

## 2. Solenoid interlocks

### Description



### Area of application

The solenoid interlocks of the AZM and MZM series have been designed to prevent sliding, hinged and removable safety guards (fences, flaps or doors) from being opened before hazardous conditions (e.g. run-on movements from rollers, chains, shafts etc) have been eliminated. This task is to perform in conjunction with an appropriate safety relay module, such as a fail-safe standstill monitor or a safe timer.

In addition to this application field of occupational safety, interlocks are also used in cases where the opening of a safety device causes an impermissible or unwanted intrusion into a production process (process protection).

### Design and way of functioning

The solenoid interlock of the Schmersal Group is based on the principle of separate actuators: The actuator element is fixed in the moveable part (mostly a safety door) of the guard system. The interlock itself is fixed, such as on the post of a safety door. Shutting the safety equipment immerses the actuator in the device and interlock locks with a bolt in the safety door. Only then can the machine be started. The position of the locking bolt is continuously being monitored.

When the safety guard is opened in the unlocked condition, the actuator is separated from the base unit. During this process, the NC contacts are positively opened and the NO contacts closed.

There are two interlocking principles: The current principle is where the locking bolt is held into position with a spring. By energizing the interlocking solenoid coil, the interlock unlatches and the NC contact is opened, and the protection equipment can be opened. With the working current principle, the operation is reversed. Using this principle an analysis of the accident risk is to be made, as you should be able to open the protection equipment in the event of a fault (e.g. broken cable) or with a loss of power.

The solenoid interlocks, the safety switches and the safety sensors have all belonged to the core program of the Schmersal Group for decades. The variety of designs and product ranges is correspondingly large.



The solenoid interlocks AZM 161, 170, 190 and 415 are fitted with protection against incorrect locking. The AZM 200 Series is integrated with position monitoring of the safety door, interlock, door handle and if necessary other functions such as the emergency release in an installation friendly, ergonomic operated system. The AZM 300 Series is characterised by a novel interlock system and an RFID-based safe detection of the actuator position. The AZM 400 series is a safe bolt interlock with bistable principle of operation or a motor-driven locking bolt. With the series MZM 100 and 120 non-contact-acting solenoid interlocks are also available, where the clamping force is generated electromagnetically.

In several series (AZM 200, AZM 300, AZM 400, MZM 100) the monitoring of the safety door position is not electromechanical, but non-contact - either with the Schmersal developed "Coded Safety Sensor Technology (CSS) or by a safety-reinforced RFID-technology (RSS). These models offer the advantage that they provide the machine operator with additional diagnostic information.

Depending on the type of device, an individual coding of the actuator is possible. Clamping forces of up to 10,000 N are possible. For some series, the latching force (i.e. the non-safety-related clamping force) can be adjusted.

Information for the selection of suitable safety relay modules can be found in the chapter "Safety relay modules" (refer to page 216).

Versions with integrated "AS-Interface Safety at Work" interface, as well as models with ATEX certification are also available. An extensive range of accessories as well as different plug and line variants round off the program.

In addition, the solenoid interlock program offers a wide variety of additional features that are either integrated or available as an option. In addition to safety functions such as manual release and emergency release ("emergency handle"), there are integrated door stops and door handles.

## 2. Solenoid interlocks

### Overview of the series



#### Key Features

<ul style="list-style-type: none"> <li>• Thermoplastic enclosure</li> <li>• Individual coding possible</li> <li>• Holding force 2000 N</li> <li>• Power to unlock / Power to lock</li> <li>• Up to 6 contacts</li> <li>• Manual release, emergency exit or emergency release</li> <li>• Cut clamps, screw terminals or connector</li> </ul>	<ul style="list-style-type: none"> <li>• Thermoplastic enclosure</li> <li>• Compact design</li> <li>• Individual coding possible</li> <li>• Holding force 1000 N</li> <li>• Power to unlock / Power to lock</li> <li>• Up to 5 contacts</li> <li>• Manual release from side</li> <li>• Cut clamps, screw terminals or connector</li> </ul>	<ul style="list-style-type: none"> <li>• Thermoplastic enclosure</li> <li>• Holding force 1950 N</li> <li>• Power to unlock / Power to lock</li> <li>• 3 contacts</li> <li>• Manual release or emergency release</li> <li>• Screw terminals</li> </ul>
---	--	--

#### Other versions

ATEX / IECEX	■	■	-
AS-i SaW	■	■	-

#### Technical features

<b>Electrical characteristics</b>			
Operating voltage	-	-	-
Power consumption	-	-	-
Max. switching capacity U/I	230 VAC / 4 A; 24 VDC / 2.5 A	230 VAC / 4 A; 24 VDC / 4 A	230 VAC / 4 A; 24 VDC / 4 A
<b>Mechanical data</b>			
Dimensions (W x H x D)	130 x 90 x 30 mm	90 x 100.5 x 30 mm	89 x 178 x 41 mm
<b>Ambient conditions</b>			
Ambient temperature	-25 °C ... +60 °C	-25 °C ... +60 °C	0 °C ... +50 °C
Protection class	IP67	IP67	IP67, suffix N: IP65
Actuator and accessories refer to ...	page 40	page 44	page 48

#### Safety classification

Standards	EN ISO 13849-1	EN ISO 13849-1	EN ISO 13849-1
B <sub>10d</sub> (NC contact)	2,000,000	2,000,000	2,000,000
PL	-	-	-
Category	-	-	-
PFH-value	-	-	-
SIL	-	-	-
Certificates			



To get detailed information about the products and certificates, visit [www.schmersal.net](http://www.schmersal.net).



■ AZM 415	■ AZM 200	■ AZM 300	■ AZM 400	■ MZM 100	■ MZM 120
<ul style="list-style-type: none"> <li>• Metal enclosure</li> <li>• Holding force 3500 N</li> <li>• Power to unlock / Power to lock</li> <li>• Up to 6 contacts</li> <li>• Manual release or emergency release</li> <li>• Screw terminals or connector</li> <li>• Robust design</li> </ul>	<ul style="list-style-type: none"> <li>• Thermoplastic enclosure</li> <li>• Holding force max. 2000 N</li> <li>• 2 safety outputs and 1 diagnostic output</li> <li>• Also available with serial diagnostics</li> <li>• Manual release, emergency exit or emergency release (suitable for retrofitting)</li> <li>• Cut clamps, screw terminals or connector</li> </ul>	<ul style="list-style-type: none"> <li>• Thermoplastic enclosure</li> <li>• Individual coding possible</li> <li>• Holding force 1000 N</li> <li>• 2 safety outputs and 1 diagnostic output</li> <li>• Also available with serial diagnostics</li> <li>• Manual release, emergency exit or emergency release</li> <li>• 3 different directions of actuation</li> </ul>	<ul style="list-style-type: none"> <li>• Metal solenoid interlock with bolt locking</li> <li>• Bistable principle of operation</li> <li>• Individual coding</li> <li>• Holding force 10000 N, unlocking against lateral force (&lt; 300 N)</li> <li>• 2 safety outputs and up to 2 diag. outputs</li> <li>• Auxiliary, manual emergency exit or electric emergency exit</li> <li>• Two-channel unlocking signal</li> </ul>	<ul style="list-style-type: none"> <li>• Thermoplastic enclosure</li> <li>• Holding force 750 N</li> <li>• Power to lock</li> <li>• 2 safety outputs and 1 diagnostic output</li> <li>• Also available with serial diagnostics</li> <li>• Can be used as an end stop</li> </ul>	<ul style="list-style-type: none"> <li>• Thermoplastic enclosure</li> <li>• Holding force 500 N</li> <li>• Power to lock</li> <li>• 2 safety outputs and 1 diagnostic output</li> <li>• Also available with serial diagnostics</li> <li>• Can be used as an end stop</li> </ul>

■	-	-	-	-	-
-	■	-	-	-	-

-	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC
-	0.7 A (without load)	0.25 A (without load)	0.6 A (without load)	0.6 A (without load)	0.6 A (without load)
230 VAC / 4 A	24 VDC / 0.25 A	24 VDC / 0.25 A	24 VDC / 0.25 A	24 VDC / 0.25 A	24 VDC / 0.25 A
130 x 100 x 46.5 mm	40 x 220 x 50 mm	85 x 100 x 35 mm	78 x 157 x 47 mm	40 x 179 x 40 mm	40 x 177.5 x 40 mm
-25 °C ... +50 °C	-25 °C ... +60 °C	0 °C ... +60 °C	0 °C ... +55 °C	-25 °C ... +55 °C	-25 °C ... +55 °C
IP67; NS, RS: IP54 page 50	IP67 page 52	IP66, IP67, IP69 page 54	IP66, IP67 page 54	IP65, IP67 page 55	IP67, IP69K page 55

EN ISO 13849-1	EN ISO 13849-1, IEC 61508	EN ISO 13849-1, IEC 61508	EN ISO 13849-1, IEC 61508	EN ISO 13849-1, IEC 61508	EN ISO 13849-1, IEC 61508
2,000,000	-	-	-	-	-
-	e	e	e	e	e
-	4	4	4	4	4
-	4.0 x 10 <sup>-9</sup> / h	4.3 x 10 <sup>-9</sup> / h	1.0 x 10 <sup>-9</sup> / h	4.3 x 10 <sup>-9</sup> / h	4.3 x 10 <sup>-9</sup> / h
-	3	3	3	3	3

## 2. Solenoid interlocks

### Preferred types




Series	Coding	Connection	Latching force	Magnetic contact / Actuator contact	Special features		
AZM 161	Standard coding	Cage clamps	30 N	1 NO / 2 NC	3 NC	Manual release	
				1 NO / 2 NC	1 NO / 2 NC	Emergency exit	
		1 NO / 2 NC		3 NC	Manual release		
		1 NO / 2 NC		1 NO / 2 NC	Emergency exit		
	Individual coding	Connector		1 NO / 1 NC	1 NO / 2 NC	Manual release	
	Standard coding			1 NO / 2 NC	1 NO / 1 NC		
AZM 170	Standard coding	Connector	30 N	---	2 NC	Manual release	
				---	1 NO / 1 NC		
		Cut clamps		5 N	---		2 NC
				30 N	---		1 NO / 1 NC
	Individual coding	---	2 NC				
	Standard coding	Screw terminals	---		2 NC		
			---		1 NO / 1 NC		
	2 NC	1 NO					
AZM 190	Standard coding	Screw terminals	20 N	2 NC	1 NC	Manual release	
				2 NC	1 NO		
				1 NO / 1 NC	1 NC		
AZM 415	Standard coding	Screw terminals	150...400 N	1 NO / 1 NC	1 NO / 1 NC	---	
				Emergency exit			
				Manual release			
				2 NC	1 NO / 1 NC	Emergency exit	
1 NO / 1 NC	2 NO / 2 NC	Manual release					

A variety of other types of the solenoid interlocks can be found at [www.schmersal.net](http://www.schmersal.net).

	Included in delivery	Power to lock	Power to unlock	Type designation	Material number	
	---		■	AZM 161CC-12/03RK-024	101195902	
				AZM 161CC-12/12RK-024	101166283	
		■		AZM 161CC-12/12RKA-110/230	101166288	
			■	AZM 161CC-12/12RKTD-024	101187882	
				AZM 161CC-12/12RKTU-024	101187884	
		■		AZM 161SK-12/03RK-024	101195886	
				AZM 161SK-12/03RKA-024	101195892	
			■	AZM 161SK-12/12RK-024	101164207	
		■		AZM 161SK-12/12RKA-024	101166285	
				AZM 161SK-12/12RKEU-024	101187819	
				AZM 161SK-12/12RKT-024	101177876	
				AZM 161SK-12/12RKTD-024	101187838	
			■	AZM 161SK-12/12RKTU-024	101187849	
		Actuator B1		AZM 161SK-12/12RI-024-B1	101213351	
	Actuator B6L		AZM 161SK-12/12RI-024-B6L	101215900		
	Actuator B6R		AZM 161SK-12/12RI-024-B6R	101215869		
	---	■	AZM 161ST-11/12RKA-024	101192434		
			■	AZM 161ST-12/11RK-024	101192414	
	---		■	AZM 170-02ZRK-ST-2197 24VAC/DC	101141430	
			■	AZM 170-02ZRKA-ST 24VAC/DC	101141422	
			■	AZM 170-11ZRK-ST-2197 24VAC/DC	101141425	
			■	AZM 170-11ZRKA-ST 24VAC/DC	101141455	
			■	AZM 170-02ZRK 24VAC/DC	101140795	
			■	AZM 170-02ZRKA 24VAC/DC	101141020	
				AZM 170-11ZK 24VAC/DC	101141639	
			■	AZM 170-11ZRK 24VAC/DC	101140788	
				AZM 170-11ZRK-2197 24VAC/DC	101140813	
		■		AZM 170-11ZRKA 24VAC/DC	101140796	
		Actuator B1		AZM 170-02ZRI B1 24VAC/DC	101140798	
		Actuator B6L		AZM 170-02ZRI B6L 24VAC/DC	101140810	
		Actuator B6R		AZM 170-02ZRI B6R 24VAC/DC	101140806	
		---	■	AZM 170SK-02ZRK-2197 24VAC/DC	101144261	
			■	AZM 170SK-02ZRKA 24VAC/DC	101144263	
			■	AZM 170SK-11ZRK-2197 24VAC/DC	101144260	
	■			AZM 170SK-11ZRKA 24VAC/DC	101144262	
			■	AZM 170SK-02/10ZRK-2197 24VAC/DC	101181883	
	---		■	AZM190-02/01RK 110VAC	101182115	
				AZM190-02/01RK 24VDC	101178901	
		■		AZM190-02/01RKA 24VDC	101031685	
			■	AZM190-02/10RK 24VDC	101029960	
		■		AZM190-02/10RKA 24VAC	101030182	
				AZM190-02/10RKA 24VDC	101030003	
			■	AZM190-11/01RK 230VAC	101029963	
		■		AZM190-11/01RK 24VDC	101029937	
			■	AZM190-11/01RKA 24VDC	101030129	
	---		■	AZM 415-11/11ZPK 24 VAC/DC	101167205	
				AZM 415-11/11ZPK 230 VAC	101167204	
		■		AZM 415-11/11ZPKA 24 VAC/DC	101167206	
				■	AZM 415-11/11ZPKT 24 VAC/DC	101167201
				■	AZM 415-11/11ZPKE 24 VAC/DC	101167190
				■	AZM 415-11/11ZPKF 24 VAC/DC	101167209
				■	AZM 415-02/11ZPKT 24 VAC/DC	101168224
				■	AZM 415-33ZPDK 24 VAC/DC	101135487

## 2. Solenoid interlocks

### Preferred types

Series	Coding	Connection	Latching force	Diagnostic and safety outputs	Special features	
<b>AZM 200</b> 	Standard coding	Cage clamps	30 N	1 diagnostic output and 2 safety outputs, all p-type	Manual release	
		Screw terminals				
		M23 connector		Serial diagnostic output and 2 safety outputs, all p-type		
		M12 connector				
		Cage clamps		1 diagnostic output and 2 safety outputs, all p-type, combined diagnostic signal		
		Screw terminals				
		M23 connector				
		M12 connector				
		Screw terminals				
<b>AZM 300</b> 	Standard coding	M12 connector	25 N/50 N	1 diagnostic output and 2 safety outputs, all p-type	Manual release	
				Individual coding	Serial diagnostic output and 2 safety outputs, all p-type	Emergency exit
	1 diagnostic output and 2 safety outputs, all p-type				Manual release	
	Serial diagnostic output and 2 safety outputs, all p-type				Emergency exit	
					Manual release	
	Standard coding				1 diagnostic output and 2 safety outputs, all p-type	Emergency exit
					Emergency release	
	<b>AZM 400</b> 			Standard coding	1 connector plug M12, 8-pole	Unlocking against lateral forces up to 300 N
Individual coding		2 connector plugs M12, 5- and 8-pole	2 diagnostic output and 2 safety outputs, all p-type		Emergency exit	
		1 connector plug M12, 8-pole	1 diagnostic output and 2 safety outputs, all p-type	Manual release		
		2 connector plugs M12, 5- and 8-pole	2 diagnostic output and 2 safety outputs, all p-type	Emergency exit		
			1 diagnostic output and 2 safety outputs, all p-type	Manual release		
		Individual coding, re-teaching enabled	1 connector plug M12, 8-pole	1 diagnostic output and 2 safety outputs, all p-type	Emergency exit	
			2 connector plugs M12, 5- and 8-pole	2 diagnostic output and 2 safety outputs, all p-type	Manual release	
Emergency exit						



A variety of other types of the solenoid interlocks can be found at [www.schmersal.net](http://www.schmersal.net).

	Included in delivery	Guard locking monitored	Actuator monitored	Power to lock	Power to unlock	Type designation	Material number						
	---	■			■	AZM 200CC-T-1P2P	101179701						
				■		■	AZM 200CC-T-1P2PA	101180289					
						■	AZM 200SK-T-1P2P	101178664					
				■			■	AZM 200SK-T-1P2PA	101179989				
							■	AZM 200ST1-T-1P2P	101187958				
				■				■	AZM 200ST1-T-1P2PA	101192617			
								■	AZM 200ST2-T-SD2P	101193287			
				■				■	AZM 200ST2-T-SD2PA	101193288			
								■	AZM 200CC-T-1P2PW	101205479			
				■					■	AZM 200CC-T-1P2PWA	101211074		
									■	AZM 200SK-T-1P2PW	101195442		
				■					■	AZM 200SK-T-1P2PWA	101196029		
									■	AZM 200ST1-T-1P2PW	101209371		
				■					■	AZM 200ST1-T-1P2PWA	101211072		
									■	AZM 200ST2-T-1P2PW	101210048		
						■	AZM 200ST2-T-1P2PWA	101213245					
			■		■	AZM 200 B SK-T-1P2PW	101194472						
			■		■	AZM 200 B SK-T-1P2PWA	101195441						
	---	■	■		■	AZM300B-ST-1P2P	103001411						
				■		■	AZM300B-ST-1P2P-A	103001423					
							■	AZM300Z-ST-1P2P	103001435				
				■				■	AZM300Z-ST-1P2P-A	103001450			
								■	AZM300Z-ST-SD2P-T	103008117			
								■	AZM300B-ST-SD2P-T	103008176			
								■	AZM300B-ST-SD2P	103001412			
				■				■	AZM300B-ST-SD2P-A	103001424			
								■	AZM300Z-ST-SD2P	103001436			
				■				■	AZM300Z-ST-SD2P-A	103001451			
						■		■	AZM300B-I2-ST-1P2P	103001415			
						■		■	AZM300B-I2-ST-1P2P-A	103001427			
				■				■	AZM300Z-I2-ST-1P2P	103001439			
								■	AZM300Z-I2-ST-1P2P-A	103001454			
								■	AZM300Z-I2-ST-SD2P-T	103008178			
					■	AZM300B-I2-ST-SD2P-T	103008179						
					■	AZM300B-I2-ST-SD2P	103001416						
					■	AZM300B-I2-ST-SD2P-A	103001428						
	■				■	AZM300Z-I2-ST-SD2P	103001440						
					■	AZM300Z-I2-ST-SD2P-A	103001455						
					■	AZM300Z-I2-ST-1P2P-T	103006863						
	---				■	AZM300Z-ST-1P2P-T	103006865						
		■			■	AZM300B-ST-1P2P-T	103006862						
						■	AZM300Z-ST-1P2P-N	103006869					
			■		■	AZM300B-ST-1P2P-N	103006867						
	Electr. auxiliary unlocking	■				AZM400Z-ST-1P2P	103003590						
										■	AZM400Z-ST-1P2P-T	103003593	
											■	AZM400Z-ST2-2P2P-E	103003588
											■	AZM400Z-ST2-2P2P-T-E	103003591
											■	AZM400Z-ST-I1-1P2P	103003732
											■	AZM400Z-ST-I1-1P2P-T	103003840
											■	AZM400Z-ST2-I1-2P2P-E	103003724
											■	AZM400Z-ST2-I1-2P2P-T-E	103003835
											■	AZM400Z-ST-I2-1P2P	103003733
											■	AZM400Z-ST-I2-1P2P-T	103003841
											■	AZM400Z-ST2-I2-2P2P-E	103003725
											■	AZM400Z-ST2-I2-2P2P-T-E	103003836



## 2. Solenoid interlocks

### Preferred types

Series	Coding	Connection	Latching force	Diagnostic and safety outputs	Special features		
<b>MZM 100</b> 	Standard coding	M23 connector	---	Serial diagnostic output and 2 safety outputs, all p-type	---		
			30...100 N		Permanent magnet		
		M12 connector	---	1 diagnostic output and 2 safety outputs, all p-type, combined diagnostic signal	---		
			30...100 N		Permanent magnet		
						Serial diagnostic output and 2 safety outputs, all p-type	---
							Permanent magnet
					Permanent magnet		
<b>MZM 120</b> 	Standard coding	M12 connector	30...80 N	1 diagnostic output and 2 safety outputs, all p-type, combined diagnostic signal	With hygiene-compliant NEDOX® SF-2 coating		
				Serial diagnostic output and 2 safety outputs, all p-type			





A variety of other types of the solenoid interlocks can be found at [www.schmersal.net](http://www.schmersal.net).

	Included in delivery	Guard locking monitored	Actuator monitored	Power to lock	Power to unlock	Type designation	Material number
	---	■		■		MZM 100 ST-SD2P-A	101183538
							MZM 100 ST-SD2PRE-A
						MZM 100 ST-SD2PREM-A	101211144
						MZM 100 ST-1P2PWRE-A	101211064
						MZM 100 ST-1P2PWREM-A	101211065
			■			MZM 100B ST-1P2PW2REM-A	101211069
						MZM 100 ST2-1P2PWM-A	101209059
		■				MZM 100 ST2-1P2PWRE-A	101211066
						MZM 100 ST2-1P2PWREM-A	101211067
						MZM 100 ST2-SD2PRE-A	101211145
						MZM 100 ST2-SD2PREM-A	101211146
			■			MZM 100B ST2-SD2PRE-A	101211156
						MZM 100B ST2-SD2PREM-A	101211153
		---				■	■
	■		■	MZM 120BM-ST2-1P2PW2RE-A	101215716		
			■	MZM 120B ST2-SD2PRE-A	101215715		
	■		■	MZM 120BM-ST2-SD2PRE-A	101215717		

## 2. Solenoid interlocks

### AZM 161 - Selection of the actuators

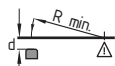


Actuator type	Actuator description	Designed for					Type designation	Material number
			R <sub>min</sub> [mm]	d [mm]	R <sub>min</sub> [mm]	d [mm]		
Flexible actuator	Standard		95	11	95	11	AZM 161-B6	101144420
	For right-hand side door hinge with individual coding		95	11	95	11	AZM 161i-B6R	Included in delivery
	For left-hand side door hinge with individual coding		95	11	95	11	AZM 161i-B6L	Included in delivery
	With centering guide		95	17	95	17	AZM 161-B6-2177	101174113
	Shortened		95	---	95	---	AZM 161-B6S	101170375
Straight actuator	Standard		---	---	---	---	AZM 161-B1	101145117
	Shortened		---	---	---	---	AZM 161-B1S	101171125
	With magnetic latch		---	---	---	---	AZM 161-B1-1747	101164100
	With slot lip-seal		---	---	---	---	AZM 161-B1-2024	101178199
	With ball latch		---	---	---	---	AZM 161-B1-2053	101173089
	With centering guide		---	---	---	---	AZM 161-B1-2177	101176642
	Standard		---	---	---	---	AZM 161-B1E	101144416
	Shortened		---	---	---	---	AZM 161-B1ES	101171859
	Standard		---	---	---	---	AZM 161-B1F	101175431

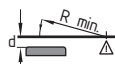
#### Actuating radii

The axis of the hinge must be d [mm] above and in a parallel plane to the top surface of the safety switch. The basis setting provides a minimum radius of R<sub>min</sub> [mm].

#### Key



Actuating radius over the small edge of the actuator



Actuating radius over the wide edge of the actuator



Sliding and removable safety guards












Hinged safety guards

Actuators must be ordered separately.

## 2. Solenoid interlocks

### AZM 161 - Actuator and accessories



AZM 161-B1 *	101145117	AZM 161-B1S	101171125	AZM 161-B1-1747 *	101164100
 <ul style="list-style-type: none"> <li>■ Straight actuator</li> <li>■ Also with individual coding *</li> </ul>		 <ul style="list-style-type: none"> <li>■ Shortened straight actuator</li> <li>■ Standard coding</li> </ul>		 <ul style="list-style-type: none"> <li>■ Straight actuator with magnetic latch</li> <li>■ Also with individual coding *</li> </ul>	
AZM 161-B1-2024 *	101178199	AZM 161-B1-2053 *	101173089	AZM 161-B1-2177 *	101176642
 <ul style="list-style-type: none"> <li>■ Straight actuator with slot lip-seal</li> <li>■ Also with individual coding *</li> </ul>		 <ul style="list-style-type: none"> <li>■ Straight actuator with ball latch</li> <li>■ Also with individual coding *</li> </ul>		 <ul style="list-style-type: none"> <li>■ Straight actuator with centering guide</li> <li>■ Also with individual coding *</li> </ul>	
AZM 161-B1E *	101144416	AZM 161-B1ES	101171859	AZM 161-B1F	101175431
 <ul style="list-style-type: none"> <li>■ Straight actuator</li> <li>■ Also with individual coding *</li> </ul>		 <ul style="list-style-type: none"> <li>■ Shortened straight actuator</li> <li>■ Standard coding</li> </ul>		 <ul style="list-style-type: none"> <li>■ Straight actuator</li> <li>■ Standard coding</li> </ul>	

\* The actuators with individual coding cannot be delivered individually.

## 2. Solenoid interlocks

### AZM 161 - Actuator and accessories






<b>AZM 161-B6</b>	<b>101144420</b>	<b>B6R *</b>	<b>B6L *</b>
 <ul style="list-style-type: none"> <li>■ Flexible actuator</li> <li>■ Standard coding</li> </ul>	 <ul style="list-style-type: none"> <li>■ Flexible actuator for right-hand side door hinge</li> <li>■ Individual coding *</li> </ul>	 <ul style="list-style-type: none"> <li>■ Flexible actuator for left-hand side door hinge</li> <li>■ Individual coding *</li> </ul>	
<b>AZM 161-B6-2177</b>	<b>101174113</b>	<b>AZM 161-B6S</b>	<b>101170375</b>
 <ul style="list-style-type: none"> <li>■ Flexible actuator with centering guide</li> <li>■ Standard coding</li> </ul>	 <ul style="list-style-type: none"> <li>■ Shortened flexible actuator</li> <li>■ Standard coding</li> </ul>		
<b>MS AZM 161 ...</b>	<b>Slot sealing plug AZM 161</b>	<b>101145379</b>	<b>Triangular key M5</b>
 <ul style="list-style-type: none"> <li>■ Mounting set only in combination with B6</li> <li>■ Mounting parallel to safety guard: <b>MS AZM 161 P</b>                   <b>101150376</b></li> <li>■ Mounting right-angled to safety guard: <b>MS AZM 161 R/P</b>               <b>101149213</b></li> </ul>	 <ul style="list-style-type: none"> <li>■ To cover unused actuator slots</li> <li>■ For protection against the ingress of dirt</li> <li>■ Easy to install by just clipping in</li> </ul>	 <ul style="list-style-type: none"> <li>■ For manual release</li> </ul>	

\* The actuators with individual coding cannot be delivered individually.

## 2. Solenoid interlocks

### AZM 161 - Actuator and accessories







Centering device	Connector plug	Tamperproof screws
 <ul style="list-style-type: none"> <li>■ Centring device for pre-positioning</li> <li>■ Mounting outside: <b>TFA-020</b>      <b>101172607</b></li> <li>■ Mounting inside: <b>TFI-020</b>      <b>101172609</b></li> </ul>	 <ul style="list-style-type: none"> <li>■ Connector (with 8-pin male connector only 24 VAC/DC variants available!)</li> </ul> <p style="text-align: right;">on request</p>	 <ul style="list-style-type: none"> <li>■ Tamperproof screws with unidirectional slots</li> <li>M5 x 12      <b>101135338</b></li> <li>M5 x 16      <b>101135339</b></li> <li>M5 x 20      <b>101135340</b></li> <li>■ Quantity 2 pcs</li> </ul>

## 2. Solenoid interlocks

### AZM 170 - Selection of the actuators

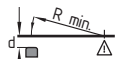


Actuator type	Actuator description	Designed for					Type designation	Material number
			R <sub>min</sub> [mm]	d [mm]	R <sub>min</sub> [mm]	d [mm]		
Flexible actuator	AZM 170 standard		50	11	50	11	AZM 170-B6	101123391
	For left-hand side door hinge with individual coding		50	11	50	11	AZM 170i-B6L	Included in delivery
	For right-hand side door hinge with individual coding		50	11	50	11	AZM 170i-B6R	Included in delivery
Straight actuator	Standard		---	---	---	---	AZ 17/170-B1	101122893
	With rubber mountings		---	---	---	---	AZ 17/170-B1-2245	101137406
	Angled		---	---	---	---	AZ 17/170-B5	101122895
	Longer		---	---	---	---	AZ 17/170-B11	101139788
	Longer and angled		---	---	---	---	AZ 17/170-B15	101139789

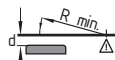
#### Actuating radii

The axis of the hinge must be d [mm] above and in a parallel plane to the top surface of the safety switch. The basis setting provides a minimum radius of R<sub>min</sub> [mm].

#### Key



Actuating radius over the small edge of the actuator



Actuating radius over the wide edge of the actuator



Sliding and removable safety guards



Hinged safety guards

Actuators must be ordered separately.

## 2. Solenoid interlocks

### AZM 170 - Actuator and accessories



AZ 17/170-B1 *	101122893	AZ 17/170-B1-2245	101137406	AZ 17/170-B5 *	101122895
 <ul style="list-style-type: none"> <li>■ Straight actuator</li> <li>■ Also with individual coding *</li> </ul>	 <ul style="list-style-type: none"> <li>■ Actuator with rubber mounting</li> <li>■ Standard coding</li> </ul>	 <ul style="list-style-type: none"> <li>■ Angled actuator</li> <li>■ Also with individual coding *</li> </ul>			
AZ 17/170-B11	101139788	AZ 17/170-B15	101139789	AZM 170-B6	101123391
 <ul style="list-style-type: none"> <li>■ Long straight actuator</li> <li>■ Standard coding</li> </ul>	 <ul style="list-style-type: none"> <li>■ Long angled actuator</li> <li>■ Standard coding</li> </ul>	 <ul style="list-style-type: none"> <li>■ Flexible actuator</li> <li>■ Standard coding</li> </ul>			
B6R *	B6L *				
 <ul style="list-style-type: none"> <li>■ Flexible actuator for right-hand side door hinge</li> <li>■ Individual coding *</li> </ul>	 <ul style="list-style-type: none"> <li>■ Flexible actuator for left-hand side door hinge</li> <li>■ Individual coding *</li> </ul>				

\* The actuators with individual coding cannot be delivered individually.



## 2. Solenoid interlocks

### AZM 170 - Actuator and accessories



<b>AZM 170-B25-R-G1</b>	<b>101175200</b>	<b>AZM 170-B25-R-G2</b>	<b>101175226</b>	<b>MP AZ 17/170-B25</b>	<b>101175190</b>
-------------------------	------------------	-------------------------	------------------	-------------------------	------------------



- Door-handle actuator with star grip
- For door hinge on the right-hand side



- Door-handle actuator with T-grip
- For door hinge on the right-hand side



- Mounting plate
- Accessories only for door-handle actuator AZM 170-B25-..

<b>Centering device</b>	<b>Connector plug</b>	<b>Tamperproof screws</b>
-------------------------	-----------------------	---------------------------



- Centring device for pre-positioning
- Mounting outside: **TFA-020** **101172607**
- Mounting inside: **TFI-020** **101172609**



- Connector M12, 4-pin
- Without cable **101208522**
- With cable 5 m **101208523**

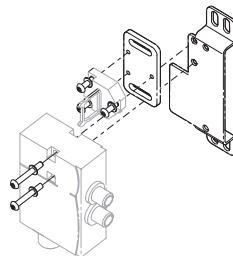


- Tamperproof screws with unidirectional slots M4 x 8 **101147463**
- Quantity 2 pcs

<b>AZM 170-B</b>	<b>101208493</b>	<b>MS AZM 170 ...</b>
------------------	------------------	-----------------------



- Centering guide
- Only in combination with long actuator



- Mounting set only in combination with B6
- Mounting parallel to safety guard: **MS AZM 170 P** **101150367**
- Mounting right-angled to safety guard: **MS AZM 170 R/P** **101149211**

Up-to-date without fail.  
The online product catalogue







For detailed information, check out  
[www.schmersal.net](http://www.schmersal.net)



## 2. Solenoid interlocks

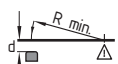
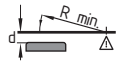


### AZM 190 - Selection of the actuators

Actuator type	Actuator description	Designed for					Type designation	Material number
			R <sub>min</sub> [mm]	d [mm]	R <sub>min</sub> [mm]	d [mm]		
Flexible actuator	Standard 2x15		350	20	650	20	AZM190-B3/2x15	101029938
	Standard 1x7.5		250	20	---	---	AZM190-B3/1x7,5	101029968
	Standard 1x15		200	20	---	---	AZM190-B3/1x15	101029967
Straight actuator	Standard		---	---	---	---	AZM190-B1	101029965
	To front mounting		---	---	---	---	AZM190-B5	101029966

#### Actuating radii

The axis of the hinge must be d [mm] above and in a parallel plane to the top surface of the safety switch. The basis setting provides a minimum radius of R<sub>min</sub> [mm].

#### Key









- 
Actuating radius over the small edge of the actuator
- 
Actuating radius over the wide edge of the actuator
- 
Sliding and removable safety guards
- 
Hinged safety guards

Actuators must be ordered separately.

## 2. Solenoid interlocks

### AZM 190 - Actuator and accessories



AZM190-B1	101029965	AZM190-B5	101029966	AZM190-B3/2x15	101029938
 <ul style="list-style-type: none"> <li>■ Straight actuator</li> <li>■ Compensation for tolerances by means of rubber buffers</li> </ul>	 <ul style="list-style-type: none"> <li>■ Actuator to front mounting</li> <li>■ Particularly suitable for front mounting and hinged protective equipment</li> </ul>	 <ul style="list-style-type: none"> <li>■ Flexible actuator</li> <li>■ For very small actuating radius over the small and wide edge of the actuator</li> </ul>			
AZM190-B3/1x7,5	101029968	AZM190-B3/1x15	101029967		
 <ul style="list-style-type: none"> <li>■ Flexible actuator</li> </ul>	 <ul style="list-style-type: none"> <li>■ Flexible actuator</li> </ul>				
MP190	101029969	ZPG190	101144777	Triangular key TZ-75	101028565
 <ul style="list-style-type: none"> <li>■ Mounting plate</li> <li>■ For simple mounting of an AZM 190 on profile systems</li> </ul>	 <ul style="list-style-type: none"> <li>■ Axial cable entry</li> </ul>	 <ul style="list-style-type: none"> <li>■ Angled triangular key</li> <li>■ For manual release</li> <li>■ The straight triangular key TZ-69 is included in delivery</li> </ul>			

## 2. Solenoid interlocks

### AZM 415 - Selection of the actuators



Actuator type	Actuator description	Designed for					Type designation	Material number
			$R_{min}$ [mm]	d [mm]	$R_{min}$ [mm]	d [mm]		
Flexible actuator	For very small actuating radius over the wide edge of the actuator		---	---	250	36	<b>AZ/AZM 415-B2</b>	<b>101144796</b>
	For very small actuating radius over the small edge of the actuator		250	36	---	---	<b>AZ/AZM 415-B3</b>	<b>101144797</b>
Straight actuator	For sliding safety guards		---	---	---	---	<b>AZ/AZM 415-B1</b>	<b>101128545</b>

#### Actuating radii

The axis of the hinge must be d [mm] above and in a parallel plane to the top surface of the safety switch. The basis setting provides a minimum radius of  $R_{min}$  [mm].

#### Key

- Actuating radius over the small edge of the actuator
- Actuating radius over the wide edge of the actuator
- Sliding and removable safety guards
- Hinged safety guards

Actuators must be ordered separately.

## 2. Solenoid interlocks

### AZM 415 - Actuator and accessories



AZ/AZM 415-B1	AZ/AZM 415-B2	AZ/AZM 415-B3
<div data-bbox="293 409 384 689" data-label="Image"> </div> <ul data-bbox="124 730 368 786" style="list-style-type: none"> <li>■ Straight actuator</li> <li>■ For sliding safety guards</li> </ul>	<div data-bbox="711 434 876 658" data-label="Image"> </div> <ul data-bbox="579 730 1007 842" style="list-style-type: none"> <li>■ Flexible actuator</li> <li>■ Particularly suitable for hinged safety guards</li> <li>■ For very small actuating radius over the wide edge of the actuator</li> </ul>	<div data-bbox="1166 434 1331 658" data-label="Image"> </div> <ul data-bbox="1034 730 1461 842" style="list-style-type: none"> <li>■ Flexible actuator</li> <li>■ Particularly suitable for hinged safety guards</li> <li>■ For very small actuating radius over the small edge of the actuator</li> </ul>
Triangular key M5		
<div data-bbox="264 976 405 1216" data-label="Image"> </div> <ul data-bbox="124 1267 320 1294" style="list-style-type: none"> <li>■ For manual release</li> </ul>		

## 2. Solenoid interlocks

### AZM 200 - Selection of the actuators



Series	Door hinge		Emergency exit P0	Type designation	Material number
	Left	Right			
AZ/AZM 200-B1	■			AZ/AZM 200-B1-LT	101183465
			■	AZ/AZM 200-B1-LTP0	101183466
		■		AZ/AZM 200-B1-RT	101183469
			■	AZ/AZM 200-B1-RTP0	101183470

Series	Door hinge		Door handle G1	Rotating knob G2	Emergency exit			Locking rod P30/P31	Lock-out tag	Mounting		Type designation	Material number	
	Left	Right			Wit-hout P1	Standard P1	Metal P20			Out-side	In-side			
AZ/AZM 200-B30	■		■		■					■		AZ/AZM 200-B30-LTAG1	101178681	
					■					■	■	AZ/AZM 200-B30-LTAG1-SZ	101213364	
						■					■	AZ/AZM 200-B30-LTAG1P1	101178668	
						■					■	AZ/AZM 200-B30-LTIG1P1	101194427	
						■					■	AZ/AZM 200-B30-LTAG1P1-SZ	101213362	
							■				■	AZ/AZM 200-B30-LTAG1P20	101186150	
							■				■	AZ/AZM 200-B30-LTAG1P20-SZ	101216690	
									■		■	AZ/AZM 200-B30-LTAG1P30	101208901	
									■		■	AZ/AZM 200-B30-LTAG1P30-SZ	on request	
											■	AZ/AZM 200-B30-LTAG1P31	101208906	
											■	AZ/AZM 200-B30-LTAG1P31-SZ	103001335	
								■	■			■	AZ/AZM 200-B30-LTAG2	101181137
				■				■	AZ/AZM 200-B30-LTAG2-SZ	on request				
					■			■	AZ/AZM 200-B30-LTAG2P1	101181141				
					■			■	AZ/AZM 200-B30-LTAG2P1-SZ	103000175				
	■		■			■					■		AZ/AZM 200-B30-RTAG1	101178680
						■					■	■	AZ/AZM 200-B30-RTAG1-SZ	101213365
							■					■	AZ/AZM 200-B30-RTAG1P1	101178738
							■					■	AZ/AZM 200-B30-RTIG1P1	101194425
							■					■	AZ/AZM 200-B30-RTAG1P1-SZ	101213363
								■				■	AZ/AZM 200-B30-RTAG1P20	101186144
								■				■	AZ/AZM 200-B30-RTAG1P20-SZ	101216691
										■		■	AZ/AZM 200-B30-RTAG1P30	101208904
										■		■	AZ/AZM 200-B30-RTAG1P30-SZ	103000183
											■	AZ/AZM 200-B30-RTAG1P31	101208917	
											■	AZ/AZM 200-B30-RTAG1P31-SZ	101217745	
								■	■			■	AZ/AZM 200-B30-RTAG2	101181139
			■				■	AZ/AZM 200-B30-RTAG2-SZ	on request					
				■			■	AZ/AZM 200-B30-RTAG2P1	101181143					
				■			■	AZ/AZM 200-B30-RTAG2P1-SZ	103000174					
AZ/AZM 200-B40	■									■		AZ/AZM 200-B40-LTAG1P1	101208848	
		■								■		AZ/AZM 200-B40-RTAG1P1	101208845	

Actuators must be ordered separately.

Detailed information for the selection of the actuators can be found at [www.schmersal.net](http://www.schmersal.net).

## 2. Solenoid interlocks

### AZM 200 - Actuator and accessories



AZ/AZM 200-B1-...	AZ/AZM 200-B1-...-P0	AZ/AZM 200-B40-...
 <ul style="list-style-type: none"> <li>■ Actuator for sliding safety guards</li> <li>■ Left-hand side actuating direction <b>AZ/AZM 200-B1-LT</b> 101183465</li> <li>■ Right-hand side actuating direction <b>AZ/AZM 200-B1-RT</b> 101183469</li> </ul>	 <ul style="list-style-type: none"> <li>■ With emergency exit P0</li> <li>■ Left-hand side actuating direction <b>AZ/AZM 200-B1-LT-P0</b> 101183466</li> <li>■ Right-hand side actuating direction <b>AZ/AZM 200-B1-RT-P0</b> 101183470</li> </ul>	 <ul style="list-style-type: none"> <li>■ Actuators for rotatable and moveable protection equipment, especially for hinged-doors with overlapping folds</li> </ul>
AZ/AZM 200-B30-... -G1	AZ/AZM 200-B30-...-SZ	AZ/AZM 200-...-G2
 <ul style="list-style-type: none"> <li>■ Actuator for hinged safety guards</li> </ul>	 <ul style="list-style-type: none"> <li>■ Actuator B30 with lockout tag</li> </ul>	 <ul style="list-style-type: none"> <li>■ Actuator with rotating knob</li> </ul>
AZ/AZM 200-...-P1	AZ/AZM 200-...-P20	AZ/AZM 200-B30-...-P30/P31
 <ul style="list-style-type: none"> <li>■ Emergency exit</li> </ul>	 <ul style="list-style-type: none"> <li>■ Emergency exit (metal)</li> </ul>	 <ul style="list-style-type: none"> <li>■ Three point locking linkage for requirements with increased mechanical stability (7,000 N)</li> </ul>

The actuation system selection can be found at [www.schmersal.net](http://www.schmersal.net).



## 2. Solenoid interlocks

### AZM 200 and AZM 300 - Actuator and accessories




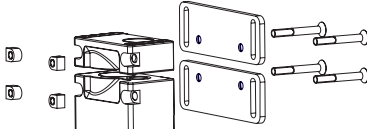




SZ 200-1	101196397	SZ 200	101194438		
 <ul style="list-style-type: none"> <li>■ Lockout tag with 6 bore holes for AZM 200 and AZM 300</li> <li>■ To prevent inadvertent closing, e.g. during maintenance</li> </ul>	 <ul style="list-style-type: none"> <li>■ Lockout tag with 5 bore holes</li> <li>■ To prevent inadvertent closing, e.g. during maintenance</li> </ul>				
AZ/AZM300-B1	101218025	MP-AZ/AZM300-1	103003172	MS-AZ/AZM300-B1-1	103002891
 <ul style="list-style-type: none"> <li>■ Actuator</li> <li>■ 3 different directions of actuation</li> </ul>	 <ul style="list-style-type: none"> <li>■ Mounting plate</li> </ul>	 <ul style="list-style-type: none"> <li>■ Mounting set for actuators</li> </ul>			
AZM300-...-T / -N					
 <ul style="list-style-type: none"> <li>■ Emergency exit (-T) for fitting and actuation only from <b>within</b> the hazardous area</li> <li>■ Emergency release (-N) for fitting and actuation only on the <b>outside</b> of the safety guard</li> </ul>					

Actuators must be ordered separately.

## 2. Solenoid interlocks

### AZM 400 and MZM 100/120 - Actuator and accessories



AZM400-B1	103003508	MS-AZM400	103009179		
 <ul style="list-style-type: none"> <li>■ Actuator</li> </ul>	 <ul style="list-style-type: none"> <li>■ Mounting set for AZM 400 and actuator</li> <li>■ For simple installation on 40 mm aluminium profiles</li> </ul>				
MZM 100-B1.1	101204290	MZM 120-B1.1	101215712	MS MZM 100-W	101185510
 <ul style="list-style-type: none"> <li>■ Actuator free from play for MZM 100</li> <li>■ Neutralisation of undesired noises</li> </ul>	 <ul style="list-style-type: none"> <li>■ Actuator free from play for MZM 120</li> <li>■ Neutralisation of undesired noises</li> <li>■ Metal components with hygiene-compliant NEDOX® SF-2 coating</li> </ul>	 <ul style="list-style-type: none"> <li>■ Mounting set for MZM 100</li> <li>■ Screws are included in delivery</li> </ul>			
MZM 100 TARGET	101210642				
 <ul style="list-style-type: none"> <li>■ For MZM 100 and MZM 120</li> <li>■ For the variable setting of the latching force</li> <li>■ Gradually adjustable by steps of approx. 10 N within a range from approx. 30 N to 100 N</li> </ul>					

Actuators must be ordered separately.