of components and systems for automotive technology.

In the aftermarket sector too, drivers can also benefit from Bosch's high-quality services and many years of experience. Thanks to new technologies Bosch is setting worldwide standards in the automotive industry.

Bosch offers a good coverage of accessories for light commercial vehicles and trucks, like horns, electric connectors and cables, switches, tools and more.

Workshops and dealers will find a complete range of accessories for commercial vehicles from A to Z, all in the familiar high Bosch quality.



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Horns and fanfares from Bosch

A powerful signal



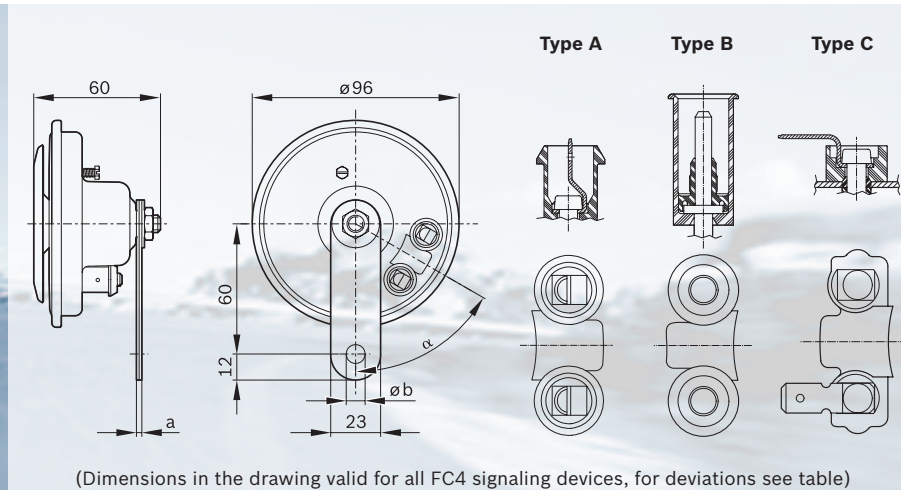
Horns and fanfares are needed in every motor vehicle. Particularly in hazardous situations, they allow the driver to warn other road users.

Bosch has been developing and producing acoustic signaling devices since 1921. Bosch signaling devices are based on these decades of experience and expertise and incorporate innovative technology.

Ultra-reliable functionality and state of the art technologies are their main features. The production sites are subject to stringent inspection and testing procedures, guaranteeing first-class product quality.

Today, numerous well-known vehicle manufacturers throughout the world trust the quality of our signaling devices. Bosch signaling devices provide increased safety on the road.

FC4



Application range



Maximum attention

- Penetrating, harsh sound carries for long distances
- Unobstructed forward propagation of sound

Long service life and reliable quality

- Insensitive to rust and stone impact

Maximum functional reliability

- Solid mechanical construction
- Pressure compensation with microporous Teflon filter
- Weather-resistant material

Approved as per EC and ECE directives

- Including Austria and Switzerland

Powerful tone

- 110 dB (A) at a distance of 2 meters

EMC protection included



Features

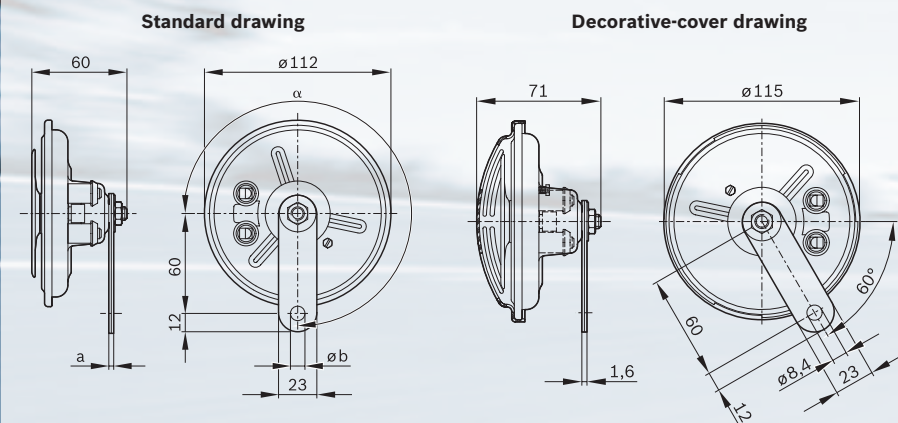
Voltage V	Output W	Frequency Hz	Color	a mm	Ø b mm	α Degrees	Connection	Weight kg	Part number
FC4									
6	30	335	Steel	2.4	Thread M8	275	Type A	0.35	0 986 320 101 □
6	30	335	Black	1.6	8.4	175	Type A	0.35	0 986 320 102 □
12	60	335	Steel	2.4	Thread M8	90	Type A	0.35	0 986 320 111 □
12	60	335	Steel	1.6	8.4	60	Type A	0.35	0 986 320 132 □ ¹⁾
12	60	335	Steel	1.6	8.4	275	Type A	0.35	0 986 320 146 □
12	60	335	Steel	1.6	10.5	90	Type A	0.35	0 986 320 112 □
12	60	335	Black	1.6	8.4	60	Type A	0.35	0 986 320 137 □
12	60	335	Black	2.4	8.4	100	Type A	0.35	0 986 320 188 □
12	60	335	Black	2.4	8.4	300	Type A	0.35	0 986 320 131 □
12	60	335	Black	1.6	8.4	285	Type B	0.35	0 986 320 148 □
12	60	335	Black	1.6	8.4	180	Type A	0.35	0 986 320 113 □
12	60	335	Black	2.0	8.4	60	Type C	0.35	0 986 320 110 ²⁾
12	60	335	Black	1.6	8.4	300	Type A	0.35	0 986 320 136 □ ³⁾
12	60	420	Steel	1.6	8.4	90	Type A	0.35	0 986 320 147 □
12	60	420	Steel	1.6	8.4	300	Type A	0.35	0 986 320 133 □ ¹⁾
12	60	420	Steel	2.4	8.7	100	Type A	0.35	0 986 320 140 □
12	60	420	Black	1.6	8.4	285	Type B	0.35	0 986 320 149 □
12	60	420	Black	1.6	8.4	270	Type A	0.35	0 986 320 114 □

Sets

Set consisting of 0 986 320 132 and 0 986 320 133	0 986 320 191 □ ¹⁾
Set consisting of high and low tone pre-fitted on 1 bracket	0 986 320 154 □

□ SB packaging for sales-promoting POS appearance ¹⁾ No EMC protection ²⁾ Three-point mounting ³⁾ Steel tone disk

FD4



(Dimensions in the drawing valid for all FD4 signaling devices, for differences see table)



Connections as for FC4, see previous page

Application range



Maximum attention

- Penetrating, harsh sound for long distances
- Unobstructed forward propagation of sound

Long service life and reliable quality

- Insensitive to rust and stone impacts

Maximum functional reliability

- Solid mechanical construction
- Weather-resistant material

Approved as per EC and ECE directives

- Including Austria and Switzerland

Attractive grill design

- Suitable for external mounting

Powerful tone

- 110 dB (A) at a distance of 2 meters

EMC protection included



Features

Voltage V	Output W	Frequency Hz	Color	a mm	Ø b mm	α Degrees	Connection ¹⁾	Weight kg	Part number
FD4									
12	60	335	Steel	1.6	8.4	60	Type A	0.36	0 986 320 310 □
12	60	420	Steel	1.6	8.4	300	Type A	0.36	0 986 320 311 □
24	60	335	Steel	1.6	8.4	270	Type A	0.36	0 986 320 301 □
24	60	420	Steel	1.6	8.4	60	Type A	0.36	0 986 320 302 □
24	60	335	Black	2.4	8.4	90	Type A	0.36	0 986 320 314 □
24	60	335	Black	1.6	8.4	270	Type A	0.36	0 986 320 317 □
24	60	335	Black	2.4	8.4	270	Type A	0.36	0 986 320 351 □
24	60	335	Black	2.4	10.5	155	Type B	0.36	0 986 320 312 □
24	60	420	Black	2.4	8.4	60	Type A	0.36	0 986 320 316 □
24	60	420	Black	2.4	8.4	155	Type B	0.36	0 986 320 313 □

FD4 with decorative cover

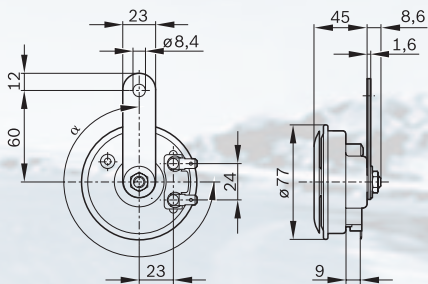
12	60	335	Steel	1.6	8.4	60	Type A	0.4	0 986 320 306 □
12	60	420	Steel	1.6	8.4	60	Type A	0.4	0 986 320 307 □

Set

Set consisting of high and low tone 0 986 320 310 and 0 986 320 311	0 986 320 392 □
Set consisting of high and low tone 0 986 320 301 and 0 986 320 302	0 986 320 394 □
Set consisting of high and low tone 0 986 320 306 and 0 986 320 307	0 986 320 393 □

□ SB packaging for sales-promoting POS appearance ¹⁾ Connections identical to FC4

FC9



(Dimensions in the drawing valid for all FC9 signaling devices, for differences see table)



Application range



High functional reliability

- Solid mechanical construction
- Use of weather-resistant materials

Long service life and reliable quality

- Insensitive to rust and stone impacts

Easy fitting in minimal space

- 25% smaller and lighter than normal-tone horns

Approved as per EC and ECE directives

Powerful tone

- 110 dB (A) at a distance of 2 meters

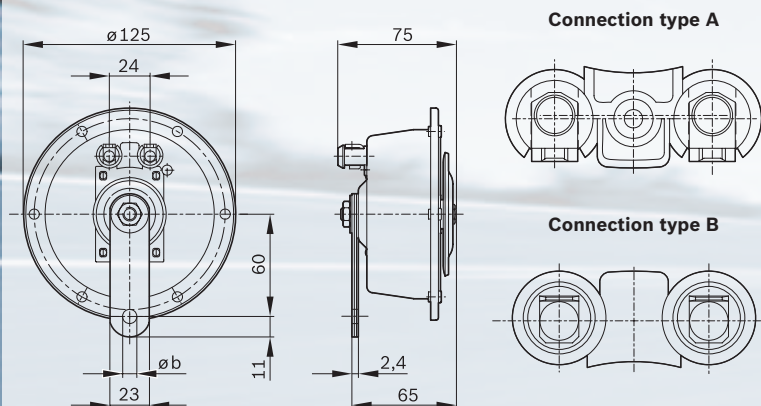
Features

Voltage V	Output W	Frequency Hz	Color	Ø b mm	α Degrees	Weight kg	Part number
FC9							
12	50	335	Steel	8.4	270	0.21	9 320 332 803
12	50	420	Steel	8.4	90	0.21	9 320 332 804
24	50	335	Steel	8.4	90	0.21	6 033 FB4 102
24	50	420	Steel	8.4	270	0.21	6 033 FB4 103

Sets

Set consisting of high and low tone 9 320 332 803 and 9 320 332 804	9 320 332 802
Set consisting of high and low tone 6 033 FB4 102 and 6 033 FB4 103	6 033 FB4 147

Supertone horn



(Dimensions in the drawing valid for all supertone horns, for differences see table)



Application range



Maximum attention

- ▶ Penetrating, harsh sound for long distances
- ▶ Unobstructed forward propagation of sound

Long service life and reliable quality

- ▶ Insensitive to rust and stone impacts

Maximum functional reliability

- ▶ Solid mechanical construction
- ▶ Pressure compensation with microporous Teflon filter
- ▶ Weather-resistant material

Approved as per EC and ECE directives

- ▶ Including Austria and Switzerland

Powerful tone

- ▶ 110 dB (A) at a distance of 2 meters

EMC protection included

Features

Voltage V	Output W	Frequency Hz	Color	Ø b mm	Connection	Weight kg	Part number
Supertone horn standard							
12	60	300	Black / silver	10.5	Type A	0.9	0 320 223 021
12	60	375	Black / silver	10.5	Type A	0.9	0 320 223 022 □
24	60	300	Black / silver	10.5	Type A	0.9	0 320 226 007 □
24	60	375	Black / silver	10.5	Type A	0.9	0 320 226 008 □
24	60	500	Black / silver	10.5	Type A	0.9	0 320 226 009 □
12	60	375	Black	8.4	Type B	0.9	0 320 223 201 □
12	60	375	Black	10.5	Type B	0.9	0 320 223 011 □
12	60	500	Black	10.5	Type B	0.9	0 320 223 012 □
24	60	375	Black	10.5	Type A	0.9	0 320 226 010 □
24	60	375	Black	10.5	Type B	0.9	0 320 226 011 □
24	60	500	Black	10.5	Type B	0.9	0 320 226 012 □

Supertone horn with decorative ring for priority vehicles (police, fire-fighting, ambulance etc.)

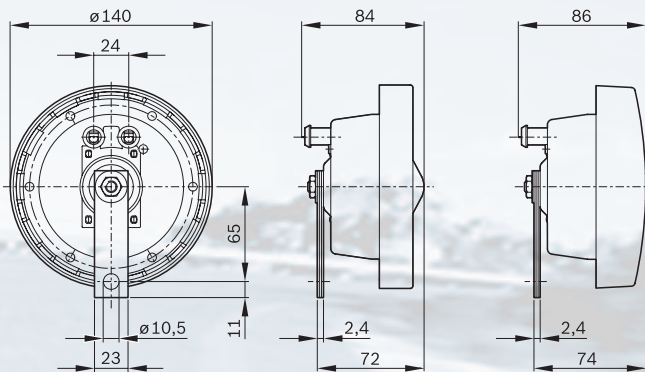
12	60	375	Black	10.5	Type A	0.9	0 320 223 002 □
12	60	500	Black	10.5	Type A	0.9	0 320 223 003 □
24	60	375	Black	10.5	Type A	0.9	0 320 226 002 □
24	60	500	Black	10.5	Type A	0.9	0 320 226 003 □

Tone-sequence switch for controlling the interval tone for priority vehicles

12	0 335 411 015 □
24	0 335 411 016 □

□ SB packaging for sales-promoting POS appearance

Supertone horn



Application range



Maximum attention

- ▶ Penetrating, harsh sound for long distances
- ▶ Unobstructed forward propagation of sound

Long service life and reliable quality

- ▶ Insensitive to rust and stone impacts

Maximum functional reliability

- ▶ Solid mechanical construction
- ▶ Pressure compensation with microporous Teflon filter
- ▶ Weather-resistant material

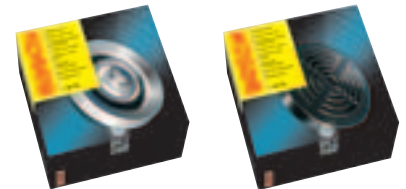
Approved as per EC and ECE directives

- ▶ Including Austria and Switzerland

Powerful tone

- ▶ 110 dB (A) at a distance of 2 meters

EMC protection included



Features

Voltage V	Output W	Frequency Hz	Color	Connection	Weight kg	Part number
Supertone horn with decorative ring						
12	60	300	Silver	Type A	0.95	0 320 223 016 □
12	60	375	Silver	Type A	0.95	0 320 223 017 □
24	60	300	Silver	Type A	0.95	0 320 226 016 □
24	60	375	Silver	Type A	0.95	0 320 226 017 □

Supertone horn with decorative grill

12	60	300	Black	Type A	0.95	0 320 223 804 □
12	60	375	Black	Type A	0.95	0 320 223 805 □
24	60	300	Black	Type A	0.95	0 320 226 004 □
24	60	375	Black	Type A	0.95	0 320 226 005 □
12	60	300	Chromium-plated	Type A	0.95	0 320 223 144 □
12	60	375	Chromium-plated	Type A	0.95	0 320 223 145 □

Sets

Set consisting of high and low tone 0 320 223 016 and 0 320 223 017	0 320 223 911 □
Set consisting of high and low tone 0 320 223 804 and 0 320 223 805	0 320 223 910 □

Supertone horn with decorative ring for priority vehicles (police, fire-fighting, ambulance etc.)

12		375	Silver	Type A	0.95	0 320 223 008 □
12		500	Silver	Type A	0.95	0 320 223 009 □

Tone-sequence switch for controlling the interval tone for priority vehicles

12					0.95	0 335 411 015 □
24					0.95	0 335 411 016 □

□ SB packaging for sales-promoting POS appearance

Megatone



Application range



Penetrating signal tone

- ▶ 118 dB (A) signal tone with long range

Attractive design

- ▶ High-quality chromium-plated protective grill
- ▶ Suitable for visible mounting

Maximum functional reliability

- ▶ Optimum-quality diaphragm and contact points

Tested quality

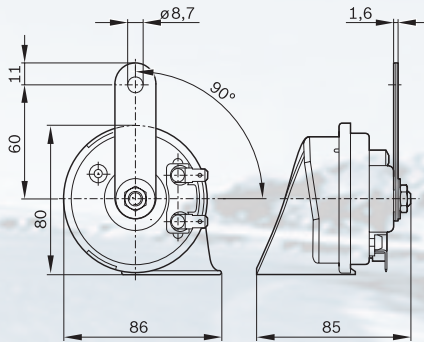
- ▶ Type-tested under EU directives

EMC protection included

Features

Voltage V	Output W	Frequency Hz Low tone/High tone	Color	Weight	Part number
Megatone					
Set consisting of 0 986 AH0 201 and 0 986 AH0 202	48	325/400	Silver	1,2	0 986 AH0 203

EC9 – EVO



Application range



Maximum attention

- Soft melodic sound, even over long distances
- Unobstructed forward propagation of sound

Long service life and reliable quality

- Insensitive to rust and stone impacts

Maximum functional reliability

- Fracture-proof and corrosion-free plastic trumpet
- Pressure compensation with microporous Teflon filter
- Vibration-resistant

Powerful tone

- 110 dB (A) at a distance of 2 meters

EMC protection included

Approved as per EC and ECE directives



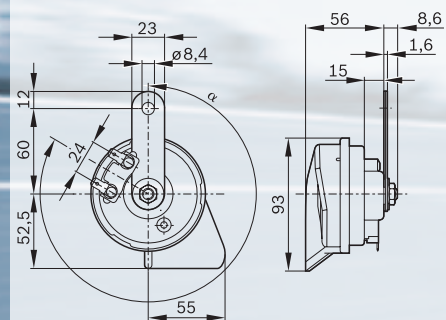
Features

Voltage V	Output W	Frequency Hz	Color	Weight kg	Part number
Fanfare EC9					
12	60	420	Black	0.31	6 033 FB2 011 ¹⁾
12	60	420	Black	0.31	6 033 FB1 012 ¹⁾
12	60	420	Black	0.31	6 033 FB1 213 ²⁾
12	60	510	Black	0.31	6 033 FB1 214 ²⁾
12	60	420	Red	0.31	9 320 335 111 ¹⁾
12	60	510	Red	0.31	9 320 335 112 ¹⁾
12	60	420	Chromium-plated	0.31	6 033 FB1 194 ¹⁾
12	60	510	Chromium-plated	0.31	6 033 FB1 195 ¹⁾

Sets

Set consisting of 9 320 335 012 and 9 320 335 013	0.62	9 320 335 007 □
Set consisting of 6 033 FB1 213 and 6 033 FB1 214	0.62	6 033 FB1 217 □
Set consisting of 9 320 335 111 and 9 320 335 112	0.62	9 320 335 113 □
Set consisting of 6 033 FB1 194 and 6 033 FB1 195	0.62	6 033 FB1 193 □
Set consisting of relays, small parts and fitting instructions, in black	0.62	9 320 335 052 □

□ SB packaging for sales-promoting POS appearance ¹⁾ Galvanized housing ²⁾ Housing painted black



Two Bosch car air filters are shown hanging against a blue background. Each filter is a circular, pleated unit with a black plastic frame and a black plastic hanger. The Bosch logo is visible on the front of each filter.

- Insensitive to rust and stone impacts

- ▶ Upright installation trumpet underneath
- ▶ Can be used as replacement for horns
- ▶ Particularly suitable for restricted installation conditions

- ▶ 110 dB (A) at a distance of 2 meters

EMC protection included

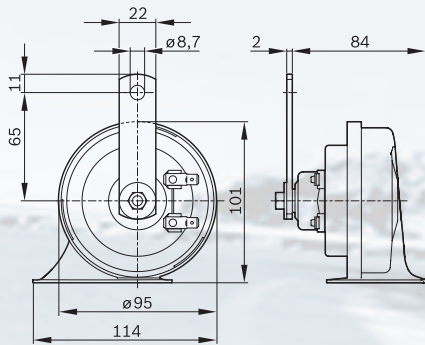


Voltage V	Output W	Frequency Hz	Color	α Degrees	Weight kg	Part number
Fanfare EC9-C						
12	60	420	Black	60	0.2	9 320 335 207
12	60	510	Black	300	0.2	9 320 335 208
12	60	420	Chromium-plated	60	0.2	6 033 FB1 505
12	60	510	Chromium-plated	300	0.2	6 033 FB1 506

Set consisting of 9 320 335 207 and 9 320 335 208	9 320 335 206 <input type="checkbox"/>
Set consisting of 6 033 FB1 505 and 6 033 FB1 506	6 033 FB1 510 <input type="checkbox"/>

Bosch Automotive Aftermarket

Windtone



Application range



Audible safety

- Always a penetrating, pure warning tone even under the toughest of conditions

Long service life and reliable quality

- Optimum-quality diaphragm and contact points

Tested quality

- Approved as per ECE standards

Powerful tone

- 110 dB (A) at a distance of 2 meters

EMC protection included

Features

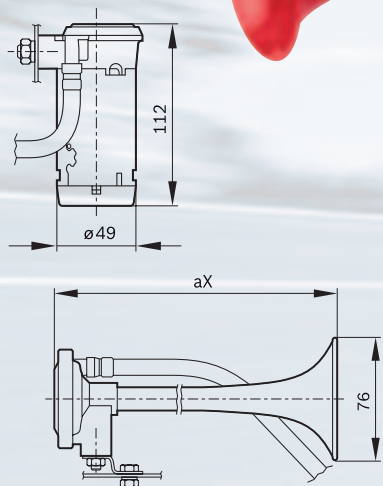
Voltage V	Output W	Frequency Hz	Color	Part number
Windtone				
12	60	420	Black	0 986 AH0 501
12	60	500	Black	0 986 AH0 502
12	60	420	Red	0 986 AH0 505
12	60	500	Red	0 986 AH0 506

Sets

Set consisting of 0 986 AH0 501 and 0 986 AH0 502	0 986 AH0 503 □
Set consisting of 0 986 AH0 505 and 0 986 AH0 506	0 986 AH0 507 □

- SB packaging for sales-promoting POS appearance

Compressor fanfare



Application range



Full power of 117 dB (A)

- Effective and harmonious sound in city and rural traffic

The best ratio between size and performance

- The best acoustic efficiency currently on the market

Compressor included

- Powerful and maintenance-free

Maximum functional reliability

- Impact-proof and weather-resistant plastic trumpet

Fast response time

- Between pressing the horn and hearing the tone

Easy fitting

- Quick installation thanks to two-hole mounting and blade terminal



Features

Voltage V	Output W	Frequency 1 Hz	Frequency 2 Hz	Frequency 3 Hz	a1 mm	a2 mm	a3 mm	Weight kg	Part number
Mini compressor fanfares									
12	240	795	840	–	166	158	–	0.7	0 986 320 003 □

Two-tone compressor fanfares

12	240	630	795	–	217	166	–	0.7	0 328 003 024 □
24	240	630	795	–	217	166	–	0.7	0 328 006 002 □

Three-tone compressor fanfares

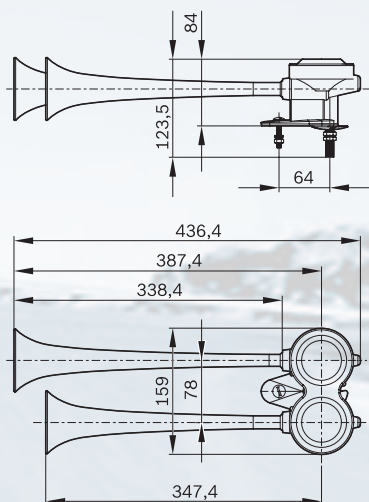
12	240	630	795	840	217	166	158	0.8	0 328 003 025 □
----	-----	-----	-----	-----	-----	-----	-----	-----	------------------------

Replacement compressor

12	240	–	–	–	–	–	–	–	1 327 223 006
24	240	–	–	–	–	–	–	–	1 327 223 005

□ SB packaging for sales-promoting POS appearance

Compressed-air fanfare



Application range



Maximum attention

- ▶ with penetrating two-tone signal audible over long distances

Long service life and reliable quality

- ▶ Insensitive to rust and stone impacts

Attractive design

- ▶ Two chromium-plated metal trumpets with black base

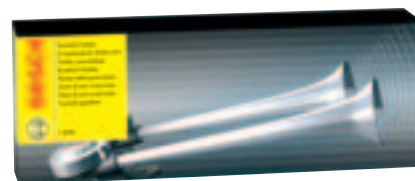
Approved as per German StVZO (FMVSS/CUR) and EC directives

Powerful tone

- ▶ 118 dB (A) at a distance of 2 meters

Secure mounting

- ▶ Secured and fixed anchorage using two-point mounting



Features

Pressure range bar	Volume dB (A)	Frequency Hz	Color	Connection	Weight kg	Part number
5 ... 8	118	300 / 320	Chromium-plated	for on-board compressor	1.2	0 328 100 002 □

Compressed-air fanfare

Accessories

Description	Fitting	Illustration	Part number
Foot valve:	Fitted on floor of driver's cabin. Operated by foot pressure.	1	1 327 011 003
Pull valve:	Fitted on roof of driver's cabin. Operated by pulling.	2	1 327 011 004
Electric valve (24V):	Fitted in engine compartment. Operated using existing horn button.	3	1 327 011 002

Accessories for horns and fanfares (order separately)

Protects connections against dirt and moisture to increase weather resistance	3 340 522 025 ¹⁾
-------------------------------------------------------------------------------	------------------------------------

□ SB packaging for sales-promoting POS appearance ¹⁾ Two units must be ordered for horns

**Elektronischer
Katalog für Kraft-
fahrzeug-Ausrüstung**

**Electronic Catalogue
for Automotive Parts**

**Catalogue électronique
de pièces détachées
et de rechange**

**Catalogo elettronico
per ricambi di
automobili**

**Catálogo electrónico
de los componentes
del automóvil**

BOSCH

**The easy way to all Automotive Parts –
under Windows 98/2000/NT/ME/XP**

1. Direct entry of article numbers/names
2. Jumps back to the window before
3. Selected vehicle
4. Shows further vehicle information

1 987 720 014

eCATalogue

**Electronic Catalogue
for Automotive
Parts**

BOSCH

Einfacher und schneller
Zugriff auf Kfz-Ausrüstungs-
daten von Bosch in
18 Sprachen.

Easy and quick access to
vehicle application data
from Bosch in 18 languages.





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Battery charger

Available from 03.2010

Figure	Type	Part number
Battery charger C3 	Nominal specification (primary) Nominal voltage: 220–240 V~ 50/60 Hz Cutin current: > 50 A Calculation input voltage: max. 0.6 A (Effective value) Rated input: 60 W Nominal specification (secondary) Calculation voltage: 6 V/12 V Charge voltage: 7.2 V (±0.25 V) 14.4 V (±0.25 V) 14.7 V (±0.25 V) Charging current: 0.8 A (±10%) 3.6 A (±10%) 3.8 A (±10%) Rated current: 0.8 A/3.8 A Ripple ondulation: max. 150 mV Return current: < 5 mA (no AC-input) Degree of protection: IP 65 (dust-protected, waterproof) Battery type: 6 V, 12 V lead-acid battery (AGM, GEL, Open and VRLA) Battery capacity: 6 V=, 1.2–14 Ah/12 V=, 14–120 Ah Noise level: > 50 dB Surrounding temperature: 0 bis 40 °C Accessories: In scope of delivery	0 189 999 030
Battery charger C7 	Nominal specification (primary) Nominal voltage: 220–240 V~ 50/60 Hz Cutin current: > 50 A Calculation input voltage: max. 1.2 A (Effective value) Rated input: 135 W Nominal specification (secondary) Calculation voltage: 12 V/24 V Charge voltage: 14.4 V/14.7 V (±0.25 V) 13.6 V/16.5 V (±0.25 V) 28.8 V/29.4 V (±2%) Charging current: 1.5 A (±10%) 3.0 A (±10%) 3.5 A (±10%) 5.0 A (±10%) 7.0 A (±10%) Rated current: 3.5 A/7.0 A Ripple ondulation: max. 150 mV Return current: < 5 mA (no AC-input) Degree of protection: IP 65 (dust-protected, waterproof) Battery type: 12 V, 24 V lead-acid battery (AGM, GEL, Open and VRLA) Battery capacity: 12 V=, 14–230 Ah/24 V=, 14–120 Ah Noise level: > 50 dB Surrounding temperature: 0 bis 40 °C Accessories: In scope of delivery	0 189 999 070
Accessories  	Hook for mobile application(C3) 0 189 999 130 Wall-holding device (C7) 0 189 999 170	

Materials and lubricants

Note:
Safety data sheets
on the MKC homepage

Lubricating greases

Rolling-bearing grease

Color: Light brown to natural
Thermal application range: -20...+100 °C.
Properties: Mineral, thin gear grease with good adhesion.
Application: Power tools, toothed gearing, plain and roller bearings.
225 ml tube **5 700 053 025**

Synthetic grease

Color: Blue
Thermal application range: -45...+120 °C.
Properties: Fully synthetic, water-repellent, high adhesion properties, non-hostile to seals and gaskets.
Application: Automotive pneumatics.
225 ml tube **5 995 588 025**

Lubricating grease

Color: Beige
Thermal application range: -50...+150 °C.
Application: R starter motor with planetary gear
225 ml tube **1 987 123 040**

Lubricating grease

Color: Light beige
Application: Repair of CP3 pumps
225 ml tube **1 987 123 050**

Silicone grease

Color: Black-grey
Thermal application range: -40...+120 °C.
Properties: Synthetic, water-repellent, outstanding non-aging properties, contains high-pressure additives.
Application: Rolling bearings, shifting shafts, pinion shafts.
225 ml tube **5 700 082 025**

Special silicone grease VS 17 050 FT

Color: White
Thermal application range: -50...+180 °C.
Properties: Water repellent and resistant to oxidation, large thermal application range, change of consistency, good pressure absorption.
Application: Adjusting lever shaft bearing for distributor injection pumps.
50 g tube **5 994 420 005**

Special gear grease FT 1 V 24

Color: Beige
Thermal application range: -20...+100 °C.
Properties: Mineral, good draw properties, highly adhesive, serves to reduce wear at high surface pressures.
Application: Power tools, highly stressed geartrains, very heavy drilling mammals.
225 ml tube **5 700 052 025**

High temperature grease

Color: Dark natural tone
Thermal application range: -10...+90 °C.
Properties: Heat-resistant, highly adhesive. Not suitable for rolling bearings, and lubrication points which come into contact with water.
Application: Ignition cam and cam follower on the ignition contacts.
225 ml tube **5 700 002 025**

Rolling-bearing grease

Color: Beige
Thermal application range: -20...+80 °C.
Properties: Mineral.
Application: Electric-motor bearings up to 5,000 min⁻¹, rolling bearings without contact with water.
225 ml tube **5 700 003 025**

Rolling-bearing grease

Color: Blue
Thermal application range: -20...+120 °C.
Properties: Water-resistant, protects against corrosion.
Application: DC generators, power tools, sliding and rolling bearings in case of high surface pressures, engine ring gears, starter pinions.
225 ml tube **5 700 005 025**

Rolling-bearing grease

Color: Beige
Thermal application range: -20...+130 °C.
Properties: Mineral, highly adhesive, protects against corrosion, water-repellent.
Application: DC generators and alternators, sliding and rolling bearings in case of medium thermal loading.
225 ml tube **5 700 009 025**

Lubricating grease VS 18 036-FT

Color: black
Thermal application range: -50...+150 °C
Properties: Synthetic, oxidation protection, wear protection, resistant to aging.
Application: Planetary gearbox, spiral spline, commutator end shield cap, for electrically energized starters.
Spiral spline and commutator end shield cap, for permanently energized starters (R and S series).
225 ml tube **1 987 123 060**

Lubricating grease VS 17 707-FT

Color: beige
Thermal application range: -45...+120 °C
Properties: Synthetic, oxidation protection, wear protection, resistant to aging.
Application: Relay armature, for electrically and permanently energized starters with solenoid switch.
Do not use with relay armatures with sliding lacquer coating (start-stop starter and starter with rubber bellows).
225 ml tube **1 987 123 070**

Lubricating grease VS 17 427-FT

Color: black
Thermal application range: -30...+135 °C
Properties: Synthetic, oxidation protection, wear protection, resistant to aging.
Application: Slot bushing for freewheeling, for start-stop-starters and conventional starters
225 ml tube **1 987 123 080**

Anti-friction bearing grease VS 15-164 FT

Color: green
Thermal application range: -20...+150 °C
Properties: Excellent thermal and squeeze stability, oxidation resistant, water repellent, anti-corrosion.
Application: DC and AC alternators, for anti-friction bearings with higher loads and speeds.
225 ml tube **1 987 123 090**

Lubricating grease FT 2 V 1

Color: white
Thermal application range: -70...+160 °C
Properties: Water repellent, excellent resistance to aging, soft.
Application: Clutch plates, longitudinal grooves, for permanent lubrication with high thermal loads.
225 ml tube **1 987 123 100**

Polishing and grinding products and abrasives

Lapping abrasive

Color: Green
Condition: Fine
Application: Seats and fits, for lapping and polishing with lapping arbors and lapping plates.
50 g tin **5 837 010 105**

Lapping abrasive

Color: Dark
Condition: Course
Application: Seats and fits, for lapping and polishing with lapping arbors and lapping plates.
50 g tin **5 837 011 105**

Anticorrosion agents

Acid-proof grease

Color: Red
Properties: Mineral, acid-resistant, prevents formation of salt.
Application: Battery terminals.
225 ml tube **5 700 102 025**



Assembly materials

Lambda-sensor mounting paste

Color: Silver-grey
 Thermal application range: Up to $-40...+1100^{\circ}\text{C}$.
 Properties: Contains no agents which could damage the sensor, heat-resistant.
 Protection against corrosion.
 Application: Prevents wear and seizure of the Lambda sensor threads in the installation bore.

225 ml tube **1 987 123 020**

Insulating paste

Color: White
 Melting point: $-40...+300^{\circ}\text{C}$.
 Properties: wax-type, odorless, improvement of the insulating properties at secondary-sides connections of the ignition system, prevention of head sparkover at spark plugs.
 Application: Spark-plug connectors, interference-suppressed, protective caps, distributor caps and the like.

45 ml tube **1 987 123 010**

Heat-transfer compound

Ft 7060

Color: White
 Thermal application range: $-20...+200^{\circ}\text{C}$.
 Properties: Improves heat dissipation.
 Application: Ignition trigger units and heat sinks.

225 ml tube **1 987 123 030**

Screw sealants

Screw locking paint

Color: Yellow
 Consistency: Thick-flowing.
 Properties: Hardening time:
 2 to 3 mins at room temperature.
 Application: Fuel-injection pumps, threaded fittings, Jetronic.

20 ml tube **5 703 245 000**



Test bench equipment




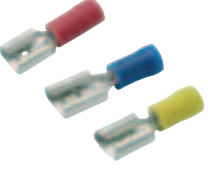



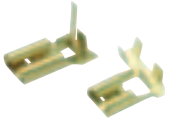
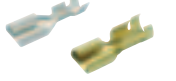

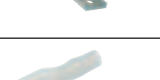

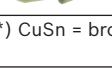
Calibrating oil V 1404

Color: light
 Properties: Mineral, low viscosity
 Application: Injection pump test benches.


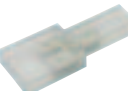

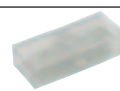
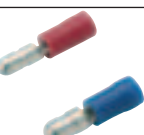
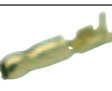

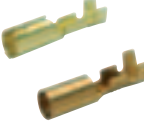
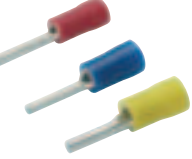


25 l canister **5 980 570 025**

Cable connectors

Universally applicable

Figure	Design	Contact width mm	Contact thickness mm	For conductor cross section mm ²	Colour	Material/finish*)	Qty. per pack	Part number
	Blade terminal	6.3	0.8	0.5–1.0	red	CuZn/tin-plated	100	8 784 480 010
				1.5–2.5	blue	CuZn/tin-plated	100	8 784 480 011
	Blade terminal	2.8	0.8	0.5–1.0		CuZn/bright	100	7 781 700 006
		6.3	0.8	0.5–1.0		CuZn/bright	100	7 781 700 007
				0.75–1.5		CuZn/bright	100	7 781 700 008
				1.5–2.5		CuZn/bright	100	7 781 700 010
	Blade terminal with locking lance	6.3	0.8	1.0–1.5		CuZn/tin-plated	100	7 781 700 009
	Blade receptacle	2.8	0.5/0.8	0.5–1.0	red	CuZn/tin-plated	100	1 901 355 866
		4.8	0.8	0.5–1.0	red	CuZn/tin-plated	100	1 901 355 876
		6.3	0.8	0.5–1.0	red	CuZn/tin-plated	100	1 901 355 880
				1.5–2.5	blue	CuZn/tin-plated	100	1 901 355 881
				4.0–6.0	yellow	CuZn/tin-plated	50	1 901 355 882
		8.0	0.8	1.5–2.5	blue	CuZn/tin-plated	50	8 781 355 810
	Blade terminal with isolation	6.3	0.8	0.5–1.0	red	CuZn/tin-plated	50	8 784 478 014
				1.5–2.5	blue	CuZn/tin-plated	50	8 784 478 015
	Blade receptacle	6.3	0.8	0.5–1.0	red	CuZn/tin-plated	50	7 781 700 029
				1.5–2.5	blue	CuZn/tin-plated	50	7 781 700 030
				4.0–6.0	yellow	CuZn/tin-plated	50	7 781 700 031
	Blade receptacle	2.8	0.5/0.8	0.5–1.0		CuZn/bright	100	1 904 478 301
		4.8	0.5	0.5–1.0		CuZn/bright	100	1 904 478 325
			0.8	1.5–2.5		CuZn/bright	100	1 904 478 331
		6.3	0.8	0.5–1.0		CuZn/bright	100	1 901 355 835
				1.5–2.5		CuZn/bright	100	1 901 355 836
				4.0–6.0		CuZn/bright	100	1 901 355 837
	Blade receptacle	8.0	0.8	1.0–2.5		CuZn/bright	50	8 784 477 007
		9.5	0.8	4.0–6.0		CuZn/bright	50	1 904 478 350
	Blade receptacle	6.3	0.8	1.0–2.5		CuZn/bright	100	8 784 477 008
		9.5	1.2	2.5–4.0		CuZn/bright	50	7 781 700 012
	Blade receptacle with locking lance	4.8	0.8	0.5–1.5		CuSn/tin-plated	25	1 904 492 016
		6.3	0.8	0.5–1.0		CuZn/bright	100	1 901 355 968
				1.5–2.5		CuZn/bright	100	1 901 355 975
				4.0–6.0		CuSn/tin-plated	100	1 901 355 895
	Blade receptacle with branch	6.3	0.8	0.5–1.0	red	CuZn/tin-plated	50	1 901 355 981
				1.5–2.5	blue	CuZn/tin-plated	50	1 901 360 820
	Predective cover for blade receptacle	6.3	0.8		trans-parent	Polyethylen natur	50	8 790 451 002
	Multiple-blade connector 2-fold	6.3	0.8			CuZn/bright	100	1 901 360 810


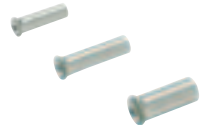


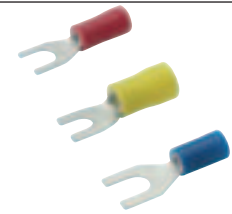



*) CuSn = bronze. CuZn = brass

Figure	Design	Contact width mm	Contact thickness mm	For conductor cross section mm ²	Colour	Material/finish*)	Qty. per pack	Part number
	Multiple-blade connector 3-fold	6.3	0.8			CuZn/bright	50	8 781 360 800
	Multiple-blade connector 3-fold	6.3	0.8			CuZn/nickel-plated	50	8 784 479 006
	Multiple-blade connector 4 way	6.3	0.8			CuZn/nickel-plated	50	8 784 479 005
	Flat connector	6.3	0.8			CuZn/tin-plated	50	8 781 360 810
	Pin terminal	Ø 4.0		0.5–1.0	red	CuZn/tin-plated	100	8 784 480 000
		Ø 5.0		1.5–2.5	blue	CuZn/tin-plated	100	8 784 480 001
	Pin terminal	Ø 4.0		0.5–1.0		CuZn/bright	100	7 781 700 013
				1.5–2.5		CuZn/bright	100	7 781 700 014
		Ø 5.0		1.5–2.5		CuZn/bright	100	7 781 700 015
	Pin receptacle	Ø 4.0		0.5–1.0	red	CuZn/tin-plated	100	8 781 355 000
		Ø 5.0		1.5–2.5	blue	CuZn/tin-plated	50	8 781 355 800
	Pin receptacle	Ø 3.5		0.5–1.0		CuZn/bright	100	7 781 700 000
		Ø 4.5		1.5–2.5		CuSn/blank	100	7 781 700 004
	Wire pin sleeve	Ø 1.8		0.5–1.0	red	Cu/tin-plated	100	7 781 700 017
				1.5–2.5	blue	Cu/tin-plated	100	8 784 480 009
				4.0–6.0	yellow	Cu/tin-plated	100	7 781 700 018
	Butt coupling			0.5–1.0	red	Cu/tin-plated	100	8 784 485 000
				1.5–2.5	blue	Cu/tin-plated	100	8 784 485 001
				4.0–6.0	yellow	Cu/tin-plated	50	8 784 485 023
	Multiple butt connector			0.5–1.5	blue	Cu/tin-plated	25	8 784 485 024
				4.0	yellow	Cu/tin-plated	25	8 784 485 025



*) CuSn = bronze. CuZn = brass




Cable connectors
universally applicable
 (continued)

Figure	Design	Contact width mm	Contact thickness mm	For conductor cross section mm ²	Colour	Material/finish*)	Qty. per pack	Part number
	Multiple butt connector			0.5–1.5	red	CuZn/tin-plated	25	7 781 700 027
				1.5–2.5	blue	CuZn/tin-plated	25	8 784 485 034
				4.0–6.0	yellow	CuZn/tin-plated	25	7 781 700 028
	Wire end ferrule			up to 1.0		Cu/tin-plated	100	8 780 422 000
				1.0–2.5		Cu/tin-plated	100	7 781 700 019
				4.0–6.0		CuZn/tin-plated	100	7 781 700 020
	Spark-plug connector					CuSn/bright	50	8 780 499 002
	Cable lug	M3		0.5–1.0	red	Cu/tin-plated	100	8 781 353 119
				1.5–2.5	blue	Cu/tin-plated	100	7 781 700 032
		M4		0.5–1.0	red	Cu/tin-plated	100	8 781 353 121
				1.5–2.5	blue	Cu/tin-plated	100	8 781 353 125
		M5		4.0–6.0	yellow	Cu/tin-plated	50	7 781 700 025
				0.5–1.0	red	Cu/tin-plated	100	8 781 353 122
				1.5–2.5	blue	Cu/tin-plated	100	8 781 353 126
		M6		4.0–6.0	yellow	Cu/tin-plated	100	8 781 353 130
				0.5–1.0	red	Cu/tin-plated	100	7 781 700 021
				1.5–2.5	blue	Cu/tin-plated	100	8 781 353 127
		M8		4.0–6.0	yellow	Cu/tin-plated	50	8 781 353 131
				0.5–1.0	red	Cu/tin-plated	100	7 781 700 022
	Open cable lug	M4		1.5–2.5	blue	Cu/tin-plated	100	8 781 353 128
				4.0–6.0	yellow	Cu/tin-plated	50	8 781 353 132
		M5		0.5–1.0	red	Cu/tin-plated	100	8 781 353 007
				1.5–2.5	blue	Cu/tin-plated	100	8 781 353 009
		M6		4.0–6.0	yellow	Cu/tin-plated	50	7 781 700 026
								8 781 353 008
	Open cable lug	M4		1.5–2.5	blue	Cu/tin-plated	100	8 781 353 000
		M5		1.5–2.5	blue	Cu/tin-plated	100	8 781 353 001
	Soldered cable lug	M6		up to 3.0		Cu/tin-plated	5	1 901 353 011
				up to 4.0		Cu/tin-plated	5	1 901 353 003
				up to 5.0		Cu/tin-plated	5	1 901 353 004
		M8		up to 5.0		Cu/tin-plated	5	1 901 353 005
				up to 6.0		Cu/tin-plated	5	1 901 353 006
				up to 8.0		Cu/tin-plated	5	1 901 353 007
		M10		up to 8.0		Cu/tin-plated	5	1 901 353 008
				up to 10.0		Cu/tin-plated	5	1 901 353 009
				up to 12.0		Cu/tin-plated	5	1 901 353 010
	Claw-type cable lug	M4		0.5–2.5		CuZn/bright	100	8 781 354 002
		M5		0.5–2.5		CuZn/bright	100	8 781 354 003
		M6		0.5–2.5		CuZn/bright	100	8 781 354 004
		M8		0.5–2.5		CuZn/bright	100	8 781 354 005
		M10		4.0–6.0		CuZn/bright	50	8 781 354 006

*) CuSn = bronze. CuZn = brass

Figure	Design	Contact width mm	Contact thickness mm	For conductor cross section mm ²	Colour	Material/finish *)	Qty. per pack	Part number
	Single blade terminal	M3	6.3	–		CuZn/bright	100	1 901 020 801
		M4	6.3	–		CuZn/bright	100	1 901 020 802
		M5	6.3	–		CuZn/bright	100	1 901 020 803
	Double blade terminal	M6	6.3	–		CuZn/bright	50	8 784 477 005

Setbox
cable connector set, 175 pcs.

	Design	Contact width mm	For conductor cross section mm ²	Qty.
	Blade terminal	6.3	0.5–1.0	10
	Blade terminal	6.3	1.5–2.5	10
	Blade receptacle	6.3	0.5–1.0	10
	Blade receptacle	6.3	1.5–2.5	10
	Cable lug	M3	0.5–1.0	10
	Cable lug	M4	0.5–1.0	10
	Cable lug	M5	0.5–1.0	10
	Cable lug	M3	1.5–2.5	10
	Cable lug	M4	1.5–2.5	10
	Cable lug	M5	1.5–2.5	10
	Cable lug	M5	4.0–6.0	10
	Cable lug	M6	4.0–6.0	10
	Open cable lug	M4	0.5–1.0	10
	Open cable lug	M5	1.5–2.5	10
	Open cable lug	M4	4.0–6.0	10
	Butt coupling		0.5–1.0	10
	Butt coupling		1.5–2.5	10
	Butt coupling		4.0–6.0	5

Line connectors

Universally applicable – High-performance



Universally applicable. High-performance crimp connectors using shrink sleeve techniques with internal coating

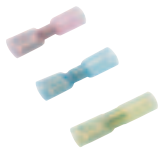

Minimum shrinkage temperature: 100 °C

Permanent application temperature range: -55 °C...+125 °C

100% waterproof

Figure	Design	Contact width	For conductor cross section mm ²	Colour	Sleeve diameter expanded mm ²	shrunk mm ²	Qty. per pack	Part number
	Butt coupling		0.1–0.5	white/transparent	3.7	1.0	25	1 987 532 035
			0.5–1.5	red/transparent	4.3	1.4	25	1 987 532 000
			1.5–2.5	blue/transparent	5.0	1.8	25	1 987 532 001
			4.0–6.0	yellow/transparent	6.5	2.2	25	1 987 532 002
	Cable lug	M4	0.5–1.5	red/transparent	4.3	1.4	25	1 987 532 003
		M5	0.5–1.5	red/transparent	4.3	1.4	25	1 987 532 004
		M6	0.5–1.5	red/transparent	4.3	1.4	25	1 987 532 005
		M8	0.5–1.5	red/transparent	4.3	1.4	25	1 987 532 006
		M10	0.5–1.5	red/transparent	4.3	1.4	25	1 987 532 007
	Cable lug	M4	1.5–2.5	blue/transparent	5.0	1.8	25	1 987 532 008
		M5	1.5–2.5	blue/transparent	5.0	1.8	25	1 987 532 009
		M6	1.5–2.5	blue/transparent	5.0	1.8	25	1 987 532 010
		M8	1.5–2.5	blue/transparent	5.0	1.8	25	1 987 532 011
		M10	1.5–2.5	blue/transparent	5.0	1.8	25	1 987 532 012
	Cable lug	M4	4.0–6.0	yellow/transparent	6.5	2.2	25	1 987 532 013
		M5	4.0–6.0	yellow/transparent	6.5	2.2	25	1 987 532 014
		M6	4.0–6.0	yellow/transparent	6.5	2.2	25	1 987 532 015
		M8	4.0–6.0	yellow/transparent	6.5	2.2	25	1 987 532 016
		M10	4.0–6.0	yellow/transparent	6.5	2.2	25	1 987 532 017
	Open cable lug	M4	0.5–1.5	red/transparent	4.3	1.4	25	1 987 532 018
		M5	0.5–1.5	red/transparent	4.3	1.4	25	1 987 532 019
	Open cable lug	M4	1.5–2.5	blue/transparent	5.0	1.8	25	1 987 532 020
		M5	1.5–2.5	blue/transparent	5.0	1.8	25	1 987 532 021
	Open cable lug	M4	4.0–6.0	yellow/transparent	6.5	2.2	25	1 987 532 022
		M5	4.0–6.0	yellow/transparent	6.5	2.2	25	1 987 532 023



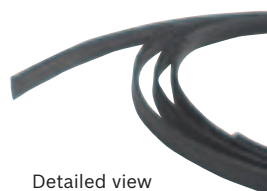
Figure	Design	Contact width mm	Contact thickness mm	For conductor cross section mm ²	Colour	Sleeve diameter expanded mm ²	shrunk mm ²	Qty. per pack	Part number
	Blade receptacle	6.3	0.8	0.5–1.5	red/transp.	6.5	1.4	25	1 987 532 024
		6.3	0.8	1.5–2.5	blue/transp.	6.5	1.8	25	1 987 532 025
		6.3	0.8	4.0–6.0	yellow/transp.	6.5	2.2	25	1 987 532 026
	Blade terminal	6.3	0.8	0.5–1.5	red/transp.	4.3	1.4	25	1 987 532 027
		6.3	0.8	1.5–2.5	blue/transp.	5.0	1.8	25	1 987 532 028
		6.3	0.8	4.0–6.0	yellow/transp.	6.5	2.2	25	1 987 532 029

Braided sleeve in dispenser box



Colour: black
Length: 10 m
Stretch: 1:2
Permanent application temperature range: –55 °C...+130 °C

diameter nominal mm	diameter stretched mm	Part number
10	15	1 987 532 032
15	27	1 987 532 033
25	34	1 987 532 034



Detailed view



Shrink-sleeve sets

Figure	Design	Part number																																
	Shrink-sleeve set, small Internal diameter (mm) 1.2/2.4/4.8/9.5/19.0/38.0 before shrinking Contents: approx. 30 m (90 ft) Permanent application temperature range: -55°C...+125°C Minimum shrinkage temperature: 110°C	1 987 532 030																																
	Shrink-sleeve set, large Internal diameter (mm) 1.2/1.6/2.4/3.2/4.8/6.4/9.5/12.7 before shrinking Contents: approx. 30 m (90 ft) Shrink rate: 2:1 Permanent application temperature range: -55°C...+125°C Minimum shrinkage temperature: 110°C	1 987 532 031																																
	Shrink-sleeve set, with butt coupling as per DIN-VDE-0293-308 <table><tr><th>Colour</th><th>For conduction cross section mm²</th><th>Qty.</th></tr><tr><td>transparent</td><td>0.1-0.5</td><td>5</td></tr><tr><td>red</td><td>0.5-1,5</td><td>5</td></tr><tr><td>blue</td><td>1.5-2.5</td><td>20</td></tr><tr><td>yellow</td><td>4.0-6.0</td><td>20</td></tr></table> Thermal-protection shrink-sleeve <table><tr><th>Length mm</th><th>Diameter mm</th><th>Qty.</th></tr><tr><td rowspan="7">70</td><td>1.6-0,8</td><td>28</td></tr><tr><td>2.4-1,2</td><td>28</td></tr><tr><td>3.2-1.6</td><td>20</td></tr><tr><td>4.8-2.4</td><td>16</td></tr><tr><td>6.4-3.2</td><td>12</td></tr><tr><td>6.4-2.0</td><td>5</td></tr><tr><td>3.2-1.0</td><td>7</td></tr></table>	Colour	For conduction cross section mm²	Qty.	transparent	0.1-0.5	5	red	0.5-1,5	5	blue	1.5-2.5	20	yellow	4.0-6.0	20	Length mm	Diameter mm	Qty.	70	1.6-0,8	28	2.4-1,2	28	3.2-1.6	20	4.8-2.4	16	6.4-3.2	12	6.4-2.0	5	3.2-1.0	7
Colour	For conduction cross section mm²	Qty.																																
transparent	0.1-0.5	5																																
red	0.5-1,5	5																																
blue	1.5-2.5	20																																
yellow	4.0-6.0	20																																
Length mm	Diameter mm	Qty.																																
70	1.6-0,8	28																																
	2.4-1,2	28																																
	3.2-1.6	20																																
	4.8-2.4	16																																
	6.4-3.2	12																																
	6.4-2.0	5																																
	3.2-1.0	7																																

Cable connectors

For use on specific vehicle type

Figure	Design	Contact width or Ø mm	For conductor cross section mm ²	Material/finish*)	Qty. per pack	Application	Part number
	Blade terminal	–	0.8–2.1	CuZn/tin-plated	25	Ford	1 987 352 109
	Blade receptacle	2.8	0.5–1.0	CuZn/tin-plated	25	BMW	1 987 352 118
		6.3	0.5–1.5	CuZn/bright	25	BMW, Opel, VW	1 987 352 101
			1.0–2.5	CuZn/tin-plated	25	Ford, Opel, VW	1 987 352 102
			0.5–2.5	CuZn/silver-plated	25	Mercedes-Benz	1 987 352 115
	Receptacle	–	0.8–2.1	CuZn/tin-plated	25	Ford	1 987 352 110
	Flat spring contact	2.8	0.5–1.0	CuZn/tin-plated	25	BMW, Opel, VW	1 987 352 119
			1.0–2.5	CuZn/tin-plated	25	Ford, Opel, VW	1 987 352 120
		6.3	0.5–1.0	CuZn/tin-plated	25	BMW, Opel, VW	1 987 352 121
			1.0–2.5	CuZn/tin-plated	25	Ford, Opel, VW	1 987 352 122
	Flat spring contact	–	0.5–1.5	CuZn/tin-plated	25	Ford, Opel, VW	1 987 352 106
						Ford	1 987 352 107
	Pin contact	Ø 1.6	0.5–1.0	CuZn/tin-plated	25	BMW, Ford, VW	1 987 352 108
		Ø 2.1	0.5–2.1	CuZn/tin-plated	25	Mercedes-Benz	1 987 352 117
		Ø 2.1	1.0–2.5	CuZn/tin-plated	25	BMW	1 987 352 112
	Pin terminal	Ø 3.5	0.5–2.1	CuZn/tin-plated	25	BMW, VW	1 987 352 103
	Socket	Ø 1.6	0.5–1.5	CuZn/tin-plated	25	VW	1 987 352 104
	Socket contact	Ø 1.6	0.5–1.0	CuZn/tin-plated	25	BMW, Ford, VW	1 987 352 105
	Socket	Ø 2.1	0.5–1.5	CuZn/tin-plated	25	Mercedes-Benz	1 987 352 116
	Socket sleeve	2.1	1.0–2.5	CuZn/tin-plated	25	BMW	1 987 352 113

*) CuSn = Bronze CuZn = Messing

Cables

Product presentation



Materials and markings

- FL** Vehicle cables
- R** Reduced thickness of insulation wall
- Y** PVC insulation
- Sn** Tin-plated conductor
- A** Symmetrical strand layout
- B** Asymmetrical strand layout

Example

FL	R	Y	A	0.5
				Nominal cross section
				Strand layout
				PVC insulation
				Reduced thickness of insulation wall
Vehicle cable				

Color coding

The cable colors are defined as per DIN 47 002/ DIN IEC 304, short symbols as per IEC 757. The color is controlled by comparison with the RAL color register 840R.

Layout example for copper strands for vehicle cables

Asymmetrical strand layout "B"



Symmetrical strand layout "A"



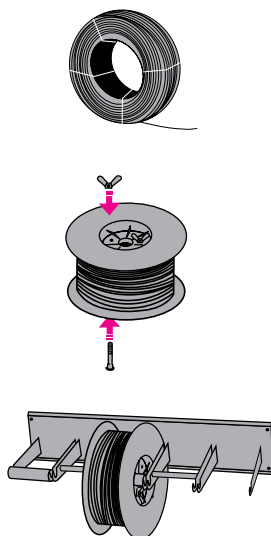
Strands with a symmetrical layout are used where there are significant requirements for a constant insulation wall thickness (particularly for cables with thin wall insulation).

Design and accessories

Your order is supplied on cardboard rings, diameter Ø 125 mm, width 90 mm.

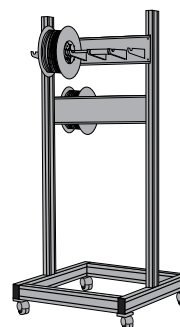
To match the wound rings, we offer:

- ▶ Reusable, standardized two-piece plastic cable drums for easy unwinding of the cables.
- ▶ Cable dispenser for up to 5 plastic cable drums. It is possible to store several dispensers on a cable-drum trolley*.



The benefits for you


- ▶ No empty drums in warehouse
- ▶ No return transport
- ▶ No waste disposal
- ▶ No freight costs
- ▶ No transport damage



Dispenser trolley can be loaded on both sides.

* Not included in catalog.

Vehicle cables


Illustration	Description
FLRY Vehicle cable with thin-wall PVC insulation 	Conductor: Soft-annealed electrolytic copper Cu-ETP1 as per DIN EN 13602, bare. Conductor structure as per ISO 6722. Insulation: Soft PVC with characteristics as per ISO 6722, Class B, lead-free. Special characteristics: Temperature range: -40 °C ... +105 °C (3000 h).

Type Description	Conductor cross section mm ²	Insulation color	Packaging unit m	Part number
FLRY (Type A and B) Conductor, bare, with plastic insulation	0.35 (Type A)	White	500	5 998 340 058
		Blue	500	5 998 340 104
		Brown	500	5 998 340 105
		Black	500	5 998 340 057
	0.5 (Type A)	White	500	5 998 340 003
		Yellow	500	5 998 340 004
		Orange	500	5 998 340 011
		Red	500	5 998 340 016
		Blue	500	5 998 340 010
		Green	500	5 998 340 008
		Gray	500	5 998 340 007
		Brown	500	5 998 340 006
		Black	500	5 998 340 009
	0.75 (Type B)	White	500	5 998 340 174
		Yellow	500	5 998 340 166
		Red	500	5 998 340 175
		Blue	500	5 998 340 167
		Green	500	5 998 340 168
		Gray	500	5 998 340 165
	1.0 (Type B)	Brown	500	5 998 340 176
		White	500	5 998 340 135
		Yellow	500	5 998 340 136
		Red	500	5 998 340 177
		Blue	500	5 998 340 137
		Green	500	5 998 340 138
	1.5 (Type B)	Black	500	5 998 340 139
		White	500	5 998 340 080
		Yellow	500	5 998 340 140
		Red	500	5 998 340 051
		Purple	500	5 998 340 081
		Blue	500	5 998 340 082
		Green	500	5 998 340 021
		Gray	500	5 998 340 142
		Brown	500	5 998 340 052
		Black	500	5 998 340 056

Cables (continued)

Vehicle cables


Type Description	Conductor cross section mm ²	Insulation color	Packaging unit m	Part number
FLRY (Type B) Conductor, bare, with plastic insulation	2.5 (Type B)	White	400	5 998 340 153
		Yellow	400	5 998 340 060
		Red	400	5 998 340 024
		Blue	400	5 998 340 088
		Green	400	5 998 340 062
		Gray	400	5 998 340 162
		Brown	400	5 998 340 025
		Black	400	5 998 340 091
	4.0 (Type B)	White	200	5 998 340 049
		Red	200	5 998 340 036
		Blue	200	5 998 340 039
		Brown	200	5 998 340 042
		Black	200	5 998 340 044

Illustration	Description
FLY Vehicle cable with PVC insulation 	Conductor: Soft-annealed electrolytic copper Cu-ETP1 as per DIN EN 13602, bare. Conductor structure as per ISO 6722. Insulation: Soft PVC with characteristic as per ISO 6722, Class B, lead-free. Special characteristics: Cables with cross sections > 6 mm ² can be used as battery cables. Temperature range: -40 °C ... +90 °C (3000 h).

Type Description	Conductor cross section mm ²	Insulation color	Packaging unit m	Part number
FLY Conductor, bare, with plastic insulation	0.75	White	100	5 998 343 068
		Yellow	100	5 998 343 081
		Red	100	5 998 343 092
		Blue	100	5 998 343 111
		Green	100	5 998 343 124
		Gray	100	5 998 343 137
		Brown	100	5 998 343 145
		Black	100	5 998 343 153
	1.00	Red	100	5 998 343 016
		Green	100	5 998 343 019
		Brown	100	5 998 343 020
		Black	100	5 998 343 021




Type Description	Conductor cross section mm ²	Insulation color	Packaging unit m	Part number
FLY Conductor, bare, with plastic insulation	1.5	White	100	5 998 343 071
		Yellow	100	5 998 343 022
		Red	100	5 998 343 023
		Blue	100	5 998 343 024
		Green	100	5 998 343 027
		Gray	100	5 998 343 028
		Brown	100	5 998 343 029
		Black	100	5 998 343 030
		Yellow/red	100	5 998 343 085
		Gray/red	100	5 998 343 185
		Gray/black	100	5 998 343 186
		White/black	100	5 998 343 079
		Black/red	100	5 998 343 187
		Black/green	100	5 998 343 165
	2.5	White	100	5 998 343 050
		Yellow	100	5 998 343 183
		Red	100	5 998 343 001
		Blue	100	5 998 343 031
		Green	100	5 998 343 034
		Gray	100	5 998 343 035
		Brown	100	5 998 343 036
		Black	100	5 998 343 002
	4.0	Yellow	100	5 998 343 184
		Red	100	5 998 343 097
		Black	100	5 998 343 157
	6.0	Red	50	5 998 343 189
		Blue	50	5 998 343 190
		Black	50	5 998 343 196
	10.0	Red	50	5 998 343 188
		Black	50	5 998 343 191
	16.0	Black	50	5 998 343 192
	25.0	Black	50	5 998 343 193
	35.0	Black	25	5 998 343 194
	50.0	Black	25	5 998 343 195
	70.0	Black	25	5 998 343 197

Illustration	Description
FLYY-F Plastic hose for vehicles Illustration shows the 3-core cable 	Conductor: Soft-annealed electrolytic copper Cu-ETP1 as per DIN EN 13602, bare. Conductor structure as per ISO 6722. Insulation / Sheath: Soft PVC with characteristics as per ISO 6722, Class B, lead-free. Special characteristics: Sheathed cable in circular (single core) and flat (multiple core) design.


Type Description	Number of cores x nominal cross section mm ²	Sheath wall-thickness specified value mm	Insulation color	Packaging unit m	Part number
FLYY-F	1 x 1.5	0.6	Black	50	5 998 351 003
	1 x 2.5	0.6	Black	50	5 998 351 004
	2 x 1.5	0.6	Black	50	5 998 351 101
	3 x 1.5	0.6	Black	50	5 998 351 105

Cables (continued)

Vehicle cables

Illustration	Description
FLYY Plastic sheathed cable for vehicles Illustration shows the 7-core cable 	Conductor: Soft-annealed electrolytic copper Cu-ETP1 as per DIN EN 13602, bare. Conductor structure as per ISO 6722, stranded cores. Insulation / Sheath: Soft PVC with characteristics as per ISO 6722, Class B, lead-free.

Type Description	Number of cores x nominal cross section mm ²	Core colors ¹⁾	Color of sheath	Packaging unit m	Part number
FLYY	5 x 1.5	ge, ws, gn, br, sw	Black	50	5 998 352 013
	7 x 1.5	ge, bl, ws, gn, br, rt, sw	Black	50	5 998 352 018
	8 x 1.5	ge, bl, ws, gn, br, rt, sw, vi	Black	50	5 998 352 021

Illustration	Description
FLYZ PVC twin cable 	Conductor: Soft-annealed electrolytic copper Cu-ETP1 as per DIN EN 13602, bare. Conductor structure as per ISO 6722. Insulation: Soft PVC with characteristics as per ISO 6722, Class B, lead-free. Special characteristics: Suitable for use as speaker cable. Temperature range: -40 °C ... +105 °C (3000 h).

Type Description	Number of cores x nominal cross section mm ²	Insulation color ¹⁾	Packaging unit m	Part number
FLYZ	2 x 0.75	br/br-rt	50	7 781 999 939
	2 x 1.50	Black	50	7 781 999 950


¹⁾ Colors: ge = Yellow, bl = Blue, ws = White, gn = Green, br = Brown, rt = Red, sw = Black, gnge = Green/yellow, hbl = Light blue, vi = Purple




Illustration	Description
XYMHY-O FLYY 9 x 1.5 + 4 x 2.5 (fine-wire copper cable with light plastic insulation)	Conductor: Cu wire, bare, Cu ETP 1 as per EN 13602, stranded cores. Insulation: PVC, lead-free.

Type Description	Cores	Conductor structure nom. mm	Cross section nom. mm ²	Color of sheath	Packaging unit m	Part number
XYMHY-O	1, 2, 4, 5, 6, 7, 8, 11, 12	30 x 0.25	1.5	Black	25	1 987 352 005
	3, 9, 10, 13	50 x 0.25	2.5			

Industrial cables

Illustration	Description
H 05 RR-F Light rubber sheathed cable Illustration shows the 4-core cable 	Conductor: Fine-wire copper cable with light rubber insulation, stranded cores. Insulation / Sheath: Rubber compound as per VDE 0282. Special characteristics: Nominal voltage U_0/U : 300 V/500 V.

Type Description	Number of cores x nominal cross section mm ²	Core colors ¹⁾	Color of sheath	Packaging unit m	Part number
H 05 RR-F	2 x 0.75	br, hbl	Black	50	6 244 001 203
	2 x 1.50	br, hbl	Black	50	6 244 001 205
	3 x 1.50	gnge, br, hbl	Black	50	6 244 002 305
	3 x 2.50	gnge, br, hbl	Black	50	6 244 002 306
	4 x 1.50	gnge, sw, hbl, br	Black	50	6 244 002 405


Illustration	Description
H 05 VV-F Medium PVC sheathed cable Illustration shows the 4-core cable 	Conductor: Fine-wire copper cable with plastic insulation, individual wires bare, stranded cores. Insulation: Thermoplastic PVC, lead-free.

Type Description	Number of cores x nominal cross section mm ²	Core colors ¹⁾	Color of sheath	Packaging unit m	Part number
H 05 VV-F	2 x 1.50	br, hbl	Black	50	6 254 011 205
	3 x 1.50	gnge, br, hbl	Black	50	6 254 012 305
	4 x 0.75	gnge, sw, hbl, br	Black	50	6 254 012 403
	4 x 1.50	gnge, sw, hbl, br	Black	50	6 254 012 405

¹⁾ Colors: ge = Yellow, bl = Blue, ws = White, gn = Green, br = Brown, rt = Red, sw = Black, gnge = Green/yellow, hbl = Light blue, vi = Purple


Cables (continued)

Industrial cables

Illustration	Description
H 07 RN-F Heavy rubber sheathed cable Illustration shows the 5-core cable 	Conductor: Fine-wire copper cable with rubber insulation, individual wires tin-plated or bare, stranded cores. Insulation / Sheath: Rubber compound as per VDE 0282. Special characteristics: Nominal voltage U_0/U : 300 V/500 V. For connection of commercial tools, equipment and machinery. The cables are suitable for fixed installation e.g. on construction sites.

Type Description	Number of cores x nominal cross section mm ²	Core colors ¹⁾	Color of sheath	Packaging unit m	Part number
H 07 RN-F	3 x 1.5	gnge, br, hbl	Black	50	6 259 002 305
	3 x 2.5	gnge, br, hbl	Black	50	6 259 002 306
	4 x 1.5	gnge, sw, hbl, br	Black	50	6 259 002 405
	4 x 2.5	gnge, sw, hbl, br	Black	50	6 259 002 406
	5 x 2.5	gnge, sw, hbl, br, sw	Black	50	6 259 002 506

¹⁾ Colors: ge = Yellow, bl = Blue, ws = White, gn = Green, br = Brown, rt = Red, sw = Black, gnge = Green/yellow, hbl = Light blue, vi = Purple

Illustration	Description
H 01 N2-D Single-core cable 	Conductor: Ultra-fine-wire copper cable, bare. Insulation / Sheath: Sheath oil-resistant and not-flammable. Special characteristics: Nominal voltage: 200 V. Can be used for welding equipment in industry, e.g. automotive engineering, and for commercial electrodes, e.g. in workshops or on construction sites.

Type Description	Nominal cross section mm ²	Color of sheath	Packaging unit m	Part number
H 01 N2-D	16	Black	50	6 168 910 161
	25	Black	50	6 168 910 251
	35	Black	25	6 168 910 351
	50	Black	25	6 168 910 501
	70	Black	25	6 168 910 701
	95	Black	25	6 168 910 951



Accessories


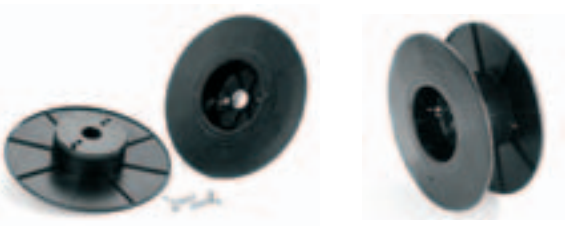
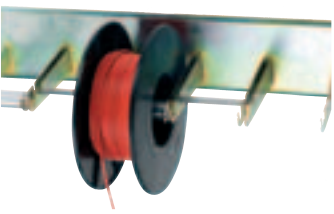
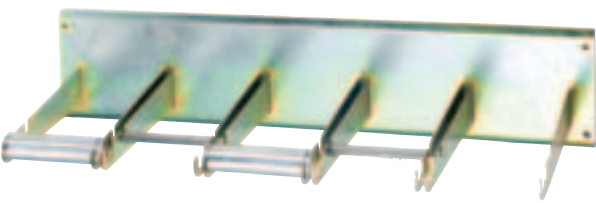

Illustration	Description	Part number
<p>Plastic cable drum</p>  <p>Application example</p> 	<p>Reusable, two-piece plastic cable drum:</p> <ul style="list-style-type: none"> ► Can be attached to cardboard rings. ► Quick and easy to fit by hand. ► Screwed together with 2 thumb screws*. <p>* Included in scope of delivery.</p>	7 781 999 948

Illustration	Description	Part number
<p>Cable dispenser</p>  <p>Application example</p> 	<p>Cable dispenser for 5 plastic cable drums with mounting elements.</p> <p>Supplied with 5 shafts to allow storage of</p> <ul style="list-style-type: none"> ► Plastic cable drums (shaft Ø 30 mm) ► Dispenser rollers* (shaft Ø 10 mm) <p>* Also fits dispenser rollers as delivered up to now.</p>	7 781 999 949

Copper cable for general use, accessories

	Cable ties			
	Dimensions mm	Pack Qty.	Part number black	Part number transparent
	390 x 4.8	100	1 987 352 011	7 781 999 596
	203 x 4.8	100	1 987 352 010	7 781 999 592
	150 x 3.6	100	1 987 352 009	7 781 999 593
	102 x 2.5	100	1 987 352 008	7 781 999 594

	Mounting plates for cable ties	
	For securing wiring harness, self-adhesive. Colour white. Dimensions: 28 x 28 mm	
	Design	Part number
	25 pack qty., screw type	7 781 999 595

- | Werkzeug-Sortiment
Tool Set | |
|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Handbohrer, Typ 1.187.530.037 | |
| Artikel Nr. / No. 1.187.530.039 | Kunststoffgehäuse Gehäuse
Material Kunststoff
Materialstärke 1,5 mm
Materialfarbe grau
Beispiel Gehäuse: Länge 1,48 m
Beispiel Gehäuse: 1,48 m
Beispiel Gehäuse: 1,48 m |
| Artikel Nr. / No. 1.187.530.050 | Kunststoffgehäuse Micro Taper
Material Kunststoff
Materialstärke 1,5 mm
Materialfarbe grau
Beispiel Gehäuse: Micro Taper
Beispiel Gehäuse: Micro Taper
Beispiel Gehäuse: Micro Taper |
| Artikel Nr. / No. 1.187.530.051 | Kunststoffgehäuse KSK 1,5 mm
Material Kunststoff
Materialstärke 1,5 mm
Materialfarbe grau
Beispiel Gehäuse: KSK 1,5 mm
Beispiel Gehäuse: KSK 1,5 mm
Beispiel Gehäuse: KSK 1,5 mm |
| Artikel Nr. / No. 1.187.530.052 | Kunststoffgehäuse KSK Taper
Material Kunststoff
Materialstärke 1,5 mm
Materialfarbe grau
Beispiel Gehäuse: KSK Taper
Beispiel Gehäuse: KSK Taper
Beispiel Gehäuse: KSK Taper |
| Artikel Nr. / No. 1.187.530.058 | Kunststoffgehäuse KSK 2,5 mm
Material Kunststoff
Materialstärke 2,5 mm
Materialfarbe grau
Beispiel Gehäuse: KSK 2,5 mm
Beispiel Gehäuse: KSK 2,5 mm
Beispiel Gehäuse: KSK 2,5 mm |

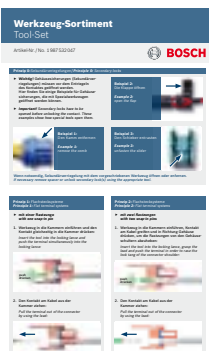


Figure	Description	Part number
	Contact example: JPT 2.8 mm/5.8 mm	1 987 532 048
	Contact example: Junior Timer 1.48 mm	1 987 532 049
	Contact example: Micro Timer II	1 987 532 050
	Contact example: QKK 1.5 mm Contact for blade terminals with 2 grip mechanism	1 987 532 051
	Contact example: Sensor Timer Special tool for 2.8 mm Tyco sensor blade terminals	1 987 532 052

Tool box
The tools are suitable for all common vehicles. All principles are blade terminal systems.

Crimping tools

Product information

Crimping pliers

- Processing of conductor and insulation crimping in a single operation
- Integrated, unlocking lock secures the crimping
- Easy to use
- Ergonomic soft handles

Crimping pliers with easy replacement system











- Quick and easy replacement of heads with snap connector
- Integrated lock secures the crimping
- Modular design and construction of pliers reduces procurement costs
- Universal crimping profile of replacement head allows a wide range of connectors to be processed
- Effort-saving use due to optimum transmission ratio

Cable stripper

- Stripping and cutting of fine-wire and solid conductors with PVC insulation, from 0.03–6.0 mm²
- Adjustable stripping length from 3–16 mm
- Lightweight and easy to use
- Automatic adjustment of cross-section
- Adjustable for different insulation thicknesses
- Zero fatigue working due to ergonomic design
- No damage to head

Field of application

DIN cable lug, pin cable lug, blade terminals and blade receptacles, pin terminals and receptacles, butt connectors, parallel connectors

Figure	Description	Part number
	Cable stripping tool Stripping and cutting of firm and solid wire with PVC insulation, from 0.03 to 6.0 mm ²	1 987 532 036
	Crimping tool For cable cross-section: Red 0.5–1.0 mm ² 20–16 AWG Blue 1.5–2.5 mm ² 16–14 AWG Yellow 4.0–6.0 mm ² 12–10 AWG	1 987 532 037
	Crimping tool For cable cross-section: Profile 1 0.5–1.0 mm ² 20–16 AWG Profile 2 1.0–2.0 mm ² 16–14 AWG Profile 3 4.0–6.0 mm ² 12–10 AWG Profile 4 0.5–1.0 mm ² 20–16 AWG	1 987 532 038
	Handle, short for changeable tool heads	1 987 532 039
	Tool head, yellow/red and blue, for cable cross-section: 0.35–0.5 mm ² /AWG 22–20 Yellow insulated shrink-down tubing connectors 0.5–1.0 mm ² /AWG 20–16 Red insulated shrink-down tube connectors 1.5–2.5 mm ² /AWG 16–14 Blue insulated shrink-down tube connectors	1 987 532 041
	Tool head without insulation Crimp, yellow, for cable cross-section: 4–6 mm ² Yellow insulated shrink-down tubing connector	1 987 532 042
	Tool head for red/blue insulated connectors for cable cross-section: Red 0.5–1.0 mm ² AWG 20–16 Blue 1.5–2.5 mm ² AWG 16–14	1 987 532 043
	Tool head for yellow insulated connectors for cable cross-section: 4.0–6.0 mm ² AWG 12–10	1 987 532 044
	Universal tool head for cable cross-section: 0.35–0.5 mm ²	1 987 532 045
	Universal tool head for cable cross-section: 0.5–1.0 mm ²	1 987 532 046



Connectors

13-pole 12 V connector ISO 11446

Application

This connector is used for the electrical connection between the towing vehicle and the trailer.

Technical data

The connector complies with ISO 11446.
Tests were carried out in compliance with ISO 4091.

Contact allocation

Connector N-type according to ISO 1724

Contact no.	Colour	mm ²	Circuit for
1	yellow	1.5	Left-hand direction indicator light
2	blue	1.5	Rear fog light
3 ¹⁾	white	2.5	Earth (for circuit to contact no. 1 bis 8)
4	green	1.5	Right-hand direction indicator light
5	brown	1.5	Right-hand rear position and marker lights, and rear registration-plate illuminating device ²⁾
6	red	1.5	Stop-lights
7	black	1.5	Left-hand rear position and marker lights, and rear registration-plate illuminating device ¹⁾
8	pink	1.5	Reversing light
9	orange	2.5	Power supply (permanent positive)
10	grey	2.5	Power supply (controlled by ignition switch)
11 ¹⁾	white/black	2.5	Earth (for circuit to contact no. 10)
12	–	1.5	Reserved for future allocation
13 ¹⁾	white/red	2.5	Earth (for circuit to contact no. 9)

¹⁾ The three earth cables shall not be connected electrically in the trailer.

²⁾ The rear registration-plate illuminating device shall be connected in such that no lamp of the device has a common connection with either contact 5 or 7.

15-pole 24 V connector ISO 12098

Application

This connector is used for the electrical connection between the towing vehicle and the trailer. Leading vehicle manufacturers use this connector as a successor to the 7-pole connector complying with ISO 1185/ISO 3731.

Technical data

The connector complies with ISO 12098.
Tests were carried out in compliance with ISO 4091.

Contact allocation

Connector N-type according to ISO 1185

Contact no.	Colour	mm ²	Circuit for
1	yellow	1.5	Left-hand direction indicator light
2	green	1.5	Right-hand direction indicator light
3	blue	1.5	Rear fog light
4	white	2.5	Earth
5	black	1.5	Left-hand rear position and marker lights, and rear registration-plate illuminating device ¹⁾
6	brown	1.5	Right-hand rear position and marker lights, and rear registration-plate illuminating device ¹⁾
7	red	1.5	Stop-lights
8	pink	1.5	Reversing light
9	orange	2.5	Power supply (+24 V)
10	grey	1.5	Worn brake lining sensor
11	white/black	1.5	Pressure sensor for spring brake
12	white/blue	1.5	Axle lifting device
13	white/red	2.5	Earth (for circuit to contact no. 14 und 15)
14	white/green	1.5	Data communication
15	white/brown	1.5	Data communication

¹⁾ The rear registration-plate illuminating device shall be connected in such that no lamp of the device has a common connection with either contact 5 or 7.

ABS/EBS 24 V connector ISO 7638, 7-pole

Application

This connector is used for the electrical connection between the towing vehicle and the trailer.

Technical data

The connector complies with ISO 12 098.
Tests were carried out in compliance with ISO 4091.

Contact allocation

Connector N-type according to ISO 1185

Contact no.	Colour	mm ²	Circuit for
1	red	4/6	Plus electrovalve
2	black	1.5	Plus electronic
3	yellow	1.5	Minus electronics
4	brown	4/6	Minus electrovalve
5	white	1.5	Warning device
6	white/yellow	1.5	Data communication
7	white/brown	1.5	Data communication

7-pole 12 V connector ISO 1724/ISO 3732

Application

This connector is used for the electrical connection between the towing vehicle and the trailer.

Technical data

The N-type is normed in ISO 1724. The S-type is colour coded in white and corresponds to ISO 3732. The tests were carried out in accordance with ISO 1724 and ISO 3732.

Contact allocation

Connector N-type according to ISO 1724

Contact no.	Core insulation colour (for information)	mm ²	Circuit for
1 / L	yellow	1.5	Left-hand direction indicator light
2 / 54g	blue	1.5	Rear fog light
3 / 31	white	2.5	Earth
4 / R	green	1.5	Right-hand direction indicator light
5 / 58R	brown	1.5	Right-hand rear position and marker lights, and rear registration-plate illuminating device ¹⁾
6 / 54	red	1.5	Stop-lights
7 / 58L	black	1.5	Left-hand rear position and marker lights, and rear registration-plate illuminating device ¹⁾

Connector S-type according to ISO 3732

1	yellow	1.5	Reversing light ²⁾
2		1.5	Reserved for future allocation
3	white	2.5	Earth (for circuit to contact no. 4)
4	green	2.5	Power supply (permanent positive)
5	brown	1.5	No allocation
6	red	2.5	Power supply (controlled by ignition switch)
7	black	2.5	Earth (for circuit to contact no. 6)

¹⁾ The rear registration-plate illuminating device shall be connected in such a manner that no lamp of such a device has a common connection with both contacts 2 and 6.

²⁾ The earth for the circuit of this contact will normally be by contact no. 3 of the 12N connector according to ISO 1724.

7-pole 24 V connector ISO 1185/ISO 3731

Application

This connector is used in the so called "Euro-tow equipment" for the electrical connection between the towing vehicle and the trailer.

Technical data

The N-type is normed in ISO 1185. The S-type is colour coded in white and corresponds to ISO 3731. The tests were carried out in accordance with ISO 1185 and ISO 3731.

Contact allocation

Connector N-type according to ISO 1185

Contact no.	Colour	mm ²	Circuit for
1 / 31	white	2.5	Earth
2 / 58L	black	1.5	Left-hand rear position and marker lights, and rear registration-plate illuminating device ¹⁾
3 / L	yellow	1.5	Left-hand direction indicator light
4 / 54	red	1.5	Stop-lights
5 / R	green	1.5	Right-hand direction indicator light
6 / 58R	brown	1.5	Right-hand rear position and marker lights, and rear registration-plate illuminating device ¹⁾
7 / -	blue	1.5	Braking control for trailers

Connector S-type according to ISO 3731

1	white	2.5	Earth
2	black	1.5	No allocation
3	yellow	1.5	Reversing light
4	red	2.5	Power supply (permanent positive)
5	green	1.5	Control via earth
6	brown	2.5	Power supply (controlled by ignition switch)
7	blue	1.5	Rear fog light

¹⁾ The rear registration-plate illuminating device shall be connected in such a manner that no lamp of such a device has a common connection with both contacts 2 and 6.








Plugs, sockets, spiral connection cables

Plugs and sockets for trailer connection (12 V program)

Figure	Designation	Description	Part number
	Trailer plug, 3-pole	Plastic, 12 V, for single-axle towing, switch-off contact	0 352 130 001
	Socket (trailer), 3-pole	Plastic, 12 V, for single-axle towing, switch-off contact	0 352 030 002
	Trailer plug, 4-pole	Plastic, 12 V, for narrow-track towing vehicle, commercial vehicles, as additional plug-connection cable	0 352 140 001
	Socket (trailer), 4-pole	Plastic, 12 V, for narrow-track towing vehicle, commercial vehicles, as additional plug-connection cable	0 352 040 002
	Trailer plug, 7-pole	Metal, 12 V, for cars, connecting to ISO 1724, N-version	0 352 170 004
	Socket (trailer), 7-pole	Metal, 12 V, for cars, connecting to ISO 1724, N-version	0 352 070 011
	Socket (trailer), 7-pole	Switch-off contact, plastic, 12 V, for cars, with switch-off contact for fog warning lamp of towing vehicle when trailer plug is inserted	0 986 352 028
	Socket (trailer), 7-pole	Switch-off contact, plastic, 12 V, for cars, with switch-off contact for fog warning lamp of towing vehicle when trailer plug is inserted, with sheet-metal panel, sealing ring	0 986 352 820 □
	Trailer plug, 7-pole	For cars, connecting to ISO 1724, N-version	0 352 170 003
	Trailer plug, 7-pole	Folding plug, 12 V, for cars, connecting to ISO 1724, N-version	0 986 352 816 □

□ Self-service pack

Plugs and sockets for trailer connection (12 V program)

Figure	Designation	Description	Part number
	Socket (trailer), 7-pole	Switch-off contact, plastic, 12 V, for cars, with switch-off contact for fog warning lamp of towing vehicle when trailer plug is inserted	0 986 352 029
	Socket (trailer), 7-pole	Switch-off contact, plastic, 12 V, for cars, with switch-off contact for fog warning lamp of towing vehicle when trailer plug is inserted, with sheet-metal panel and seal	0 986 352 819 □
	Socket (trailer), 7-pole	Switch-off contact, plastic, 12 V, for cars, with switch-off contact for fog warning lamp of towing vehicle when trailer plug is inserted	0 986 352 817 □
	Trailer plug, 13-pole	Plastic, 12 V, for cars, standard DIN/ISO 11446	0 986 352 814 □
	Socket (trailer), 13-pole	Plastic, 12 V, for cars, standard DIN/ISO 11446	0 986 352 026
	Socket (trailer) 13-pole	Plastic, 12 V, for cars, as ...026, but with switch-off contact for fog warning lamp of towing vehicle when trailer plug is inserted, with sealing ring	0 986 352 815 □
	Short adapter	Plastic, 12 V, for connecting 7-pole and 13-pole, without cable	0 986 352 813 □
	Parking socket, 13-pole	Plastic, 12 V, to protect against dust and splashwater, for unplugged trailer plugs	0 986 352 030



Plugs, sockets, spiral connection cables (continued)

Plugs and sockets for trailer connection (24 V program)


Figure	Designation	Description	Part number
	Trailer plug, 7-pole	Plastic, 24 V, for truck-trailer, SAE and SMMT standards, N-version to ISO 1185	0 986 352 114
	Socket (trailer), 7-pole	Plastic, 24 V, for truck-trailer, SAE and SMMT standards, N-version to ISO 1185, with predection cap and flat connection	0 986 352 010
	Socket (trailer), 7-pole	Plastic, 24 V, for truck-trailer, SAE and SMMT standards, N-version to ISO 1185, with predection cap and screw connection	0 986 352 123
	Trailer plug, 7-pole	Metal, 24 V, for truck-trailer, SAE and SMMT standards, N-version to ISO 1185	0 352 171 001
	Socket (trailer), 7-pole	Metal, 24 V, for truck-trailer, SAE and SMMT standards, N-version to ISO 1185, with screw connection and predection cap	0 986 352 121
	Socket (trailer), 7-pole	Metal, 24 V, for truck-trailer, SAE and SMMT standards, N-version to ISO 1185, with flat connection	0 986 352 124
	Trailer plug, 7-pole	Plastic, 24 V, for truck-trailer, SAE and SMMT standards, S-version to ISO 3731	0 986 352 113
	Socket (trailer), 7-pole	7-pole, plastic, 24 V, for truck-trailer, SAE and SMMT standards, S-version to ISO 3731, with predection cap and flat connection	0 986 352 023
	Socket (trailer), 7-pole	Plastic, 24 V, for truck-trailer, SAE and SMMT standards, S-version to ISO 373, with screw connection	0 986 352 122

Figure	Designation	Description	Part number
	Trailer plug, 7-pole	Metal, 24 V, for truck-trailer, SAE and SMMT standards, S-version to ISO 3731	0 986 352 022
	Socket (trailer), 7-pole	Metal, 24 V, for truck-trailer, SAE and SMMT standards, S-version to ISO 3731, with screw connection	0 986 352 125
	Socket (trailer), 7-pole	Metal, 24 V, for truck-trailer, SAE and SMMT standards, with pretection cup, S-version to ISO 3731, with flat connection and pretection cap	0 986 352 126
	Trailer plug, 7-pole	Plastic, 24 V, ISO 7638, plug with turned crimp contact and anti-kink sleeve for cable	0 986 352 101
	Socket (trailer), 7-pole	Plastic, 24 V	0 986 352 822
	Trailer plug, 15-pole	Plastic, 24 V, to ISO 12098, plug with turned crimp contact and anti-kink sleeve for cable, approx. 13 to 17 mm Ø, GGVS-ADR tested	0 986 352 104
	Trailer plug, 15-pole	Plastic, 24 V, for truck-trailer, additional data cable to ISO 12098 are possible	0 986 352 018
	Trailer plug, 15-pole	Plastic, 24 V, for truck-trailer, additional data cable to ISO 12098 are possible	0 986 352 017
	Parking socket ABS/EBS	15-pole, plastic, 24 V, to protect against dust and splashwater, for trailer plugs 15-pole, or plugs for ABS-/EBS cables	0 986 352 021
	Socket, 2-pole	24 V, usable as a starting-aid socket, without contacts	0 986 352 109
	Combi crimp/solder contact	for 35- and 50-mm ² -cable	0 986 352 111
	Plug, 2-pole	24 V, with crimp-type solder contacts, for 35-mm ² -cable	0 986 352 112









Plugs, sockets, spiral connection cables (continued)

Plug-and-socket device, 2-pole (DIN/ISO 4165)

Figure	Designation	Description	Part number
	Plug-and-socket device, 2-pole	24 V, with 2 plugs and 1 coupling, length 6000 mm	0 986 352 105

Spiral connection cables for trailer connection

	Spiral cable, 7-pole	24 V, ISO 1185 and ISO 3731, with moulded plug, waterproof, degree of protection IPX 9K, N-version	0 986 352 103
	EBS-spiral cable, 7-pole	24 V, ISO 7638 (plug), working length: 4000 mm, plug: GGVS-ADR tested, wire assembly as per ISO 6722, hytrel spiral cable as per ISO 4141	0 986 352 106
	EBS-spiral cable 7-pole	24 V, ISO 7638, working length: 4000 mm, plug: GGVS-ADR tested, hytrel spiral cable as per ISO 4141	0 986 352 108
	Spiral cable 7-pole	24 V, ISO 3731, with moulded TPE plastic plug, waterproof, degree of protection IPX 9K, S-version	0 986 352 107
	Spiral cable 15-pole	24 V, ISO 12098, working length: 4000 mm, plug: GGVS-ADR tested	0 986 352 102
	Spiral electric cable, 15 on 2x7-pole	24 V, with moulded TPE plastic plug, 7-pole, to ISO 1185 and 3731, 15-pole, to ISO 12098, PUR spiral cable to ISO 4141, wire assembly as per ISO 6722	0 986 352 110

Standard sockets








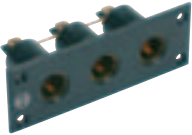




	Surface-mounted standard socket	with blade terminal 6,3 mm, fitting for standard and universal sockets, max. 16 A/12–24 V, TÜV tested and controlled, with contacts as per ISO 4165	0 986 352 006
	Surface-mounted standard socket, housing 2-pole	12 A at 6–24 V, Housing (aluminum), socket (plastic), 2 holes, Ø 4,5mm, hole spacing 46 mm, screw terminal for wire and ferrules	0 352 221 001
	Panel-mounted standard socket, 2-pole	12 A at 6–24 V, housing (aluminum), socket (plastic), with hexagonal nut M18x1, SW 22, 1 screw terminal (+)	0 352 222 008
	Panel-mounted standard socket, 2-pole	12 A at 6–24 V, housing (aluminum), socket (plastic), hinged cover olive green, with hexagonal nut M18x1, SW 22, 1 screw terminal (+)	0 352 222 009



Figure	Designation	Description	Part number
	Panel-mounted standard socket to DIN	With 6.3mm flat connection, secured with hexagon nut, suitable for standard and universal plugs, max. 16 A/1–24 V, TÜV tested and monitored, complies with DIN ISO 4165, installation aperture 18 mm	0 986 352 007
			0 986 352 805 <input type="checkbox"/>
	Panel-mounted standard socket to DIN	Water tight, with screw-on cover, 12–24 V, water tight seal, IP 67, 16 A, contacts comply with DIN ISO 4165, pre-assembled with 300mm cable, secured with hexagon nut, installation aperture: 18.4 mm, temperature resistant: –40 °C to 105 °C	0 986 352 823
	Panel-mounted standard socket to DIN	With cover, with 6.3 mm flat connection, cover protects against dust and splashed water, secured with hexagon nut, suitable for standard and universal plugs, max. 16 A/1–24 V, TÜV tested and monitored, complies with DIN ISO 4165, installation aperture 18 mm	0 986 352 804
	Panel-mounted standard triple socket	Three standard sockets, 12–24 V, connected using 6.3 mm flat plug, max. total current consumption for all three sockets: 16 A, with contacts complying with DIN ISO 4165	0 986 352 807
	Hinged cover	For panel-mounted standard socket, olive green	1 350 500 012
	Hinged cover	For panel-mounted standard socket, black (Lupolen)	1 350 500 001

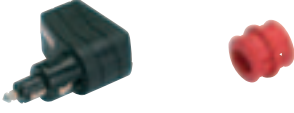

Universal plugs for standard socket and cigar lighter socket

	Standard plug	For standard socket, 10 A at 6–24 V, black housing, straight, 2 screw terminals	0 986 352 000
	Standard plug	for standard socket and cigar lighter socket, 8 A at 6–24 V, black housing, straight, 2 screw terminals, with adapter	0 986 352 015 0 986 352 810 <input type="checkbox"/>
	Standard plug	for standard socket and cigar lighter socket, 8 A at 6–24 V, black housing, straight, 2 screw terminals, with adapter, fuse preselection up to 8 A with ceramic or glass fuse	0 986 352 016 0 986 352 811 <input type="checkbox"/>
	Standard plug	as 0 986 352 811, with green LED function display	0 986 352 812 <input type="checkbox"/>
	Standard plug		



☐ Self-service pack

Plugs, sockets, spiral connection cables (continued)


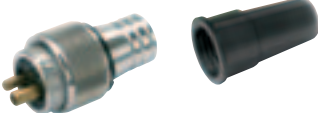

Universal plugs

Figure	Designation	Description	Part number
	Universal plug	for standard socket and cigar lighter socket, 8 A at 6–24 V, black housing, offset, 2 screw terminals with adapter, fuse protection up to 7.5 A, with green LED function display, Lockable adapter	0 986 352 809 <input type="checkbox"/>
	Universal plug	for standard socket and cigar lighter socket, 8 A at 6–24 V, black housing, offset, 2 screw terminals, with adapter, fuse protection up to 8 A, the front and rear of the plug housing can be rotated with respect to each other while at the same time pivoting through 0–70°	0 986 352 818 <input type="checkbox"/>

Extension cable for standard socket and cigar lighter socket



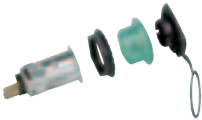


	Extension cable	8 A at 12–24 V, flat cable (2x0.75 mm ²), with safety universal plug (fuse 8 A integrated) and break resistant connection for standard plugs to ISO 4165, length 4 m	0 986 352 825 <input type="checkbox"/>
	Extension cable	8 A at 12–24 V, spiral cable (2x0.75 mm ²) with safety universal plug (fuse 8 A integrated) and connection (inner Ø 21 mm), length 0.6 to 3.0 m	0 986 352 826 <input type="checkbox"/>

Socket outlet and plug, 2-pole (DIN/ISO 14690)

	Integral socket, 2-pole	16 A at 6–42 V, housing made of aluminum, captive screw cover with gasket, screw terminals for cable lug M3, 3 holes, Ø 5.5 mm, hole circle Ø 49 mm	0 352 220 001
	Plug	16 A at 6–42 V, Housing made of aluminum, including captive union nut, strain relief and protective cable sleeve for cable Ø 6–12 mm, screw terminals for wire end ferrules up to Ø 3 mm, with protection cap	0 352 320 001
	Socket, 2-pole	16 A at 6–42V, Housing made of aluminum, captive screwed-on cover with gasket, strain-relief and protective cable sleeve for cable Ø 6–12 mm, screw terminals for wire end ferrules up to Ø 3 mm, fastening: 3 holes, Ø 5.5 mm, hole circle Ø 49 mm	0 352 220 003

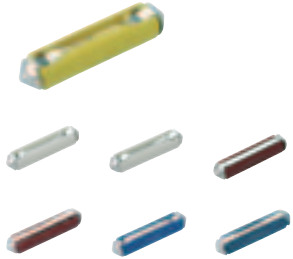



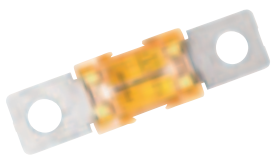
☐ Self-service pack

Special accessories

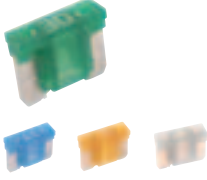




Figure	Designation	Description	Part number
	Adapter cable	8 A to 12–24 V, standard plug according to ISO 4165 and connection (inner Ø 21 mm), length: 0.25 m	0 986 352 824 □
	Adapter for universal plug	To adapt universal plugs to cigar lighter socket	1 987 352 126 □
	AC mains socket	With screw thread, for operation of additional equipment in cars, boats and caravans, 20 A load capacity with cable cross-section 2.5 mm ² , 2,15 A load capacity with cable cross-section 1.5 mm ² , internal diameter: 22 mm, installation aperture: 27.8 mm	0 986 352 130 □
	Coupling	For setting up individual extensions to supply power to electrical equipment and lights, max. 16 A /12–24 V, with contacts complying with DIN ISO 4165	0 986 352 128 □
	Battery monitor	Protects the battery against total discharge by disconnecting loads in good time, e.g. cool boxes, seat heating, fans and other mobile 12V devices. Automatic reconnection when normal voltage conditions are restored. Suitable for cigarette lighter and standard sockets, with LED function indicator and short circuit protection, 1 m cable with coupling (internal Ø 21 mm), angular design allows adjustment for specific vehicle configuration.	0 986 352 127 □



Car fuses


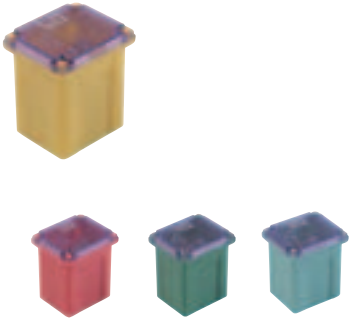
Figure	Version	Rated current A	Colour	Qty. per bulk pack	Dimensions mm	Part number
	Torpedo fuses (6 x 25 mm), as per DIN 72581/1	5	yellow	100 ²⁾		1 904 520 015
		8	white	10		1 904 520 914 □
				100 ²⁾		1 904 520 016
		16	red	100 ²⁾		1 904 520 018
				10		1 904 520 918 □
		25	blue	100 ²⁾		1 904 520 017
				10		1 904 520 917 □
	Assortment (2 pieces each)	2	clear	10		1 904 529 002 □
		5	yellow			
		8	white			
		16	red			
		25	blue			
	Fuse strips for diesel vehicles as per DIN 72581/2	25	grey	5		1 351 017 010
		30	grey	50		1 191 017 004
		50	grey	25		1 191 017 005
		60	grey	10		1 191 017 001
		80	grey	50		1 191 017 003
		100	grey	10		1 191 017 006
		125	grey	5		1 191 017 007
		150	grey	10		1 199 999 018
		250	grey	10		1 199 999 019
	Glas fuses	2	clear	25	5 x 20	1 904 521 441
		3,15	clear	25	5 x 20	1 987 529 011
		5	clear	25	6,35 x 32	1 987 529 901
		6,3	clear	25	6,35 x 32	1 904 522 750
		10	clear	25	6,35 x 32	1 987 529 902
		15	clear	25	6,35 x 32	1 987 529 903
		20	clear	25	6,35 x 32	1 987 529 904
		25	clear	25	6,35 x 32	1 987 529 905
	Screw locking element Midi (small), as per ISO 8820-5 For BMW, VAG, FORD, Daimler, Renault, Chrysler, Hyundai, KIA, Porsche High current fuse for agricultural machinery manufacturers etc. Screw in fuse with 32 V rated voltage for protection of high current wiring. Transparent cover for easy identification of blown fuses. Fuses are installed between the battery and the starter or alternator, for example.	30	orange	25		1 987 531 018
		40	green	25		1 987 531 017
		50	red	25		1 987 531 016
		60	yellow	25		1 987 531 014
		70	brown	25		1 987 531 013
		80	white	25		1 987 531 012
		100	blue	25		1 987 531 011
		125	pink	25		1 987 531 010
		200	violet	25		1 987 531 008
	Screw locking element Mega , as per ISO 8820-5 For BMW, VAG, FORD, Daimler, Renault, Chrysler, Hyundai, KIA, Porsche Screw in fuses with 32 V rated voltage for protection of high current wiring. Transparent cover for easy identification of blown fuses. Fuses are installed between the battery and the starter or alternator, for example.	100	yellow	10		1 987 531 000
		125	green	10		1 987 531 001
		150	orange	10		1 987 531 002
		175	white	10		1 987 531 003
		200	blue	10		1 987 531 004
		225	brown	10		1 987 531 005
		250	pink	10		1 987 531 006
		300	grey	10		1 987 531 007

□ Self-Service pack ²⁾ Transparent plastic box

Figure	Version	Rated current A/V	Color	Qty. per bulk pack	Part number
	Fuses Low-Profile Mini Low-profile mini fuses provide similar performance features as standard mini fuses. Designed for open terminals and forked contacts, eliminating the need for additional contact bushing. The low overall height also provides additional weight and material savings. Used in Japanese vehicles.	2/58	grey	10	1 987 529 041
		3/58	violet	10	1 987 529 042
		4/58	pink	10	1 987 529 043
		5/58	light brown	10	1 987 529 044
		7,5/58	brown	10	1 987 529 045
		10/58	red	10	1 987 529 046
		15/58	blue	10	1 987 529 047
		20/58	yellow	10	1 987 529 048
		25/58	white	10	1 987 529 049
		30/58	green	10	1 987 529 077
	Mini flat connection fuses, as per DIN 72581-3, ISO 8820-2 Rapidly becoming the new standard for circuit protection in vehicles. Their compact size enables more circuits to be protected with less space required. Transparent housing for easy identification of blown fuses. Excellent reliability	2	grey	50	1 987 529 025
		3	violet	50	1 987 529 026
		4	pink	50	1 987 529 027
		5	beige	50	1 987 529 028
		7,5	brown	50	1 987 529 029
		10	red	50	1 987 529 030
		15	blue	50	1 987 529 031
		20	yellow	50	1 987 529 032
		25	neutral	50	1 987 529 033
		30	green	50	1 987 529 034
	Standard flat connection fuses, as per DIN 72581-3, ISO 8820-2 These fuses have become the standard circuit protection for domestic and international passenger cars and trucks. They are easy to identify and replace and can be specified for a wide range of applications in the low voltage range.	3	violet	100	1 904 529 901
		4	pink	100	1 904 529 902
		5	beige	100	1 904 529 903
		7,5	brown	100	1 904 529 904
		10	red	100	1 904 529 905
		15	blue	100	1 904 529 906
		20	yellow	100	1 904 529 907
		25	neutral	100	1 904 529 908
		30	green	100	1 904 529 909
		40	orange	100	1 987 529 036
	Flat connection fuses, as per DIN 72581-3, ISO 8820-2 Standard fuse in maxi design. Transparent housing for easy identification of blown fuses.	20	yellow	5	1 987 529 018
		30	green	5	1 987 529 019
		40	orange	5	1 987 529 020
		50	red	5	1 987 529 021
		60	blue	5	1 987 529 022
		70	brown	5	1 987 529 023
		80	white	5	1 987 529 039
		100	violet	5	1 987 529 040
	Puller for blade-type fuse links			5	1 987 531 026

Car fuses (continued)

Figure	Version	Rated current A/V	Colour	Qty. per bulk pack	Part number
	Blister (Mini)	1 x 5/7,5/25/30,		10	1 987 529 038
	Blister (Norm)	2 x 10/15/20		10	1 987 529 037
	AS series male fuses				1 987 529 062
	Delay fuses with highly temperature resistant housing.		20/32	blue	5
	Used in Japanese, European, American, and Korean vehicles.		30/32	pink	5
			40/32	green	5
			50/32	red	5
	B series male fuses				1 987 529 068
	Delay fuses with highly temperature resistant housing.		30/32	pink	5
	Used in Japanese, European, American, and Korean vehicles.		40/32	green	5
			50/32	red	5
			60/32	yellow	5
			70/32	brown	5
			80/32	black	5
			100/32	blue	5
			120/32	white	5

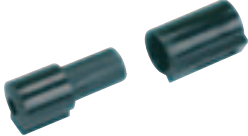
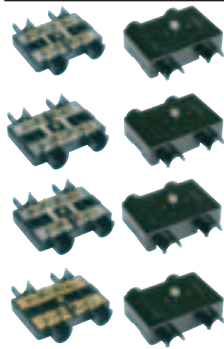


Figure	Version	Rated current A/V	Colour	Qty. per bulk pack	Part number
	J series fuses With longer time delay, lower voltage drop and better resistance to make currents, they are particularly well suited for circuits with high currents. Used in Japanese, European, American, and Korean vehicles.	20/32	light blue		1 987 529 056
		25/32	white		1 987 529 057
		30/32	pink		1 987 529 058
		40/32	green		1 987 529 059
		50/32	red		1 987 529 060
		60/32	yellow		1 987 529 061
	Low profile J series fuses Low profile fuses offer similar performance features to the standard J fuses. The low total height allows the use of shorter blade terminals and saves on space and weight. Used in Japanese, European, American, and Korean vehicles.	20/58	light blue		1 987 529 050
		25/58	white		1 987 529 051
		30/58	pink		1 987 529 052
		40/58	green		1 987 529 053
		50/58	red		1 987 529 054
		60/58	yellow		1 987 529 055

Setbox

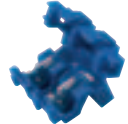
Flat connection fuses (251 pcs.), as per DIN 72581-3

	Description	Nominal voltage A	Qty.	Part number
	Mini flat connection fuses,	3	5	1 987 529 079
		5	15	
		7,5	15	
		10	15	
		15	30	
		20	30	
		25	15	
		30	15	
	Standard flat connection fuses,	3	5	
		5	10	
		7,5	10	
		10	15	
		15	15	
		20	15	
	Maxi flat connection fuses,	25	10	
		30	10	
		30	2	
		40	2	
		50	1	
		60	1	

Fuse holder

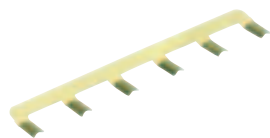
Figure	Description	Connection	Rated current	Included fuses Part number	Part number
	Single, for cylindrical fuses and cable cross sections up to 2.5 mm ² , bayonet fitting	Screw terminal	–	–	0 354 010 001
					0 354 010 005 <input type="checkbox"/>
	Double, for cylindrical fuses Fastening: 2 holes, Ø 5.3 mm, hole spacing 55 mm.	Screw terminal	1 x 25 A	1 351 017 010	0 354 120 003
			1 x 50 A	1 191 017 005	
			2 x 50 A	1 191 017 005	0 354 120 004
			2 x 80 A	1 191 017 003	0 354 120 005
					0 354 120 006
					0 354 120 007
	Fuse holder for blade-type fuse links				1 987 531 019
	Fuse holder for blade-type fuse links with 6-...10-mm ² contacts				1 987 531 024

☐ Self blister pack

Figure	Description	Contact width mm	Contact thickness mm	Conductor cross section mm ²	Color	Material / finish*)	Qty. per pack	Part number
	Fuse holder for connection fuses			0.5–1.5	blue	CuZn/brass / bright	6	8 781 324 028

*) CuZn = Messing

Joining bar



Description	Part number
For 4 x and 6 x fuse holders, for connecting two or more connection points	1 351 090 000

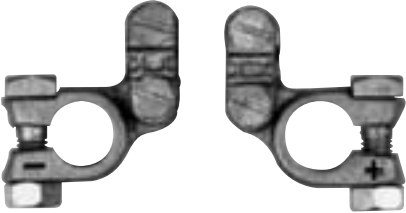
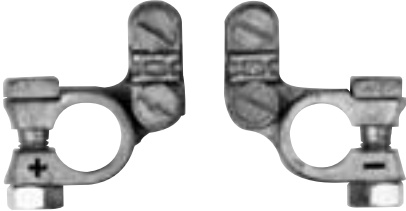
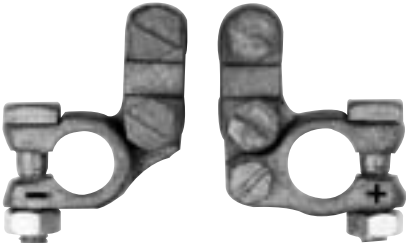
Spare cover for fuse boxes

Part number Fuse box	Part number Cover
0 354 120 003	1 350 516 003
0 354 120 004	1 350 516 003
0 354 120 005	1 350 516 003
0 354 130 003	1 350 516 000



Figure	Description	Connection	Rated current	Included fuses Part number	Part number
	Fuse holder set with adapter right and left				1 987 531 028
	For 3 flat fuses. Fastening: 2 holes, Ø 6.4 mm, hole spacing 112 mm.	Screw terminal	1 x 50 A 1 x 80 A 1 x 100 A	1 191 017 005 1 191 017 003 1 191 017 006	0 354 130 003

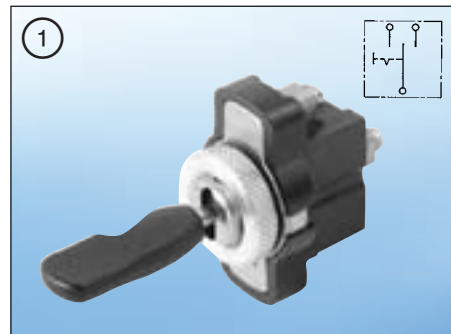
Battery cable terminals with zinc plated surface for securely fastening the starter cables to the starter battery

Figure	Conductor cross section mm ²	Pole	Part number
① 	16.0–70.0	+	1 901 315 100 ¹⁾
		–	1 901 315 102 ¹⁾
		– +	1 901 315 120 ¹⁾
② 	16.0–70.0	+	1 901 315 104 ¹⁾
		–	1 901 315 105 ¹⁾
		– +	1 901 315 125 ¹⁾
③ 	70.0–120.0	+	1 901 315 101 ¹⁾
		–	1 901 315 103 ¹⁾

¹⁾ DIN 72331

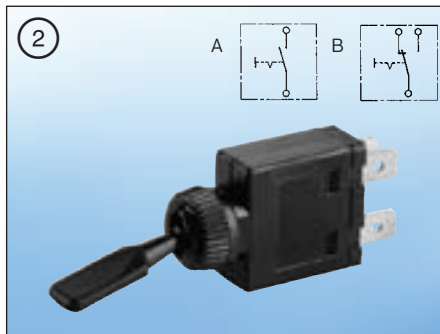
Universal switches

For wipers, signal equipment, fog lamps, power-window drives, etc.



1 Lever switch
Change-over switch (two-way contact with neutral position)
 Switching capacity: 48 W/24 V.
 Fastening: with knurled nut M 12 x 1.
 Fitting: Ø 12.5 mm. For wall thicknesses up to 3 mm.
 Connection: screw terminals.

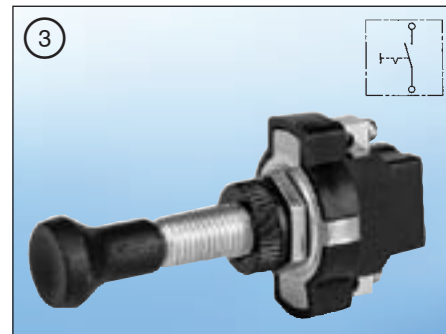
0 986 340 100



2 Lever switch
On-off switch (NO contact)
 Switching capacity: 75 W/24 V.
 Fastening: with round nut M 12 x 1.
 Fitting: Ø 12 mm. For wall thicknesses up to 6 mm. Connection: blade terminals.

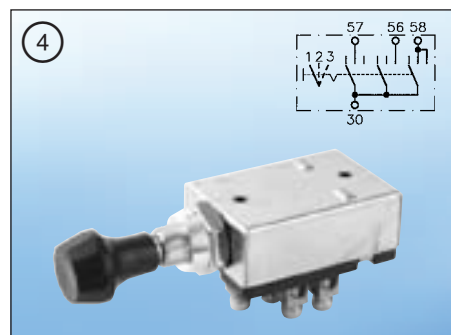
Diagram A **0 341 500 801**
 as ..801, but

change-over switch (change-over contact)
 Diagram B **0 341 500 803**



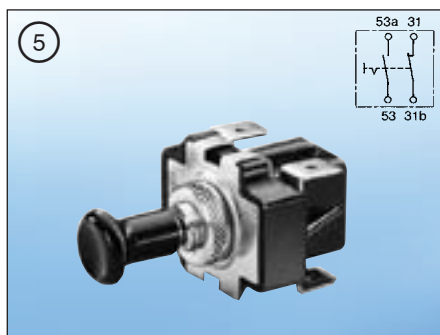
3 Push-pull switch
On-off switch (NO contact)
 Knob, black.
 Switching capacity: 60 W/24 V.
 Fastening: with knurled nut M 8 x 0.75.
 Fitting: Ø 8.5 mm. For wall thicknesses up to 5 mm.
 Connection: screw terminals.

0 986 340 001



4 Push-pull switch
multi-position switch
 Switching capacity: 100 W 24 V.
 Switch positions: 1 Off, 2 Blower stage I, 3 Blower Stage II.
 Fastening: with round nut M 10 x 1.
 Fitting: Ø 10.5 mm. For wall thicknesses up to 2 mm.
 Connection: screw terminals.

0 986 340 120

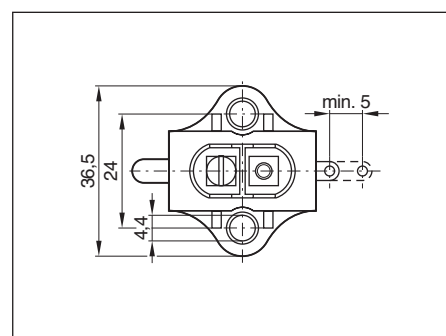
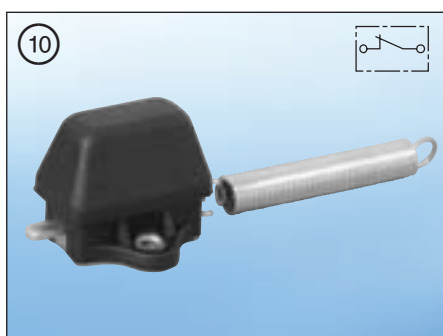
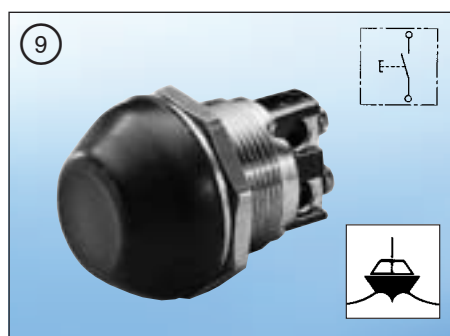
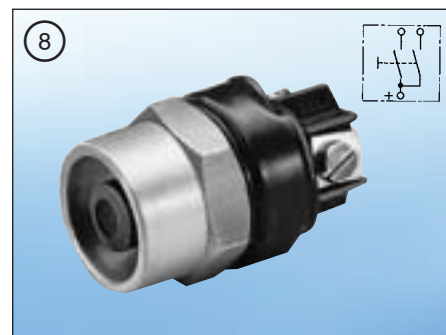
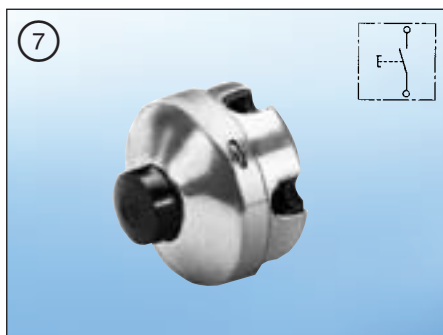
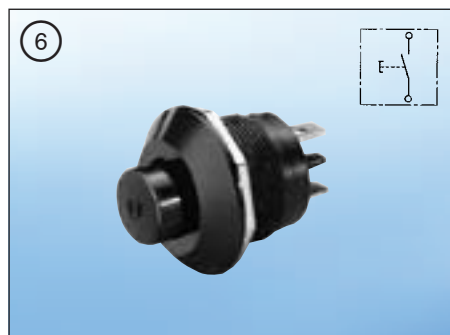


5 Push-pull switch
Knob, black
 For one-speed wiper motors with permanently excited field.
 Circuit diagram: For wiper motors (Car Alarm etc.), Knob, black.
 Switching capacity: 60 W/24 V.
 Fastening: with knurled nut M 8 x 0.75.
 Fitting: Ø 8.5 mm (rotation-proof).
 For wall thicknesses up to 4 mm.
 Connection: Blade terminals

0 340 003 003

Degrees of protection (complies with IEC 60529 and DIN 40050, page 9)

Designation	Protection against contact	Protection against foreign bodies	Protection against water
IP 40	with tools etc. thickness Ø > 1 mm	Ø > 1 mm	no protection
IP 54	complete	dust-protected	Splashwater, from all directions
IP 64	complete	dust-protected	Splashwater, from all directions



6 Momentary push-button NO contact

Switching capacity: 30 A/6 V, 20 A/12 V, 15 A/24 V. (On-time 10 s each)

Fastening: with octagon nut.

Fitting: Ø 22.5 mm. For wall thicknesses up to 6 mm.

Connection: screw terminals.

0 343 003 001

as ..001, but

Connection: blade terminals.

0 343 003 004

as ..001, but

Connection: blade terminals. Push-button and cover grey.

0 343 003 007

as ..001, but

Connection: blade terminals. Push-button ivory colored, polished aluminum.

0 343 003 005

7 Momentary push-button NO contact

Push-button black, housing polished aluminum.

Switching capacity: 15 A/12 V, 7.5 A/24 V. (On-time 10 s each)

Fastening: 2 holes with Ø 3.7 mm.

Hole spacing 17 mm, external Ø 26 mm.

Connection: 1 screw terminal.

0 343 007 001

as ..007 001, but

Fastening: 2 holes with Ø 4.2 mm.

Hole spacing 23 mm, external Ø 35 mm.

Connection: 2 screw terminals.

0 343 013 001

8 Momentary push-button NO contacts with two makes

Push-button black, surface green. Hexagon aluminum nut with protective rim to prevent undesired actuation.

Degree of protection: housing IP 40, contact chamber IP 64.

Switching capacity:

Terminal 1: 26 A/6 V, 25 A/12 V, 20 A/24 V (On-time 2 min each)

or 100 A/6 V, 50 A/12 V, 50 A/24 V (On-time 1 s each).

Terminal 2: 20 A/24 V (Resistive load)

Terminal 3: (+) lead

Fastening: with hexagon nut.

Fitting: Ø 22.5 mm. For wall thicknesses up to 3 mm.

Connection: screw terminals.

0 343 004 003

9 Momentary push-button NO contact

Protective rubber cap on knob side: Metal parts made of brass. Seawater-resistant. Degree of protection IP 54.

Switching capacity:

400 W/24 V (on-time 1 s).

250 W/24 V (on-time 2 min).

Fastening: with hexagon nut.

Fitting: Ø 22.5 mm. For wall thicknesses up to 9 mm.

Connection: screw terminals.

0 340 000 001

10 Mechanical brake-light switch - Push-pull switch

Switched-on in neutral position,

2 screw-type M 4 terminals,

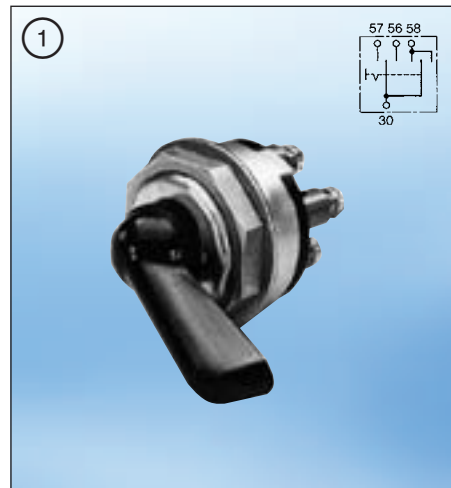
permissible loading: 7 A/12 V

4 x 21 W/12 V

permissible ambient temperature: -40...+120 °C

0 986 340 010

Light switches



Rotary switch. Two-way contact with neutral position

For side-marker lamps and upper/lower beam. With black switch lever.

Switching capacity: 10 W/12 V (terminal 57)

90 W/12 V (terminals 56, 58).

Fastening: with octagon nut M 26 x 1.

Fitting: Ø 26.5 mm. For wall thicknesses up to 2 mm.

Connection: screw terminals.

0 341 100 001

Spare parts

Fastening nut	1 343 300 002
Washer	3 340 102 000

4 Foot-operated switch Change-over contact, with detent

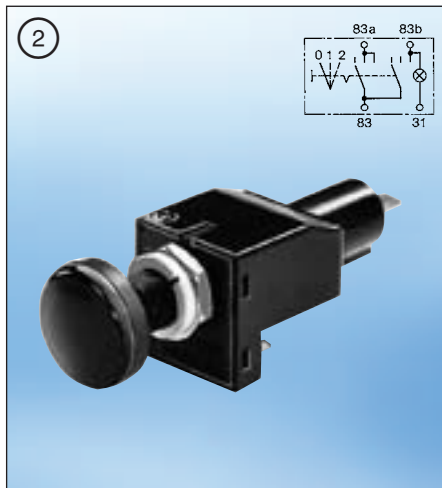
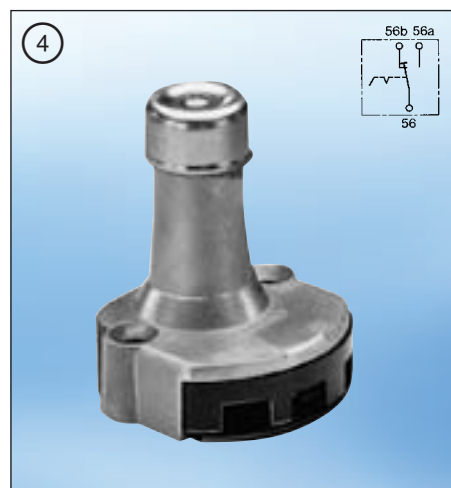
For upper and lower beam. Switches with-out break. Corrosion-protected finish.

Switching capacity: 120 W/24 V. For cables up to 4 mm² with or without cable lug.

Fastening: from above with 2 oval-head screws, hole Ø 5.3 mm, with hole spacing 38 mm.

Connection: screw terminals.

0 340 603 001



2 Push-pull switch Multi-position switch

For fog lamps and fog warning lamps.

With indicator lamp and green lens (yellow lens enclosed).

Switching capacity: 140 W/24 V (terminal 83a),

35 W/24 V (terminal 83b).

Switch positions: 0 Off, 1 Fog lamp, 2 Fog lamp and tail lamp.

Fastening: with round nut M 14 x 1.5.

Fitting: Ø 14.5 mm. For wall thicknesses up to 6.5 mm (up to 10.5 mm without lock nut).

Connection: blade terminals.

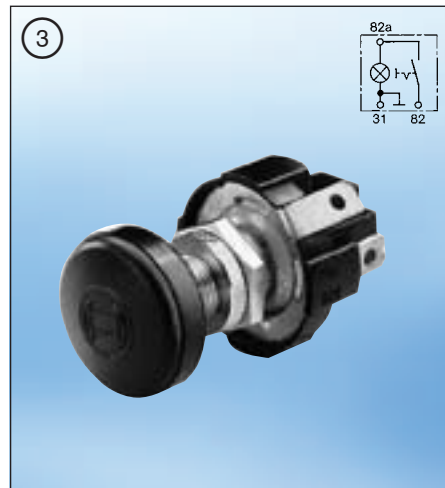
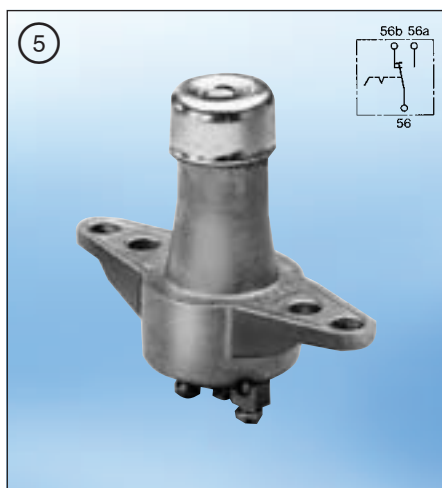
Bulb connection: screw terminals.

Order bulb separately.

0 340 006 004

Bulb (shape J)

12 V 2.0 W	1 987 302 224
24 V 3.0 W	1 987 302 519



3 Push-pull switch On-off switch (NO contact)

For fog warning lamp. With safety knob, black, made of soft PVC, and indicator lamp. Green lens fitted, red and yellow lenses enclosed.

Switching capacity: 100 W/24 V.

Fastening: with knurled nut M 12 x 1.

Fitting: Ø 12.5 mm. For wall thicknesses up to 6 mm.

Connection: blade or screw terminals.

12 V bulb fitted.

0 340 006 012

Bulb (shape W)

12 V 1.2 W	1 987 302 208
24 V 1.2 W	1 987 302 504

5 Foot-operated switch Change-over contact, with detent

For upper and lower beam. Switches with-out break. Corrosion-protected finish.

Switching capacity: 120 W/24 V. For cables up to 6 mm² without cable lug.

Fastening: from below with 4 screws, hole Ø 6.4 mm, with hole spacing 44.5 and 67 mm.

Fitting: Ø 23 mm.

Connection: screw terminals, accessible from below.

0 340 604 001

Hazard-warning switches, alarm switch, backup lamp switches, door-contact switch



Hazard-warning switches

1 Push-button switch for electronic hazard-warning flashers
With indicator lamp and 12 V bulb included.
Symbol for hazard-warning (double triangle) on push-button.
Switching capacity: 6 x 21 W + 1.2 W/24 V.
Fastening: with knurled nut, fitting Ø 30.5 mm. For wall thicknesses up to 15 mm.
Connection: blade terminals.

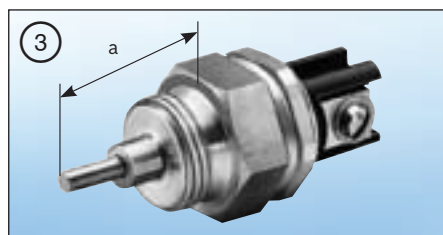
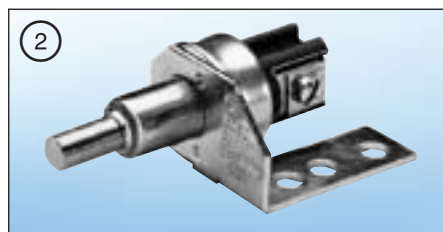
0 340 302 008

Accessories (order separately)

Protective cap for push-button (transparent) **3 340 522 004**
Plug housing **3 344 485 001**

Bulb (shape W)

12 V 1.2 W **1 987 302 208**
24 V 1.2 W **1 987 302 504**



Backup lamp switches

2 Plunger switch/NO contact
For attachment to gearshift linkage.
For switching on the backup lamp when reverse gear is engaged.
Contact travel: approx. 10 mm
Switching capacity: 60 W/24 V.
Fastening: 3 holes, Ø 5.3 mm, hole-spacing 20 mm and 12 mm.
Connection: screw terminals.

0 343 101 003

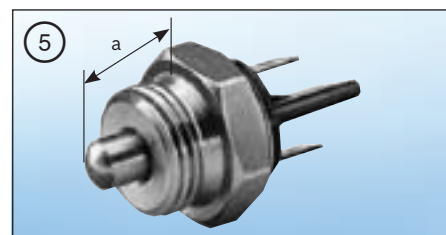
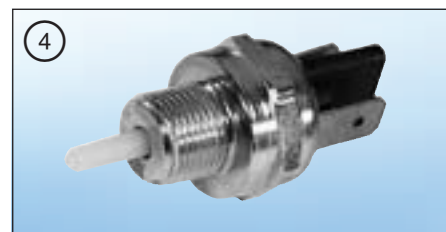
3 Plunger switch/NO contact
For screwing into gearbox cover.
Contact travel approx. 6 mm. For switching on the backup lamp when reverse gear is engaged.
Switching capacity: 60 W/24 V.
Fastening: screw thread M 18 x 1.5.
Connection: screw terminals
a = 24 mm **0 343 102 015**

as above, but blade terminal connection

a = 21 mm **0 343 102 024**

Accessories (order separately)

Protective cap **3 340 522 001**



Plunger switch/NO contact

For screwing into gearbox cover.
Contact travel approx. 2.2 mm. For switching on the backup lamp when reverse gear is engaged.
Switching capacity: 5 W/12 V.
Fastening: screw thread M 12 x 1.
Connection: 2 blade terminals.

0 343 102 008

as ..008, but

Connection: 1 blade terminal, ground return through switch housing.

0 343 102 010

Plunger switch/NO contact

For screwing into gearbox cover.
Contact travel approx. 1 mm. For switching on the backup lamp when reverse gear is engaged.
Switching capacity: 60 W/12 V.
Fastening: screw thread M 18 x 1.5.
Connection: blade terminal.

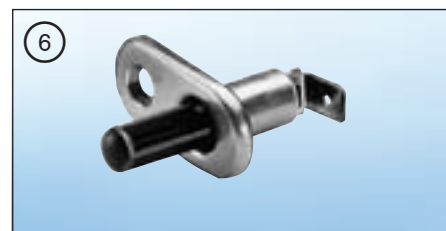
a = 15 mm **0 343 102 011**

Door-contact switch

Plunger switch NC contact

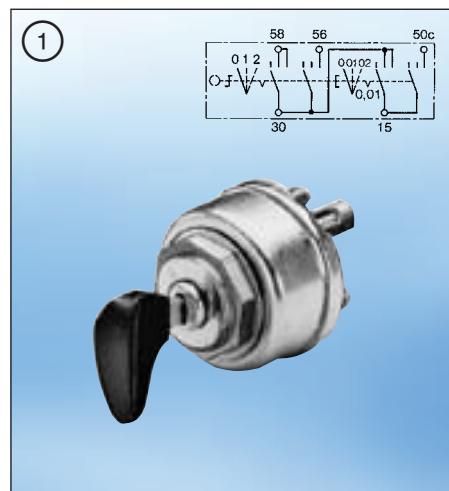
For switching interior lighting on and off.
Switching capacity: 12 W/24 V.
Fastening: screw Ø 4 mm.
Connection: 1-pole blade terminal.

0 343 107 002



Headlamp-ignition switches

Up to 24 V. For motor vehicles with spark-ignition or diesel engines (driving switch)



1 Key-operated switch up to 24 V, housing Ø 48 mm

Key can be removed in any position.
Design: Housing and U-disk galvanized.
Switching capacity: 100 A/24 V, 2 min (terminal 15).
Fastening: polished aluminum octagon nut M 26 x 1.
Fitting: Ø 26.5 mm with cutout 33.5 x 7.5 mm (twist-proof).
For wall thicknesses up to 2 mm.

Nickel-plated key. Key with grip in plastic jacket. Colour black.
Additional function: On/off switching of battery relay.
Switching capacity: 20 W (terminal 50 c), 100 W (terminal 56), 180 W (terminal 58), 250 W (terminal 15).
Switch positions: 0 Off / 01 Daytime loads / 02 Battery relay energized / 1 Side-marker lamp / 2 Headlamps.

Terminals connected:

	key inserted	key removed
0	–	–
01	30–15	–
02	30–15–50c	–
1	30–15, 30–58	30–58
2	30–15, 30–56–58	30–56–58

Connection: screw terminals.

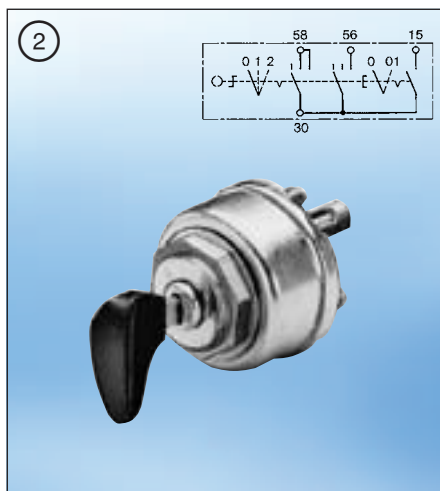
with 1 key **0 342 307 001**

as ..307 001, but

Design: Housing, octagon nut and U-disk black.

with 1 key **0 342 307 002**

Substitute key **3 341 982 101**



2 Key-operated switch up to 24 V, housing Ø 48 mm

Key can be removed in any position.
Switching capacity: 100 A/24 V, 2 min (terminal 15).
Fastening: polished aluminum octagon nut M 26 x 1.
Fitting: Ø 26.5 mm with cutout 33.5 x 7.5 mm (twist-proof). For wall thicknesses up to 2 mm.

Zinc-plated steel key. Key grip in black plastic jacket.
Switching capacity: 250 W (terminal 15), 150 W (terminal 56), 200 W (terminal 58).
Switch positions: 0 Off / 01 Daytime loads / 1 Side-marker lamp / 2 Headlamps.

Terminals connected:

	key inserted	key removed
0	–	–
01	30–15	–
02	30–15–58	30–58
2	30–15–56–58	30–56–58 ¹⁾

Connection: screw terminals 15, 30; blade terminals 30, 56, 58.

with 1 key **0 342 106 012**

as ..106 012, but nickel-plated key:

50 W (terminal 15),
100 W (terminal 56),
200 W (terminal 58).

Connection: screw terminals

with 1 key **0 342 106 004**

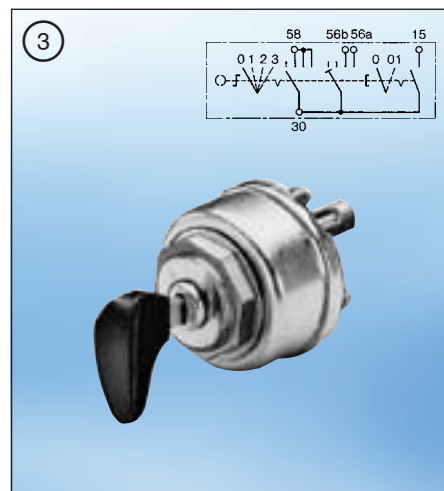
as ..106 012, but nickel-plated key:

Switching capacity: 50 W (terminal 15),
100 W (terminal 56), 200 W (terminal 58).
Connection: screw terminals 30, 56, 58:
M 4. 15, 30: M 6.

Terminals protected against contact.

For cables up to 16 mm².

with 1 key **0 342 106 005**



3 Key-operated switch up to 24 V, housing Ø 48 mm

Key can be removed in any position.
Switching capacity: 100 A/24 V, 2 min (terminal 15).
Fastening: polished aluminum octagon nut M 26 x 1.
Fitting: Ø 26.5 mm with cutout 33.5 x 7.5 mm (twist-proof). For wall thicknesses up to 2 mm.

Nickel-plated key. Key with grip in black plastic jacket.

Switching capacity: 250 W (terminal 15), 100 W (terminal 56a, 56b), 150 W (terminal 58).
Switch positions: 0 Off / 01 Daytime loads / 1 Side-marker lamp / 2 Low beam / 3 High beam.

Terminals connected:

	key inserted	key removed
0	–	–
01	30–15	–
1	30–15–58	30–58
2	30–15–56b–58	30–56b–58 ²⁾
3	30–15–56a–58	30–56a–58 ²⁾

Connection: screw terminals 15, 30;

blade terminal 30, 56a, 56b, 58.

with 1 key **0 342 201 010**

as ..201 010, but nickel-plated key.

Key grip in plastic jacket. Colour black.

Switching capacity: 100 W (terminals 56a, 56b),
150 W (terminal 58), 250 W (terminal 15).

with 1 key **0 342 201 009**

Spare parts

Switch key	3 341 982 101
Octagon nut	1 343 300 002
Washer	3 340 102 000

Spare parts

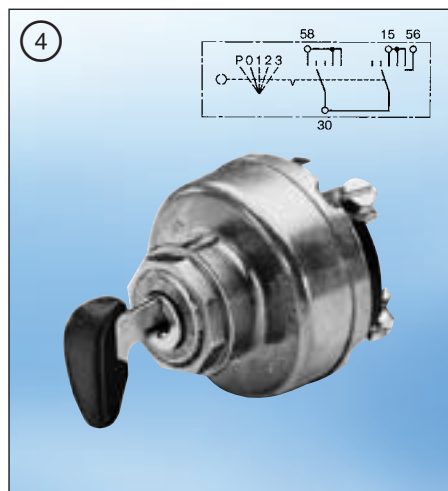
Switch key for
0 342 106 004, ..005

3 341 981 010

¹⁾ only on 0 342 106 012

²⁾ only on 0 342 201 009

Ignition switches



4 Key-operated switch up to 24 V, housing Ø 62 mm

Key can be removed only in position 0 or P.
Switching capacity: 100 A/24 V, 2 min (terminal 15).

Fastening: polished aluminum octagon nut M 26 x 1.

Fitting: Ø 26.5 mm with cutout 33.5 x 7.5 mm (twist-proof).

For wall thicknesses up to 2 mm.

Nickel-plated key. Key with grip in plastic jacket. Colour black.

Lock No. E 30.

Switching capacity: 100 W (terminals 56, 58), 150 W (terminal 15).

Switch positions: P Parking lamps / 0 Off / 1 Daytime loads / 2 Side-marker lamp / 3 Headlamps.

Terminals connected:

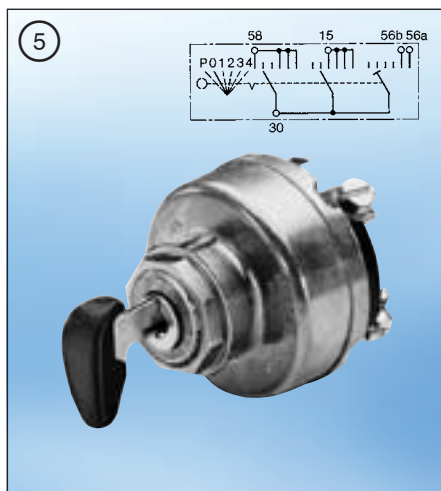
	key inserted	key removed
P	30-58	30-58
0	-	-
1	30-15	-
2	30-15-58	-
3	30-15-56-58	-

Connection: screw terminals 15, 30, 58; blade terminals 15, 30, 56

with 2 keys **0 342 202 001**

as ..202 001, but key with grip in plastic jacket. Lock No. U 39.

with 2 keys **0 342 202 002**



5 Key-operated switch up to 24 V, housing Ø 62 mm

Key can be removed only in position 0 or P.
Switching capacity: 100 A/24 V, 2 min (terminal 15).

Fastening: polished aluminum octagon nut M 26 x 1.

Fitting: Ø 26.5 mm with cutout 33.5 x 7.5 mm (twist-proof).

For wall thicknesses up to 2 mm.

Nickel-plated key. Key with grip in plastic jacket. Colour black. Lock No. K 30.

Switching capacity: 100 W (terminals 56a, 56b, 58), 150 W (terminal 15).

Switch positions: P Parking lamps / 0 Off / 1 Daytime loads / 2 Side-marker lamp / 3 Headlamps / 4 High beam.

Terminals connected:

	key inserted	key removed
P	30 - 58	30 - 58
0	-	-
1	30-15	-
2	30-15-58	-
3	30-15-56b-58	-
4	30-15-56a-58	-

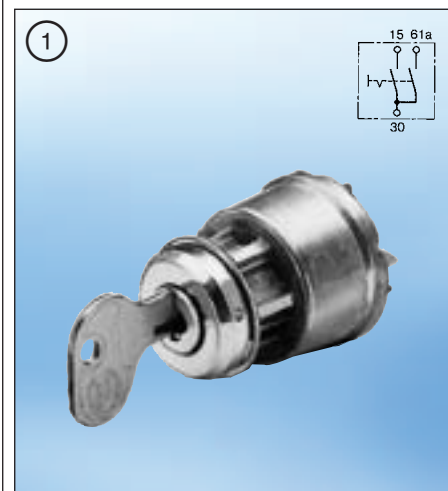
Connection: screw terminals 15, 30, 58; blade terminals 15, 30, 56a, 56b.

with 2 keys **0 342 203 001**

Spare parts

Switch key E 30	3 341 980 279
Switch key U 39	3 341 980 338
Octagon nut	1 343 300 002

Regarding spare keys for headlamp-ignition switches, please contact your authorized representative (address, see back cover)



1 Key-operated switch up to 24 V, with safety lock.

Key can be removed only in "off" position. Lock No. E 1 ... E 50.

Switching capacity: 20 A/24 V.

60 W (terminal 15), 5 W (terminal 61a).

Fastening: with unpolished aluminum round nut M 22 x 1.

Fitting: Ø 22.5 mm, with cutout (twist-proof)

For wall thicknesses up to 3 mm.

Connection: blade terminals.

with 2 keys **0 342 006 001**

as ..006 001, but with polished round nut.

with 2 keys **0 342 006 004**

as ..006 001, but with polished round nut, lock No. E 30.

with 3 keys **0 342 006 003**

as ..006 001, but key with grip in plastic jacket, lock No. K 3.

with 2 keys **0 342 006 007**

as ..006 001, but lock No. E 41.

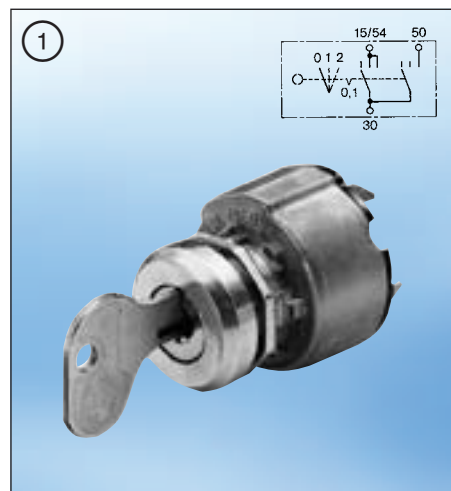
with 2 keys **0 342 006 009**

Spare parts

Washer **1 330 140 000**

Ignition and starting switches

Up to 24 V



1 Key-operated starting switch with start-repeating block

Key can be removed only in "off" position. Nickel-plated key.

Key lock No. E 1...E 50.

Switching capacity: 90 W (terminals 15, 54) 12 A/12 V (terminal 50), 9 A/24 V (terminal 50).

Fastening: octagon and round nut M 22 x 1.

Fitting: Ø 22.5 mm (twist-proof). For wall thicknesses up to 9 mm.

Switch positions: 0 Off, 1 On, 2 Start.

Connection: blade terminals.

with 2 keys **0 342 311 003**

as ..311 003, but lock No. K 11.

with 2 keys **0 342 311 004**

as ..311 003, but lock No. E 11.

without key **0 342 311 006**

as ..311 003, but lock No. E 30.

with 2 keys **0 342 311 007**

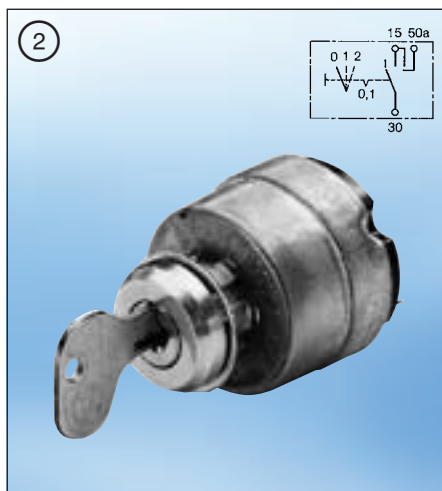
Spare parts

Switch key E 11 **3 341 980 260**

Switch key E 30 **3 341 980 279**

Switch key K 11 **3 341 982 210**

Regarding spare keys for headlamp-ignition switches, please contact your authorized representative (address, see back cover)



2 Key-operated starting switch without start-repeating block

Key can be removed only in "off" position. Key with grip in plastic jacket.

Key lock E 80.

Switching capacity: 150 W (terminal 15), 16 A/12 V (terminal 50a),

8 A/24 V (terminal 50a).

Fastening: octagon and round nut M 22 x 1.

Fitting: Ø 22.5 mm (twist-proof).

For wall thicknesses up to 6 mm.

Switch positions: 0 Off, 1 On, 2 Start.

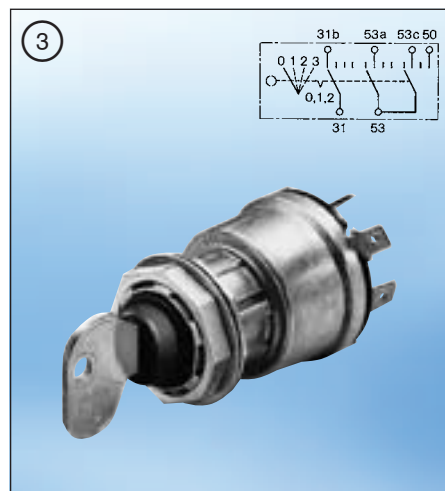
Connection: blade terminals.

with 2 keys **0 342 309 008**

Spare parts

Switch key E 80 **3 341 980 379**

Washer **1 330 140 000**



3 Key-operated light/starting switch without start-repeating block

Key can be removed only in "off" position. Nickel-plated key. Key lock No. E 1...E 50.

Switching capacity: 80 W (terminals 53, 53c)

16 A/12 V (terminal 50),

8 A/24 V (terminal 50).

Fastening: two octagon nuts M 26 x 1.

Fitting: Ø 26.5 mm (twist-proof). For wall thicknesses up to 6 mm.

Switch positions: 0 Off, 1 Night driving,

2 Daytime driving, 3 Start.

Connection: blade terminals.

with 2 keys **0 342 309 007**

Spare parts

Octagon nut outside **1 343 300 002**

Washer outside **3 340 102 000**

For all key-operated switches
DIN 40 050
Housing IP 30
Connection IP 00

Accessories (order separately)

Hinged cover

For key-operated switches, protects against dust and moisture.

Material: Polyamide 6 (cover),

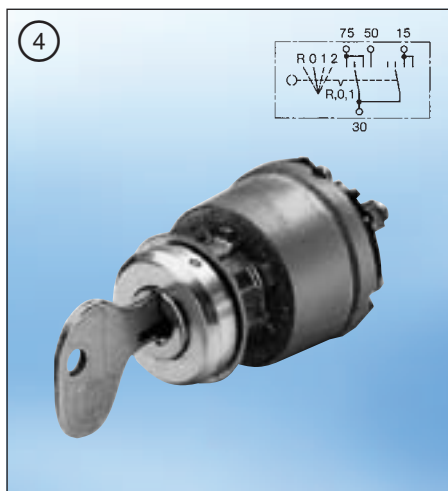
Fastening: with nut of switch.

for thread M 22 x 1 **3 347 000 032**

for thread M 26 x 1 **3 347 000 030**



Battery master switches



4 Key-operated radio/starting switch without start-repeating block

Key can be removed only in "off" position.
Nickel-plated key. Key lock No. E 1...E 50.
Switching capacity: 150 W (terminals 15, 75)
9.5 A/12 V (terminal 50),
4.5 A/24 V (terminal 50).
Fastening: octagon and round nut M 22 x 1.
Fitting: Ø 22.5 mm (twist-proof). For wall thicknesses up to 7 mm.
Switch positions: R Radio / 0 Off / 1 On / 2 Start
Connection: screw terminals.

with 2 keys **0 342 309 003**

as ..309 003, but lock No. E 30.

with 2 keys **0 342 309 006**

as ..309 003, key with grip in plastic jacket.

Lock No. U 39.

Connection: blade terminals.

with 2 keys **0 342 309 009**

as ..309 003, but key with grip in plastic jacket.

Lock No. K 1...50.

Connection: blade terminals.

with 2 keys **0 342 309 011**

as ..309 003, but lock No. K 10

Connection: blade terminals.

with 2 keys **0 342 309 012**

as ..309 003, but degree of protection

IP 30. Nickel-plated brass key.

Lock No. M 1...M 4

Connection: blade terminals.

with 2 keys **0 342 309 005**

as ..309 005, but lock No. K 30

with 2 keys **0 342 309 010**

Spare parts

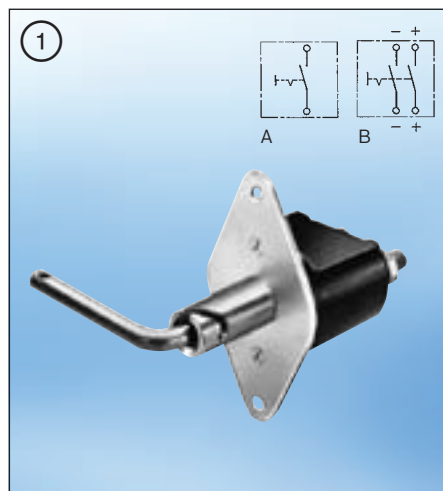
Switch key E 30 **3 341 980 279**

Switch key K 10 **3 341 982 209**

Switch key K 30 **3 341 982 229**

Switch key U 39 **3 341 980 338**

Washer **1 330 140 000**



1 Lever switch with switch-on detent

Lever: removable.
Switching capacity: 250 A/24 V, 2500 A (5 s)
Fitting: Ø 23.5 mm, 2 holes Ø 6.4 mm.
Hole spacing 100 mm. For wall thicknesses up to 25 mm.
Degree of protection: on handle side IP 00, on housing side IP 54, terminals IP 00.
Connection: threaded terminal for cable lug
1-pole, diagram A **0 341 002 003**

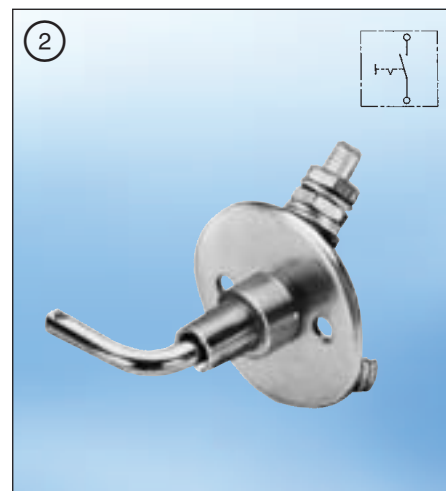
as ..002 003, but
for two-pole cutoff,
e.g. of combined 12-V and 24-V battery systems.
Fitting: Ø 23.5 mm, 2 holes Ø 8.4 mm.

Hole spacing 120 mm.

2-pole, diagram B **0 341 003 004**

Spare parts

Switch lever **1 342 026 002**



2 Lever switch with switch-on detent

Galvanized housing. Lever: galvanized and removable.
Switching capacity: 100 A/24 V, 500 A (5 s)
Fitting: Ø 23 mm, 2 holes Ø 6.4 mm.
Hole spacing 38 mm. For wall thicknesses up to 14 mm.
Degree of protection: terminals IP 00, housing IP 50.
Connection: threaded terminal for cable lug

0 341 001 001

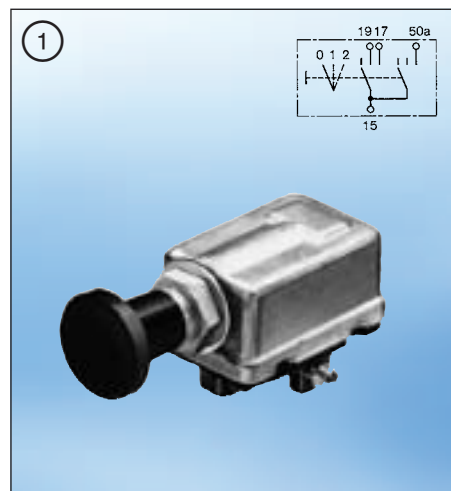
Spare parts

Switch lever **3 342 027 051**

Degrees of protection (complies with IEC 60529 and DIN 40050, page 9)

Designation	Protection against contact	Protection against foreign bodies	Protection against water
IP 00	No protection	No protection	No protection
IP 30	With tools etc. thickness Ø > 2.5 mm	Ø > 2.5 mm	No protection
IP 50	Complete	Dust-protected	No protection
IP 54	Complete	Dust-protected	Splashwater, from all directions

Glow-plug and starting switches



1 Push-pull starting switch

Galvanized steel housing. With black knob, enclosed loose.
Switching capacity: 50 A/12 V (term. 17, 19) 27 A/24 V (terminals 17, 19), 12 A/12 V (terminal 50a), 9 A/24 V (terminal 50a).
Fastening: with hexagon nut M 10 x 1.
Fitting: Ø 10.5 mm. For wall thicknesses up to 3 mm.
Switch positions: knob must be held in position 1 (preheating) and 2 (start); returns automatically to position 0 (off).
Connection: screw terminals.

0 343 008 006

as ..008 006, but without knob.

0 343 008 007

as ..008 006, but

Connection: blade terminals, without knob

0 343 008 009

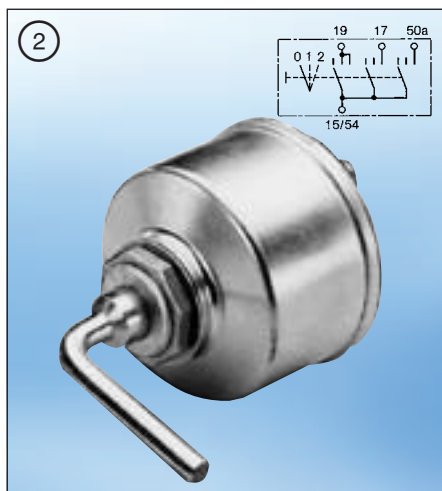
as ..008 006, but

Connection: blade terminals, without knob, without terminal 17.

0 343 008 008

Spare parts

Knob **3 343 231 070**



2 Rotary starting switch

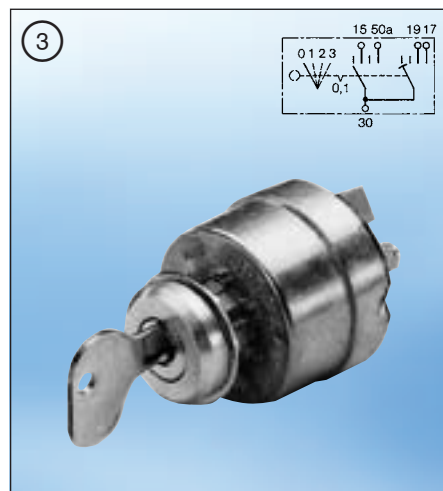
Galvanized steel housing and switch lever.
Switching capacity: 12 A/12 V (terminal 50a) 9 A/24 V (terminal 50a), 100 A/24 V (terminals 17, 19), On-time 2 min.
Fastening: with pickled aluminum octagon nut.
Fitting: Ø 26.5 mm, with cutout (twist-proof). For wall thicknesses up to 2 mm.
Switch positions: switch handle must be held in position 1 (preheating) and 2 (start); it returns automatically to position 0 (off); cannot be removed.
Connection: screw terminals.

0 343 401 001

Spare parts

Octagon nut **1 343 300 002**

Washer **3 340 102 000**



Key-operated starting switch

with safety lock.
Key can be removed only in "off" position. Nickel-plated key. Key lock No. E 30.
Switching capacity: 13 A/24 V continuous duty (terminal 15), 33 A/24 V (terminals 17, 19).
On-time 2 min.
150 W/24 V (terminal 15), 18 A/12 V (terminal 50a), 9 A/24 V (terminal 50a).
Fastening: with octagon nut and unpolished aluminum round nut.
Fitting: Ø 22.5 mm, with cutout (twist-proof).
For wall thicknesses up to 6 mm.
Switch positions: 0 Off / 1 On / 2 Preheating / 3 Start.
Connection: screw terminals.
with 2 keys **0 342 315 001**

as ..315 001, but

nickel-silver key, lock No. N 30.

with 2 keys **0 342 315 002**

as ..315 001, but

key with grip in plastic jacket, lock No. U 39

with 2 keys **0 342 315 004**

Spare keys

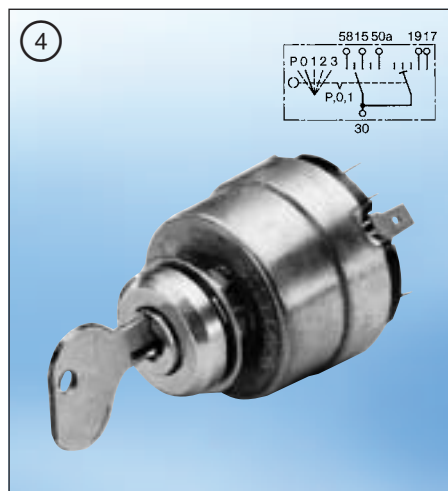
The key formula consists of the key designation (letter) and the key number.

The key designation informs about the type of key or its type of protection. Keys with the same key number, but with different designation, are interchangeable.

E key, nickel-plated
K key with grip in plastic jacket
N nickel-silver
U key with grip in plastic jacket

E 11	3 341 980 260
E 30	3 341 980 279
E 80	3 341 980 379
K 10	3 341 982 209
K 30	3 341 982 229
K 80	3 341 982 279
N 30	3 341 980 329
U 39	3 341 980 338





④ Key-operated light/starting switch

with safety lock. Key can be removed only in "off" position. Nickel-plated key.
Key lock No. E 51–E 100.
Switching capacity: 13 A/24 V continuous duty (terminal 15), 33 A/24 V (terminals 17, 19).
On-time 2 min.
18 A/12 V (terminal 50a), 9 A/24 V (terminal 58).
Fastening: with octagon nut and unpolished aluminum round nut M 22 x 1.
Fitting: Ø 22.5 mm, with cutout (twist-proof). For wall thicknesses up to 6 mm.
Switch positions: P Parking lamp / 0 Off / 1 On / 2 Preheating / 3 Start.
Connection: for terminals 17, 19, 30, connect both terminals if current above 45 A.

with 2 keys **0 342 316 002**

as ..316 002, but

key with grip in plastic jacket and round nut painted black. Lock No. K 80.

with 2 keys **0 342 316 003**

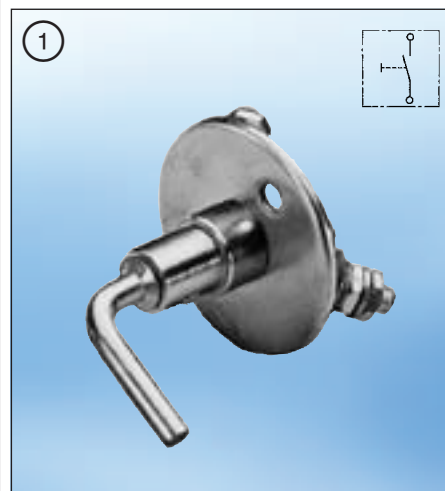
Spare parts for ③ ④

Switch keys for lock Nos.

E 30	3 341 980 279
K 80	3 341 982 279
N 30	3 341 980 329
U 39	3 341 980 338
Washer	1 330 140 000

Regarding spare keys for headlamp-ignition switches, please contact your authorized representative (address, see back cover)

Glow-plug switches



① Preheat lever switch

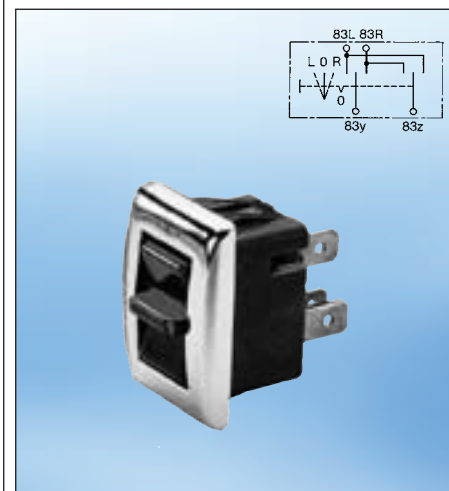
Galvanized steel housing. Chrome-plated switch lever, not removable.
Switching capacity: 100 A/12 V (on-time 2 min).
Fastening: flush installation.
Fitting: Ø 22 mm. 2 holes Ø 6.4 mm, hole spacing 38 mm.
Switch positions: 0 Off, 1 Preheating, switch lever must be held in preheating position, returns automatically to position 0 (Off).
Connection: terminal stud (for cables with cable lug).

0 343 405 001

Note:

If this glow-plug switch is used, a special ignition switch, or headlamp-ignition switch, or ignition and starting switch is necessary, see Pages A 98...A 101.

Motor and equipment switches



Rocker switch Reversing changeover switch

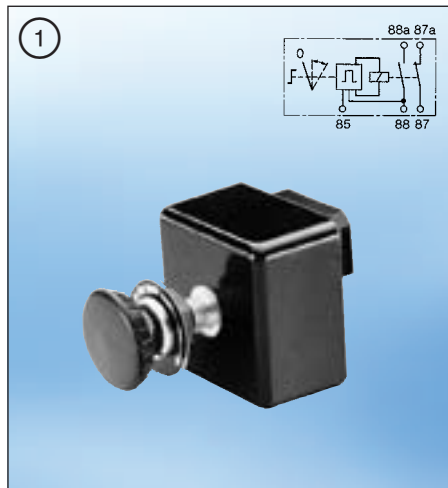
12 V

With reset, for power-windows, sunroofs etc.
With chrome-plated cover, black switch handle.
Dual changeover switch
72 W/12 V (30 A for on-time 5 sec).
Fastening: with clamping spring, with or without mounting frame.
Connection: blade terminals.

0 343 302 003

Wiper switches

Up to 24 V



Rotary switch, wiper pulse generator, soft rubber knob, black

For self-parking wiper motors. For intermittent wiping. Continuously adjustable from 2 to 25 pulses/min.

Pulse length approx. 0.4 s independent of load.

Fastening: with round nut M 10 x 1.

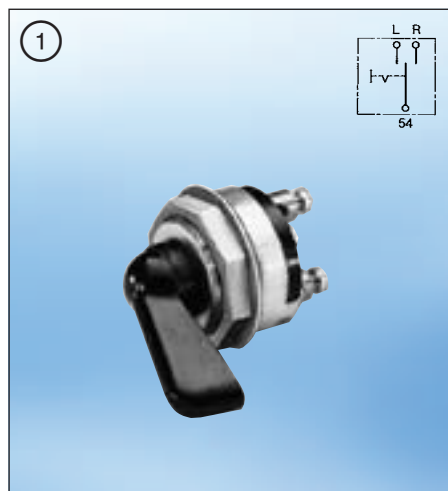
Fitting: Ø 10.5 mm. For wall thicknesses up to 9 mm.

Connection: blade terminals.

6 V/12 V	0 336 920 004
24 V ¹⁾	0 336 920 003

¹⁾ Use a relay for wiper motors with more than 3.2 A current consumption.

Turn-signal switches



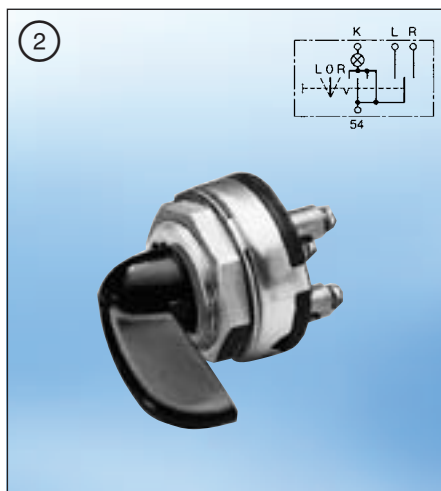
1 Rotary, single-circuit switch without indicator lamp

Housing black, switch lever black.
Switching capacity: 45 W/12 V (term. L, R)
Fastening: with polished aluminum octagon nut M 26 x 1.
Fitting: Ø 26.5 mm with cutout (twist-proof). For wall thicknesses up to 2 mm.
Connection: screw terminals.

0 341 101 001

Spare parts

Octagon nut	1 343 300 002
Washer	3 340 102 000



2 Rotary, single-circuit switch with indicator lamp

Without bulb, housing galvanized, switch lever black, lens red.
Switching capacity: 60 W/12 V (terminals L, R), 5 W/12 V (terminal K).
Fastening: with polished aluminum octagon nut M 26 x 1.
Fitting: Ø 26.5 mm with cutout (twist-proof). For wall thicknesses up to 2 mm.
Connection: screw terminals.

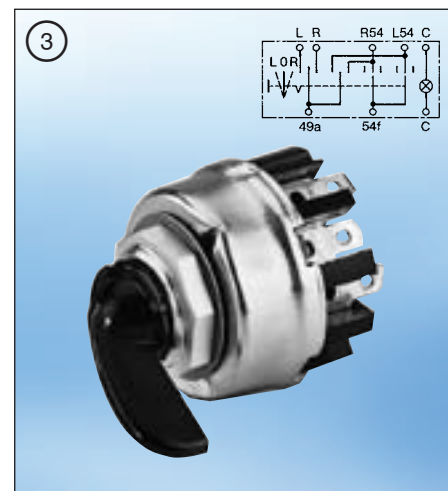
0 341 300 002

Spare parts

Octagon nut	1 343 300 002
Washer	3 340 102 000

Bulb (shape H)

6 V 2.0 W	1 987 302 613
12 V 2.0 W	1 987 302 212
24 V 2.0 W	1 987 302 508



3 Rotary, dual-circuit switch with indicator lamp

Without bulb, housing galvanized, switch lever black, lens red.
Switching capacity: 40 W/24 V (terminals L, R, L 54, R 54).
Fastening: with polished aluminum octagon nut M 26 x 1.
Fitting: Ø 26.5 mm with cutout (twist-proof). For wall thicknesses up to 3 mm.
Connection: blade terminals.

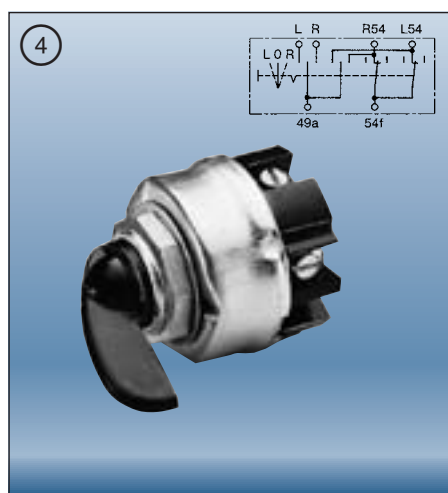
Lens	red	0 341 301 005
	green	0 341 301 004

Spare parts

Octagon nut	1 343 300 002
Washer	3 340 102 000

Bulb (shape H)

6 V 2.0 W	1 987 302 613
12 V 2.0 W	1 987 302 212
24 V 2.0 W	1 987 302 508



4 Rotary, dual-circuit switch without indicator lamp

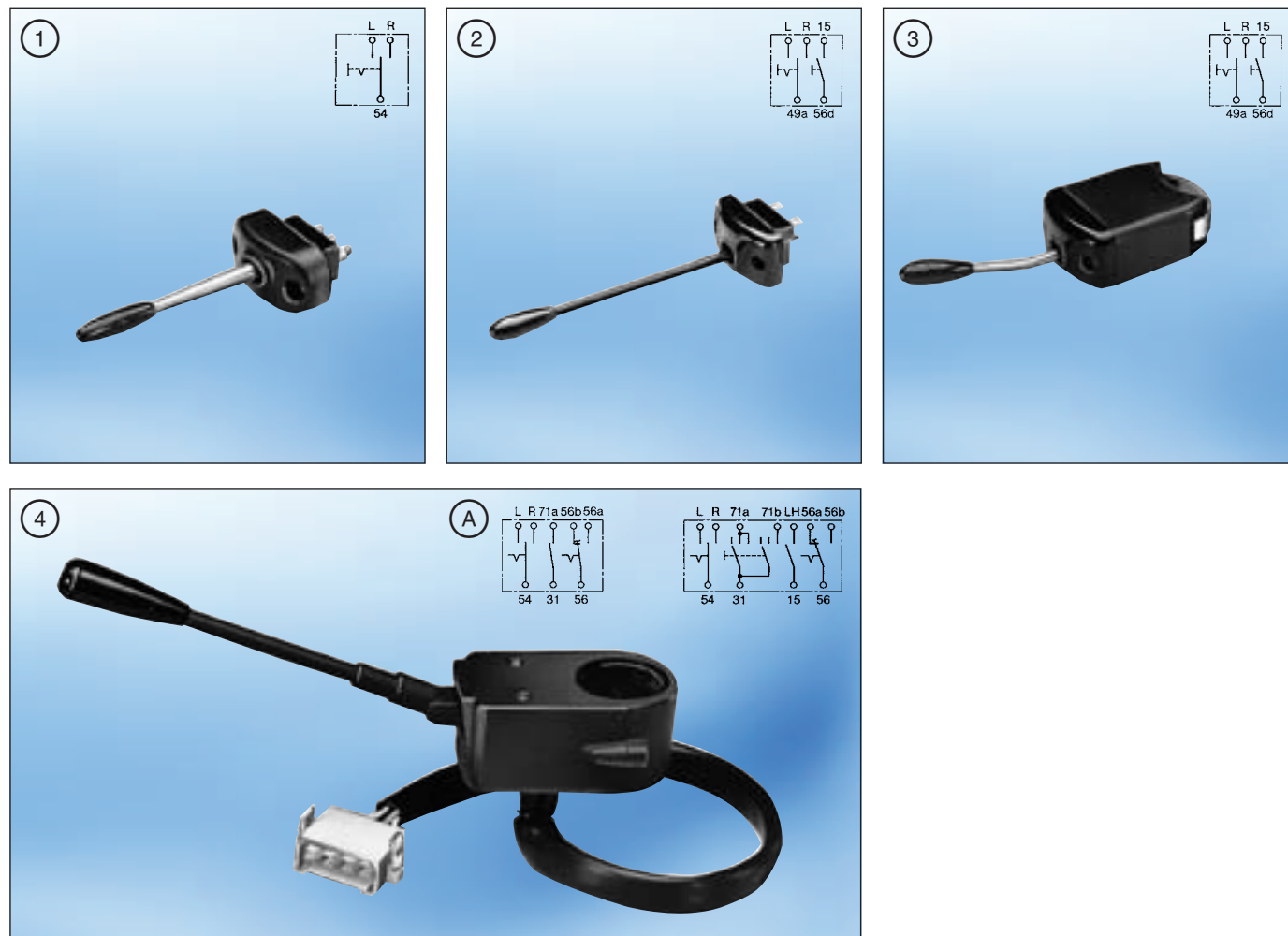
Housing galvanized, switch lever grey.
Switching capacity: 40 W/24 V (terminals L, R, L 54, R 54).
Fastening: with polished aluminum octagon nut M 26 x 1.
Fitting: Ø 26.5 mm with cutout (twist-proof). For wall thicknesses up to 3 mm.
Connection: screw terminals.

0 341 106 002

Spare parts

Octagon nut	1 343 300 002
Washer	3 340 102 000

Turn-signal and combi-switches



1 Lever-type turn-signal switch without headlamp-flasher contact

For mounting in steering column. Knob and housing black. Switch lever galvanized with transparent chromated finish. Switch lever 82 mm long. Switching capacity: 60 W/24 V (term. L, R). Fastening: 2 holes Ø 4.2 mm. Hole spacing 42 mm. Fitting: aperture 32 x 21 mm. Connection: screw terminals.

0 341 600 001

2 Lever-type turn-signal switch with headlamp-flasher contact

For mounting in steering column. Housing, handle and switch lever black. Switch lever straight. Length 148 mm. Switching capacity: 80 W/24 V (term. L, R), 100 W/24 V (terminal 56 d). Fastening: on steering column with clamping band. Clamping range Ø 45 to Ø 55 mm. Without fastening parts. Connection: blade terminals.

0 341 810 005

as ..810 005, but switch lever angled 5°, length 109 mm.

0 341 810 013

Lever-type turn-signal switch with headlamp-flasher contact

Housing and handle black, switch lever angled at 15°, bright-galvanized and transparent chromated finish. Switch lever 148 mm long. Switching capacity: 80 W/24 V (term. L, R), 100 W/24 V (terminal 56d). Fastening: on steering column with clamping band. Clamping range Ø 45 to Ø 55 mm. With fastening parts (enclosed loose). Connection: blade terminals.

0 341 810 006

4 Lever-type combi-switch

Diagram ④:

For turn-signal indicators, change-over switch for high and low beam, with horn button. Housing and handle black. With switch lever angled at 11°. Length 220 mm. Switching capacity: 110 W/24 V (terminals L, R, 56a, 56b, LH), 60 W/24 V (terminal 71a), 85 W/24 V (terminal 71b). Fastening: with clamping ring Ø 45 mm. Connection: 8-pole flat-pin plug. Cables 400 mm.

0 341 810 007

as ..810 007, but switch lever angled at 20°. Length 180 mm

0 341 810 008

as ..810 007, but cables 430 mm long and switch lever angled 20°. Length 239 mm.

0 341 810 009

as ..810 007, but diagram ⑤: Horn button with 2 switch positions for supertone horn. With headlamp flasher. Switch lever angled at 20°. Length 180 mm. Connection: one 8-pole plug, one 3-pole plug.

0 341 810 010

Multi-purpose pressure switches

Pneumatically and hydraulically actuated



① Pressure switch. NO contact On-off switch, two-chamber system.

For use in vehicle as check switch. Hydraulically or pneumatically actuated. Switching capacity: 2 W/24 V (lamp load). Permissible pressure agents: mineral oil, air (details of other agents upon request). Permissible operating temperature: -40...+130 °C.

Fastening: screw-in thread M 12 x 1.5.

Connection: blade terminals.

Switching range (gauge press.): 1.8...2.3 bar

Permissible operating pressure (gauge pressure): 6 bar. Permissible max. pressure (gauge pressure): 10 bar.

1-pole **0 986 345 202**

as ..202, but

Switching capacity: 5 W/24 V (lamp load).

Permissible operating temperature: -25...+85 °C

Fastening: screw-in thread M 10 x 1.

Switching range (gauge press.): 0.1...0.5 bar

Permissible operating pressure (gauge pressure): 8 bar. Permissible max. pressure (gauge pressure): 15 bar

1-pole **0 986 345 203**



② Pressure switch. NC contact

On-off switch, two-chamber system. For use in vehicle as check switch.

Pneumatically actuated.

Switching capacity: 5 W/24 V (lamp load).

Permissible operating temperature:

-40...+100 °C.

Fastening: screw-in thread M 12 x 1.5.

Connection: blade terminals.

Switching range (gauge press.):

4.4...5.1 bar

Permissible operating pressure (gauge pressure): 8 bar.

Proof against excess pressure up to 12 bar

1-pole **0 986 345 501**

as ..501, but

Switching range (gauge press.):

5.6...6.6 bar

Permissible operating pressure (gauge pressure): 12 bar.

Proof against excess pressure up to 15 bar.

1-pole **0 986 345 503**



Pressure switch. NC contact

On-off switch, two-chamber system. For use in vehicle as check switch. Pneumatically actuated.

Switching capacity: 5 W/24 V (lamp load).

Permissible operating temperature:

-40...+100 °C.

Fastening: screw-in thread M 12 x 1.5.

Connection: blade terminals.

Switching range (gauge pressure):

0.5...0.9 bar. Permissible operating pressure (gauge pressure): 12 bar.

Proof against excess pressure up to 15 bar

1-pole **0 986 345 504**



③

as ..501, but

Switching range (gauge press.):

9.6...10.8 bar.

Permissible operating pressure (gauge pressure): 18 bar.

Proof against excess pressure up to 18 bar.

1-pole **0 986 345 502**

Accessories (order separately)

for pressure switches 0 986 345 501, ..502, ..503.

③ Protective cap

For multi-purpose pressure switches with blade terminals.

Protects electrical connections against moisture.

Material: black neoprene.

Fastening: self-clamping.

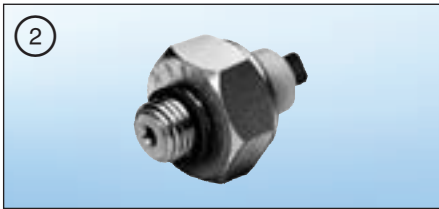
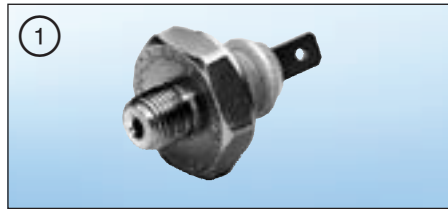
3 340 524 012

Oil-pressure warning switches

Hydraulically actuated
Up to 24 V



For European vehicles
Two-chamber system



Fastening screw-in thread	Operating pressure range Gauge pressure bar	Connection 1-pole	Fig.	Part number	Vehicle makes ¹⁾
M 10 x 1	0.15–0.45	Blade terminals	1	0 986 344 082 ^{2) 3)}	Audi, Volvo, VW
	0.3–0.5	Blade terminals	1	0 986 344 085 ²⁾	Cesab, Itma Trattori, VM, VW
	0.5–0.8	Blade terminals	1	0 986 344 090 ³⁾	Fendt
M 10 x 1 (tapered short) DIN 158	0.05–0.15	Blade terminals	1	0 986 344 055	BMW
	0.15–0.45	Blade terminals	1	0 986 344 044 ^{2) 3)}	Alfa Romeo, Audi, Porsche, VW
	0.2–0.49	Blade terminals	2	0 986 344 032	Audi, Massey-Ferguson-Hanomag
	0.2–0.5	Blade terminals	1	0 986 344 058 ^{2) 3)}	ABG, Atlas, Hanomag, Massey-Ferguson, Steyr
	0.3–0.6	Screw terminals M 4	4	0 986 344 051	Audi, Magirus-Deutz, MAN, Porsche, Saviem
		Blade terminals	1	0 986 344 056 ^{2) 3)}	Audi, Porsche, VW
	0.5–0.8	Screw terminals M 4	4	0 986 344 052	–
		Blade terminals	1	0 986 344 033 ³⁾	Hanomag-Henschel, MAN, Schilter, Volvo
	0.8–1.2	Screw terminals M 4	4	0 986 344 053	Reformwerke Bauer, Steyr, Volvo
		Blade terminals	1	0 986 344 041 ^{2) 3)}	IF, Itma Trattori, Lamborghini, Mosa, Muzzi, Palmieri, Steyr, VM
M 12 x 1,5	0.2–0.5	Blade terminals	1	0 986 344 040 ^{2) 3)}	BMW, FIAT, Lamborghini, UNIC
	0.3–0.55	Screw terminals	3	0 986 344 089	Mercedes-Benz
M 12 x 1,75	1.2–1.7	Blade terminals	1	0 986 344 077 ^{2) 3)}	Huerlimann, Lamborghini, Same, VM
M 14 x 1,5	0.15–0.45	Blade terminals	1	0 986 344 046 ^{2) 3)}	Alfa Romeo
	0.3–0.55	Screw terminals M 4	4	0 986 344 080 ²⁾	Mercedes-Benz
		Blade terminals	1	0 986 344 036 ³⁾	Opel, Peugeot, Renault, Vauxhall, Volvo
¼"-18 NPTF	0.2–0.6	Threaded pins ⁴⁾	5	0 986 344 086 ³⁾	Ford, SAAB
⅜"-27 PTF-	0.3–0.6	Blade terminals	1	0 986 344 076 ^{2) 3)}	DAF, Ford, Case IH, IH
SAE short	0.5–0.8	Blade terminals	1	0 986 344 054 ^{2) 3)}	DAF, Ford, John Deere, SAAB
⅜"-27 NPTF	0.4–0.7	Blade terminals	1	0 986 344 074 ^{2) 3)}	Volvo

Technical data for European and Japanese oil-pressure warning switches

On-off switch, NC contact. Steel housing, for European vehicles galvanized and yellow chromated.
Switching capacity (lamp load): 5 W to 24 V.
Permissible operating temperature: –40°C ... +140°C.

Permitted operating pressure (gauge pressure): 6 bar.
Maximum pressure (gauge pressure): 10 bar.
Degree of protection according to DIN 40050 (Page 9):
IP 66 if suitable protective cap is used, i.e.: complete protection against contact, protection against penetration by dirt and dust and penetration by water during temporary submersion.

¹⁾ See application recommendation for vehicle models.

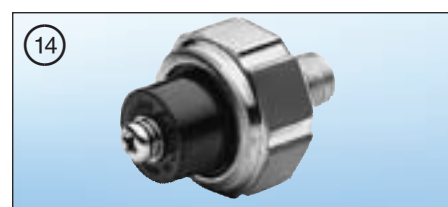
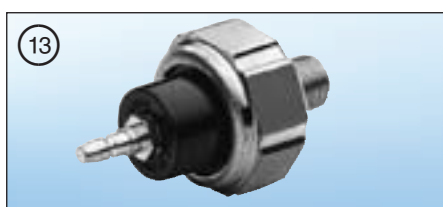
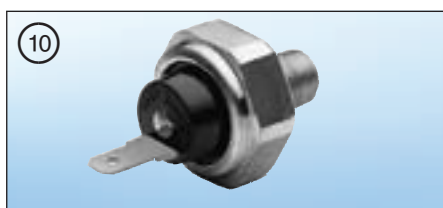
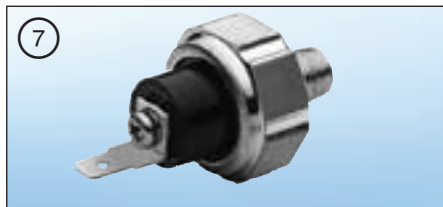
²⁾ Interior parts with special corrosion protection.

³⁾ Accessories: protective cap **3 340 522 025** see next page.

⁴⁾ Threaded pin 8-32 UNC-2 A.



For Japanese vehicles Single-chamber system



Fastening screw-in thread	Operating pressure range Gauge pressure bar	Connection 1-pole	Fig.	Part number	Vehicle makes ¹⁾
R 1/8"-28 BSP (tapered)	0.16–0.18	Blade terminals	6	0 986 345 007	Nissan
	0.25–0.35	Blade terminals	7	0 986 345 001	Daihatsu, Suzuki, Toyota
				0 986 345 017	Mitsubishi, Suzuki
		Plate terminals	8	0 986 345 000	Toyota
				0 986 345 012	Mazda
	0.28–0.38	Plate terminals	9	0 986 345 005	Daihatsu, Mazda
	0.28–0.34	Blade terminals	10	0 986 345 008	Daihatsu, Subaru, Suzuki
	0.30–0.32	Pin terminals	11	0 986 345 009	Honda
	0.30–0.38	Screw	12	0 986 345 006	Honda, Mazda, Subaru
	0.30–0.40	Pin terminals	13	0 986 345 003	Nissan
	0.35–0.45	Screw terminals	14	0 986 345 004	Mazda
				0 986 345 011	Honda

¹⁾ See application recommendations for vehicle models.



Accessories (order separately)

Protective cap

For oil-pressure warning switches with blade terminals. Protects electrical connections against moisture.

Material: black neoprene.

Fastening: self-clamping.

3 340 522 025



Important installation note

Before installing the new oil-pressure warning switch, check that the pressure range (can be read off on housing) and thread of the replacement switch match those of the original switch.

Stop lamp switches

Pneumatically or hydraulically actuated



Type of actuation	Fastening screw-in thread	Operating pressure range Gauge pressure bar	Connection 2-pole	Fig.	Part number
Pneumatic	M 12 x 1,5	0.1–0.3	Pin terminals	1	0 986 345 413 ¹⁾
		0.1–0.5	Blade terminals	2	0 986 345 408
			Blade terminals 6,3 mm	2	0 986 345 409
			Pin terminals	1	0 986 345 410
		0.75–1.0	Pin terminals	1	0 986 345 414 ¹⁾
Hydraulic	M 10 x 1 (tapered short) DIN 158	1.0–1.4	Pin terminals	1	0 986 345 411 ¹⁾
		2–4	Blade terminals	3	0 986 345 112
			Blade terminals	3	0 986 345 114 ²⁾
		2–5	Pin terminals	4	0 986 345 115 ¹⁾
			Blade terminals	3	0 986 345 116 ²⁾
		3–6	Blade terminals	3	0 986 345 110
			Blade terminals	3	0 986 345 113 ²⁾
			Pin terminals	4	0 986 345 117 ¹⁾
	½" x 27 NPTF SAE-short	2–4	Blade terminals	3	0 986 345 119
		2–5	Blade terminals	3	0 986 345 120
		3–6	Blade terminals	3	0 986 345 111
Oil-pressure switches	M 12 x 1,5	0.1–0.5	Blade terminals 6,3 mm	2	0 986 346 409
		1.0–1.4	Pin terminals	1	0 986 346 411 ¹⁾
		0.1–0.3	Pin terminals	1	0 986 346 413 ¹⁾
		0.75–1.0	Pin terminals	1	0 986 346 414 ¹⁾
	M 10 x 1 (tapered short) DIN 158	3–6	Blade terminals	3	0 986 346 110
		2–4	Blade terminals	3	0 986 346 112
		2–5	Pin terminals	4	0 986 346 115
		3–6	Blade terminals	3	0 986 346 111
	½" x 27 NPTF SAE-short	2–4	Blade terminals	3	0 986 346 119
		2–5	Blade terminals	3	0 986 346 120



Technical data

Pneumatic pressures: Permissible operating pressure (gauge pressure) 8 bar.

Max. permissible pressure (gauge pressure) 12 bar. Overload capacity 15 bar (max. 2 s).

Permissible operating temperature: –40...+100 °C.

Hydraulic pressures (pressure medium: brake fluid).

Permissible operating pressure (gauge pressure) 200 bar.

Max. permissible pressure (gauge pressure) 350 bar.

Permissible operating temperature: –40...+80 °C.

On-off switch, NO contact, two-chamber system.

Galvanized steel housing with yellow chromated finish.

Electrical connections silver-plated.

Switching capacity (lamp load):

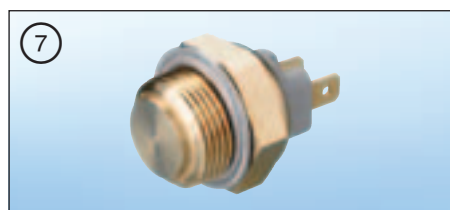
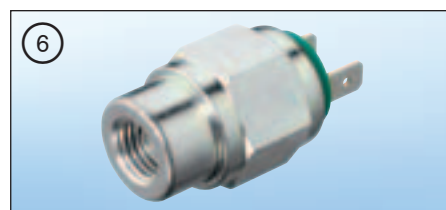
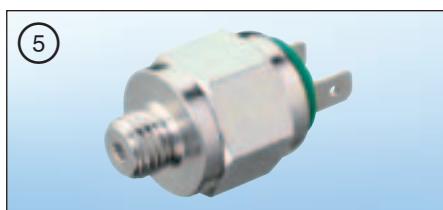
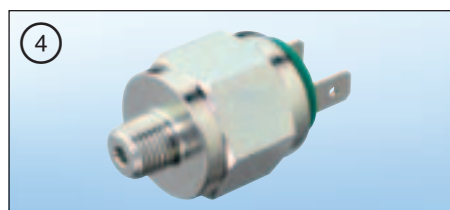
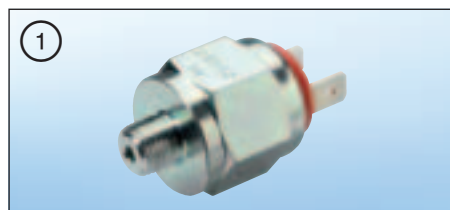
150 W/12 V or 100 W/24 V.

¹⁾ With thread M 27 x 1 (on plug side) for splashwater protection.

²⁾ With two blade-terminal connections supplied loose.

Temperature switch 12 V/15 A

for engine coolings fans
(-40 °C...+140 °C)



Type of actuation		Fastening screw-in thread	Operating pressure range/ Temperature range bar / °C	Connection 2-pole	Fig.	Part number		
Pressure switch	NC contact	M12 x 1.5	2.0 ± 0.2 bar	Blade terminal 6.3 mm	2	0 986 346 001		
		M12 x 1.5	4.0 ± 0.4 bar			0 986 346 002		
		M12 x 1.5	0.15 ± 0.1 bar			0 986 346 003		
		M12 x 1.5	0.5 ± 0.15 bar			0 986 346 004		
		M12 x 1.5	6.0 ± 0.6 bar			0 986 346 005		
		M12 x 1.5	2.5 ± 0.3 bar			0 986 346 006		
		M12 x 1.5	1.0 ± 0.2 bar			0 986 346 007		
		M12 x 1.5	4.5 ± 0.5 bar			0 986 346 008		
		M12 x 1.5	5.0 ± 0.5 bar			0 986 346 009		
		M12 x 1.5	0.8 ± 0.15 bar			0 986 346 010		
		M12 x 1.5	3.0 ± 0.3 bar			0 986 346 011		
		M12 x 1.5	5.5 ± 0.6 bar			0 986 346 012		
		M12 x 1.5 (internal thread)	0.15 ± 0.1 bar		3	0 986 346 021		
		M12 x 1.5 (internal thread)	0.5 ± 0.15 bar			0 986 346 022		
		M12 x 1.5 (internal thread)	4.0 ± 0.4 bar			0 986 346 023		
		M10 x 1 (tapered short)	1.0 ± 0.2 bar		1	0 986 346 031		
		M10 x 1 (tapered short)	2.0 ± 0.2 bar			0 986 346 032		
		M10 x 1 (tapered short)	3.0 ± 0.3 bar			0 986 346 033		
		M10 x 1 (tapered short)	4.0 ± 0.4 bar			0 986 346 034		
Pressure switch	NO contact	M12 x 1.5	5.5 ± 0.6 bar	Blade terminal 6.3 mm	5	0 986 346 051		
		M12 x 1.5	2.0 ± 0.2 bar			0 986 346 052		
		M12 x 1.5	0.3 ± 0.1 bar			0 986 346 053		
		M12 x 1.5	3.5 ± 0.4 bar			0 986 346 054		
		M12 x 1.5	4.1 ± 0.4 bar			0 986 346 055		
		M12 x 1.5	4.5 ± 0.5 bar			0 986 346 056		
		M12 x 1.5	5.0 ± 0.5 bar			0 986 346 057		
		M12 x 1.5	1.2 ± 0.2 bar			0 986 346 058		
		M12 x 1.5	6.0 ± 0.6 bar			0 986 346 059		
		M12 x 1.5	5.2 ± 0.5 bar			0 986 346 060		
		M12 x 1.5	5.7 ± 0.6 bar			0 986 346 061		
		M12 x 1.5	6.6 ± 0.6 bar			0 986 346 062		
		M12 x 1.5 (internal thread)	4.5 ± 0.5 bar		6	0 986 346 071		
		M12 x 1.5 (internal thread)	5.5 ± 0.6 bar			0 986 346 072		
		M12 x 1.5 (internal thread)	5.7 ± 0.6 bar			0 986 346 073		
		M10 x 1 (tapered short)	4.2 ± 0.4 bar		4	0 986 346 081		
		M10 x 1 (tapered short)	2.0 ± 0.2 bar			0 986 346 082		
		Temperature switch	M22x1.5-6g		92°C–87°C	Blade terminal 6.3 mm Bimetal rivets AGNi 20a/E-Cu, DIN 46244	7	0 986 347 005
			M22x1.5-6g		88°C–79°C			0 986 347 003
M22x1.5-6g	95°C–86°C		0 986 347 004					
M22x1.5-6g	82°C–68°C		0 986 347 002					
M22x1.5-6g	95°C–90°C		0 986 347 001					

Mini-relays

Good for 250,000 switching cycles

Note:

Please refer to relay catalog 1 987 721 076.

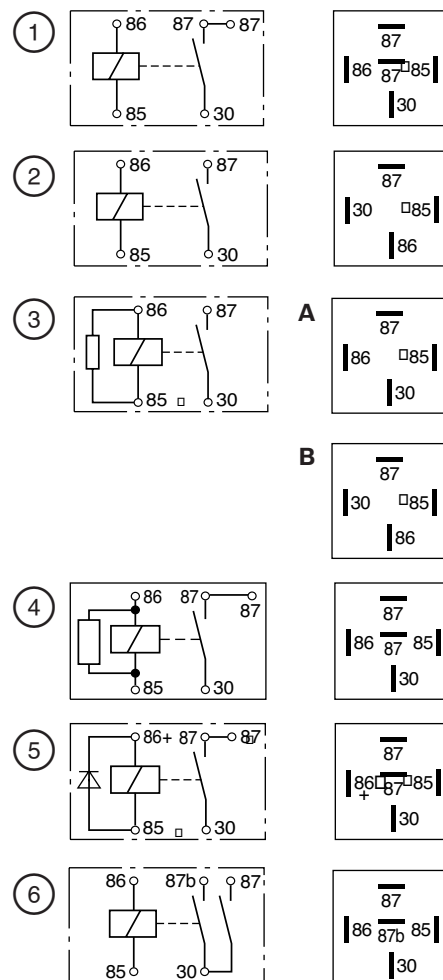
NO-contact relays

12 V / 24 V

Fig.	Version	Rated voltage Rated current (terminal 87)	Mounting bracket	Part number
1	Basic version	12 V 30 A	with	0 332 014 125 ¹⁾
				0 332 019 150
		24 V 20 A	without	0 332 019 801 □
			with	0 332 019 151
2	Basic version	12 V 40 A	with	0 332 019 203
			without	0 332 019 213
		12 V	without	0 332 019 157
		24 V	without	0 332 019 166
3 A	Terminals 30 and 86 interchanged.	12 V 30 A	without	0 332 019 205
			without	0 332 019 451
		12 V 30 A	without	0 332 019 103
		12 V 30 A	with	0 332 019 110
3 B	Shunt resistor for suppressing inductive interference-voltage peaks.	12 V 30 A	T-bar	0 332 019 456
		12 V 40 A	without	0 332 019 457
			without	0 986 332 003
			detend	0 986 332 040
		12 V 50 A	without	0 986 332 071
			T-bar	0 986 332 072
			without	0 986 332 023
		12 V 60 A	without	0 986 332 030
4	Shunt resistor for suppressing inductive interference-voltage peaks.	12 V 70 A	without	0 986 332 002
		12 V 30 A	T-bar	0 986 332 050
			with	0 986 332 053
		12 V 30 A	without	0 332 019 451
5	Decay diode for suppressing inductive interference-voltage peaks.	12 V 20 A	with	0 332 014 112
			without	0 332 019 451
		24 V 30 A	without	0 332 014 112
			without	0 332 019 204
6	Decay diode for suppressing inductive interference-voltage peaks.	12 V 30 A	with	0 332 019 155
			without	0 332 019 109
		24 V 20 A	without	0 332 014 213
			without	0 332 015 213
7	No contacts with two makes	12 V, 2 x 15 A	with	0 332 015 001 ¹⁾
			without	0 332 015 006 ¹⁾
		24 V, 2 x 10 A	with	0 332 015 002 ¹⁾
			without	0 332 015 008 ¹⁾

□ Self-service pack

¹⁾ With metal housing



Change-over contact relays (can also be used as NC contacts)**6 V / 12 V / 24 V**

Fig.	Version	Rated voltage Rated current (terminal 87)	Mounting bracket	Part number
10	Basic version	6 V 20 A/30 A	with	0 332 204 001
		12 V 40 A/60 A	without	0 986 332 022
		12 V 30 A/20 A	with	0 332 209 150
			without	0 332 209 135
				0 332 209 137
				0 332 209 138
				0 332 209 151
11	Shunt resistor for suppressing inductive interference-voltage peaks.	24 V 20 A/10 A	with	0 332 209 203
			without	0 332 209 211
		lamp load only, max. 100 W	without	0 332 204 212 ¹⁾
		12 V 30 A/20 A	without	0 332 209 159
		24 V 20 A/10 A	with	0 332 209 207
			without	0 332 209 206
		12 V 40 A/40 A	detend	0 986 332 041
12	Decay diode for suppressing inductive interference-voltage peaks.	12 V 40 A/60 A	T-bar	0 986 332 053
				0 986 332 073
		12 V 30 A/20 A	with	0 332 209 158
			without	0 332 209 152
	Blade terminal silver-plated.	24 V 20 A/10 A	without	0 332 204 204 ¹⁾
				0 332 209 204

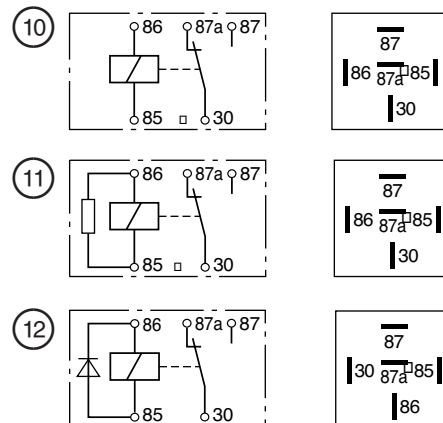
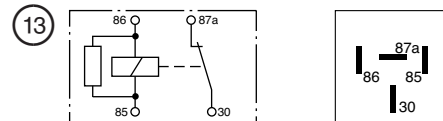
¹⁾ With metal housing**NC Contacts**

Fig.	Version	Rated voltage Rated current (terminal 87/87a)	Mounting bracket	Part number
13	Shunt resistor for suppressing inductive interference-voltage peaks.	12 V 10 A	without	0 332 109 011



Accessories

For mini-relays, time-lag relays, turn-signal flashers, pulse generators, and vehicular hazard-warning-signal flashers

Note:

Please refer to relay catalog 1 987 721 076.



1 Socket housing (5-pole) with mounting bracket

For relays and sensors without mounting bracket. For single and multiple mounting.

Design: Glass-fiber-reinforced polyamide. The blade receptacles engage with their locking lance and are locked firmly in position. The plug-in bases are provided with groove and tongue and can therefore be assembled in rows; it is necessary only to secure 2 bases (hole diameter 5.3 mm, distance from base to base mount 30.5 mm).

3 334 485 008 ²⁾

²⁾ Qty. in pack: 5



2 Socket housing (5-pole) without mounting bracket

For relays and hazard-warning flasher units with mounting bracket.

Design: glass-fiber-reinforced polyamide. The blade receptacles engage with their locking lance and are locked firmly in position.

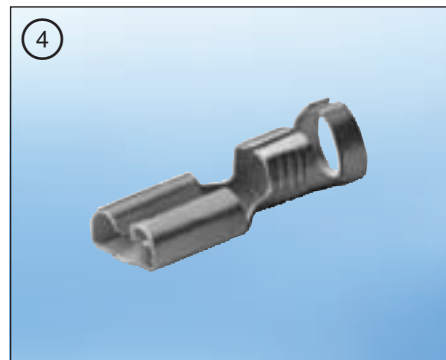
3 334 485 007 ²⁾



3 Plug housing

as ... 007, but for soldering onto printed circuit board.

3 334 485 041



4 Blade receptacles with locking lance

For socket housing.

Terminal size: 6.3 x 0.8 mm, as per DIN 46340/3.

Qty. in pack: 25

For conductor cross-section 1,5–2,5 mm²

1 901 355 975

Note

Relays not only reduce the loading imposed on control switches, but also reduce the voltage drops in the wiring. Furthermore, interlock circuits are a simple matter with relays.

In case of cramped installation conditions, mini-relays can provide the solution.

In the case of pre-tested wiring harnesses, multiple connectors facilitate simple assembly and lower failure rates.

The following mini-relay versions are available:

- Mini-relay without mounting bracket. Easily inserted in buttable screw-fastening plug-in base.
- Mini-relay with mounting bracket. Electrical connection through 5-pole socket.

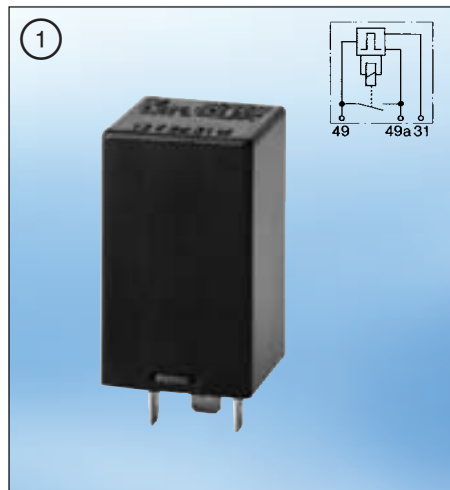
Blade-terminal connection

Blade-terminal size: 6.3 x 0.8 mm to ISO 7588

Degree of protection:

When using multiple connectors: Housing IP 34 to IEC 60529, contact with tools etc. thickness $\varnothing > 2.5$ mm. Splashwater from all directions (terminals pointing downwards).

Pulse generators



1 Pulse generators, electronically controlled 12 V/24 V

For intermittent switching of devices or lamps, e.g. to improve the warning effect of indicator lamps.

Circuitry: load-independent, starts with on phase.

Load: according to service life in hours, max. 50 W for 100 h, 100 W for 36 h.

Frequency 90 ±15 pulses/min.

Fastening: on plug-in base (accessory).

Connection: blade terminals.

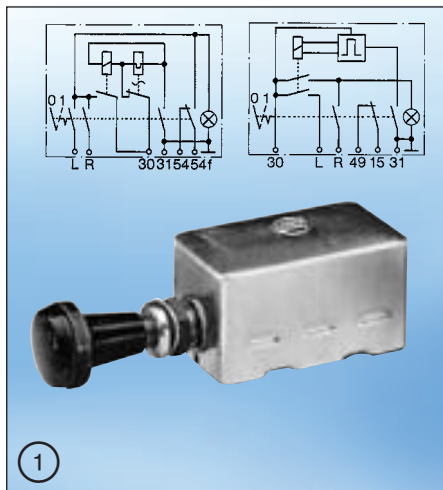
12 V	0 335 322 001
24 V	0 335 323 001

Load: max. 8 x 21 W for 100 h.

12 V	0 335 322 003
24 V	0 335 323 003

Hazard-warning-signal flashers

For vehicles with or without trailer



1 Hazard-warning-signal flasher 6 V/12 V/24 V

For single and dual-circuit turn-signal systems.

Design: electronic flasher. Push-pull switch with indicator lamp in knob, without cable set.

Fastening: with round nut, installation hole

Ø 10.5 mm, wall thickness up to 7 mm.

Connection: blade terminals.

6 V, max. 6x 21 W	0 336 851 003
12 V, max. 8x 21 W	0 336 851 004
24 V, max. 8x 21 W	0 336 900 000 ¹⁾

Switch shaft sealed for tractors

12 V, max. 8x 21 W	0 336 851 008
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With universal cable set

12 V, max. 8x 21 W	0 336 851 901
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Spare parts

Safety knob

for 24 V version	3 337 030 085
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Bulb (shape J)

12 V 2 W	1 987 302 224
24 V 3 W	1 987 302 519

Universal cable set (not shown)

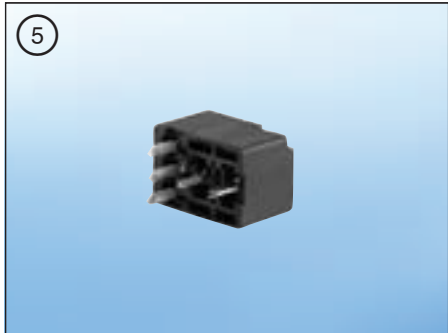
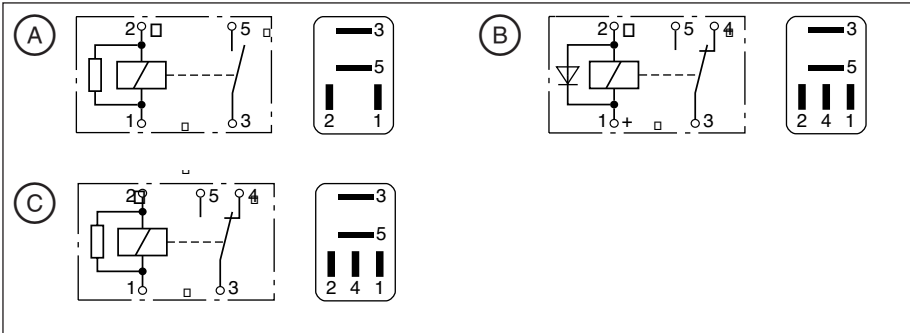
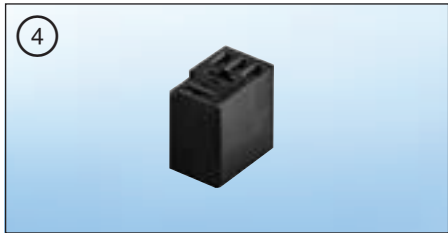
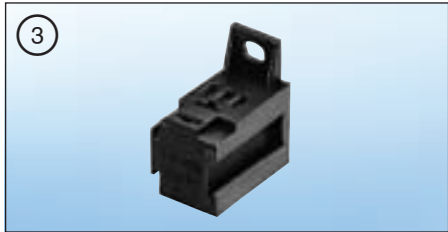
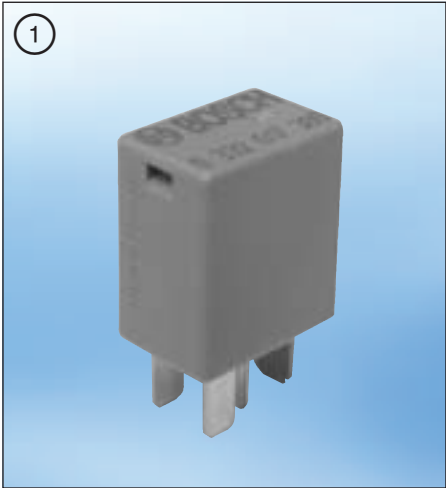
	1 354 463 007
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¹⁾ for single-circuit turn-signal systems only.

Micro-relays

Compact, and high making and/or breaking capacity

Note:
Please refer to relay
catalog 1 987 721 076.



Many loads can be switched with micro relays with a lower power than the customary 30 A mini-relays. The micro relays which can be loaded with a rated current of up to 20 A are compact and have a low power loss.

Terminal designation cross-reference

Micro-relay	Mini-relay	Recommended polarity
1	86	+
2	85	-
3	30	+
4	87a	
5	87	

Blade terminal sizes

Connections 1, 2, 4	4.8 x 0.8 mm
Connections 3, 5	6.3 x 0.8 mm

Rated voltage V	Rated switching current A	Mounting bracket	Fastening hole mm	Circuit diagram/ pin assignment	Fig.	Part number
NO-contact relays						
12	20	without	-	A	1	0 332 017 300

Change-over contact relays (can also be used as NC-contact relays)

12	30/10	without	-	C	1	0 332 201 107
	20/10	without	-	B	1	0 332 207 304
24	10/5	without	-	B	1	0 332 207 402
	10/5	without	-	C	2	0 332 207 405

Accessories (order separately)

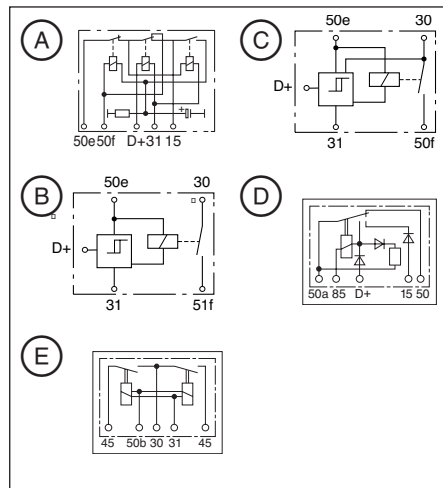
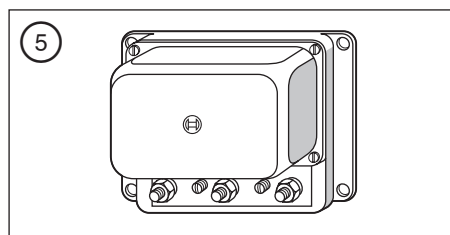
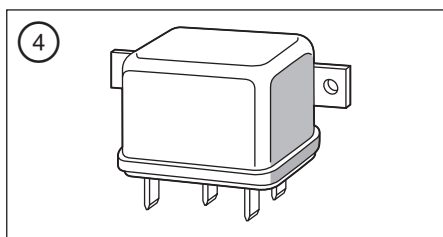
Socket housing

Version	Fastening hole mm	Fig.	Part number
Mounting bracket with hole	Ø 5.3	3	3 334 485 045
without mounting bracket	-	4	3 334 485 046
for soldering onto printed circuit board	-	5	3 334 485 049 ¹⁾

¹⁾ Note: When soldering, insert relays into the socket housing; the receptacles will then be adjusted to the correct position.

Relays for starters

For commercial vehicles, buses and assemblies of equipment.
Preferred for engines where starting cannot be heard.



1 + Start-repeating relay
Protects the solenoid switch of the starter against overload.
Start-repeating function:
– Automatic repetition of the mestring process in the event of problems with starting, until the starter pinion engages.
Fitting: vertical on a vibration-free wall, protected against water and dirt.

– 3 Start-locking relay
Protects the starter, the pinion and the flywheel ring gear against overload.
Start-locking function:
– Switches off the starter when the engine starts to run on its own.
– Prevents actuation of the starter when the engine is running.
– Prevents actuation of the starter after the start command has been interrupted, until the starter and engine have stopped.
Fitting: vertical on a vibration-free wall, protected against water and dirt.

Start-locking/ start-repeating relay
Switches off the starter when the engine starts to run on its own.
– Prevents actuation of the starter when the engine is running.
– Prevents actuation of the starter after the start command has been interrupted, until the starter and engine have stopped.
Start-repeating function:
– Automatic repetition of the engagement process in the event of problems with starting, until the starter pinion engages.
Fitting: vertical on a vibration-free wall, protected against water and dirt.

Rated voltage	Type of current	Switching	Connection	Fastening	Dimensions	fig.	Part number
Rated current				mm	L x w x H mm		

Start-repeating relay

24 V 15 A	AC	mechanical	blade terminals	2x hole Ø 5.3	50 x 33.5 x 47	4 D	0 331 800 003
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Start-locking relay

24 V 20 A	AC	C	blade terminals	3x hole Ø 5.5	187 x 103 x 44	2 A	0 331 801 001
24 V	AC	electronical	blade terminals	2x hole Ø 6.4	100 x 95 x 35	3 B	0 331 801 300

Start-locking/Start-repeating relay

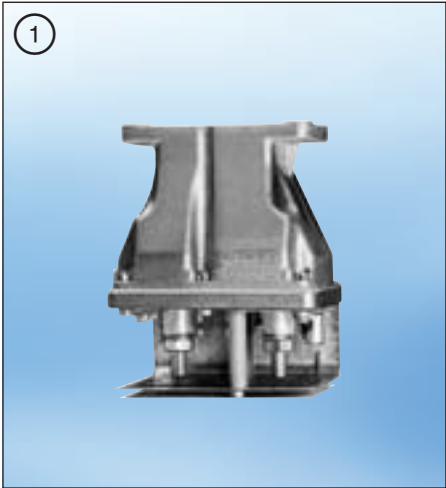
24 V*	AC	electronical	blade terminals	2x hole Ø 6.4	100 x 95 x 35	3 C	0 331 802 100
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* Terminal 50f – max. 15 amps.

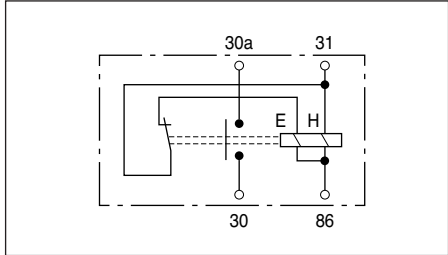
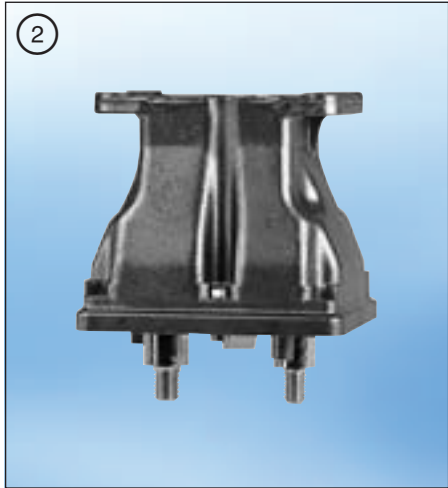
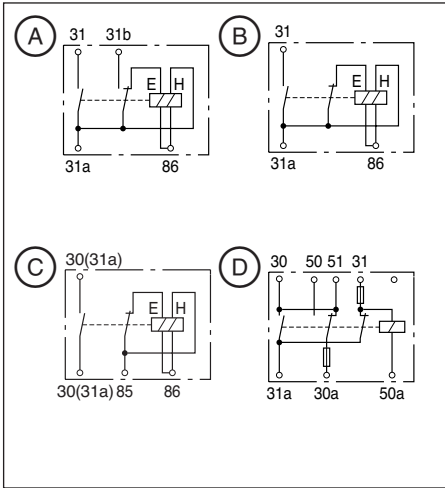
Dual starting relay

24 V	DC	V	screws M8	4x hole Ø 8.4	232 x 180 x 45	5 E	0 333 500 001
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Battery relays



Cutoff and switching relay, battery changeover relay
Design: open construction. With protective cover.
Fitting: the terminals must point downwards.
Fastening: 4 holes Ø 8.4 mm.
Connection: screw terminals.
Dimensions: 124 x 110 x 160 mm.



② Cut-off and switching relay 24 V
Open construction: Without protective cover.
Fitting: Terminals must point downwards
Fastening: 4 holes, Ø 8.4 mm.
Connection: Screw terminals.
Dimensions: 114 x 78 x 141 mm.
Operating temperature range: -30...+100 °C.
Data for excitation side
Max. operating voltage: 30 V
Response voltage: ≤ 16 V
Dropout voltage: ≥ 0.5 V
Max. make current (at rated voltage) ≤ 4.5 A
Max. holding voltage (at rated voltage) ≤ 0.4 V
Data for contacts side
Permissible contact loading on terminal 30/30a.
Current: ≤ 2,500 A
Current-flow time: ≤ 1 s
Repeat time: ≥ 60 s
Continuous current: 200 A
Voltage drop: ≤ 10 mV
Test current: 10 A
0 333 301 015

Rated voltage V	Fig.	Switch- ing poles	Circuit diagramm	Switching current		Part number
				continuous duty ¹⁾ A	short-time duty A	
12	①	2	A	60/200	2500 ²⁾	0 333 301 007
24	①	1	B	200	2500 ²⁾	0 333 301 009
			C	300	3500 ²⁾	0 333 301 010

Cutoff and switching relay for disconnecting battery voltage (ground cable)
¹⁾ max. 2 min, ²⁾ max. 1 s

Change-over relay for series and parallel connection of two 12 V batteries in 12 V systems with 24 V starter. For short-time duty.						
12		2	D	75	1500 ³⁾	0 333 300 003

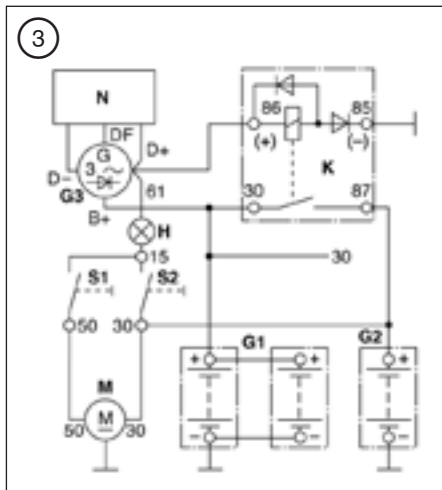
³⁾ max. 5 s

Cable dimensions
IA voltage drop in the control line (ignition switch terminal 86 of cutoff relay) must not exceed 0.5 V. The cable cross-section must be matched to the cable length.

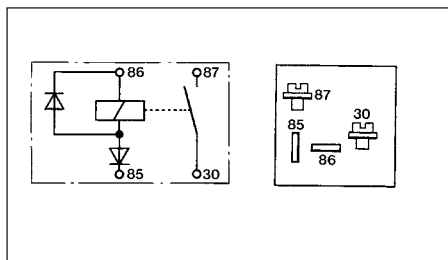
Note:
Battery relays should be installed as close to the batteries as possible, in order to keep the connection cables short.

Cable length up to	Cable cross-section
3.2 m	1.5 mm ²
5.3 m	2.5 mm ²
8.5 m	4 mm ²
13.0 m	6 mm ²

Note:
Please refer to relay
catalog 1 987 721 076.



**4 Battery cutoff relay
Normally open relay**
Protects the starter battery against discharge.
For disconnection of an additional second battery from the starter battery when the alternator is delivering no charge.
Design: seawater-protected. Relay with reversed-polarity-protective diode and decay diode for suppressing inductive voltage peaks.
Switching capacity: 12 V 75 A (400 A, 1 s).
Fastening: 2 holes Ø 5.3 mm.
Connection: screw terminals and blade terminals.
Dimensions: 75 x 35 mm, height 55 mm.
0 332 002 156 ☐
as ..002 156, but 12 V 75 A (400 A, 1 s).
0 332 002 161 ☐

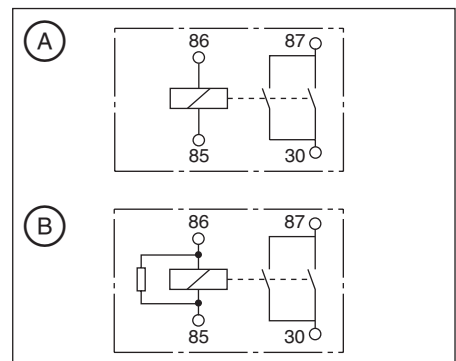
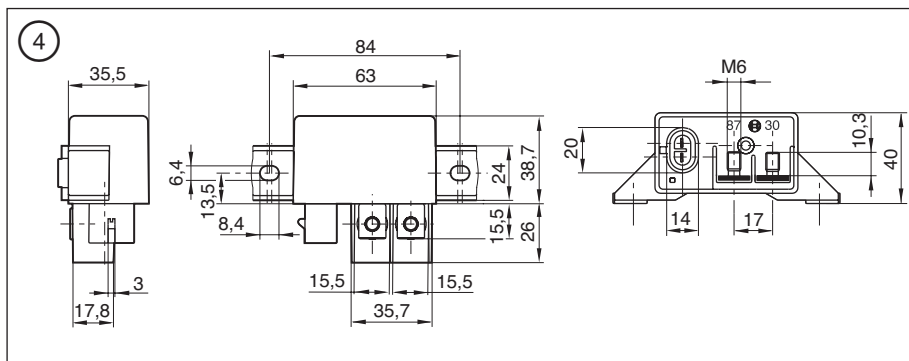


- G1 Battery for auxiliary equipment
- G2 Starter battery
- G3 Alternator
- H Charge-indicator lamp
- K Battery-cutoff relays
- M Starting
- N Voltage regulators
- S1 Ignition switches
- S2 Driving switches
- S1/S2 Combination of S1 and S2
- 30 Auxiliary equipment

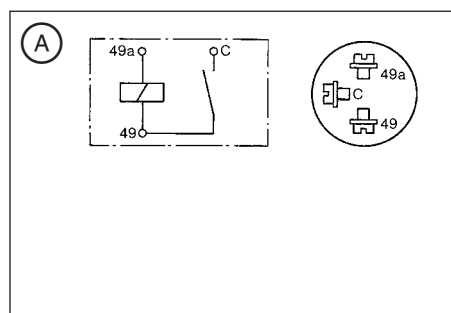
as ..002 156, but 24 V 50 A (250 A, 1 s).
0 332 002 256 ☐
☐ Self-service pack



4 Normally open relay	
Nominal voltage (switching and excitation circuit)	12 V
Permissible operating voltage	8–16 V
Permissible ambient temperature	–40...+100 °C
Voltage drop at test current when new	< 100 mV/100 A
Voltage drop after specified no. of operations	< 200 mV/100 A
Degree of protection of housing / Terminals	IP 67
Response voltage	< 8 V
Release voltage	1,5–4 V
Overall resistance	46 ± 5
Circuit diagram	A
	0 332 002 351
As ...002 351, but overall resistance 42 ± 5, terminal diagram B	B
	0 332 002 352



Relays for headlamps and auxiliary lamps



① Current relay for rotating beacon 12 V/24 V

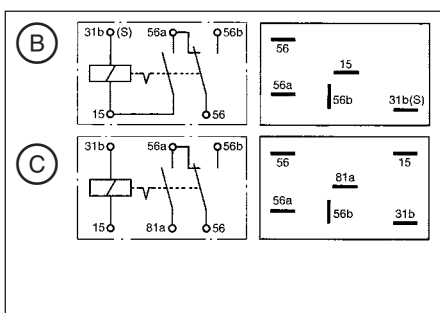
For switching rotating beacons on police, fire service, road maintenance vehicles, etc.

Fastening: hole diameter 6.4 mm.

Connection: blade terminals, screw terminals.

Ⓐ Normally open relay

12 V 70 W	0 332 400 002
24 V 70 W	0 332 400 003



② Step-by-step relay (stepping relay) up to 24 V

For switching high/low beam, headlamp flasher and other loads.

Operation: switching relay with changeover contact (for high and low beams). Switching is carried out by a short current pulse. The NO contact (for headlamp flasher) closes only as long as the relay is energized.

Design: galvanized housing.

Connection: blade terminals 6.3 x 0.8 mm, pointing downwards.

Dimensions: 58 x 45 mm, height 72 mm, with mounting bracket, height 52 mm with clip.

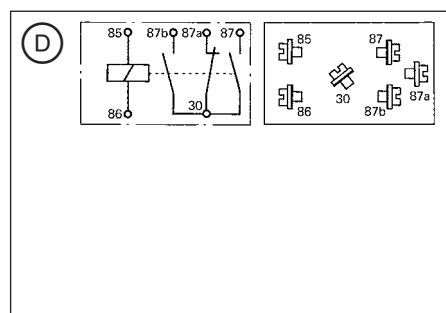
Ⓢ NO contact/changeover contact

Fastening: mounting bracket, hole diameter 6.8 mm, center of hole to lower edge of relay 52 mm, without terminal 81a.

12 V 150 W	0 332 515 009
24 V 150 W	0 332 515 012

Ⓢ with terminal 81a, monostable; terminal 56, bistable.

12 V 150 W	0 332 515 022
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③ Switching relay up to 24 V

For switching fog lamps and driving lamps, horns, fanfare horns etc.

Fastening: with mounting bracket on bodywork, hole diameter 5.3 mm, hole spacing 60 mm.

Connection: screw terminals M4 or blade terminals 6.3 x 0.8 mm, pointing downwards.

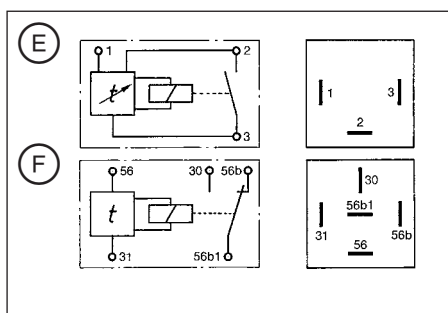
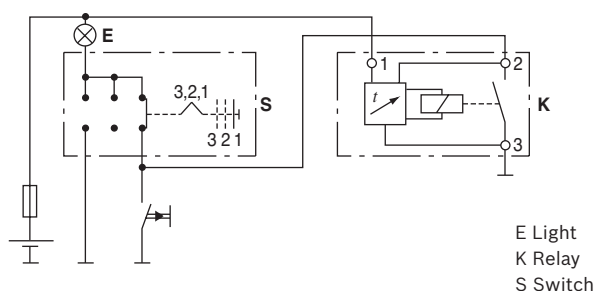
Dimensions: 70 x 36 mm, height 46 mm

Ⓢ One NC and two NO contacts

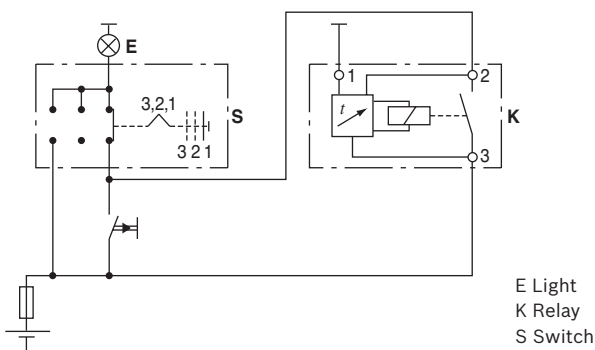
24 V 240 W	0 332 201 006
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0 335 330 801 Application example 1



0 335 330 801 Application example 2



4 Easytronic time-lag relay (electronic time-lag relay) 12 V

Delayed switch-off of a load, e.g. interior lamp to illuminate the surroundings after leaving the vehicle.

Design: black polyamide housing, fiberglass reinforced.

Connection: blade terminals 6.3 x 0.8 mm.

Terminals point downwards.

Dimensions: 30 x 30 mm, height 60 mm.

Ⓔ For interior lamp

12 V 50 W max. switching capacity, switch-off delay adjustable 3–30 s.

NO contact **0 335 330 801¹⁾**

Ⓕ For low beam

12 V 150 W max. switching capacity, switch-off delay fixed 90 s.

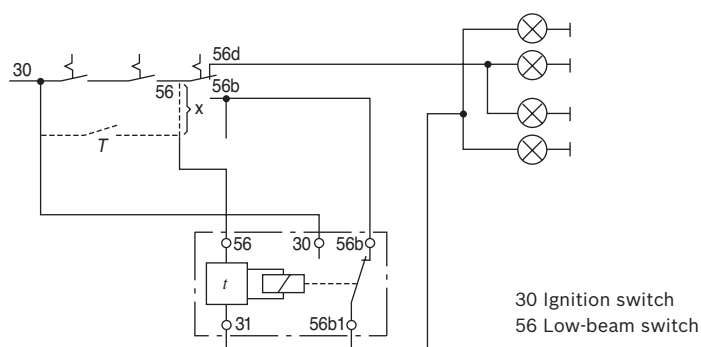
Change-over contact **0 335 330 802²⁾**

Installation instructions with possible circuits are enclosed.

¹⁾ 1 Relay, 1 universal holder, 3 blade receptacles.

²⁾ 1 Relay, 1 universal holder, 5 blade receptacles.

Application example



X: When button "T" is connected, line "X" is dispensed with.

Power relays

For switching starters, automatic preheating systems, motors.
Equipment of forklift trucks and for controlling hydraulic units.

Note:
Please refer to relay
catalog 1 987 721 076.

Rated voltage V	Fig.	Circuit diagram	Switching poles	Switching current S1 ¹⁾ A	S2 ²⁾ A	Switch function (main relay) NC NO Change-over	Connection Screw Blade	Dimensions L/W/H mm	Part number
Power relay (some with preliminary contact, therefore less contact burn-off).									
Closed construction (polyamide housing); fastening 2 x Ø 5.3 mm.									
12	1	A	–	75	400	•	•	75 x 35 x 55	0 332 002 150 ³⁾
	1	A	–	75	400	•	•	75 x 35 x 55	0 332 002 160 ^{3) 6)}
	1	A	–	75	400	•	•	75 x 35 x 55	0 332 002 155
24	1	A	–	50	200	•	•	75 x 35 x 55	0 332 002 250 ³⁾
	1	A	–	50	200	•	•	75 x 35 x 55	0 332 002 255

Power relay with parallel resistor (to suppress inductive interference-voltage peaks).

Closed construction (polyamide housing); fastening 2 x Ø 5.3 mm.

24	1	B	–	50	200	•	•	75 x 35 x 55	0 332 002 257
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Power relay, closed construction (metal housing); fastening 2 x Ø 5.3 mm.

12	2	D	1	80	800	•		110 x 55 x 60	0 333 006 004
	2	E	1	80	800	•	•	140 x 55 x 56	0 333 006 015 ^{4) 7)}
	3	D	1	150	1000	•		104 x 56 x 57	0 333 009 004
	3	D	1	150	1000	•		110 x 55 x 60	0 333 009 010 ⁷⁾
24	2	D	1	80	800	•		110 x 55 x 60	0 333 006 006 ⁷⁾
	2	G	1	100	500	•		110 x 55 x 60	0 333 006 008
	4	C	2	100	500	•	•	95 x 50 x 52	0 333 006 017 ⁷⁾
	4	F	2	100	800	•	•	105 x 50 x 55	0 333 006 010 ⁷⁾
	3	D	1	150	1000	•		104 x 56 x 57	0 333 009 002
	3	D	1	150	1000	•	•	104 x 56 x 57	0 333 009 005
	3	D	1	150	1000	•		104 x 56 x 57	0 333 009 009 ⁷⁾
	3	D	1	150	1000	•	•	106 x 56 x 57	0 333 009 011
	3	D	1	150	1000	•		114 x 56 x 57	0 333 009 017 ⁷⁾
	6	D	1	230	1500	•		135 x 70 x 100	0 333 200 010
	6	E	1	230	1500	•	•	135 x 70 x 100	0 333 200 011 ⁴⁾
	6	D	1	230	1500	•	•	135 x 70 x 100	0 333 200 012 ⁵⁾

Power relay, open construction; fastening 2 x Ø 6.4 mm; 4 x Ø 6.4 mm.

24	5	K	2	250 (3 Min.)		• Single contact	•	87 x 62 x 102	0 333 007 002
	5	H	2	150	1000	• Twin contact	•	98 x 57 x 89	0 333 007 004 ⁵⁾
	6	D	1	230	1500	•	•	135 x 70 x 100	0 333 200 010
	6	E	1	230	1500	•	•	135 x 70 x 100	0 333 200 011 ⁴⁾
	6	D	1	230	1500	•	•	135 x 70 x 100	0 333 200 012 ⁵⁾
	6	I	1	230	1500	•	•	135 x 70 x 128	0 333 201 010
	6	J	1	230	1500	•	•	135 x 70 x 128	0 333 201 011 ⁴⁾
80	6	D	1	230	1500	•	•	135 x 70 x 100	0 333 200 013
	6	I	1	230	1500	•	•	135 x 70 x 128	0 333 201 012
	6	J	1	230	1500	•	•	135 x 70 x 128	0 333 201 013 ⁴⁾

Degrees of protection according to IEC 60529

Designation	Protection against contact	Protection against foreign bodies	Protection against water
IP 00	no protection	no protection	no protection
IP 30	with tools etc. Thickness Ø > 2.5 mm	Ø > 2.5 mm	no protection
IP 33	with tools etc. Thickness Ø > 2.5 mm	Ø > 2.5 mm	Spraywater, at angles up 60° from the perpendicular
IP 53	complete	dust-protected	Spraywater, at angles up 60° from the perpendicular
IP 54	complete	dust-protected	Splashwater from all directions
IP 6K9K	complete	dust proof	High pressure/steam jet cleaning

⁷⁾ Degree of protection

Relay	Housing	Terminals
0 333 006 006	IP 54	IP 00
0 333 006 010	IP 54	IP 00
0 333 006 015	IP 33	IP 00
0 333 006 017	IP 53	IP 00
0 333 009 003	IP 54	IP 00
0 333 009 009	IP 54	IP 00
0 333 009 010	IP 54	IP 00
0 333 009 008	IP 30	IP 00
0 333 009 017	IP 6K9K	IP 00

¹⁾ S1 – Continuous duty

²⁾ S2 – Short-time duty (1 s)

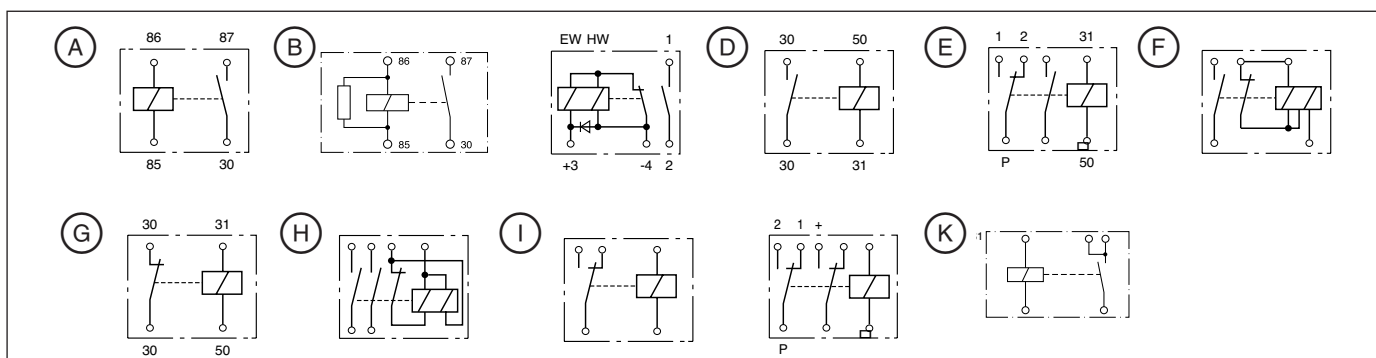
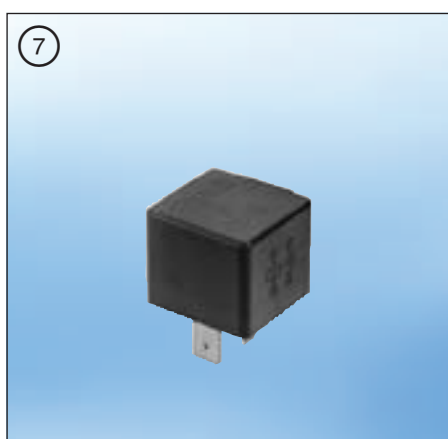
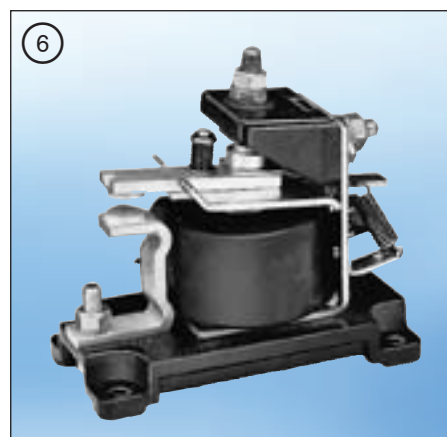
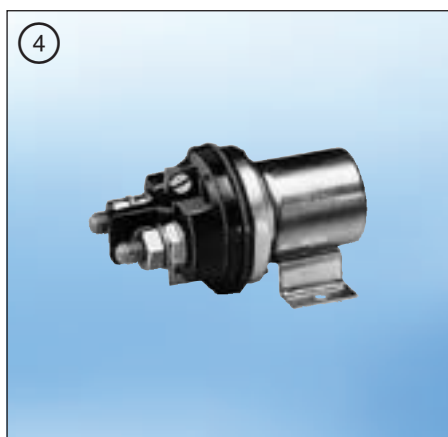
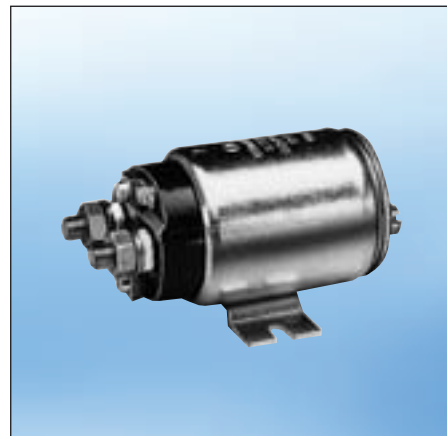
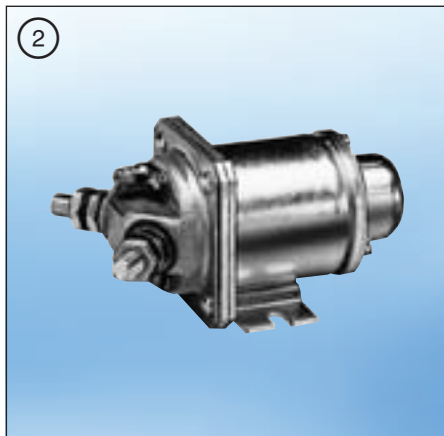
³⁾ With preliminary contact

⁴⁾ Additional auxiliary relay (changeover),
e.g. for indicator lamps, max. 6 A

⁵⁾ Fitting position: long edge of baseplate
vertical, max. inclination 10°

⁶⁾ Switch-on duration 25%, referred to
5 min., i.e. relay may be in operation for
1.25 mins max. A pause of 3.75 minutes
must be maintained afterwards.

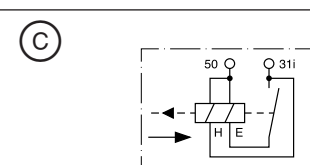
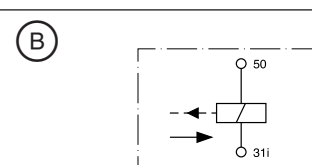
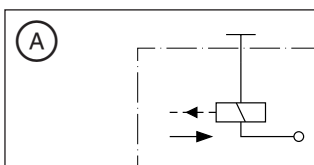
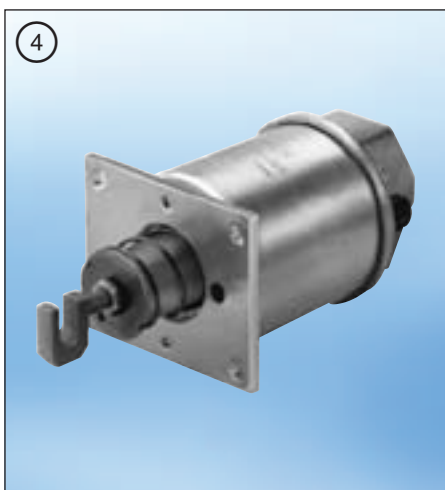
The connection terminals must not be exposed to water and dirt.
Power relays must be mounted with the terminals at the bottom.



Pulling electromagnets 12 V/24 V

Note:

Please refer to relay catalog 1 987 721 076.



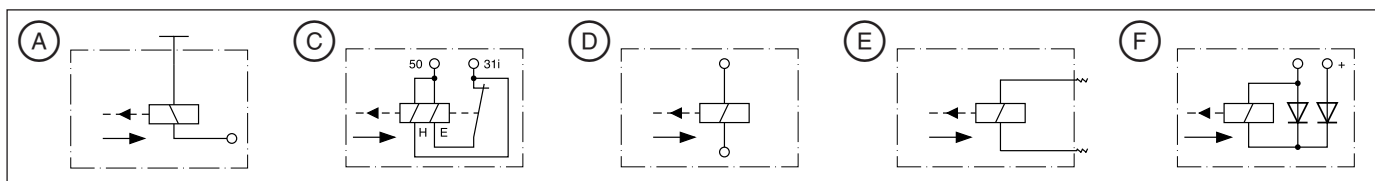
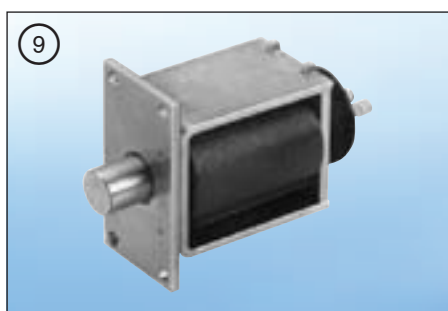
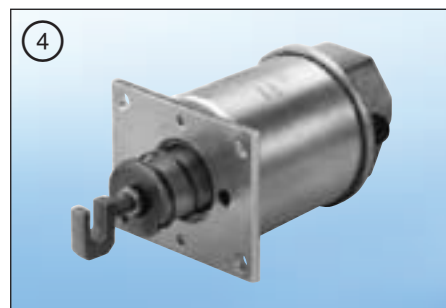
Nominal voltage V	Working stroke mm	Nominal wattage ¹⁾ W	Operating mode ²⁾	Forces Working stroke ³⁾ N	Forces With armature pulled in ³⁾ N	Forces Return spring N	Weight kg	Fig.	Connection and circuit diagram	Part number
12	4	69	Short-time duty	≤ 14	≤ 70	4 ± 1	0.11	1	A	0 330 001 004
12	1.3	14	Contin. duty	13	15	2.3 ± 0.5	0.103	2	A	0 330 001 020
12	1.3	≤ 21	Contin. duty	≥ 8	≥ 11	2.3 ± 0.5	0.074	3	A	0 330 001 040
12	15.3	277	Short-time duty	≤ 95	≤ 200	4.5 ± 0.5	1.11	4	B	0 330 003 002
12	15.3	960/12.5 ⁴⁾	Contin. duty	≤ 110	≤ 270		1.1	5	C	0 330 003 007

¹⁾ With armature pulled in.

²⁾ Short-time duty, after 45 sec. of operation there should be a break of 4.5 min.

³⁾ At nominal voltage and winding temperature 23 ± 5°C.

⁴⁾ Pull-in winding/hold-in winding.



Nominal voltage V	Working stroke mm	Nominal wattage ¹⁾ W	Operating mode ²⁾	Forces Working stroke ³⁾ N	Forces With armature pulled in ³⁾ N	Forces Return spring N	Weight kg	Fig.	Connection and circuit diagram	Part number
24	4	75	Short-time duty	≤ 14	≤ 70	4 ± 1	0.11	1	D	0 330 001 003
24	1.3	14	Contin. duty	13	15	2.3 ± 0.5	0.103	2	A	0 330 001 021
24	1.3	≤ 21	Contin. duty	≤ 8	≤ 11	2.3 ± 0.5	0.076	6	A	0 330 001 047
24	1.3	≤ 21	Contin. duty	≤ 8	≤ 11	2.2	0.094	7	E	0 330 003 048
24	15.3	274	Short-time duty	≤ 95	≤ 250	4.5 ± 0.5	1.11	4	D	0 330 003 001
24	15.3	695/18 ⁴⁾	Contin. duty	≤ 55	≤ 350	5 ± 1	1.18	4	C	0 330 003 003
24	6	50	Short-time duty	≤ 24	≤ 80	4 ± 1	0.44	8	D	0 330 004 005
24	1.8	14	Contin. duty	≤ 16	≤ V24	7.8 ± 1	0.32	9	F	0 330 005 002

¹⁾ With armature pulled in.

²⁾ Short-time duty, after 45 sec. of operation there should be a break of 4.5 min.

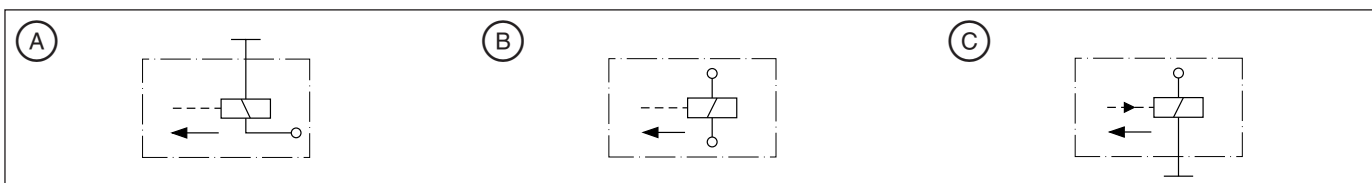
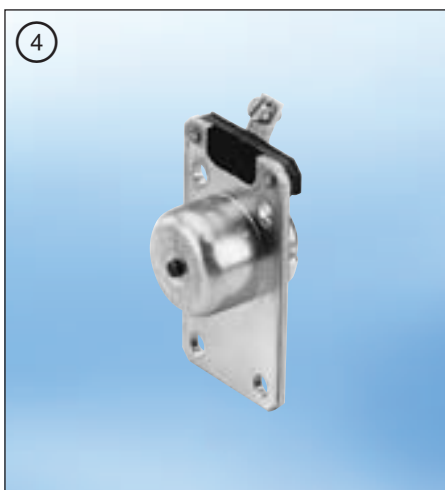
³⁾ At nominal voltage and winding temperature 23 ± 5 °C.

⁴⁾ Pull-in winding/hold-in winding.

Pushing electromagnets 12 V/24 V

Note:

Please refer to relay catalog 1 987 721 076.

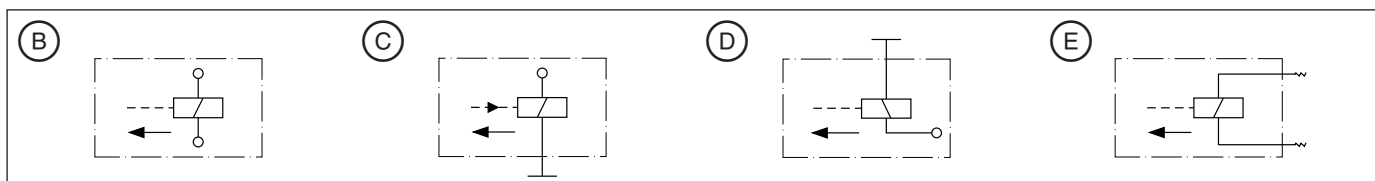
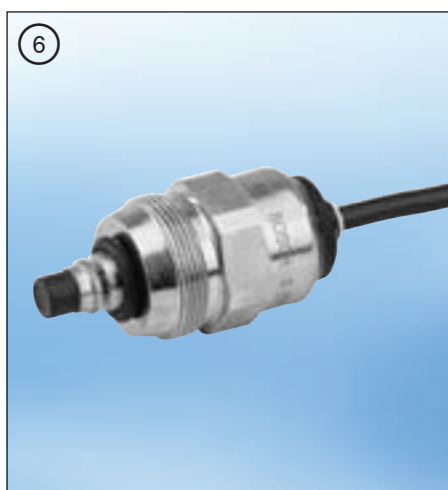


Nominal voltage V	Working stroke mm	Nominal wattage ¹⁾ W	Operating mode ²⁾	Forces Working stroke ³⁾ N	Forces With armature pulled in ³⁾ N	Forces Return spring N	Weight kg	Fig.	Connection and circuit diagram	Part number
12	7	137	Short-time duty	≤50	≤120		0.4	1	A	0 330 101 012
12	6.5	137	Short-time duty	≤50	≤120		0.4	2	B	0 330 101 022
12	3	42.5	Short-time duty	≤12	≤60	0.9±0.2	0.14	3	C	0 330 106 001
12	2.6	42.5	Short-time duty	≤20	≤30		0.19	4	A	0 330 106 006
12	1	32	Short-time duty	≤12	≤12		0.088	5	A	0 330 106 010

¹⁾ With armature pulled in.

²⁾ Short-time duty, after 45 sec. of operation there should be a break of 4.5 min.

³⁾ At nominal voltage and winding temperature 23±5°C.



Nominal voltage V	Working stroke mm	Nominal wattage ¹⁾ W	Operating mode ²⁾	Forces Working stroke ³⁾ N	Forces With armature pulled in ³⁾ N	Forces Return spring N	Weight kg	Fig.	Connection and circuit diagram	Part number
24	4.8	26.7	Short-time duty	≤32	≤100		0.6	2	B	0 330 101 022
24	7	152	Short-time duty	≤50	≤120		0.4	2	B	0 330 101 026
24	3	48	Short-time duty	≤12	≤60	0.9±0.2	0.14	3	C	0 330 106 003
24	1	26	Short-time duty	≤11	≤11		0.088	5	D	0 330 106 012
24	1	26	Short-time duty	≤11	≤11		0.094	6	E	0 330 106 017

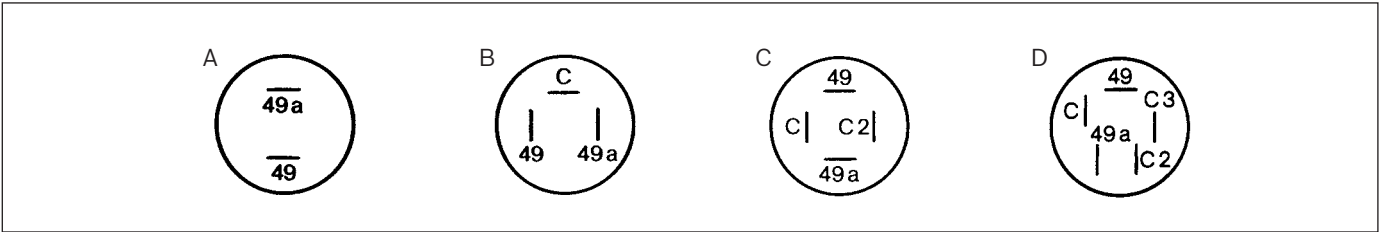
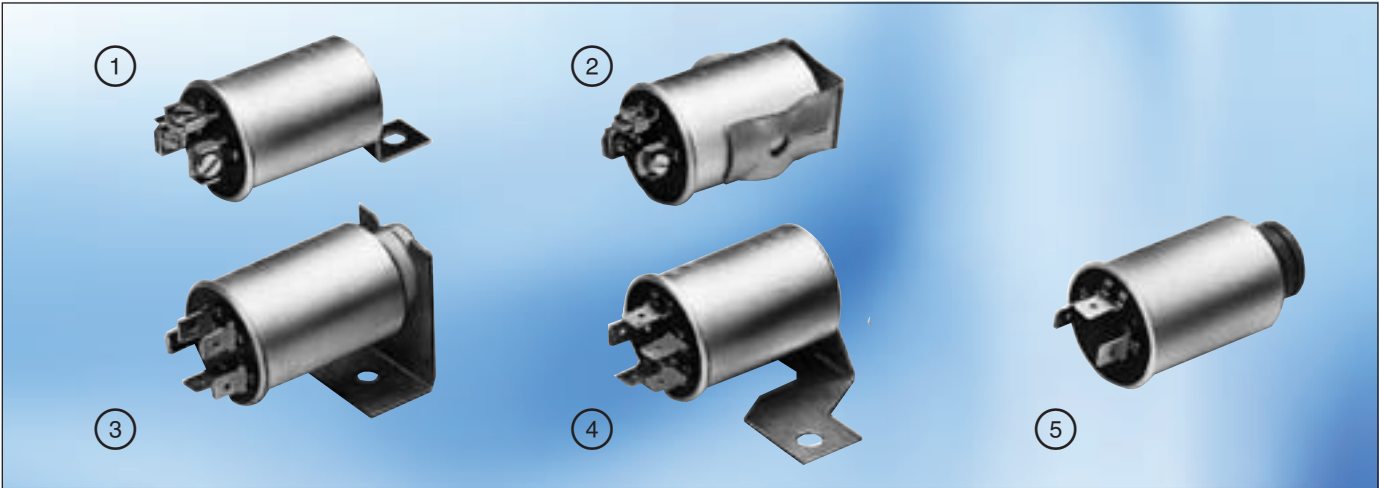
¹⁾ With armature pulled in.

²⁾ Short-time duty, after 45 sec. of operation there should be a break of 4.5 min.

³⁾ At nominal voltage and winding temperature 23±5 °C.

Hot-wire flashers

Turn-signal flashing only



Load	Fastening	Connection	Fig.	Part number	Vehicle makes
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For passenger cars and motorcycles 6 V

For vehicles without trailer hitch					
1 x 15 W or 18 W	Bracket at top, 1 hole Ø 6.4 mm	Screw	1 A	0 336 101 004	–
2 x 18 W	Slide-on clip with hole Ø 6.4 mm	Screw/ Blade	2 B	0 336 203 006	Henschel (–67), KHD (–71), Mercedes-Benz (–67)
2 x 21 W	Bracket at top, rubber- mounted; 1 hole Ø 6.4 mm	Blade	5 B	0 336 206 003	Hercules, Kreidler, Zündapp

For passenger cars and motorcycles 12 V

For vehicles without trailer hitch					
1 x 15 W or 18 W	Bracket at top, 1 hole Ø 6.4 mm	Screw	1 A	0 336 101 005	Münch (–70)
2 x 21 W	Slide-on clip with hole Ø 6.4 mm	Blade	2 B	0 336 206 004	–
For vehicles with trailer hitch					
2+ 1 x 21 W	Bracket at top, 1 hole Ø 6.4 mm	Blade	1 C	0 336 207 002	IFA, Reformwerke Bauer



Load	Fastening	Connection	Fig.	Part number	Vehicle makes
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For commercial vehicles 12 V

For vehicles without trailer hitch

1 x 15 W or 18 W	Bracket at top, 1 hole Ø 6.4 mm	Screw	1 A	0 336 101 005	Volvo BM
2 x 18 W	Slide-on clip with hole Ø 6.4 mm	Screw/ blade	2 B	0 336 203 005	Epple-Buxbaumwerke, Irion, Steyr, Wartburg

For vehicles with trailer hitch

2+ 1 x 18 W	Slide-on clip with hole Ø 6.4 mm	Screw/ blade	2 C	0 336 200 049	Gutbrod, Hanomag-Henschel, KHD, MAN, Mercedes-Benz, Steyr, Volvo
2+ 1 x 21 W	Bracket at top, 1 hole Ø 6.4 mm	Blade	1 C	0 336 207 002	Reformwerke Bauer
	Bracket on both sides, 2 holes Ø 6.4 mm	Blade	4 C	0 336 207 008	John Deere, Mercedes-Benz
	Bracket at top, rubber- mounted; 1 hole Ø 6.4 mm	Blade	3 C	0 336 207 006	Henschel, Mercedes-Benz, Steyr
1+1+ 1 x 18 W	Bracket at top, rubber- mounted; 1 hole Ø 6.4 mm	Screw	3 C	0 336 200 033	Hako, Schilter AG, Volvo BM
2+1+ 1 x 18 W	Bracket at top, rubber- mounted; 1 hole Ø 6.4 mm	Blade	3 D	0 336 202 001	Deutz-Fahr, IH, John Deere, KHD, Lanz
	Rubber mounting hole Ø 15 mm	Blade	5 D	0 336 202 002	Case IH, IH, KHD
2+1+ 1 x 21 W	Bracket at top, rubber- mounted; 1 hole Ø 6.4 mm	Blade	3 D	0 336 208 001	Agria, Agrifull, FIAT, Huerlimann, IH, John Deere, Lamborghini, Same

For commercial vehicles 24 V

For vehicles without trailer hitch

2 x 18 W	Slide-on clip with hole Ø 6.4 mm	Screw/ blade	2 B	0 336 203 007	FIAT, UNIC
3 x 18 W	Bracket at top, 1 hole Ø 6.4 mm	Blade	1 B	0 336 200 047	FIAT, UNIC

For vehicles with trailer hitch

2+ 1 x 18 W	Slide-on clip with hole Ø 6.4 mm		2 C	0 336 200 051	FIAT, UNIC
2+ 1 x 21 W	Bracket at top, 1 hole Ø 6.4 mm	Blade	1 C	0 336 207 003	Mercedes-Benz (Portugal)
	Bracket on both sides, 2 holes Ø 6.4 mm	Blade	4 C	0 336 207 010	Mercedes-Benz
	Bracket at top, rubber- mounted; 1 hole Ø 6.4 mm	Blade	3 C	0 336 207 007	Steyr
3+ 1 x 18 W	Bracket on both sides, 2 holes Ø 6.4 mm	Blade	4 C	0 336 200 031	DAF, KHD, Magirus-Deutz
3+ 1 x 21 W	Bracket on both sides, 2 holes Ø 6.4 mm	Blade	4 C	0 336 207 011	Mercedes-Benz

Identification (Example)

of turn-signal-flasher load

2 + 1 + 1(8) x 21 W + 0-4 W

2	Number of turn-signal lamps per vehicle side on tractor vehicle
1	on first trailer
1	on second trailer
(8)	Total number of turn-signal lamps for hazard warning flashing (in brackets)
21 W	Power in watt per turn-signal lamp
0-4 W	Power in watt for indicator lamp or additional low power side turn-signal lamp if con- nected in parallel with main turn-signal lamps.

Turn-signal flasher

Thermally controlled electromagnetic flasher for turn-signal flashing only. The flasher is load-dependent; if the specified load is not observed, the flashing frequency changes.

Hazard-warning-signal flasher with switch

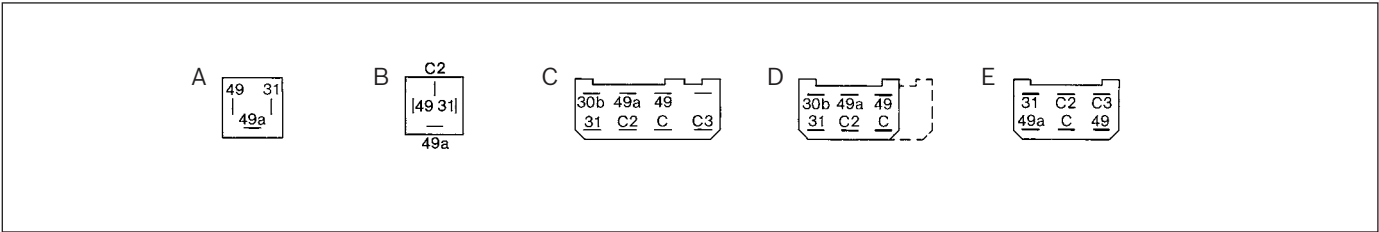
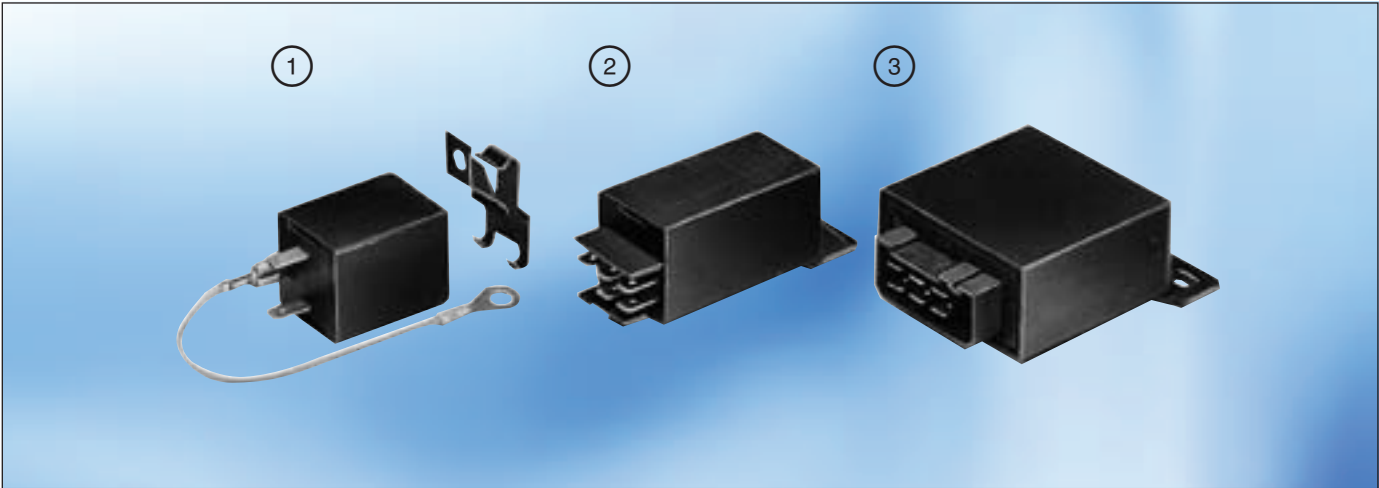
Thermally controlled electromagnetic flasher, only for hazard-warning flashing in single-circuit systems (circuit with turn signals at front and rear) or dual-circuit systems. (Circuit with turn-signal lamps at front and stop lamps at rear used for flashing).

Hazard-warning and turn-signal flasher

Electronic pulse generators for turn-signal and hazard-warning flashing, starting with on phase, with indicator lamp.

Electronic hazard-warning and turn-signal flashers

Turn-signal and hazard-warning flashing



Load	Fastening	Fig.	Part number	Vehicle makes ¹⁾
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For commercial vehicles 12 V

For vehicles without trailer hitch

2 (4)x 21 W+ 0-4 W	Haltekralle mit Loch-Ø 6,4 mm	1 A	0 335 200 038 ²⁾	Ford, Mercedes-Benz, Volvo, VW
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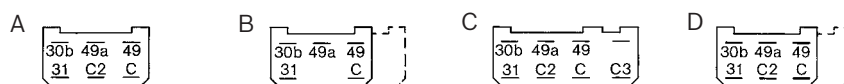
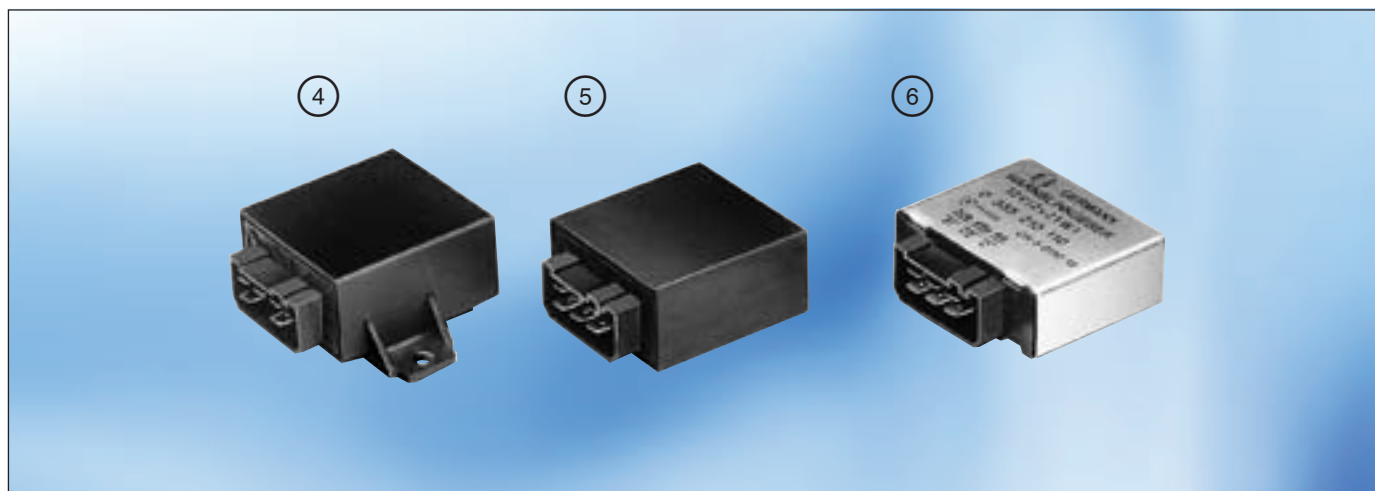
For vehicles with trailer hitch

2+ 1(6)x 18 W	Bracket on both sides, 2 holes Ø 6.4 mm	4 D	0 335 210 044	Mercedes-Benz
2+ 1(6)x 21 W	Mounting claw with hole Ø 6.4 mm	1 B	0 335 200 041 ²⁾	Ford, Mercedes-Benz, Volvo, VW
	Bracket on both sides, 2 holes Ø 6.4 mm	4 G	0 335 210 143	IVECO, Magirus-Deutz, Mercedes-Benz, Volvo, DAF
			0 335 210 148 ³⁾	Mercedes-Benz
3+ 1(8)x 18 W	Bracket on both sides, 2 holes Ø 6.4 mm	4 D	0 335 210 054	-
3+ 1(8)x 21 W	Bracket at top, 3 holes Ø 6.4 mm	3 D	0 335 210 154	Steyr
	Bracket on both sides, 2 holes Ø 6.4 mm	4 D	0 335 210 153	-
			0 335 210 156 ³⁾	-
2+1+ 1(8)x 18 W	Bracket on both sides, 2 holes Ø 6.4 mm	4 C	0 335 210 063	-
2+1+ 1(8)x 21 W	Bracket on both sides, 2 holes Ø 6.4 mm	4 C	0 335 210 163	Chase IH, IH, Mercedes-Benz
			0 335 210 164 ³⁾	-
2+1+ 1(8)x 21 W+ 1,2-2 W	Bracket at top, 1 hole Ø 6.4 mm	3 E	0 335 200 160	Huerlimann, John Deere, Lamborghini, Same, Schilter, Steyr

¹⁾ See application recommendations for vehicle models

²⁾ Ground cable supplied

³⁾ Increased immunity to interference



Load	Fastening	Fig.	Part number	Vehicle makes ¹⁾
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For commercial vehicles 24 V

For vehicles without trailer hitch

2(4)x 21 W+	Bracket at top, 3 holes Ø 6.4 mm	3 B	0 335 215 113	MAN
2-4 W	Bracket on both sides, 2 holes Ø 6.4 mm	4 B	0 335 215 114	VÖV-SGL-Busse
3(6)x 21 W+	Bracket at top, 3 holes Ø 6.4 mm	3 B	0 335 215 123	MAN
2-4 W				
4(8)x 21 W	Bracket on both sides, 2 holes Ø 6.4 mm	4 B	0 335 215 133 ²⁾	MAN, Mercedes-Benz
4(8)x 21 W+	Bracket on both sides, 2 holes Ø 6.4 mm	4 B	0 335 215 134 ²⁾	MAN
2-4 W				

For vehicles with trailer hitch

2+1(6)x 18 W	Bracket on both sides, 2 holes Ø 6.4 mm	4 D	0 335 215 043	MAN
2+1(6)x 21 W	Bracket on both sides, 2 holes Ø 6.4 mm	4 A	0 335 215 143	DAF, Kässbohrer, MAN
		4 A	0 335 215 147 ⁴⁾	Mercedes-Benz
2+1(6)x 21 W+	Bracket on both sides, 2 holes Ø 6.4 mm	4 A	0 335 215 145 ³⁾	Mercedes-Benz
1,2-2 W	on plug-in base	5 A	0 335 215 146	Volvo
2+1(6)x 21 W+	Bracket on both sides, 2 holes Ø 6.4 mm	6 D	0 335 215 144	Renault
5 W (10 W)				
3+1(8)x 21 W	Bracket on both sides, 2 holes Ø 6.4 mm	4 D	0 335 215 154	Berna, Faun, Kaelble, Saurer, Steyr
			0 335 215 156 ³⁾	Mercedes-Benz
3+1(8)x 21 W+	on plug-in base	5 A	0 335 215 155	Steyr, Volvo
2-4 W				
2+1+1(8)x 21 W	Bracket on both sides, 2 holes Ø 6.4 mm	4 C	0 335 215 163	Mercedes-Benz (Portugal)
			0 335 215 164 ³⁾	Mercedes-Benz

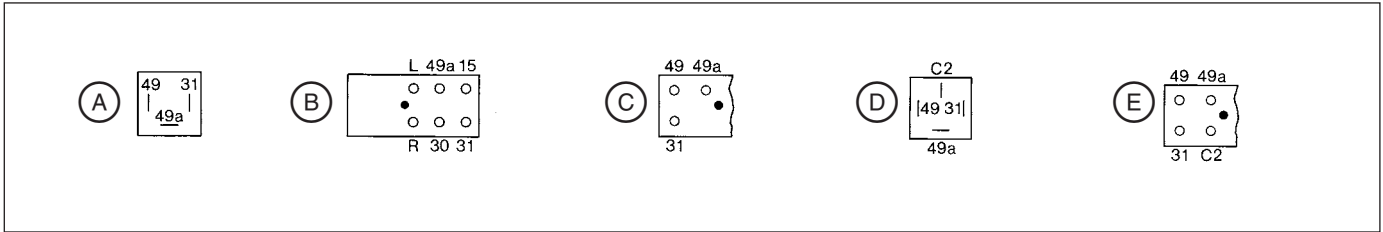
¹⁾ See application recommendations for vehicle models

²⁾ Ground cable supplied

³⁾ Increased immunity to interference

⁴⁾ With audible signal (ticker)

Electronic hazard-warning and turn-signal flashers (continued)



Load	Fastening	Fig.	Part number	Vehicle makes ¹⁾
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For passenger cars 12 V

For vehicles without trailer hitch

2(4) x 21 W	Round nut M 12 x 1	1 B	0 335 240 002 ³⁾	Mercedes-Benz
2(4) x 21 W + 2 W	on side of plug-in base	2 C	0 335 200 007	Mercedes-Benz
2(4) x 21 W + 0-4 W	Mounting claw with hole Ø 6.4 mm	3 A	0 335 200 038 ²⁾	Audi, BMW, Ford, Lada, Opel, Porsche, Vauxhall, Volvo, VW

For vehicles with trailer hitch

2+1(6)x 21 W	Mounting claw, 1 hole Ø 6.4 mm	3 D	0 335 200 041 ²⁾	Audi, BMW, Ford, Opel, Vauxhall, Volvo, VW
2+1(6)x 21 W + 4 W	on side of plug-in base	2 E	0 335 200 008	Mercedes-Benz

¹⁾ See application recommendations for vehicle models

²⁾ Ground cable enclosed

³⁾ With indicator lamp

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