

SRM 16 – 40 – Basis/-M

Pneumatische Schwenkeinheit

Pneumatic swivel unit

Montageanleitung

Assembly instructions

Sämtliche Angaben in dieser Anleitung entsprechen dem aktuellen Stand zum Zeitpunkt des Drucks und können Änderungen unterliegen. Die aktuelle Anleitung, die ausführliche Montage- und Betriebsanleitung sowie weiterführende Informationen und Dokumente können unter schunk.com heruntergeladen werden.

1 Baugrößen

Diese Anleitung gilt für folgende Baugrößen:

- SRM 16
- SRM 20
- SRM 25
- SRM 32
- SRM 40

2 Varianten

Diese Anleitung gilt für folgende Varianten:

- SRM Schwenkwinkel 90° oder 180°
- SRM Endlageneinstellbarkeit ±3° oder +3°/-90°
- SRM mit pneumatischer Mittelstellung (M)

3 Mitgeltende Unterlagen

- Allgemeine Geschäftsbedingungen *
- Katalogdatenblatt des gekauften Produkts *
- Montage- und Betriebsanleitung des Produkts, inkl. Einbauerklärung *
- Montage- und Betriebsanleitungen des Zubehörs *

Die mit Stern (*) gekennzeichneten Unterlagen können unter schunk.com heruntergeladen werden.

4 Grundlegende Sicherheitshinweise

4.1 Bestimmungsgemäße Verwendung

Das Produkt dient ausschließlich zum Schwenken von zulässigen Anbauteilen oder Werkstücken.

- Das Produkt darf ausschließlich im Rahmen seiner technischen Daten verwendet werden, ▶ Kap. 5.
- Bei der Implementierung und dem Betrieb der Komponente in sicherheitsbezogenen Teilen von Steuerungen sind die grundlegenden Sicherheitsprinzipien nach DIN EN ISO 13849-2 anzuwenden. Für die Kategorien 1, 2, 3 und 4 sind zudem die bewährten Sicherheitsprinzipien nach DIN EN ISO 13849-2 anzuwenden.
- Das Produkt ist zum Einbau in eine Maschine/Anlage bestimmt. Die für die Maschine/Anlage zutreffenden Richtlinien müssen beachtet und eingehalten werden.
- Das Produkt ist für industrielle und industriennahe Anwendungen bestimmt.
- Zur bestimmungsgemäßen Verwendung gehört auch das Einhalten aller Angaben in dieser Anleitung.

4.2 Personalqualifikation

- Alle Arbeiten durch dafür qualifiziertes Personal durchführen lassen.
- Vor Arbeiten am Produkt muss das Personal die komplette Montage- und Betriebsanleitung gelesen und verstanden haben.

4.3 Persönliche Schutzausrüstung

- Beim Arbeiten an und mit dem Produkt die Arbeitsschutzbestimmungen beachten und die erforderliche persönliche Schutzausrüstung tragen.
- Bei scharfen Kanten, spitzen Ecken und rauen Oberflächen Schutzhandschuhe tragen.
- Bei heißen Oberflächen hitzebeständige Schutzhandschuhe tragen.
- Bei bewegten Bauteilen eng anliegende Schutzkleidung und Haarnetz bei langen Haaren tragen.

4.4 Bauliche Veränderungen

- Bauliche Veränderungen nur mit schriftlicher Genehmigung von SCHUNK durchführen.

4.5 Hinweise für den Transport

- Bei hohem Gewicht das Produkt mit einem Hebezeug anheben und mit einem angemessenen Transportmittel transportieren.
- Bei Transport und Handhabung das Produkt gegen Herunterfallen sichern.
- Nicht unter schwebende Lasten treten.

4.6 Hinweise für die Montage

- Vor Beginn der Montage den Gefahrenbereich durch geeignete Schutzmaßnahmen absichern.
- Vor Montagearbeiten die Energieversorgung abschalten. Sicherstellen, dass keine Restenergie mehr vorhanden ist und gegen Wiedereinschalten sichern.

4.7 Hinweise für den Betrieb

- Sicherheitsabstände einhalten.
- Niemals Sicherheitseinrichtungen außer Funktion setzen.
- Wenn die Energieversorgung angeschlossen ist, keine Teile von Hand bewegen.

- Gültige landesspezifische Sicherheits- und Unfallverhütungsvorschriften einhalten.

Mögliche elektrostatische Energie

Bauteile oder Baugruppen können sich elektrostatisch aufladen. Beim Berühren kann die elektrostatische Entladung eine Schreckreaktion auslösen, die zu Verletzungen führen kann.

- Der Betreiber muss sicherstellen, dass nach einschlägigen Regeln alle Bauteile und Baugruppen in den örtlichen Potenzialausgleich einbezogen werden.
- Den Potenzialausgleich nach den einschlägigen Regeln durch eine Elektrofachkraft unter besonderer Berücksichtigung der tatsächlichen Arbeitsumgebungsbedingungen ausführen lassen.
- Die Wirksamkeit des Potenzialausgleichs durch regelmäßige Sicherheitsmessungen nachweisen lassen.

5 Technische Daten

5.1 Basisdaten, Baugröße 16 – 40

Bezeichnung	Wert
Druckmittel	Druckluft, Druckluftqualität nach ISO 8573-1:2010 [7:4:4]
Nennbetriebsdruck [bar]	6
Mindestdruck [bar]	4
Maximaldruck [bar]	6.5 / 8 (MDF)

Weitere technische Daten enthält das Katalogdatenblatt. Es gilt jeweils die letzte Fassung.

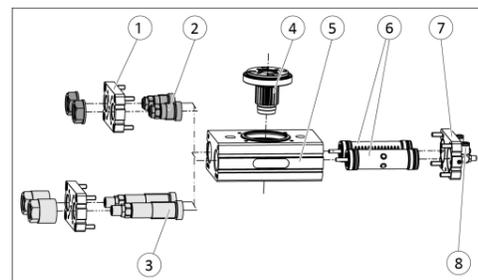
Das Katalogdatenblatt enthält Diagramme zur Auslegung des maximal zulässigen Massenträgheitsmoments. Der SCHUNK-Ansprechpartner unterstützt bei der Auslegung weiterer Einsatzfälle.

Umgebungs- und Einsatzbedingungen

Bezeichnung	Wert
Umgebungstemperatur [°C]	
Min.	+5
Max.	+60
Schutzart IP	65
Geräuschemission [dB(A)]	≤ 70

6 Aufbau

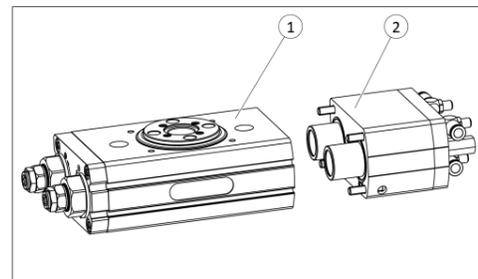
6.1 Basiseinheit



Aufbau Basiseinheit

1	Anschlagdeckel
2	Anschläge zur Einstellung der Endlagen bei Variante "Endlageneinstellbarkeit ±3°"
3	Optional: Anschläge zur Einstellung der Endlagen bei Variante "Endlageneinstellbarkeit +3/-90°"
4	Ritzel
5	Gehäuse
6	Kolben mit Stoßdämpfer
7	Deckel
8	Druckluftanschlüsse

6.2 Basiseinheit mit Mittelstellung (Variante -M)



Aufbau Basiseinheit mit Mittelstellung (Variante -M)

1	Basiseinheit
2	Anbau Mittelstellung (0°-90°-180°)

7 Montage und Einstellungen, Baugröße 16 – 40

7.1 Montieren und anschließen

⚠️ WARNUNG

Verletzungsgefahr durch unerwartete Bewegungen!

Ist die Energieversorgung eingeschaltet oder noch Restenergie im System vorhanden, können sich Bauteile unerwartet bewegen und schwere Verletzungen verursachen.

- Vor Beginn sämtlicher Arbeiten am Produkt: Energieversorgung abschalten und gegen Wiedereinschalten sichern.
- Sicherstellen, dass im System keine Restenergie mehr vorhanden ist.

⚠️ ACHTUNG

Sachschaden durch fehlerhafte Einstellungen und Montage!

Wenn die Endlage zu hart angefahren wird, kann das Produkt beschädigt werden.

- Sicherstellen, dass die Dreh-/Schwenkbewegung grundsätzlich schlag- und prellfrei erfolgt.
- Hierzu eine ausreichende Drosselung und Dämpfung vornehmen.
- Angaben im Katalogdatenblatt beachten.

⚠️ ACHTUNG

Sachschaden durch geöffnete Abluft-Drosselventile!

Wenn beim ersten Beaufschlagen die Abluft-Drosselventile geöffnet sind, kann sich das Produkt unkontrolliert bewegen.

- Vor dem Beaufschlagen Abluft-Drosselventile vollständig schließen.

⚠️ HINWEIS

- Anforderungen an die Druckluftversorgung beachten, ▶ Kap. 5.
- Bei Druckluftverlust (Abtrennen der Energieleitung) verliert das Produkt seine Kraftwirkung und verharrt nicht in einer gesicherten Position. Um die Kraftwirkung in diesem Fall dennoch für geraume Zeit aufrecht zu erhalten, wird der Einsatz eines Druckerhaltungsventils SDV-P empfohlen.

Überblick

- Produkt mit der Maschine/Anlage verschrauben, ▶ Kap. 7.2.1.
 - ⇒ Zentrierhülsen aus dem Beipack verwenden.
 - ⇒ Anzugsdrehmoment der Befestigungsschrauben beachten.
- Anbauteil mit Zentrierhülsen und Befestigungsschrauben am Ritzel befestigen. **ACHTUNG! Zentrierhülsen von Hand einsetzen. Nicht auf das Ritzel schlagen.**
- In die Hauptluftanschlüsse "A" und "B" Abluft-Drosselventile einschrauben und Druckluftleitungen anschließen, ▶ Kap. 7.2.2.
 - ⇒ **ACHTUNG! Sachschaden durch fehlende Bauteile!** Festdrossel und Drosselventile aus dem Beipack in die Druckluftleitungen für die Luftanschlüsse "a" und "b" montieren.
 - ⇒ O-Ringe aus dem Beipack verwenden.
- Variante mit Mittelstellung (M):** In die Hauptluftanschlüsse "C" und "D" Zuluft-Drosselventile einschrauben und Druckluftleitung anschließen, ▶ Kap. 7.2.2.
- Prüfen, dass alle Drosselventile geschlossen sind.
- Verschlusschrauben in ggf. geöffnete und nicht benötigte Luftanschlüsse einschrauben.
 - ⇒ Bei schlauchlosem Direktanschluss: O-Ringe aus dem Beipack verwenden.
 - ⇒ Gegebenenfalls Schläuche zur Fluiddurchführung anschließen.
 - ⇒ Bei schlauchlosem Direktanschluss: O-Ringe aus dem Beipack verwenden.
 - ⇒ Nicht benötigte Anschlüsse mit Schutzkappen aus dem Beipack verschließen.
- Endlagen einstellen, ▶ Kap. 7.3.1.
- Sensor montieren, ▶ Kap. 7.4.
- Schwenkgeschwindigkeit einstellen, ▶ Kap. 7.3.2.
- Stoßdämpferhub einstellen, ▶ Kap. 7.3.3.

7.2 Anschlüsse

7.2.1 Mechanischer Anschluss

HINWEIS

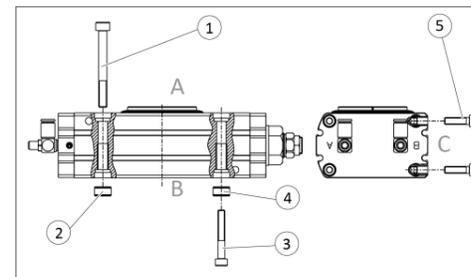
Adapterplatten zwischen Produkt und Maschine/Anlage sowie Produkt und Anbauteil müssen aus hochfestem Aluminium oder Stahl gefertigt werden. Die Toleranzklasse für die Passbohrungen ist H7.

Anschlüsse am Gehäuse

Das Produkt kann von drei Seiten montiert werden.

- Anlagenseitig über Gewindebohrungen
- Anbauteilseitig über Durchgangsbohrungen
- Seitlich über Gewindebohrungen

Zentrierhülsen für die Befestigungsschrauben sind im Beipack enthalten.

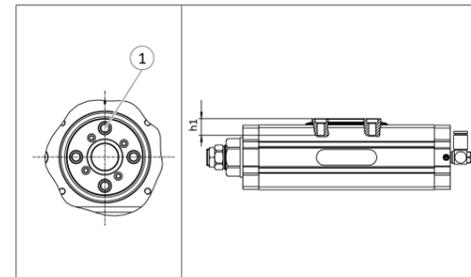


Möglichkeiten der Montage

Pos. Befestigung	SRM
	16 20 25 32 40
Seite A *	
1 Befestigungsschraube	M5 M6 M6 M6 M8
Befestigungsschrauben nach Norm	DIN EN ISO 4762
2 Zentrierhülse	Ø10 Ø12 Ø12 Ø12 Ø14
Seite B	
3 Befestigungsschraube	M6 M8 M8 M8 M10
Befestigungsschrauben nach Norm	DIN EN ISO 4762
Max. Einschraubtiefe ab Anschlagfläche [mm]	Max. Festigkeitsklasse 8.8
	16 22 22 26 33
4 Zentrierhülse	Ø10 Ø12 Ø12 Ø12 Ø14
Seite C	
5 Befestigungsschraube	M4 M5 M5 M8 M8
Max. Einschraubtiefe ab Anschlagfläche [mm]	8 9 10 16 17
Befestigungsschrauben nach Norm	DIN EN ISO 4762
	Max. Festigkeitsklasse 8.8

- * Anschluss **nicht** möglich bei Varianten:
 - Elektrische Drehdurchführung (EDF)
 - Sensor induktiv (SI)

Anschlüsse am Ritzel, SRM 20 – 40, Basiseinheit



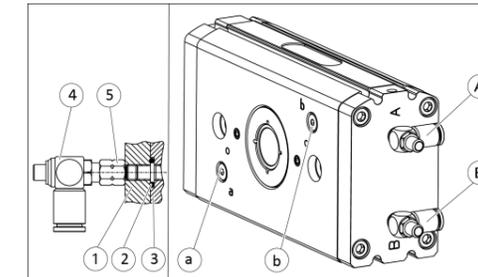
Anschlüsse am Ritzel - Darstellung des Ritzels in der Draufsicht und Seitenansicht, Basiseinheit

Pos. Bezeichnung	SRM
	16 20 25 32 40
1* Gewinde für Befestigungsschraube der kundenseitigen Last, (4 Stück)	M5 M6 M6 M8 M8
Zentrierhülse [mm], (2 Stück)	Festigkeitsklasse 8.8
	Ø8 Ø8 Ø8 Ø12 Ø12
h1 Max. Einschraubtiefe ab Ritzelfläche [mm]	9 10 10 12.5 13

- * Bei Auswahl der Schraubenlänge muss die maximale Einschraubtiefe ab der Ritzelfläche (h1) beachtet werden.

7.2.2 Pneumatischer Anschluss

7.2.2.1 Basiseinheit



Druckluftanschluss, Basiseinheit

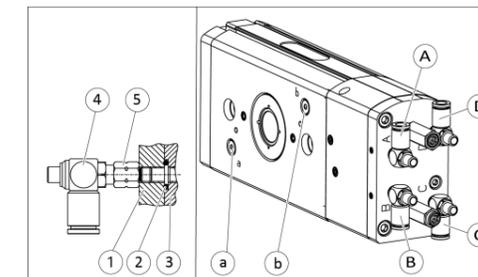
Bezeichnung	Funktion
Hauptluftanschlüsse	
A *	Abluft-Drosselventil Schwenken 0° – 90° bzw. 0° – 180°
B *	Abluft-Drosselventil Schwenken 90° – 0° bzw. 180° – 0°
Schlauchloser Direktanschluss	
a	Schwenken 0° – 90° bzw. 0° – 180°
b	Schwenken 90° – 0° bzw. 180° – 0°
1	Anbauteil
2 *	O-Ring
3	Produkt
4 *	Abluft-Drosselventil
5 *	Festdrossel

* Im Beipack enthalten.

Abmessungen

Pos. Bezeichnung	SRM
	16 20 25 32 40
A, B Hauptluftanschlüsse	M 5 M 5 M 5 G 1/8" G 1/8"
e	
a, b O-Ring [mm] - (Schlauchloser Direktanschluss)	Ø4 x 1.5 Ø6 x 1.5 Ø6 x 1.5 Ø6 x 1.5 Ø6 x 1.5

7.2.2.2 Basiseinheit mit Mittelstellung (Variante -M)



Druckluftanschluss, Basiseinheit mit Mittelstellung (Variante -M)

Bezeichnung	Funktion
Hauptluftanschlüsse	
A *	Abluft-Drosselventil Schwenken 0° – 180°
B *	Abluft-Drosselventil Schwenken 180° – 0°
C *	Zuluft-Drosselventil
D *	Schwenken in Mittelstellung 0° – 90°, 180° – 90°
Schlauchloser Direktanschluss	
a	Schwenken 0° – 180°
b	Schwenken 180° – 0°
1	Anbauteil
2 *	O-Ring
3	Produkt
4 *	Abluft-Drosselventil
5 *	Festdrossel

* Im Beipack enthalten.

Abmessungen

Pos. Bezeichnung	SRM 10 – 14
A, B, C, D Hauptluftanschlüsse	M 3
a, b O-Ring [mm] - (Schlauchloser Direktanschluss)	Ø4 x 1.5

Sehr geehrte Kundin,
sehr geehrter Kunde,

vielen Dank, dass Sie unseren Produkten und unserem Familienunternehmen als führendem Technologieausrüster für Roboter und Produktionsmaschinen vertrauen.

Unser Team steht Ihnen bei Fragen rund um dieses Produkt und weiteren Lösungen jederzeit zur Verfügung. Fragen Sie uns und fordern Sie uns heraus. Wir lösen Ihre Aufgabe!

Mit freundlichen Grüßen

Ihr SCHUNK-Team

Urheberrecht:
Diese Anleitung ist urheberrechtlich geschützt. Urheber ist die SCHUNK SE & Co. KG. Alle Rechte vorbehalten.

Technische Änderungen:
Änderungen im Sinne technischer Verbesserungen sind uns vorbehalten.

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SRM 16 – 40 – Basis/ M Pneumatische Schwenkeinheit

Pneumatic swivel unit

Montageanleitung Assembly instructions

Dear Customer,

Thank you for putting your trust in our products and our family-owned company, the leading technology supplier of robots and production machines.

Our team is always available to answer any questions on this product and other solutions. We look forward to your challenging questions. We will find a solution!

Best regards,

The SCHUNK Team

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Technical changes:
We reserve the right to make technical improvements.

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All information in this manual is current at the time of printing and is subject to change. The current manual, the detailed assembly and operating manual as well as further information and documents can be downloaded from schunk.com

1 Sizes

This operating manual applies to the following sizes:

- SRM 16
- SRM 20
- SRM 25
- SRM 32
- SRM 40

2 Variants

This operating manual applies to the following variations:

- SRM Angle of rotation 90° or 180°
- SRM End position adjustability ±3° or +3°/-90°
- SRM With pneumatic center positioning (M)

3 Applicable documents

- General terms of business *
 - Catalog data sheet of the purchased product *
 - Assembly and operating manual for the product including declaration of incorporation *
 - Assembly and operating manuals of the accessories *
- The documents labeled with an asterisk (*) can be downloaded from schunk.com.

4 Basic safety notes

4.1 Intended use

The product may only be used for swiveling permissible attachment parts or workpieces.

- The product may only be used within the scope of its technical data, ▶ Chap. 5.
- When implementing and operating components in safety-related parts of the control systems, the basic safety principles in accordance with DIN EN ISO 13849-2 apply. The proven safety principles in accordance with DIN EN ISO 13849-2 also apply to categories 1, 2, 3 and 4.
- The product is intended for installation in a machine/automated system. The applicable guidelines for the machine/automated system must be observed and complied with.
- The product is intended for industrial and industry-oriented use.
- Appropriate use of the product includes compliance with all instructions in this manual.

4.2 Personnel qualification

- All work may only be performed by qualified personnel.
- Before working with the product, the personnel must have read and understood the complete assembly and operating manual.

4.3 Personal protective equipment

- When working on and with the product, observe the occupational health and safety regulations and wear the required personal protective equipment.
- Wear protective gloves to guard against sharp edges and corners or rough surfaces.
- Wear heat-resistant protective gloves when handling hot surfaces.
- Wear close-fitting protective clothing and wear long hair in a hairnet when dealing with moving components.

4.4 Constructional changes

- Constructional changes may only be done with the permission of SCHUNK.

4.5 Notes for transport

- When handling heavy weights, use lifting equipment to lift the product and transport it by appropriate means.
- Secure the product against falling during transportation and handling.
- Stand clear of suspended loads.

4.6 Notes for assembly

- Before assembly, secure the danger zone by suitable measures.
- Switch off the power supply before mounting work, ensure that no residual energy is present and secure against reconnection.

4.7 Notes for operation

- Observe safety distances.
- Never put safety devices out of operation.
- When the power supply is connected, do not move parts by hand.
- Observe applicable country-specific safety and accident prevention regulations.

Possible electrostatic energy

Components or assembly groups may become electrostatically charged. When the electrostatic charge is touched, the discharge may trigger a shock reaction leading to injuries.

- The operator must ensure that all components and assembly groups are included in the local potential equalisation in accordance with the applicable regulations.
- While paying attention to the actual conditions of the working environment, the potential equalisation must be implemented by a specialist electrician according to the applicable regulations.
- The effectiveness of the potential equalisation must be verified by executing regular safety measurements.

5 Technical data

5.1 Basic data, size 16 – 40

Designation	Value
Pressure medium	Compressed air, compressed air quality according to ISO 8573-1:2010 [7:4:4]
Nominal operating pressure [bar]	6
Min. pressure [bar]	4
Max. pressure [bar]	6.5 / 8 (MDF)

More technical data is included in the catalog data sheet. Whichever is the latest version.

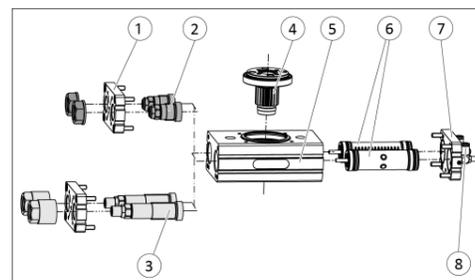
The catalog data sheet contains diagrams for designing the maximum permissible mass moment of inertia. The SCHUNK contact person provides support for designing further applications.

Ambient conditions and operating conditions

Designation	Value
Ambient temperature [°C]	
Min.	+5
Max.	+60
Protection class IP	65
Noise emission [dB(A)]	≤ 70

6 Design

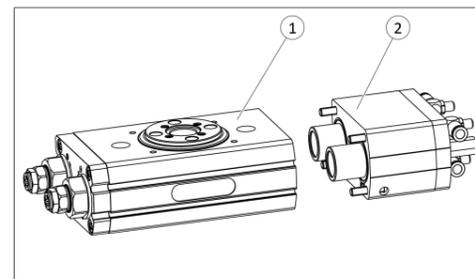
6.1 Base unit



Base unit setup

1	Stop cover
2	Stops for adjusting the end positions for variant "End position adjustability ±3°"
3	Optional: Stops for adjusting the end positions for variant "End position adjustability +3/-90°"
4	Pinion
5	Housing
6	Pistons with shock absorbers
7	Cover
8	Compressed air connections

6.2 Base unit with center position (variant -M)



Base unit structure with center position (variant -M)

1	Base unit
2	Attaching center position (0°-90°-180°)

7 Assembly and settings, size 16 – 40

7.1 Assembling and connecting

⚠ WARNING

Risk of injury due to unexpected movements!

If the power supply is switched on or residual energy remains in the system, components can move unexpectedly and cause serious injuries.

- Before starting any work on the product: Switch off the power supply and secure against restarting.
- Make sure, that no residual energy remains in the system.

CAUTION

Material damage due to faulty settings and assembly.

If the end position is approached too abruptly, the product may be damaged.

- Ensure the turning / swiveling movement is carried out without bouncing or bumping.
- Therefore provide sufficient throttling and damping.
- Please observe the information in the catalog data sheet.

CAUTION

Material damage due to opened exhaust air throttle valves!

If during first actuation the exhaust throttle valves are open, the product may move in an uncontrolled manner.

- Close the exhaust air throttle valves completely before applying pressure.

NOTE

- Observe the requirements for the compressed air supply, ▶ Chap. 5.
- In case of compressed air loss (cutting off the energy line), the product loses its dynamic effects and does not remain in a secure position. However, the use of a SDV-P pressure maintenance valve is recommended in this case in order to maintain the dynamic effect for some time.

Overview

1. Screw the product to the machine/system, ▶ Chap. 7.2.1.
 - ⇒ Use centering sleeves from the enclosed accessory pack.
 - ⇒ Observe the tightening torque for the mounting screws.
2. Fasten attachment with centering sleeves and fastening screws onto the pinion. **IMPORTANT! Insert centering sleeves by hand. Do not hammer the pinion.**
3. In the main air connections "A" and "B", screw in throttle valves and connect compressed air lines, ▶ Chap. 7.2.2.
 - ⇒ **IMPORTANT! Property damage caused by missing components!** Mount fixed throttle and throttle valves from the accessory pack in the compressed air lines for air connections "a" and "b".
 - ⇒ Use O-rings from the accessory pack.
4. **Variant with center position (M):** Screw supply air throttle valves into the main air connections "C" and "D" and connect compressed air line, ▶ Chap. 7.2.2.
5. Check that all of the throttle valves are closed.
6. Screw in locking screws in open and not required air connections where appropriate.
 - ⇒ For hose-free direct connections, use the O-rings from the accessory pack.
 - ⇒ If necessary, connect hoses for fluid feed-through.
 - ⇒ For hose-free direct connections, use the O-rings from the accessory pack.
 - ⇒ Seal those connections that are not needed using the protective caps from the accessory kit.
7. Adjust end positions, ▶ Chap. 7.3.1.
8. Mount the sensor, ▶ Chap. 7.4.
9. Adjust swiveling speed, ▶ Chap. 7.3.2.
10. Adjust shock absorber stroke, ▶ Chap. 7.3.3.

7.2 Connections

7.2.1 Mechanical connection

NOTE

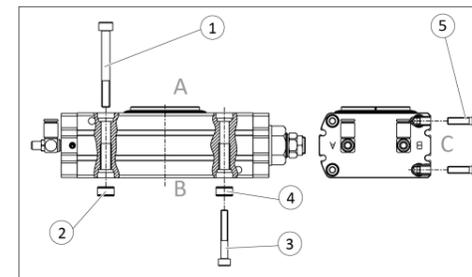
Adapter plates between the product and the machine/system as well as the product and the attachment part must be made of high-strength aluminum or steel. The tolerance class for the fitting bore is H7.

Connections on the housing

The product can be assembled from three sides.

- On the side of the apparatus via threaded holes
- On the attachment part side via through-bores
- On the side via threaded holes

Centering sleeves for the mounting screws are included in the accessory pack.

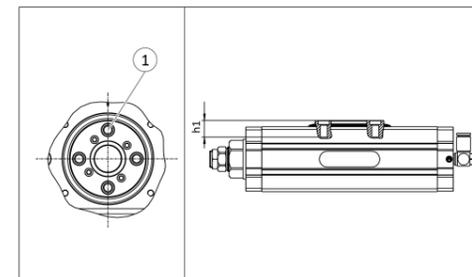


Assembly options

Item	Mounting	SRM				
		16	20	25	32	40
Side A *						
1	Mounting screw according to standard	M5	M6	M6	M6	M8
		DIN EN ISO 4762				
2	Centering sleeve	Ø10	Ø12	Ø12	Ø12	Ø14
Side B						
3	Mounting screw according to standard	M6	M8	M8	M8	M10
		DIN EN ISO 4762				
		Max. strength class 8.8				
		Max. depth of engagement from locating surface [mm]				
4	Centering sleeve	Ø10	Ø12	Ø12	Ø12	Ø14
Side C						
5	Mounting screw	M4	M5	M5	M8	M8
		DIN EN ISO 4762				
		Max. strength class 8.8				
		Max. depth of engagement from locating surface [mm]				
		Mounting screw according to standard				
		Max. strength class 8.8				

- * Connection **not** possible for variants:
 - electrical rotary feed-through (EDF)
 - sensor inductive (SI)

Connections on the pinion, SRM 20 – 40, base unit



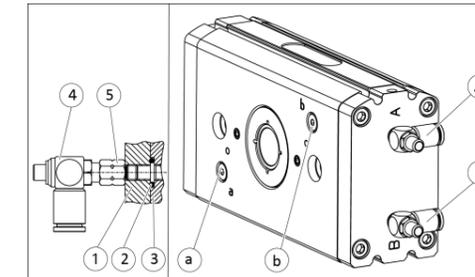
Connections on the pinion – Illustration of the pinion in the top view and side-on view, base unit

Item	Designation	SRM				
		16	20	25	32	40
1*	Threads for mounting screws of the customer's load, (4 pieces)	M5	M6	M6	M8	M8
		Strength class 8.8				
		Centering sleeve [mm], (2 pieces)				
h1	Max. Screw-in depth from pinion surface [mm]	9	10	10	12.5	13

- * When selecting the screw length, the maximum screw-in depth from the pinion surface (h1) must be observed.

7.2.2 Pneumatic connection

7.2.2.1 Base unit



Compressed air connection, base unit

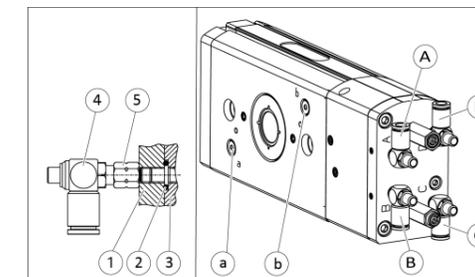
Designation	Function
Main air connections	
A *	Exhaust air throttle valve Swiveling 0° – 90° or 0° – 180°
B *	Exhaust air throttle valve Swiveling 90° – 0° or 180° – 0°
Hose-free direct connection	
a	Swiveling 0° – 90° or 0° – 180°
b	Swiveling 90° – 0° or 180° – 0°
1	Attachment
2 *	O-ring
3	Product
4 *	Exhaust air throttle valve
5 *	Fixed throttle

* Contained in accessory pack.

Dimensions

Item	Designation	SRM				
		16	20	25	32	40
A, B	Main connections	M5	M5	M5	G 1/8"	G 1/8"
a, b	O-ring [mm] – (Hose-free direct connection)	Ø4 x 1.5	Ø6 x 1.5	Ø6 x 1.5	Ø6 x 1.5	Ø6 x 1.5

7.2.2.2 Base unit with center position (variant -M)



Compressed air connection, Base unit with center position (Variant -M)

Designation	Function
Main air connections	
A *	Exhaust air throttle valve Swiveling 0° – 180°
B *	Exhaust air throttle valve Swiveling 180° – 0°
C *	Supply air throttle valve
D *	Swiveling in center position 0° – 90°, 180° – 90°
Hose-free direct connection	
a	Swiveling 0° – 180°
b	Swiveling 180° – 0°
1	Attachment
2 *	O-ring
3	Product
4 *	Exhaust air throttle valve
5 *	Fixed throttle

* Contained in accessory pack.

Dimensions

Item	Designation	SRM 10 – 14
A, B, C, D	Main connections	M3
a, b	O-ring [mm] – (Hose-free direct connection)	Ø4 x 1.5

Wiring diagram

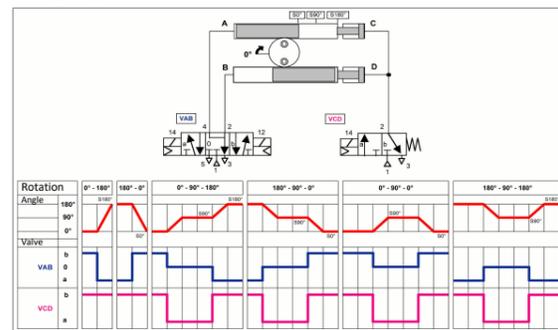


Fig.: Electrical circuit diagram actuation with one 5/3 and one 3/2 directional control valve, example

7.3 Settings

CAUTION

Material damage due to erroneous settings!

If the end position is approached too hard, the product may be damaged.

- Adjust exhaust throttle valve and shock absorber so that the movement is braked smoothly.

For operation, the angle of rotation, the swiveling speed and the absorber stroke must be set.

The settings must always be configured under subsequent operational conditions. If the operating conditions change, e. g. weight of the workpiece, check that the movement decelerates smoothly. If necessary, readjust angle of rotation, swiveling speed and absorber stroke.

Angle of rotation

The angle of rotation is set in order to achieve a fine adjustment of the end positions.

If the end positions are adjusted, the swiveling speed and absorber stroke might also have to be readjusted.

Center position

For variants with center position (M), the center position can be adjusted by $\pm 3^\circ$. If the center position is adjusted, the rotating angle, swiveling speed and absorber stroke might also have to be readjusted.

Swiveling speed and absorber stroke

In order to ensure a smooth operating cycle for the respective operating conditions, swivel speed and absorber stroke must be attuned to one another. ▶ Chap. 7.3.4.

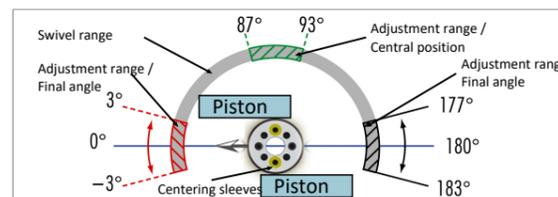
Each end position is set separately. The position of the exhaust throttle valve and shock absorber may deviate from one another.

7.3.1 Adjust swivel angle

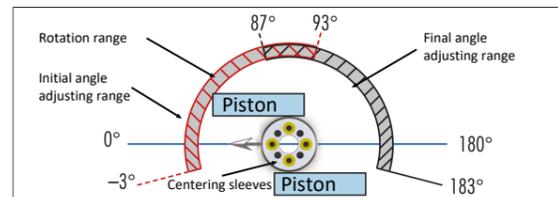
The angle of rotation is set in order to achieve a fine adjustment of the end positions. The end positions can be adjusted by $\pm 3^\circ$ or $+3^\circ/ -90^\circ$ depending on the variant.

The center position can be adjusted by $\pm 3^\circ$.

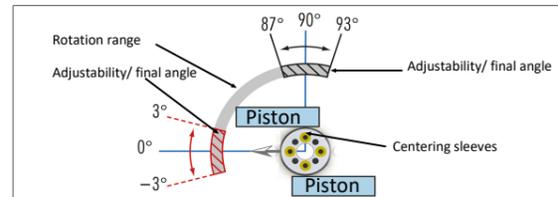
Adjustment ranges



Adjustability of the end positions and center position at angle of rotation 180°



Adjustability of the end positions at angle of rotation 180°



Adjustability of the end positions at angle of rotation 90°

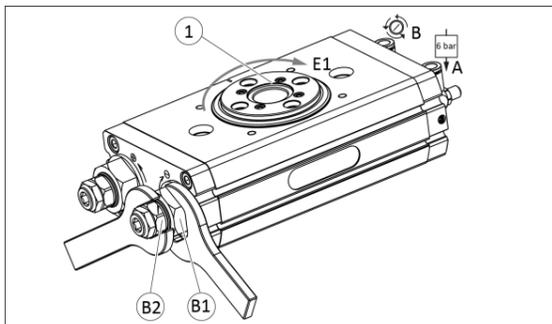
CAUTION

Material damage due to erroneous settings!

Due to erroneous adjustment of the angle of rotation, individual components may become loose and the product may be damaged and its seal broken.

- Only trained staff may set the angle of rotation.
- Before setting the angle of rotation, relieve the pressure.

7.3.1.1 Base unit



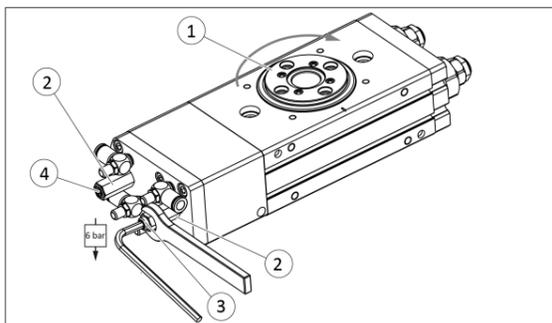
- Loosen nut (B1).
- Apply pressurized air to air connection "A".
- Open the exhaust air throttle valve at the air connection "B" approx. two turns until the pinion (1) moves to the end position "E1".
- Turn the adjusting sleeve (B2) and set the desired end position. **IMPORTANT! Do not unscrew adjusting sleeve too far. The product may become leaky.**
- Check the end position.
 - To do this, ventilate air connection "A" and pressurize it again, if necessary adjust end position.
- Tighten nut (B1).
 - Tightening torque: SRM 16: 11 Nm; SRM 20: 18 Nm; SRM 25: 20 Nm; SRM 32: 35 Nm; SRM 40: 40 Nm
 - End position "E1" is set.
- Adjust other end position analogously.
- Swivel repeatedly to test the setting, readjust if necessary.

7.3.1.2 Base unit with center position (variant -M)

Adjust end position

see ▶ Chap. 7.3.1.1

Adjust center position



Adjust center position

- Loosen nut (2).
- Apply pressurized air to air connection "C" and "D".
 - Pinion (1) swivels to center position.
- Unscrew the stop spindle (4) slightly.
- Turn pinion (1) clockwise to the stop and keep it pressed.
- Turn stop spindle (3) and set the desired center position.
- Screw in stop spindle (4) until the center position is free of play again. **IMPORTANT! If the stop spindle is screwed in too far, the play increases again.**
- Tighten nut (2).
 - Tightening torque: SRM 16: 3 Nm; SRM 20: 3 Nm; SRM 25: 8 Nm; SRM 32: 9 Nm; SRM 40: 12 Nm
 - Center position is set.
- Swivel repeatedly to test the setting, readjust if necessary.

7.3.2 Set swivel time

NOTE

The optimal swiveling speed is achieved by adjusting the swiveling time on the exhaust air throttles and adjusting the absorber stroke. Schematic illustration of the optimal adjustment, ▶ Chap. 7.3.4.

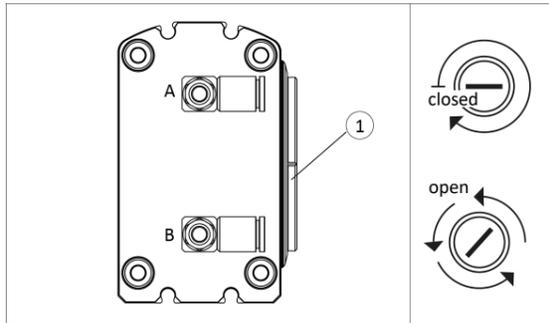
CAUTION

Material damage due to too high swiveling speed!

If the swiveling speed is too high, the assembly will be decelerated abruptly by the shock absorber and will continue to oscillate until reaching the end position. This will overload the shock absorber and may cause damage to it.

- Adjust the swiveling speed in a way, that the movement decelerate smoothly in the end position.

7.3.2.1 Base unit



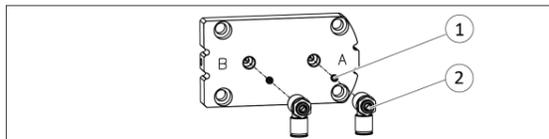
- Load that corresponds to the operating conditions is mounted on the pinion (1).
- Close exhaust throttle valve on air connection "A" and "B" completely.
- Apply pressurized air to air connection "A".
- Open exhaust air throttle valve "B" incrementally until the desired swiveling time has been achieved.
 - The product swivels into the end position.
- Observe movement of the load in front of and in the end position.
 - The movement brakes smoothly, **no** springing back or swiveling of the load is visible. The product is correctly adjusted.
 - OR: springing back or swiveling of the load visible **in the end position**. Increase absorber stroke, ▶ Chap. 7.3.3.
 - OR: Springback or oscillation of the load visible **before** the end position, then slow rotary movement to the end position. Turn off exhaust air throttle valve "B" incrementally, if necessary reduce the absorber stroke, ▶ Chap. 7.3.3.
- Swivel repeatedly to test the setting, readjust if necessary.
- Adjust swivel time for the other end position analogously.

Note for size 40

NOTE

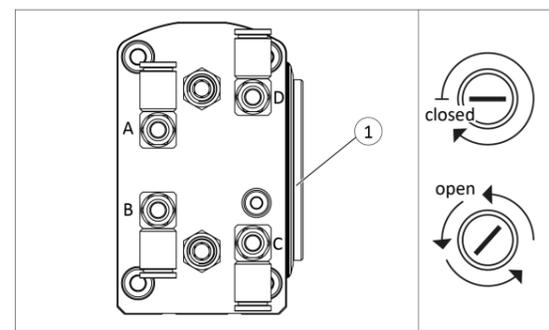
For low loads and horizontal swivel axis, it may be the case that the desired swivel time is no longer achieved.

If the desired swiveling time is no longer achieved:



- Remove exhaust air throttle valve (2).
- Remove grub screws (1).
- Screw in exhaust air throttle valves (2).
- Adjust swiveling time again.

7.3.2.2 Base unit with center position (variant -M)



Adjustment for end position 1

- Load that corresponds to the operating conditions is mounted on the pinion (1).
- Turn the pinion clockwise to the stop.
- Close exhaust or supply air throttle valve on air connection "A", "B", "C" and "D" completely.
- Apply pressurized air to air connection "C" and "D".
 - The product swivels to the center position.
- Open the exhaust air throttle valve "A" incrementally until the desired swiveling time in the center position is reached and the over-swiveling and settling of the load in the center position is low. **IMPORTANT! Too high a swiveling speed leads to more frequent over-swiveling and settling of the load and thus to increased wear of the product.**
- Apply pressurized air to air connection "A".
 - The product swivels from the center position to end position 1.
- Open supply air throttle valve "C" and "D" incrementally until the desired swiveling time in the end position is reached.
- Observe movement of the load in front of and in the end position.
 - The movement brakes smoothly, **no** springing back or swiveling of the load is visible. The product is correctly adjusted.
 - OR: Springing back or swiveling of the load visible **in the end position**. Increase absorber stroke, ▶ Chap. 7.3.3.
 - OR: Springing back or swiveling of the load visible **in front of** the end position, then slow rotary movement to the end position. Turn off supply air throttle valve "C" and "D" incrementally; if necessary reduce the absorber stroke, ▶ Chap. 7.3.3.
- Swivel repeatedly to test the setting, readjust if necessary.

Adjustment for end position 2

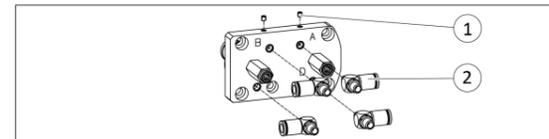
- Load that corresponds to the operating conditions is mounted on the pinion (1).
- Turn the pinion counter-clockwise to the stop.
- Apply pressurized air to air connection "C" and "D".
 - The product swivels to the center position.
- Open the exhaust air throttle valve "B" incrementally until the desired swiveling time in the center position is reached and the over-swiveling and settling of the load in the center position is low. **IMPORTANT! Too high a swiveling speed leads to more frequent over-swiveling and settling of the load and thus to increased wear of the product.**
- Apply pressurized air to air connection "B".
 - The product swivels from the center position to end position 2.
- Observe movement of the load in front of and in the end position.
 - The movement brakes smoothly, **no** springing back or swiveling of the load is visible. The product is correctly adjusted.
 - OR: Springing back or swiveling of the load visible **in the end position**. Increase absorber stroke, ▶ Chap. 7.3.3.
 - OR: Springing back or swiveling of the load visible **in front of** the end position, then slow rotary movement to the end position. Turn off supply air throttle valve "C" and "D" incrementally; if necessary reduce the absorber stroke, ▶ Chap. 7.3.3.
- Swivel repeatedly to test the setting, readjust if necessary.

Note for size 40-M

NOTE

For low loads and horizontal swivel axis, it may be the case that the desired swivel time is no longer achieved.

If the desired swiveling time is no longer achieved:



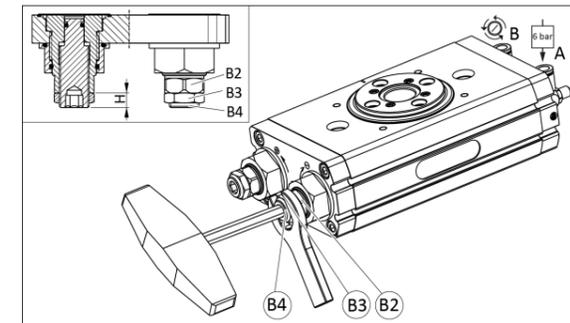
- Remove exhaust air throttle valve (2).
- Remove grub screws (1).
- Screw in exhaust air throttle valves (2).
- Adjust swiveling time again.

7.3.3 Adjust absorber stroke

NOTE

The absorber stroke has been pre-set in the factory and can be adjusted in order to achieve the optimal swiveling time.

Designation	SRM				
	16	20	25	32	40
Projection "H" - factory settings [mm]	3.3	3.8	5.9	8.4	7.0

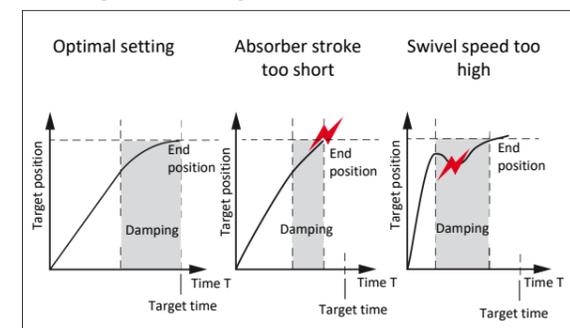


- Observe movement of the load in the end positions.
 - If the absorber stroke is too long, the end position is reached too slowly.
 - If the absorber stroke is too short, the attachment strikes the end position.
 - Note: schematic illustration of the rotating motion, Diagram of swiveling movement.
- Loosen nuts (B3) and counter-support the adjusting sleeve (B2).
 - Reduce absorber stroke: unscrew stop pin (B4) with hexagon socket wrench incrementally approx. 1/4 revolution. **IMPORTANT! Do not unscrew stop pin too far, the product may become leaky.** OR
 - Increase absorber stroke: screw in stop pin (B4) with hexagon socket wrench incrementally approx. 1/4 revolution. **IMPORTANT! An absorber stroke that is too long reduces the lifespan of the shock absorbers.**
- Swivel repeatedly to test the setting, readjust if necessary.
 - The end positions must be approached gently.
- Tighten nuts (B3) and counter-support the adjusting sleeve (B2).
 - Tightening torque: SRM 16: 9 Nm; SRM 20: 11 Nm; SRM 25: 12 Nm; SRM 32: 20 Nm; SRM 40: 25 Nm
- Check swiveling time and adjust if necessary, ▶ Chap. 7.3.2
- Repeat the steps for the other end position.

NOTE

Depending on the loading condition, the settings for the two shock absorbers may deviate widely from each other.

7.3.4 Diagram of swiveling movement



7.4 Mounting the sensor

NOTE

Observe the assembly and operating manual of the sensor for mounting and connecting.

The product is prepared for the use of sensors.

- For the exact type designations of suitable sensors, please see catalog datasheet and ▶ Chapter "Overview of sensors" in the Assembly and Operating Manual.
- For technical data for the suitable sensors, see assembly and operating manual and catalog datasheet.
 - The assembly and operating manual and catalog datasheet are included in the scope of delivery for the sensors and are available at schunk.com.
- Information on handling sensors is available at schunk.com or from SCHUNK contact persons.