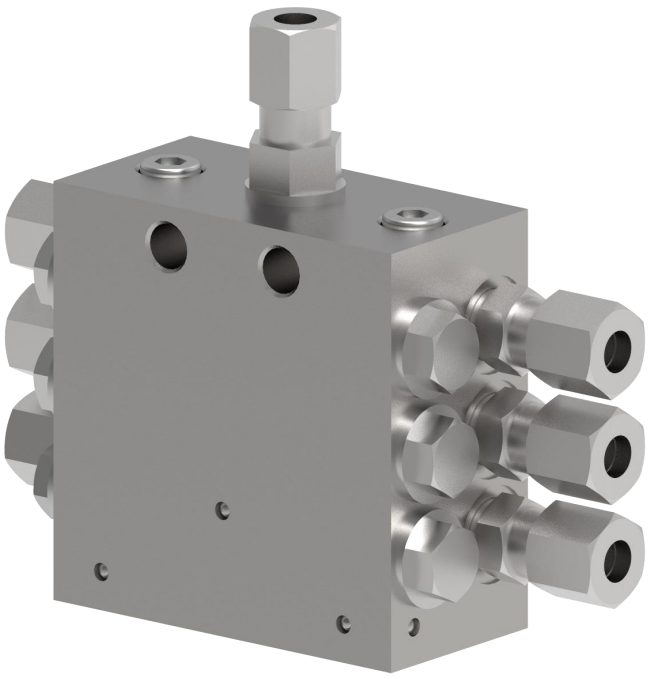
PRODUCT MANUAL

Progressive Block divider

Series SSVA



AUTOL

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Legal disclosure

Manufacturer

Zhengzhou Autol Technology CO.,LTD.,
Add: Hehuan Rd, 96, Zhengzhou High-Tech Zone, China
E-Mail: info@autol.net
Website: www.autolgroup.com

Training courses

To provide a maximum of safety and economic viability, Autol Technology carries out detailed training courses. It is recommended that the training courses are attended. For more information, please contact Autol Technology.

Copyright

Warranty and extent of warranty

Inappropriate intervention will rule out your warranty claim!

Warranty regarding operational safety, reliability and performance of the lubricating pump is only accepted by the manufacturer under the following conditions:

- Assembly, connection, setting, maintenance and repair are carried out by authorized and specialized staff.
- The limits stipulated in the technical data must never be exceeded.
- Only original components or components approved by the manufacturer may be used for repair and maintenance work.

All guarantees and warranties expire for damages to central lubrication systems that are caused by operation with improper lubricants (e.g., piston wear, piston jamming, plugins, embrittled sealings).

Autol Technology does not assume liability on damages caused by lubricants, even if these lubricants have been tested and released by laboratory tests, as damages caused by lubricants (e.g., by expired or improper stored lubricants, batch variations etc.) can not be retraced to their root cause in retrospect.

Service address

Hehuan Rd, 96, Zhengzhou High-Tech Zone, China
Tel.: +86 400 6836 862

Disclaimer

The manufacturer shall not be held responsible for damages caused by:

- Non appropriate use faulty assembly, operation, setting, maintenance, repair or accidents
- Use of inappropriate lubricants
- Improper or late response to malfunctions
- Unauthorized modifications of the product
- Intent or negligence
- Use of non-original Autol Technology spare parts
- Faulty planning or layout of the centralized lubrication system

Liability for loss or damage resulting from the use of our products is limited to the maximum purchase price. Liability for consequential damages of whatever kind is excluded.

Safety instructions

General information

Any safety-related faults must be eliminated without delay.

Below, please find fundamental instructions to be complied with, regarding assembly, operation and maintenance. The mechanical and the competent specialists / staff of the operating company must read the Operating Instructions on all accounts prior to starting assembly and commissioning. Moreover, the Operating Instructions must permanently be available on site.

Not only the safety instructions included under this item, but also the specific safety instructions appearing in other parts of this manual must be complied with.

General risk information

All system components have been designed with operational safety and accident prevention in mind, in accordance with the applicable regulations for the design of technical work equipment.

It should be noted, however, that the use of these systems may present certain risks to the user of third parties, as well as to the technical equipment itself. Therefore, it is of the utmost importance that the system is only used for its intended purpose and in compliance with the relevant safety regulations and operating instructions, provided that the system is in a technically perfect condition.

Explanation of symbols

Safety instructions which, if not complied with, may endanger persons, are marked specifically with the general hazard symbol:

This heading is used if inaccurate compliance or non-compliance with the Operating Instructions or specified work procedures etc. may result in damage

Points out Special Information

Delivery, Returns and Storage

Delivery

After receipt of the shipment, check the shipment for damage and completeness according to the shipping documents. Immediately report any transport damages to the forwarding agent. Keep the packaging material until any discrepancies are resolved. During in-house transport ensure safe handling.

Returns

Clean all parts and pack them properly (i.e., following the regulations of the recipient country) before returning them. Protect the product against mechanical influences such as impacts. There are no restrictions for land, sea or air transport.

Storage

Autol Technology products are subject to the following storage conditions:

dry, dust- and vibration-free in closed premises
no corrosive, aggressive materials at the place of storage (e. g. UV rays, ozone)
protected against pests and animals (insects, rodents, etc.)
possibly in the original product packaging
shielded from nearby sources of heat and coldness
in case of high temperature fluctuations or high humidity take adequate measures (e. g. heater) to prevent the formation of condensation water

Storage conditions for parts filled with lubricant

The conditions mentioned in the following will have to be adhered to when storing products filled with lubricant,

Storage period of up to 6 months

The filled products can be used without having to take further measures.

Step for Storage period from 6 to 18 months - Divider

1. Remove all connection lines and closure screws
2. Connect the pump which has been filled with new lubrication grease suitable for the application purpose to the divider
3. Let the pump run until new lubricant leaks from the divider
4. Remove leaked lubricant
5. Reinstall closure screws and connection lines

Commissioning

Connect the pump properly to the designated connections. Check the device for functionality and the presence of safety features.

Ensure that all warning labels are present, undamaged, and clearly visible. If this not the case, they must be replaced immediately.

Deviating from Intended Use is strictly Prohibited

Please adhere to the technical specifications provided in the manual and do not exceed the specified limits.

Improper use is strictly prohibited. Only use lubricants intended for this purpose. Make sure to use the product exclusively within its designated area of use.

Accompanying Documents

In addition to this manual, the following documents must be considered by the respective target audience:

1) Operational instructions and release regulations

If applicable:

2) Safety data sheet for the lubricant used

3) Project documentation

4) Supplementary information regarding special configurations of the pump. These can be found in the specific system documentation.

5) Instructions for additional components for the assembly of the central lubrication system.

Lubricant

The system has been designed for commercially available multi-purpose greases of NLGI class 2 for operation in summer and winter.

- Use greases with high-pressure additives (EP greases).
- Only use greases of the same saponification type.
- Lubricants containing solid contents must not be used (lubricants like graphite or MoS2 on request).
- Observe the vehicle manufacturer's specifications, when you select the lubricant.

Hazards to environment cause by lubricants

The lubricants which are recommended by the manufacturer of your vehicle, system or machine correspond in their composition to the common safety regulations. Mineral oils and greases are generally hazardous to ground water and their storage, processing and transport requires special precautions.

Inadmissible methods of operation

Operational security of the plant is only guaranteed if it is operated in accordance with the operating instructions. The limit values stated in the technical data must not be exceeded under any circumstances.

Transport and storage of the divider

The dividers of the series SSVA are packed commercially, according to the regulations of the recipient country and to the wish of the customer. There are no limitations with respect to land, air or sea transport. Store in a dry place at a temperature of -5° C to +35° C.

Overview

The SSVA progressive block divider works on the principle that the internal pistons are moving in sequence by hydraulic pressure , then each grease outlet discharges the grease to the different lubricating points following this sequence.

The internal accesses in the SSVA progressive block divider can be combined by blocking the corresponding outlets to achieve a variety of different combinations and ratios of grease output, making it easier to arrive the different mounts of grease required for different lubrication points.

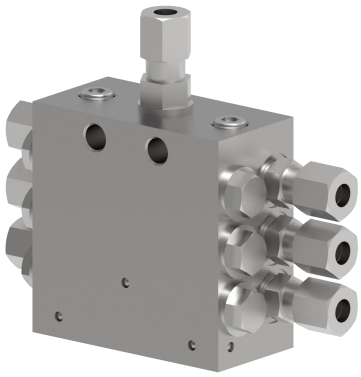
During the SSVA progressive block divider operation, the piston must complete a full discharge process before another piston begins operation, if one piston blocked the rest of the pistons will not move.

To monitoring whether the entire divider is blocked, the user can observe by installing divider monitoring sensor to easily check the movement of one piston.

Technical data

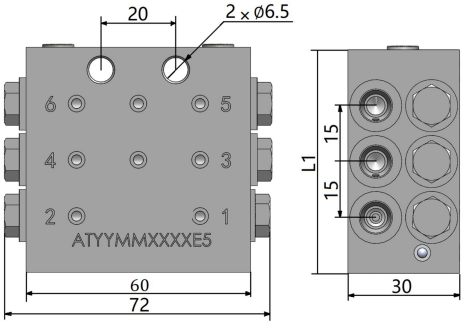
Max. operating pressure:	350 bar
Min. operating pressure:	20 bar
Operating temperature:	-40°C to 80°C
Lubricant:	Greases up to NLGI- Cl.2, No grease with solids, no oil
In-/ Outlet thread:	M10 x 1
Number of outlets:	6 - 22
Delivery quantity per outlet (mm^3/stroke)	200

Divider Series	Number of outlets	L1 mm	Weight (kg)
SSVA 6	6	62	0,761
SSVA 8	8	77	0,953
SSVA 10	10	92	1,147
SSVA 12	12	107	1,342
SSVA 14	14	122	1,535
SSVA 16	16	137	1,729
SSVA 18	18	152	1,920
SSVA 20	20	167	2,108
SSVA 22	22	182	2,302



ATTENTION

When installing the SSVA dividers, please make sure that the divider can always be mounted vertically.



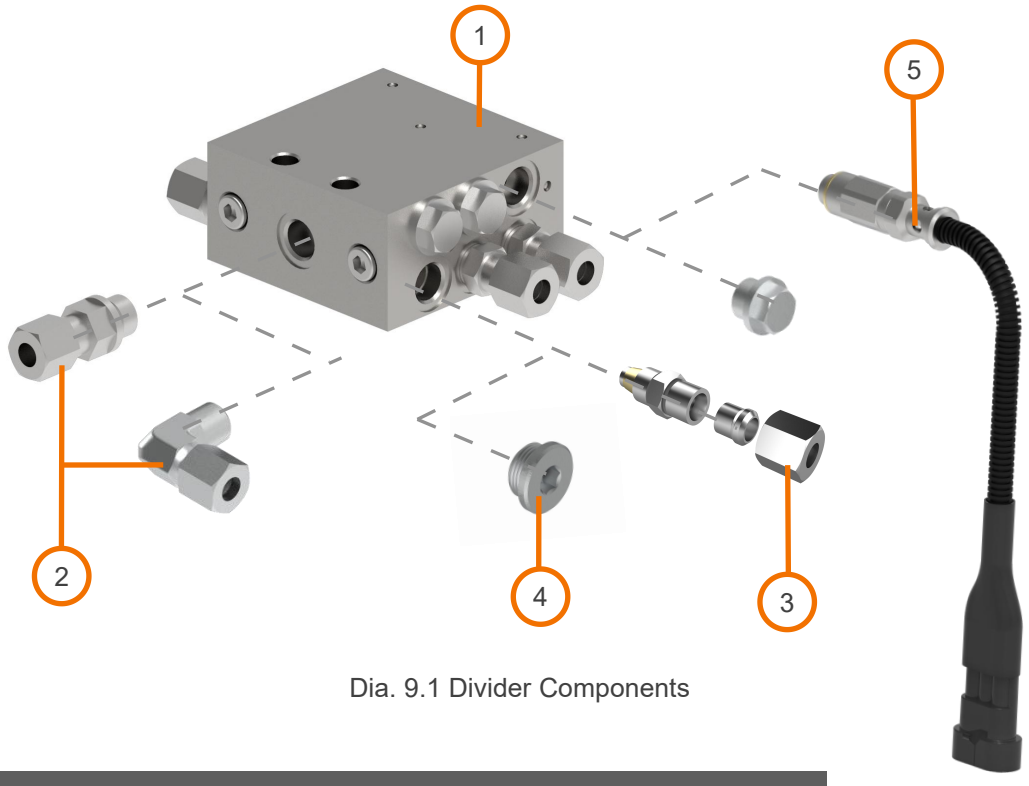
** For the outlets Nr.1 and Nr.2 which have been marked with „1S" and „2S" are preinstalled with magnet pin on the piston and available for connecting the divider monitoring sensor.*

Assembly and Components

1 SSVA divider might be made of:

1 x Inlet screw coupling,
N x Outlet screw coupling,
N x Screw plug
1 x Divider Body (min. 6 outlets, max. 22 outlets),
1 x Divider Monitoring Sensor

By properly plugging the outlet connectors or outlet blind plugs, the grease volume of each outlets can be adjusted and distributed.



Dia. 9.1 Divider Components

No.	Components	Page
1	Divider body	5
2	Inlet screw coupling	6
3	Outlet screw coupling	7-8
4	Screw plug	8
5	Divider monitoring sensor	11-12

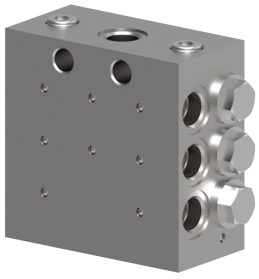
Divider Body

There are 2 different types with standard Part No. for customer ordering:

1. Progressive block divider body without monitoring sensor, without in- and outlets and with sealing screw and sealing steel ball on outlets "1" and "2" (Dia. 14.1),
2. Progressive block divider body with monitoring sensor PNP EU ver. (default position on the bottom and right side of the divider as in Dia. 14.2), without in- and outlets and with sealing screw and sealing steel ball on outlets "1" and "2" .

The divider monitoring cable must be ordered separately.

Description	Possible for divider monitoring*	With in- and outlet connectors	Part No.
SSVA 6	Yes	No	2110001020
SSVA 8	Yes	No	2110001021
SSVA 10	Yes	No	2110001022
SSVA 12	Yes	No	2110001023
SSVA 14	Yes	No	2110001024
SSVA 16	Yes	No	2110001025
SSVA 18	Yes	No	2110001026
SSVA 20	Yes	No	2110001027

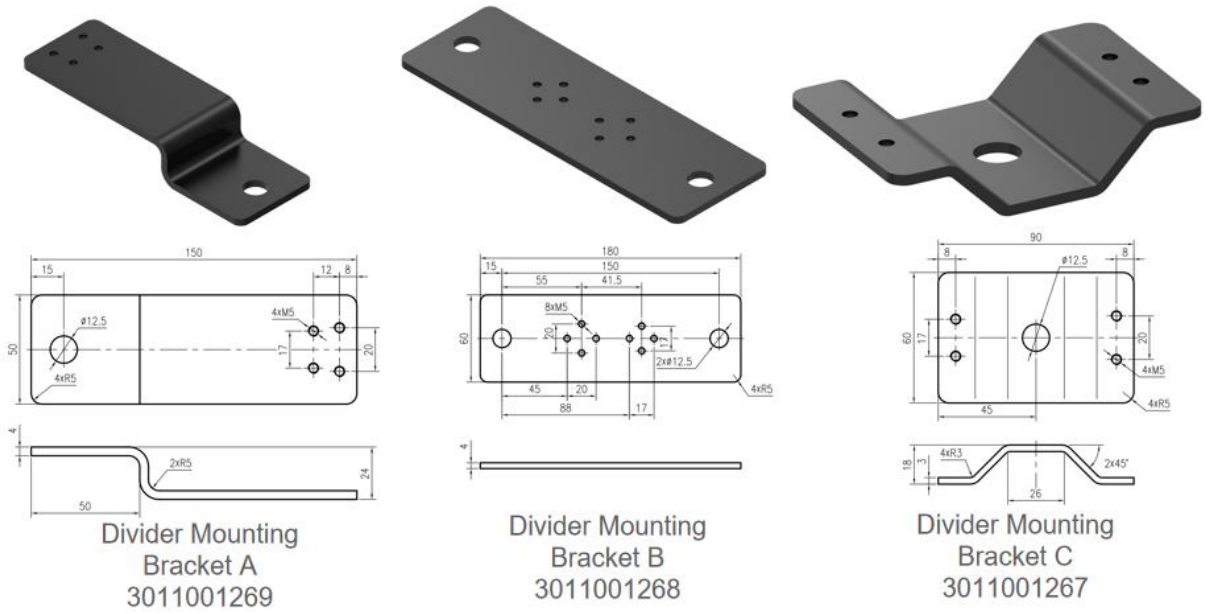


Dia. 10.1 Divider body

** More possibilities for divider monitoring sensor please check page 16.*

Divider Mounting Bracket

For fixing the dividers in palce we offer 3 options of fixing brackets:



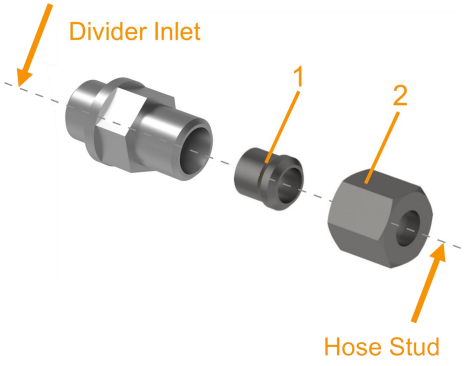
Dia. 11.1 Fixing Brackets

Inlet Screw Couplings

Straight inlet screw couplings (Dia. 11.2)

All screw couplings with M10x1k threads can be directly used for the inlet connection of the SSVA divider. All screw couplings with M10x1 threads must be used together with a copper ring (or ED sealed) for the inlet connection.

Description	Part No.
GE-ZN M10KD6*	3012002895
GE-ZN M10KD10*	3012002936
GE-D6LL-M10x1 (SW14-ED)-ST-ZnNi	3012002826
GE-ZN M10D6 (ED sealed)	3012003039
Spare part 1 – Cutting ring	
SR-ZN D6	3014000727
SR-ZN D10	3014000787
Spare part 2 – Union nut	
ÜM-D6LL-ST-ZiNi	3014000729
ÜM-D8LL-ST-ZiNi	3014000704



1- Cutting ring
2- Union nut

Dia. 11.2 Straight inlet screw coupling

Outlet Screw Couplings

The SSVA progressive divider can be used as either a main divider or a secondary divider.

From the main divider to the secondary divider, a screw coupling with non-return valve is mainly used as the outlet fitting of the main divider for the connection with a high-pressure hose and hose stud with outer diameter 6mm. From the secondary divider to the greasing points, a screw coupling with or without non return valve is mainly used as the outlet fitting of the secondary divider for the connection with a polyamide pipe with diameter 6x1.5mm or steel pipe with a diameter 6x1mm.

All screw couplings (including non-return valve and coupling, without non-return valve Push-in coupling) with M10x1k threads can be directly used for the inlet connection of the SSVA divider. All screw couplings with M10x1 threads can be used together with a copper ring for the input connection.

ATTENTION

For construction machinery application like excavators, wheel loaders, please use non return valves for all divider outlets due to the high back pressure from the greasing points.

ATTENTION

Type of couplings*	High pressure hose ø 6 mm	Steel pipe ø 6 mm	PA Hose ø 6 mm
RGE	✓ with hose stud Y	✓	✓
PGE	✓ with hose stud Y1 / N	✗	✓

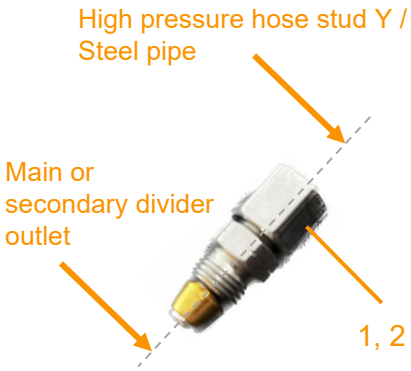
For hose stud description pls check accessories catalogue.

* *RGE* *Non-return valves*

PGE *Straight Push-in quick couplings*

RGE (Dia. 13.1)

Description	Part No.
RGE-6LL-M10x1-ST-ZnNi	2111000123
Spare Part 1 – Cutting ring	
SRE-D6LL-ST-ZnNi	3014000727
Spare Part 2 – Union nut	
U-ZN D6	3014000729



1- Cutting ring
2- Union nut

Dia. 13.1 RGE – Non-return Valve

Screw plug divider outlet

The function of the blind plug of SSVA divider is to achieve a double or multiple flow rate by direct blinding one or more outlets continuously on one side of the divider.

** More details regarding the working principle please check on page 14-15.*

Description	Part no.
Screw plug-DIN910-M10x1-ST-ZnNi	3012003935

Screw plug

Dia. 13.2 Screw plug divider outlet

Divider External Combination Principle

To meet the volume demand of the different greasing points under various application environment, sometimes it is necessary to combine the outlets of the divider internally to achieve more possibilities of the flow rate combination.

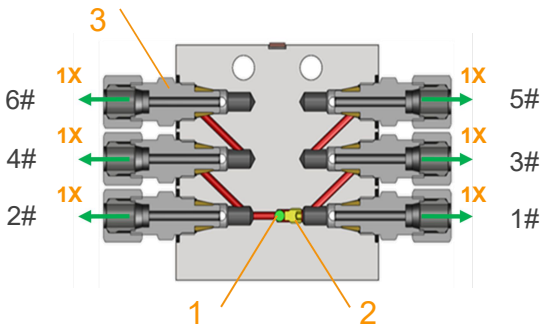
Divider without combination

As shown in Dia. 14.1, the red slanted holes represent the channel connecting the two adjacent grease outlets; each SSVA divider valve body is only installed with a sealing screw and a sealing steel ball at the bottom piston (for outlets 1# and 2#) of the divider body, which in the farthest part from the fixing hole.

For a divider with sealing screw and sealing steel ball, none of the outlets 1# and 2# can be blocked by a blind plug.

ATTENTION

Description	Part no.
Sealing steel ball for divider outlet separation-D3-ST	3014000616
Sealing screw for divider outlet separation-M4-ST	3014000320
Non return valve with sealing cone (brass)-RGE-6LL-M10x1-ST-ZnNi	2111000123



1- Sealing steel ball
2- Sealing screw
3- Non return valve with sealing cone

Dia. 14.1 Divider without combination

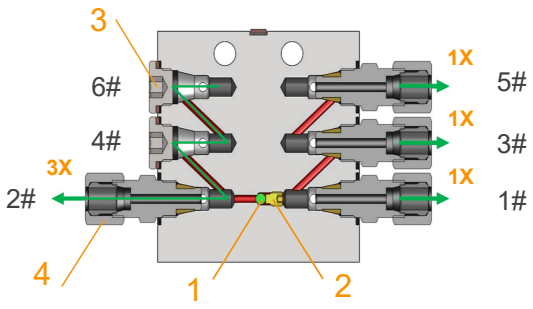
Divider with combination (combination one side)

As shown in Dia. 15.1, after the outlet is blocked by a blind plug, the outlets will be merged downward with the adjacent outlet. The non-adjacent outlets cannot be jump merged. For example: when the outlet 6# is blocked, the grease flows into outlet 4#, and the flowrate of discharged grease from 4# is twice as before; when the outlet 6# and outlet 4# are blocked at the same time, the grease flows into the 2# and grease is discharged from outlet 2# and the flowrate of the discharged grease from 2# is trebled.

For a divider with sealing screw and sealing steel ball, none of the outlets 1# and 2# can be blinded by a blind plug.

ATTENTION

Description	Part no.
Sealing steel ball for divider outlet separation-D3-ST	3014000616
Sealing screw for divider outlet separation-M4-ST	3014000320
Screw plug-DIN910-M10x1-ST-ZnNi	3012002598
DR-DIN7603 A-10x14x1-Cu	3012002597
Non return valve with sealing cone (brass)-RGE-6LL-M10x1-ST-ZnNi	2111000123



1- Sealing steel ball
2- Sealing screw
3- Outlet blind plug
4- Screw plug

Dia. 15.1 Divider with combination

Divider with combination (combination both sides)

When the combined outlets on one side cannot meet the flowrate requirements, the sealing screw and sealing steel ball (Dia. 15.2) can be removed from the outlet 1# and implement with a blind plug either on 1# or 2#, and the grease on the opposite side can be merged in. For example, a 6 outlets divider needs 4 outlets to be combined and discharge 4 times of the flowrate as usual from the 2# outlet, then 1#, 4#, and 6# need be blocked with a blind plug and remove the sealing screw and sealing steel ball.

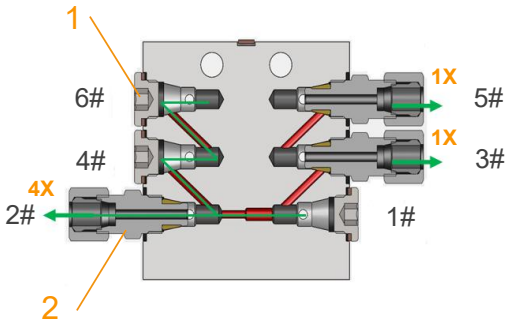
For a divider without sealing screw and sealing steel ball, outlets 1# and 2# cannot be blocked at the same time.

ATTENTION

The merging of the outlets in different sides can only be realized through the outlets 1# and 2#.

ATTENTION

Description	Part no.
Screw plug-DIN910-M10x1-ST-ZnNi	3012002598
DR-DIN7603 A-10x14x1-Cu	3012002597
Non return valve with sealing cone (brass)-RGE-6LL-M10x1-ST-ZnNi	2111000123



1- Screw plug
2- Non return valve with sealing cone

Dia. 15.2 Divider with combination

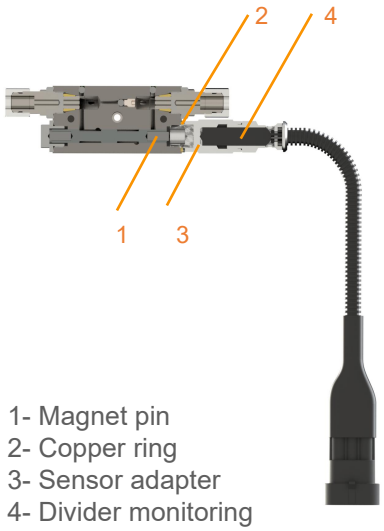
Divider Monitoring

Divider monitoring sensor kit

Thanks to the Hall effect, the divider monitoring sensor kit is designed to monitor the operation status of the divider with the magnet pin (Dia. 16.1). During the working time of the pump, the sensor checks the movement of the piston and send signal back to pump. Based on different working principles * (time-control or cycle-control) and parameter settings, the pump will judge whether the divider is working normally or not and send warning to pump or customized terminal if necessary.

Sensor type:

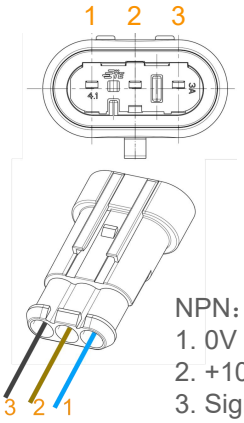
NPN: Sensor signal is (-) negative. Normally open type contact can be used.
Standard version for ALPB HSC / ALP81 AH Ver.
PNP: sensor signal is (+) positive. Normally open type contact can be used.
Standard version for ALPB / ALP81 BYN Ver.



1- Magnet pin
2- Copper ring
3- Sensor adapter
4- Divider monitoring Sensor

Dia. 16.1 Divider with monitoring sensor kit

Part no. (single part without divider element)*:	EU version	CN version
NPN:	2111000146	2111000148
PNP:	2111000145	2111000147
Technical data:		
Approval/Conformity:	cULus/CE/WEEE/EAC	
Connection with divider:	M12x1 plug in	
Connection with cable:	AMP Super Seal 1.5 SRS. 3P Tab	
Connecting method:	NPN / PNP	
Power rating:	200 mA	
Voltage:	10 to 30 V DC	
Temperature range:	- 25 °C to + 85 °C	
Function display:	LED yellow	LED red
Housing material:	Stainless steel	
Protection type:	IP 67	



NPN:
1. 0V DC
2. +10 to 30V DC
3. Signal

Dia. 16.2 Divider monitoring sensor wiring connection

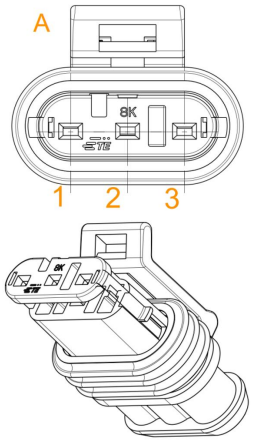
Dia. 16.3 Divider monitoring sensor adapter SSVA M10x1 - M12x1 SW14 L34
(Part No. 3012002885)

Attention: *For the part no. of divider monitoring sensor kit, the sensor, copper ring and sensor connector are included (Pos. 2 & 3 & 4 in Dia. 16.1).*
The connecting cable between sensor and pump, the divider element are NOT included. More information for cables please check on the next page.

Connecting cable – divider monitoring sensor

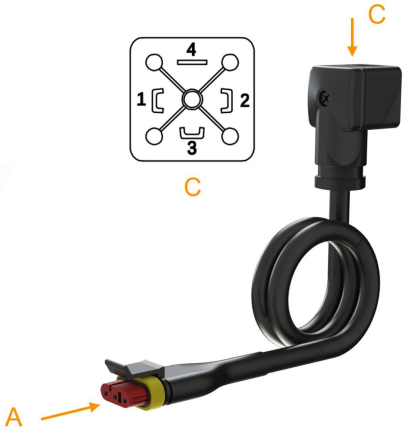
Depends on the various application, the sensor cable has to be ordered separately as following description.

Part No. (cable):	BD plug	HSC cubic plug
Length 5 m:	2210000593	2210000426
Length 7.5 m:	2210000592	2210000303
Cable Connection with Divider:	TE - AMP Super Seal 1.5 SRS. 3P Plug Connector (IEC 529 and ISO 20653)	
Cable Connection with Pump:	RD24 Series 693	Cubic GDM 3011 J (DIN EN 175 301-803-A)



Dia. 17.1
Cable connection at divider

Dia. 17.2
Cable connection with BD 4 poles



Dia. 17.3
Cable connection with HSC cubic GDM 3011 J

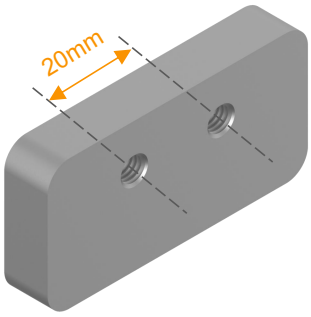
Divider Accessories

Divider mounting bracket

As an important accessory of the divider, the divider bracket is widely used in the installation of automatic lubrication systems. Especially when customers prefer that the installers do not drilling on their equipment.

In our accessories catalogue you can find many more types of divider mounting brackets.

Attention: *When selecting a suitable divider bracket, please note that the brackets of the JPQ1 and SSVA series dividers have different mounting distance between the mounting holes.*



Dia. 18.1 Divider mounting bracket

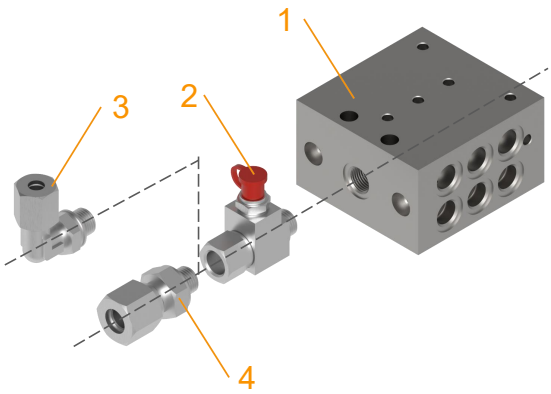
Banjo with grease nipple

As an option, a banjo with grease nipple is provided to using a manual or hydraulic pump to refill the grease directly from the inlet connection of the divider when the automatic lubrication pump does not work.

Attention: *Please check the hoses between the banjo and the pump before starting refilling Grease from the banjo!*

If the hose is broken, please use a non-return valve to replace the inlet coupling.

If the hose is in good situation, please do not disconnect the hose between the pump and banjo.



1- Divider body
2- Banjo Block with grease nipple
3- Elbow inlet screw coupling
4- Straight inlet screw coupling

Dia. 18.2 Banjo with grease nipple

SSVA Order Key

SSVA - 4 / 5 - 100 - 3/4/7 - 2P - 000

No. of total outlets	
3 = 6 total outlets	7 = 14 total outlets
4 = 8 total outlets	8 = 16 total outlets
5 = 10 total outlets	9 = 18 total outlets
6 = 12 total outlets	10 = 20 total outlets
11 = 22 total outlets	

No. of valid outlets
X = No. of valid outlets

X <= No. of total outlets

Fittings in inlet and outlets					
	None	Straight D6mm	Straight D8mm	Elbow D6mm	Elbow D8mm
None	100	104	108	112	116
RGE	101	105	109	113	117
GE	102	106	110	114	118
PGE	103	107	111	115	119

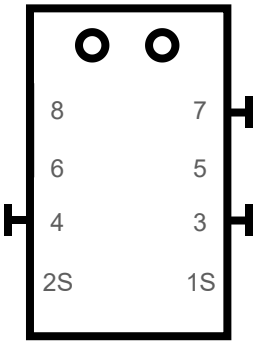
Blinded outlets
X/Y/Z = on outlet position X, Y and Z, the outlets have been blinded

*It is **NOT** allowed to blind the position 1 and 2 on the same time for a SSVA divider.*

0 = there are no blinded outlets in the SSVA divider.

Extra options	
1P = Outlet position 1 has been implemented with a PNP divider monitoring sensor	2P = Outlet position 2 has been implemented with a PNP divider monitoring sensor
1N = Outlet position 1 has been implemented with a NPN divider monitoring sensor	2N = Outlet position 2 has been implemented with a NPN divider monitoring sensor
0 = No extra options	

Customized code	
Standard version	000
Customized version	xxx



Dia. 19.1 SSVA - 4 / 5 - 100 - 3/4/7 - 0 - 000