



Reliable precision for sustained use

Air tools for industry
Full-range catalogue



BOSCH

Invented for life

Air tools for industry



The air tools are designed for use in industrial production. These top-class tools meet the highest precision requirements and have extremely long life. Based on our many years of expertise and experience in the production tools industry, they offer state-of-the-art technology and guarantee high reliability of your processes. The versatility and reliability of Bosch is reflected everywhere: from the comprehensive product range to the large spare parts warehouse in the Bosch Service Centre in Willershausen.

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Bosch air technology

The right tool for any job



Bosch air tools are suitable for a wide variety of different applications – in trade and industry. A long lifetime and consistently high quality of all tools are guaranteed by the intensive quality monitoring in our factory in Murrhardt.

C·L·E·A·N

- C consumption optimised
- L lubrication free
- E ergonomic
- A air tool
- N noise reduction

Technology that sets standards

The versatility and reliability of Bosch air technology ensure efficient use:

- ▶ As no sparks are formed in the air motor, the tools are particularly suitable for work in damp and wet environments
- ▶ A high level of operational safety because the drive medium (air) is safe
- ▶ Easy maintenance and repair
- ▶ No overheating or burn-out of the motor
- ▶ Robust design for a long lifetime

Ergonomics for easier working

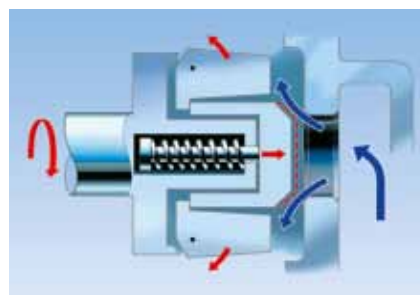
Bosch air tools fit perfectly in your hand. Small dimensions, low weight and quiet, low-vibration use ensure non-tiring work. A glass-fibre-reinforced plastic housing insulates against the cold and offers optimum grip comfort.

The environmentally friendly range from Bosch

Environmental awareness is an important aspect at Bosch – from the initial idea for a product through energy-saving production, all the way to environmentally friendly packaging and disposal. For example, if a Bosch air tool is irreparable, it is recycled in the service centre.

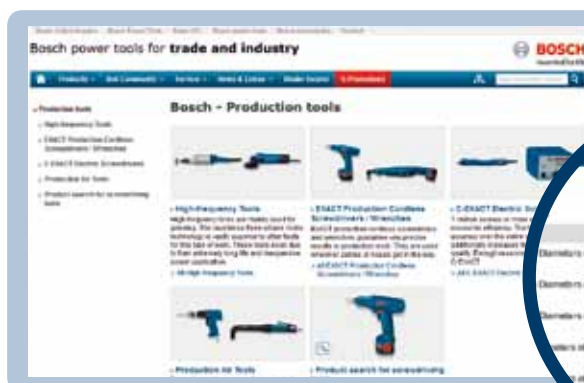
Air technology with speed control

Bosch offers optional compressed-air grinders with speed control. The sensitive speed controller enables virtually constant working speeds in any speed range with straight and angle grinders.



An overview with a single click

All air tools online



User manuals, pictures and dimensional drawings can be downloaded directly from the internet.

Information from the internet

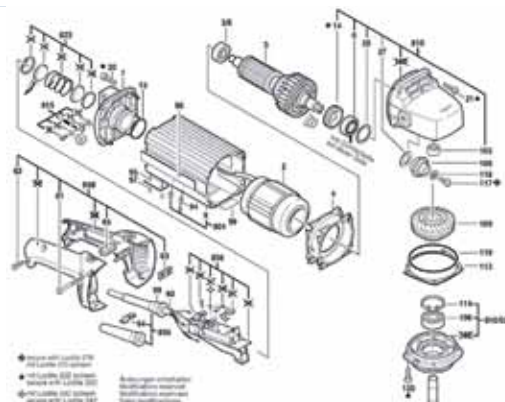
Everything that users need to know can be found on the net: at www.boschproductiontools.com a comprehensive online catalogue provides information on products and how they can be used. The selection of tools is made easier by the possibility to run comparisons between tools.

Users can, for example, display all air screwdrivers and compare their respective data such as output or rotational speed. Furthermore, they can find out the latest news about trade-fair dates, innovations and new developments from the Bosch Production Tools Division.

Within a short time, this provides users with all the relevant information they need to select the correct production tools.

A spare parts service informs users about which spare parts they need – and where they can order them.

www.boschproductiontools.com



1

Drills, rotary hammers



The Bosch drills and rotary hammers are the right tools for a wide variety of materials and applications.

Their ergonomic design enables fatigue-free working. The Bosch centre grip drills, for example, have an ergonomic, glass-fibre-reinforced polyamide housing to protect the user against the dreaded “white finger syndrome”.

Bosch drills and rotary hammers are ideal for working in wet areas – where electric tools are unsafe.



1

Selection guide Drills

Choosing a drill is based on two criteria:

- ▶ the drilling diameter
- ▶ the recommended cutting speed of the material you are working on (see page 14).

In the table, the optimal cutting speeds and drilling diameters for some common materials are allocated to the individual drill models.

These recommendations are based on the speeds for HSS twist drill bits. If nothing is specified, the required drilling diameter is outside the capacity of the standard chuck.

The table shows which drill bit sizes the individual models can accept and the drilling speeds. The individual tools have additionally been assigned the maximum drilling diameters for steel, determined in tests.

To ensure that a sufficient cutting speed is always achieved, some materials should be pre-drilled as of the following drilling diameter:

- ▶ Steel up to 600 N/mm²
as of 8 mm
- ▶ Steel over 600 N/mm²
as of 6 mm
- ▶ Cast iron up to 180 N/mm²
as of 10 mm
- ▶ Cast iron up to 300 N/mm²
as of 8 mm

Drills	Part number	No-load speed (rpm)	Page
Cutting speed (m/min):			
120-watt drill			
		controlled	
	0 607 154 101	3,200	10
400-watt drill			
		uncontrolled	
	0 607 161 100	2,560	10
	0 607 161 102*	2,560	10
	0 607 161 101	1,200	10
	0 607 161 103*	1,200	10
180-watt drill			
		uncontrolled	
	0 607 153 520	3,700	10
	0 607 153 523*	3,700	10
400-watt drill			
		uncontrolled	
	0 607 161 500	2,560	10
	0 607 161 504*	2,560	10
	0 607 161 501	1,200	10
	0 607 161 505*	1,200	10
	0 607 161 502	800	10
	0 607 161 506*	800	10
	0 607 161 503	640	10
	0 607 161 507*	640	10

* with keyless chuck

	Steel up to 600 N/mm²	Steel over 600 N/mm²	Cast iron up to 180 N/mm²	Cast iron up to 300 N/mm² Plastics	Brass, copper, bronze	Silumin	Aluminium
	20 to 25	15 to 20	20 to 35	10 to 20	50 to 60	30 to 40	80 to 120
Drilling diameter (mm)							
	1 2 3 4 5 6 7 8 9 10 11 12 13	1 2 3 4 5 6 7 8 9 10 11 12 13	1 2 3 4 5 6 7 8 9 10 11 12 13	1 2 3 4 5 6 7 8 9 10 11 12 13	1 2 3 4 5 6 7 8 9 10 11 12 13	1 2 3 4 5 6 7 8 9 10 11 12 13	1 2 3 4 5 6 7 8 9 10 11 12 13

Drills



- ▶ The suitable drills for a wide variety of materials
- ▶ Centre grip drills have a very ergonomic, glass-fibre-reinforced polyamide housing to ensure effortless working and protect the user against the dreaded “white finger syndrome”
- ▶ For working in wet areas – where electric tools are unsafe

	Part number	Drill chuck
120-watt drill		
	0 607 154 101	Keyed chuck
CLEAN		
400-watt drill		
	0 607 161 100	Keyed chuck
	0 607 161 102	Keyless chuck
	0 607 161 101	Keyed chuck
	0 607 161 103	Keyless chuck
180-watt drill		
	0 607 153 520	Keyed chuck
	0 607 153 523	Keyless chuck
CLEAN		
400-watt drill		
	0 607 161 500	Keyed chuck
	0 607 161 504	Keyless chuck
	0 607 161 501	Keyed chuck
	0 607 161 505	Keyless chuck
	0 607 161 502	Keyed chuck
	0 607 161 506	Keyless chuck
	0 607 161 503	Keyed chuck
	0 607 161 507	Keyless chuck

Max. drilling diameter in steel (mm)	No-load speed (rpm)	Power output (W)	Air consumption at no-load (l/s) (cfm)	Weight as per EPTA (kg)	Drill spindle thread	Connecting thread	Hose inner diameter (mm)	Right-hand/left-hand rotation	Comes complete with
	controlled								
4	3,200	120	3.4	0.5	3/8"-24 UNF-2A	G 1/8"	6	R	Keyed chuck or keyless chuck Capacity 1–10 mm Suspension hook Hose nipple G 1/8"
			7.2						
	uncontrolled								
8	2,560	400	15.5	1.1	1/2"-20 UNF-2A	G 1/4"	10	R	Keyed chuck or keyless chuck Capacity 1–10 mm Suspension hook Hose nipple G 1/4" Auxiliary handle
			32.8						
8	2,560	400	15.5	1.3	1/2"-20 UNF-2A	G 1/4"	10	R	
			32.8						
10	1,200	400	16.0	1.2	1/2"-20 UNF-2A	G 1/4"	10	R	
			33.9						
10	1,200	400	15.0	1.5	1/2"-20 UNF-2A	G 1/4"	10	R	
			31.8						
	uncontrolled								
4	3,700	180	7.8	0.8	3/8"-24 UNF-2A	G 1/4"	10	R	Keyed chuck or keyless chuck Hose nipple G 1/4" Suspension hook Capacity 1–10 mm
			16.5						
4	3,700	180	8.5	0.9	3/8"-24 UNF-2A	G 1/4"	10	R	
			18.0						
	uncontrolled								
8	2,560	400	14.0	1.1	1/2"-20 UNF-2A	G 1/4"	10	R	Keyed chuck or keyless chuck Capacity 1–13 mm Hose nipple G 1/4" Sintered metal silencer Auxiliary handle
			29.6						
8	2,560	400	14.0	1.3	1/2"-20 UNF-2A	G 1/4"	10	R	
			29.6						
10	1,200	400	14.0	1.3	1/2"-20 UNF-2A	G 1/4"	10	R	
			29.6						
10	1,200	400	12.0	1.5	1/2"-20 UNF-2A	G 1/4"	10	R	
			25.4						
13	800	400	14.0	1.5	1/2"-20 UNF-2A	G 1/4"	10	R	
			29.6						
13	800	400	14.0	1.5	1/2"-20 UNF-2A	G 1/4"	10	R	
			29.6						
13	640	400	14.2	1.5	1/2"-20 UNF-2A	G 1/4"	10	R	
			30.0						
13	640	400	14.0	1.6	1/2"-20 UNF-2A	G 1/4"	10	R	
			29.6						

Your specialist retailer can provide you with information on the complete range of quality accessories.

Recommended speeds

HSS twist drill bits



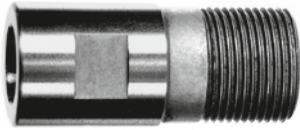
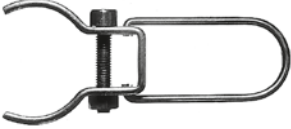


The Bosch drill range comprises machines from 120 to 400 watts in straight and pistol format.

The table is intended to help you select the right drill.

up to drilling diameter (mm)	Steel up to 600 N/mm ² (rpm)	Steel over 600 N/mm ² (rpm)	Cast iron up to 180 N/mm ² (rpm)	Cast iron up to 300 N/mm ² (rpm)	Brass, copper, bronze (rpm)	Silumin (rpm)	Aluminium (rpm)
Cutting speed (m/min):	20 to 25	15 to 20	20 to 35	10 to 20	50 to 60	30 to 40	80 to 120
4		1,600	2,200	1,200	4,400	2,800	8,000
5	1,900	1,270	1,800	950	3,500	2,200	6,400
6	1,600	1,060	1,500	800	2,900	1,850	5,300
7	1,360	910	1,300	680	2,500	1,600	4,550
8	1,200	800	1,100	600	2,200	1,400	4,000
9	1,060	700	1,000	530	1,900	1,200	3,540
10	950	640	890	480	1,700	1,100	3,200
11	860	580	810	430	1,600	1,000	2,900
12	800	530	740	400	1,500	930	2,660
13	730	490	680	370	1,350	860	2,450
14	680	450	640	340	1,250	800	2,270
15	630	420	600	320	1,150	740	2,120
16	600	400	560	300	1,100	700	2,000
17	560	380	520	280	1,050	660	1,870
18	530	350	500	260	1,000	620	1,770
19	500	330	470	250	950	590	1,680
20	480	320	450	240	900	560	1,600
23	410	280	390	210	760	480	1,380
30	310	210	300	160	580	370	1,060

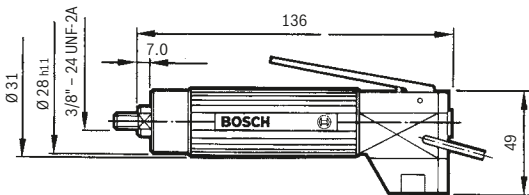
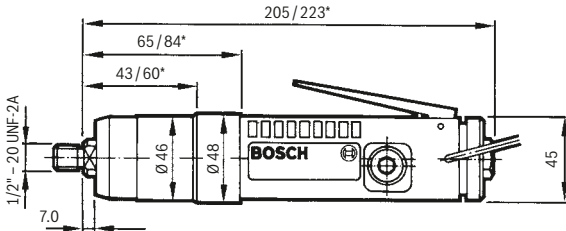
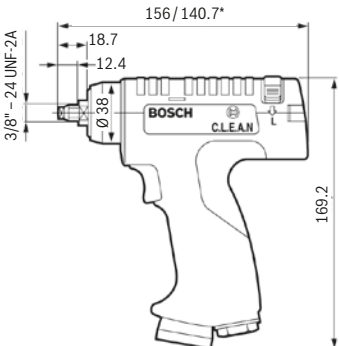
Special accessories

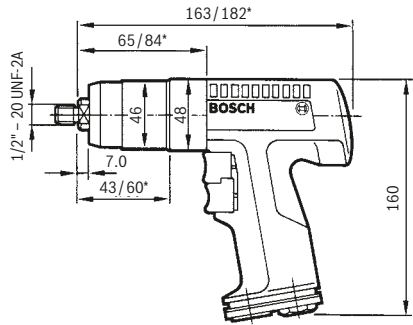
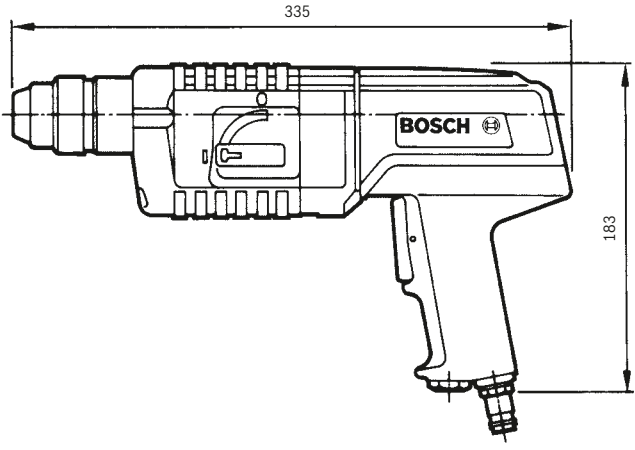
Drills

		Part number	Use for drills Part number
Collet chuck 3/8" thread 	3/8" thread Collet diameter 6 mm Locking nut	3 608 570 003	For all drills with 3/8"-24 UNF-2A thread
Suspension hook  	3 601 923 019	0 607 153 520 and 523	
	2 604 720 004	0 607 154 101	
	3 604 720 006	0 607 161 500 up to 507	
Exhaust air set, decentralised 	3 607 030 024	0 607 161 100 up to 103	
Exhaust air hose, centralised 	3 607 000 027	0 607 161 100 up to 103	
	3 607 000 011	0 607 161 500 up to 507	

Dimensional drawings

Drills, rotary hammers

Size in mm	Part number
	<p>0 607 154 101</p>
	<p>0 607 161 100 0 607 161 101* 0 607 161 102 0 607 161 103*</p>
	<p>0 607 153 520 0 607 153 523*</p>

Size in mm	Part number
	0 607 161 500
	0 607 161 501
	0 607 161 502*
	0 607 161 503*
	0 607 161 504
	0 607 161 505
	0 607 161 506*
	0 607 161 507*
	0 607 557 501

2

Sanders and grinders



Bosch's range of sanders and grinders offers you numerous possibilities for different materials and applications as well as a comprehensive range of accessories. High-speed straight grinders impress with high performance and long life. Use the selection guide on the following pages to select the tool that is suitable for you.



2

Selection guide Sanders and grinders

The selection of a sander or grinder is based on the application, i.e. you select the tool according to the abrasive.

The grinding applications and abrasives have been assigned to the suitable machines in the tables.






However, the individually different work conditions and ambient conditions mean that this recommendation serves only as a guide. When selecting a sander or grinder to match the work requirement, the power output and other product characteristics must be taken into account.

Please note the manufacturer's specifications on abrasives!

✓✓✓ ideal for this application

✓✓ very suitable for this application

✓ suitable for this application



Sanders and grinders	Part number	No-load speed (rpm)	Page
50-watt straight grinder 	0 607 250 201	55,000	20
	0 607 250 202	85,000	20
	0 607 250 203	85,000	20
100-watt straight grinder 	0 607 254 100	50,000	20
220/240-watt straight grinder 	0 607 253 100	21,000	22
	0 607 253 101	33,000	22
400-watt straight grinder 	0 607 261 101	26,000	22
	0 607 261 102	15,000	22
450-watt straight grinder 	0 607 251 102	21,000	22

	with grinding stones	with flap discs	with grinding stones
	Shape grinding and deburring		Grinding inside of a housing
	✓✓✓		✓✓
	✓✓✓		✓✓
	✓✓✓	✓	✓✓
	✓✓✓		✓✓✓
	✓✓	✓✓✓	✓
	✓✓✓	✓✓	✓✓

Straight grinders



- ▶ High-speed mini grinders for the finest grinding and polishing work
- ▶ The suitable grinders for the widest variety of materials and work environments
- ▶ Long lifetime with the highest power output
- ▶ Comprehensive range of accessories

For abrasives with 6 to 20 mm diameter	Part number	Permitted abrasive diameter (mm)	No-load speed (rpm)
50-watt straight grinder 	0 607 250 203	6	85,000
50-watt straight grinder 	0 607 250 202	6	85,000
50-watt straight grinder 	0 607 250 201	10	55,000
100-watt straight grinder 	0 607 254 100	13	50,000

Air consumption at no-load (l/s) (cfm)	Weight as per EPTA (kg)	Bit holder/ Collet diameter (mm)	Connecting thread	Hose inner diameter (mm)	Comments	Comes complete with
3.0 6.4	0.24	3	M 6	4.5	with lever switch	Collet 3 mm 2 open-ended spanners WAF 6/8 Exhaust air hose
3.0 6.4	0.24	3	M 6	4.5	with rotary switch	Collet 3 mm 2 open-ended spanners WAF 6/8 Exhaust air hose
3.0 6.4	0.12	3	M 6	4.5	with rotary switch	Collet 3 mm 2 open-ended spanners WAF 6/8 Exhaust air hose
4.0 8.5	0.5	3	G 1/8"	6	with lever switch	Collet 3 mm Locking nut Open-ended spanner WAF 14 Hose nipple G 1/8"

Straight grinders

- ▶ The suitable grinders for the widest variety of materials and work environments
- ▶ Long lifetime with the highest power output
- ▶ Comprehensive range of accessories

For abrasives with 20 to 50 mm diameter	Part number	Permitted abrasive diameter (mm)	No-load speed (rpm)
220/240-watt straight grinder 	0 607 253 101	20	33,000
	0 607 253 100	40	21,000
400-watt straight grinder 	0 607 261 101	30	26,200
	0 607 261 102	50	15,000
450-watt straight grinder 	0 607 251 102	40	21,000

Power output (W)	Air consumption at no-load (l/s) (cfm)	Weight as per EPTA (kg)	Bit holder/ Collet diameter (mm)	Connecting thread	Hose inner diameter (mm)	Comments	Comes complete with
220	8.0	0.7	6	G 1/8"	6	with safety switch	Collet 6 mm Locking nut 2 open-ended spanners WAF 14 Hose nipple G 1/8"
	17.0						
240	4.5	0.7	6	G 1/8"	6	with safety switch, speed-controlled	Collet 6 mm Locking nut Open-ended spanner WAF 14 Open-ended spanner WAF 17 Hose nipple G 1/8"
	9.5						
400	16.0	0.6	6	G 1/4"	10	with safety switch	Collet 6 mm Locking nut Open-ended spanner WAF 14 Open-ended spanner WAF 17 Hose nipple G 1/4" Suspension hook
	33.9						
400	6.0	0.6	6	G 1/4"	10	with safety switch, speed-controlled	
	12.7						
450	7.5	1.0	6	G 1/4"	10	with lever switch, speed-controlled	Collet 6 mm Locking nut 2 open-ended spanners WAF 17 Hose nipple G 1/4" Suspension hook
	15.9						

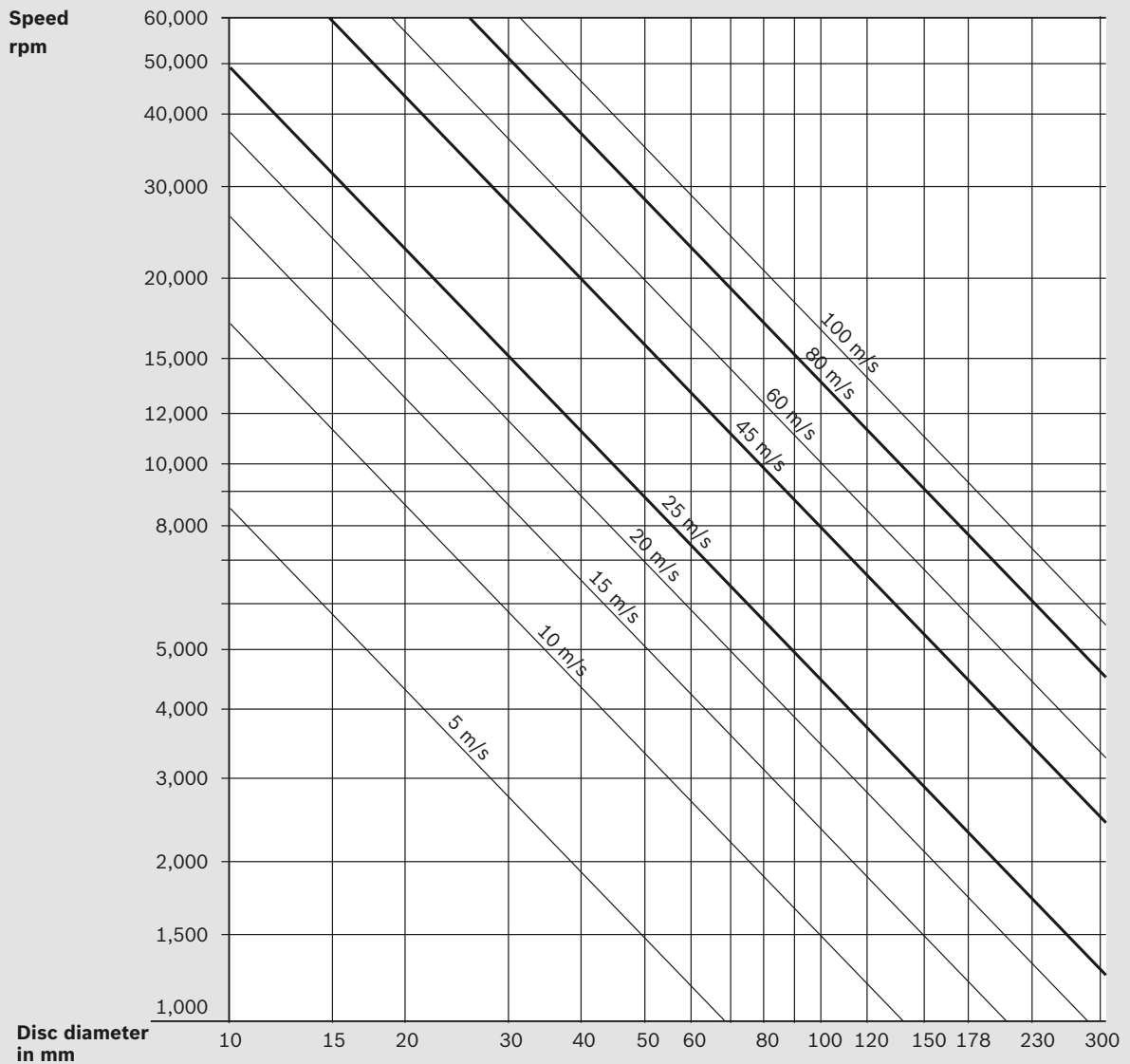
Your specialist retailer can provide you with information on the complete range of quality accessories.

Speed table

Abrasives

Permitted working speed

Please note the following when using grinding stones: permitted speeds (rpm) depend on abrasive diameter and length, as well as shank diameter and clamping length as per DIN 69170



The table shows the relationship between the permitted diameter of the grinding discs and the speed.

Accessories

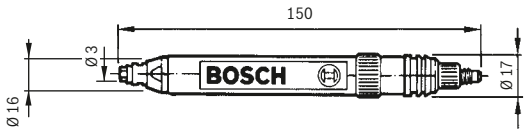
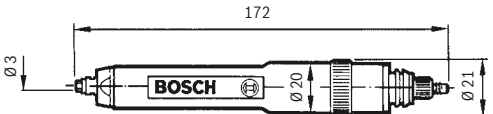
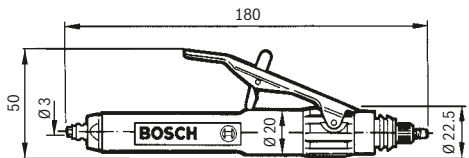
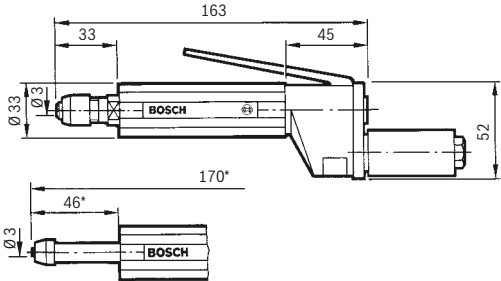
Straight grinders

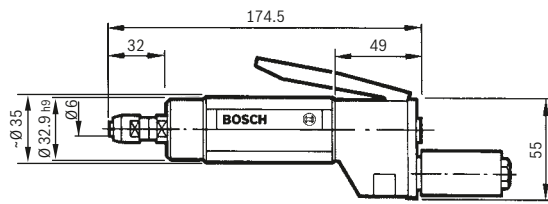
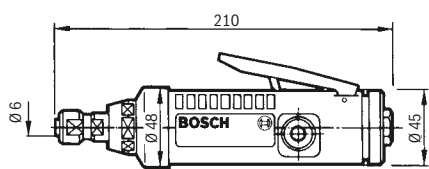
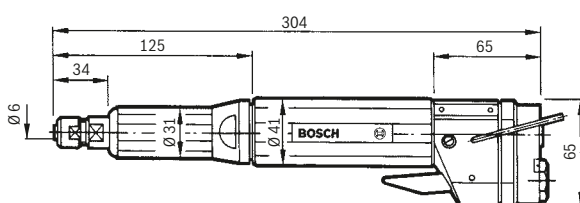
	0 607 250 201/ ... 202/ ... 203/ ... 206/ ... 207/ ... 208	0 607 254 100	0 607 253 100	0 607 253 101	0 607 261 101 0 607 261 102 0 607 261 104 0 607 261 105	0 607 251 102	0 607 254 107
Collet diameter							
1.0 mm	3 609 201 185*	-	-	-	-	-	-
1.5 mm	3 609 201 186*	-	-	-	-	-	-
2.0 mm	3 609 201 187*	-	-	-	-	-	-
2.5 mm	3 609 201 188*	-	-	-	-	-	-
3/32"	3 609 201 189*	-	-	-	-	-	-
3.0 mm	2 609 200 158	-	3 603 386 063	-	3 603 386 063	3 603 386 063	1 608 570 010
1/8"	3 609 201 190	-	2 608 570 083	-	2 608 570 083	2 608 570 083	3 608 570 007
1/4"	-	2 608 570 072	2 608 570 085	2 608 570 072	2 608 570 085	2 608 570 085	-
6.0 mm	-	3 608 570 006	-	3 608 570 006	-	-	-
8.0 mm	-	-	2 608 570 081	-	2 608 570 081	2 608 570 081	-
Exhaust air hose, centralised							
-	3 607 000 064	-	-	-	3 607 000 027	-	-
Exhaust air hose nipple, decentralised							
G 3/8" for hose diameter 12 mm	3 607 010 011	-	-	-	-	-	-
Exhaust air set	-	-	-	-	3 607 030 024	-	-

* with locking nut

Dimensional drawings

Straight grinders

Size in mm	Part number
	0 607 250 201
	0 607 250 202
	0 607 250 203
	0 607 254 100

Size in mm	Part number
	0 607 253 100
	0 607 253 101
	0 607 261 101
	0 607 261 102
	0 607 251 102

3

Screwdrivers, tappers



Bosch screwdrivers and tappers impress with their advanced technology, perfect ergonomics and excellent manufacturing quality. Thanks to their precise torque repetition and high clutch quality, they are ideal for sustained, reliable use in industry. Their CLEAN technology ensures oil-free air and less noise at the workplace to protect staff and the environment.

More information is available on the following pages.



3

Technology that lasts

Air tools from Bosch are excellent for industrial use. They impress with their advanced technology, perfect ergonomics and excellent manufacturing quality. The CLEAN technology ensures optimum working conditions and lowers air consumption and sound levels.

C·L·E·A·N

- C consumption optimised
- L lubrication free
- E ergonomic
- A air tool
- N noise reduction

Bosch air tools for industry are versatile, efficient and reliable. This new generation of CLEAN air tools is lubrication-free, which benefits the user by eliminating oil passing into the working environment air and lowering noise levels. At the same time, CLEAN means reduced air consumption by up to 30%, saving energy and costs. The air tools are driven by oil-free compressed air, do not dirty workpieces and work significantly more quietly. That improves the conditions for workpiece and workplace and opens up new applications – e.g. in clean rooms.

Exact shut-off clutches guarantee precise torque repetition for hard and soft connections. The glass-fibre-reinforced, ergonomically optimised polyamide housing effectively protects against cold, fits perfectly in your hand, and offers first-class operational comfort for continuous industrial use.

Quality that sets standards in ecology, comfort and economic efficiency.

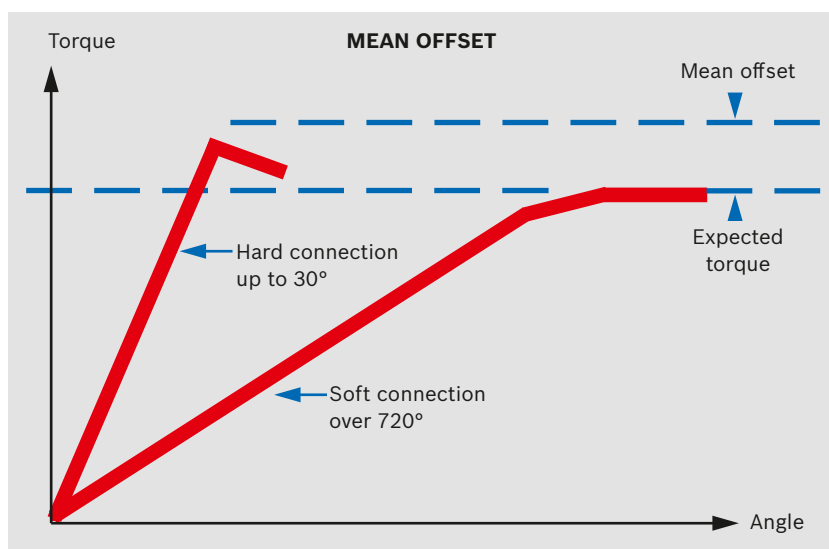


Shut-off precision

With Bosch air screwdrivers, the rate of torque reproduction is extremely high. Whether in a hard screwdriving application with 30° angle of rotation or in a soft application with 720°, the clutch guarantees an extremely low mean value offset and torques that remain constant. Measurements in line with ISO 5393 ensure high clutch quality for sustained, reliable deployment in industry.

Economical work

The long lifetime of the tools is ensured by durable engineering design, high-quality materials and intensive quality control. The CLEAN screwdrivers mean that lubricators in the supply lines and the associated maintenance overhead are things of the past. The screwdrivers are designed for low air consumption and user friendliness – thus reducing energy and maintenance costs. Ergonomics and high speeds reduce the cycle times and optimise material flows.



3

Screwdriver features

Screwdrivers with adjustable automatic shut-off clutch

The automatic shut-off clutch is set using a key, making it impossible to change the set torque inadvertently. Their outstanding repetition accuracy makes them ideal for screw connections with high requirements as regards torque accuracy in industrial assembly shops. These screwdrivers are very quiet, feature minimal air consumption, and have long lifetimes.

Screwdrivers with adjustable lockover clutch

The lockover torque for machined screw connections as well as for wood, sheet metal and cutting screws with medium torque accuracy is adjustable. Short or long activation times have a restricted influence on the final torque, as the rotational impacts only slightly increase the final torque.

“S-Plus” screwdrivers

The “S-Plus” air screwdriver (technical description: “rotary screwdriver with automatic shut-off and bypassing shut-off”) features the entire know-how of the tried and tested model series of Bosch air production tools. The “S-Plus” screwdriver for sheet metal, driving, drilling and wood screws unifies the advantages of the automatic shut-off facility and lockover clutch. In bypassing the automatic shut-off facility, it is possible to tighten screws where the initial torque is higher than the final tightening torque.

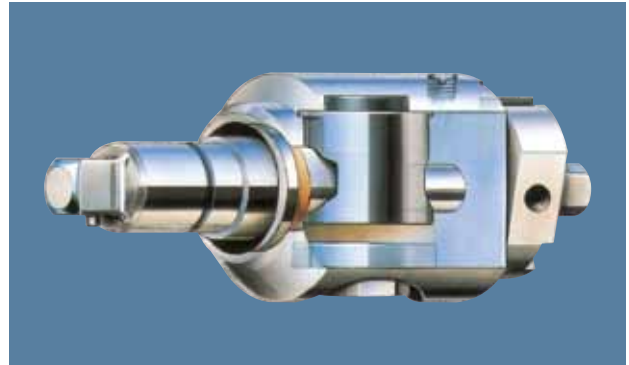


The service-friendly 180-watt clutch with many advantages: precise shut-off, comfortable handling and long lifetime

Impulse drivers

Torque reaction and noise development are extremely small with these impulse drivers, and the power-to-weight ratio is outstanding. Impulse drivers offer a user-friendly alternative to impact wrenches and have a particularly compact design. A unique principle for piston compression contributes to this.

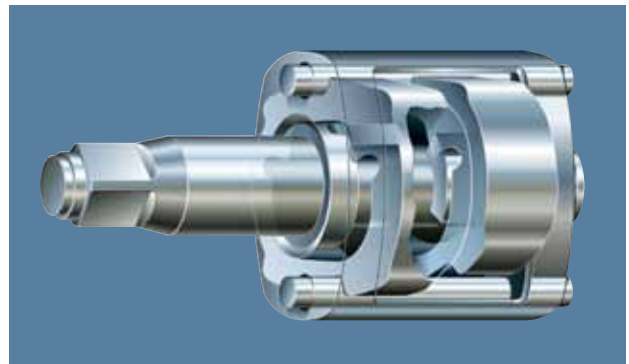
Impulse drivers are equipped with a hydraulic, oil-dampened impulse mechanism that guarantees long lifetime and shuts off when the torque is reached. This impulse mechanism consists only of three parts; these are more durable and able to withstand stronger loads than rotary vane impulse mechanisms. Any user can easily carry out the maintenance of an impulse driver without special tools.



The impulse unit with shut-off for the greatest convenience and greatest possible safety in continuous operation. The oil can be changed without special tools in less than five minutes!

Impact wrenches

The impact wrench is suitable for large screw diameters with low torque accuracy requirement. Its impact mechanism tightens the screw connection with rotary impacts. This technology produces tools that are virtually reaction-free.



High-quality materials in the impact mechanisms of the impact wrenches ensure precise function and long lifetime.







3

Achievable torque accuracy

Torque accuracy depending on screwdriver system and screwdriving application

The torque that can be achieved for a screw connection depends on the type of screwdriving application. In order to obtain an equal basis for assessment, all the data for screwdrivers refers to inflexible or “hard” screw connections (30° angle of rotation) at 6.3 bar flow pressure. In the case of lower pressure or flexible

or “soft” screw connections, some of the values that can be achieved are well below the nominal values. The torque dispersion also increases. Due to the wide variety of possibilities, specifications with absolute values are not possible. If in doubt, use a trial and error system. The table provides an overview of the advantages and achievable torque accuracy of the individual screwdriver systems in various characteristic screwdriving applications.

Screwdriver systems		Shut-off clutch	Lockover clutch	Impulse mechanism	Impact mechanism	Direct drive (Standstill screwdriver)
Features		for high, consistent torque accuracy	for the common screw connection with sufficient torque accuracy	with low reaction torque, but with moderate torque accuracy	for high torques with limited tolerance accuracy	for low torque accuracy; maximum torque when choking the motor to standstill
Screwdriving applications	Angle of rotation up to M max.	Rating of the torque accuracy				
 Torque vs. Revolutions graph showing a sharp increase at 30°	up to approx. 30°	very good	satisfactory	satisfactory	low – depending on requested M accuracy	low
 Torque vs. Revolutions graph showing a sharp increase at 60°	up to approx. 60°	good to very good	low	satisfactory	low	low
 Torque vs. Revolutions graph showing a curve starting above 60°	above 60°	good – if shut-off function is still guaranteed	low	satisfactory	low	low
 Torque vs. Revolutions graph showing a curve starting above 60°		good – if shut-off function is still guaranteed	low	satisfactory	low	low
 Torque vs. Revolutions graph showing a wavy curve	Angle of rotation not definable	good – if shut-off function is still guaranteed	low	satisfactory	low	low
 Torque vs. Revolutions graph showing a curve		good – if shut-off function is still guaranteed	satisfactory – if function is still guaranteed	low	low – if screw is still being turned	less suitable

Recommended values

Tightening torques

Recommended values for maximum screw tightening torques in Nm. Assumed friction under the head $\mu_{\text{tot}} = 0.125$ calculated from the stressed cross-section; valid for set screws with standard metric thread as per DIN 13, Sheet 13; Head caps as per DIN 931, 933.

Property classes as per DIN 267	5.8	6.8	6.9	8.8	10.9	12.9	14.9
M 1	0.0239	0.0287	0.0322	0.0382	0.0539	0.0646	0.0755
M 1.2	0.0456	0.0547	0.0618	0.0732	0.103	0.123	0.144
M 1.4	0.074	0.088	0.099	0.118	0.166	0.199	0.232
M 1.6	0.106	0.128	0.144	0.17	0.238	0.288	0.336
M 1.8	0.166	0.2	0.225	0.265	0.373	0.45	0.52
M 2	0.22	0.264	0.297	0.35	0.5	0.595	0.695
M 2.5	0.444	0.54	0.608	0.72	1.02	1.21	1.42
M 3	0.78	0.935	1.05	1.24	1.75	2.1	2.45
M 4	1.78	2.14	2.4	2.9	4	4.8	5.6
M 5	3.5	4.21	4.73	5.5	8	9.4	11
M 6	6.02	7.22	8.13	9.7	13.6	16.2	18.9
M 8	14.6	17.5	19.7	23	33	39	46
M 10	29	35	39	47	65	78	92
M 12	50	60	67	80	113	135	158
M 14	79	95	107	130	180	215	251
M 16	122	147	165	196	275	330	386
M 18	168	202	227	270	380	450	530
M 20	238	286	320	385	540	635	750
M 22	320	385	430	510	715	855	1,010
M 24	410	490	455	650	910	1,100	1,290
M 27	605	725	815	960	1,345	1,615	1,900
M 30	820	990	1,110	1,300	1,830	2,200	2,600
M 33	1,110	1,340	1,500	1,770	2,480	2,980	3,500
M 36	1,430	1,720	1,930	2,260	3,170	3,810	4,500
M 39	1,850	2,220	2,500	2,970	4,170	5,000	5,800
M 42	2,290	2,750	3,100	3,670	5,170	6,200	7,230

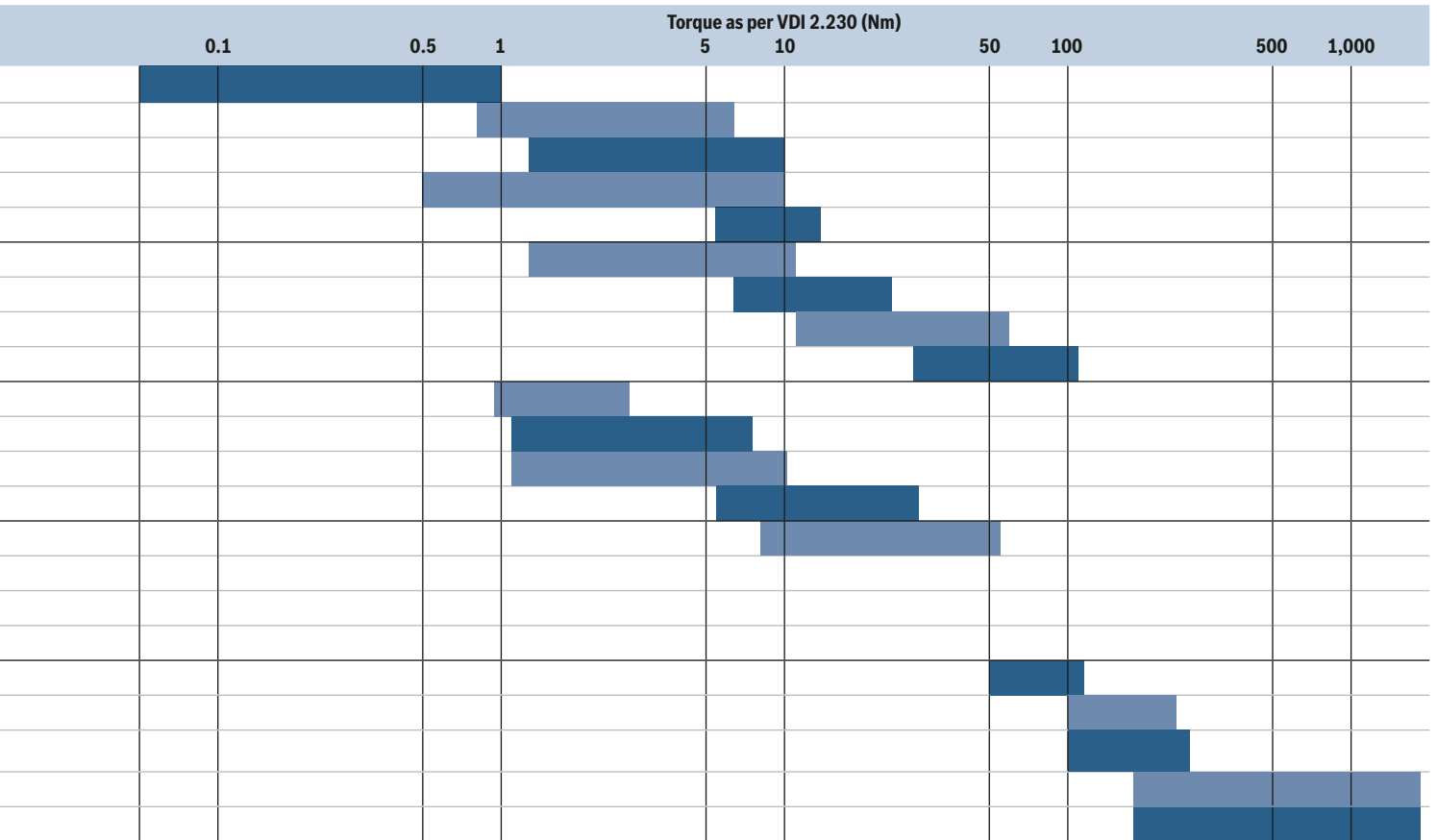
3

Selection guide

Screwdrivers

Torque is a decisive parameter for controlling the pretension force applied. The table provides an overview of the recommended torques for common screw and nut sizes. The recommended maximum torques apply to untreated, oil-lubricated screws (coefficient of friction = 0.125). The torques correspond to approx. 62% of the yield point.







Screwdrivers	Part number
Screwdrivers with adjustable shut-off clutch / "S-Plus" screwdrivers	0 607 459 2..
▶ For screw connections with high torque accuracy	0 607 454 2..
▶ Upper torque range limited by reaction torques	0 607 453 2..
▶ Other advantages: low noise, low wear, long lifetime, no influence of the user on final torque	0 607 453 4..
	0 607 461 2..
Angle shut-off wrenches	0 607 453 6..
▶ For screw connections with high torque accuracy	0 607 451 6..
▶ Other advantages: low noise, low wear, long lifetime	0 607 452 6..
	0 607 457 6..
Screwdrivers with adjustable lockover clutch	0 607 454 0../2..
▶ For normal screw connections with medium torque accuracy	0 607 453 0../2..
▶ Upper torque range limited by reaction torques	0 607 453 4..
	0 607 461 4..
Impulse drivers	0 607 661 5..
▶ For screw connections with medium torque accuracy	
▶ Virtually free of reaction torque, low noise and low wear	
Impact wrenches	0 607 450 614
▶ For large screw diameters with high torque	0 607 450 615
▶ Virtually free of reaction torque, therefore no upward limitation	0 607 450 618
	0 607 450 616
	0 607 450 619



20-watt lubrication-free straight screwdrivers

20-watt straight screwdrivers

- ▶ With integrated screw suction
- ▶ CLEAN technology
- ▶ Constant torque
- ▶ Noise-reduced
- ▶ Integrated screw suction with bit system
- ▶ Exhaust air hose optional
- ▶ Small, non-slip and breakproof plastic housing
- ▶ Minimal air consumption
- ▶ Low weight




For M 3 screws	Part number	Screw diameter at grade 8.8	Tightening torque (Nm), hard screwdriving application 30°
Straight screwdriver with shut-off clutch   	0 607 459 203	M 3	0.06–1
	0 607 459 205	M 3	0.06–0.8
Straight screwdriver with S-Plus clutch   	0 607 459 204	M 3	0.06–1

Tightening torque (Nm), soft screwdriving application 720°	No-load speed (rpm)	Direction of rotation	Air consumption at no-load (l/s) (cfm)	Weight as per EPTA (kg)	Bit holder (hex = internal hexagon)	Connecting thread	Hose inner diameter (mm)	Comments	Comes complete with
0.06–1.0	800	R/L	3.0 6.4	0.2	3 mm hex	M 5	4	Push start, with integrated screw suction	Spring for guide sleeve Suspension hook Sintered metal silencer Clutch springs 0.06–0.3 Nm (green) 0.2–0.6 Nm (brown) 0.5–1 Nm (orange)
0.06–0.8	1,200	R/L	3.0 6.4	0.2	3 mm hex	M 5	4		
0.06–1.0	800	R/L	3.0 6.4	0.2	3 mm hex	M 5	4	Push and lever start, with integrated screw suction	Spring for guide sleeve Suspension hook Sintered metal silencer Clutch springs 0.2–0.6 Nm (brown) 0.06–0.3 Nm (green) 0.5–1 Nm (orange)

120-watt lubrication-free straight screwdrivers

120-watt straight screwdrivers

- ▶ CLEAN technology
- ▶ External torque setting without bit change
- ▶ Shut-off clutch for very fine torque setting and minimal torque dispersion
- ▶ Large torque range of 0.8 to 7 Nm
- ▶ Shut-off and lockover wrench in one due to “S-Plus” clutch
- ▶ Right-hand/left-hand rotation. Greater torque in left-hand rotation, in order to loosen screws more easily
- ▶ Minimal air consumption
- ▶ Quick-release chuck with double bit holder
- ▶ Clutch housing for screw supply (Fig. on page 62)

For screws from M 4 to M 6	Part number	Screw diameter at grade 8.8	Tightening torque (Nm), hard screwdriving application 30°
Straight screwdriver with lockover clutch  CLEAN	0 607 454 006	M 4	0.8–3
	0 607 454 007	M 4	0.8–3.4
	0 607 454 238	M 4	0.8–3
	0 607 454 239	M 4	0.8–3.4
Straight screwdriver with shut-off clutch  CLEAN	0 607 454 228	M 4	0.8–2.5
	0 607 454 229	M 4	0.8–3
	0 607 454 230	M 4	0.8–3.4
	0 607 454 231	M 5	0.8–5
	0 607 454 232	M 6	0.8–7
Straight screwdriver with S-Plus clutch for bypassing shut-off  CLEAN	0 607 454 234	M 4	0.8–3
	0 607 454 235	M 4	0.8–3.4
	0 607 454 236	M 5	0.8–5
	0 607 454 237	M 6	0.8–7




Tightening torque (Nm), soft screwdriving application 720°	No-load speed (rpm)	Direction of rotation	Air consumption at no-load (l/s) (cfm)	Weight as per EPTA (kg) (lbs)	Bit holder (QRC = quick-release chuck)	Connecting thread	Hose inner diameter (mm)	Comments	Comes complete with
0.8-2	1,700	R/L	4.5	0.7	1/4" QRC	G 1/4"	6	Lever start	Suspension hook Barbed hose nipple Clutch adjusting tool Clutch spring (yellow)
			9.5	1.5					
0.8-3	1,050	R/L	4.5	0.8	1/4" QRC	G 1/4"	6		
			9.5	1.8					
0.8-2	1,700	R/L	4.5	0.7	1/4" QRC	G 1/4"	6	Push start	
			9.5	1.5					
0.8-3	1,050	R/L	4.5	0.7	1/4" QRC	G 1/4"	6		
			9.5	1.5					
0.8-1.5	2,300	R/L	4.5	0.7	1/4" QRC	G 1/4"	6	Push start	
			9.5	1.5					
0.8-2	1,700	R/L	4.5	0.7	1/4" QRC	G 1/4"	6		
			9.5	1.5					
0.8-3	1,050	R/L	4.5	0.7	1/4" QRC	G 1/4"	6		
			9.5	1.5					
0.8-4.5	640	R/L	4.5	0.8	1/4" QRC	G 1/4"	6		
			9.5	1.8					
0.8-7	400	R/L	4.5	0.8	1/4" QRC	G 1/4"	6		
			9.5	1.8					
0.8-2	1,700	R/L	4.5	0.7	1/4" QRC	G 1/4"	6	Push and lever start	Suspension hook Barbed hose nipple Clutch adjusting tool Clutch spring (yellow)
			9.5	1.5					
0.8-3	1,050	R/L	4.5	0.7	1/4" QRC	G 1/4"	6		
			9.5	1.5					
0.8-4.5	640	R/L	4.5	0.7	1/4" QRC	G 1/4"	6		
			9.5	1.5					
0.8-7	400	R/L	4.5	0.7	1/4" QRC	G 1/4"	6		
			9.5	1.5					

180-watt lubrication-free straight screwdrivers



180-watt straight screwdrivers

- ▶ External torque setting without bit change
- ▶ Shut-off clutch for very fine torque setting and minimal torque dispersion
- ▶ Large torque range of 1.2 to 10 Nm
- ▶ Shut-off and lockover wrench in one due to “S-Plus” clutch
- ▶ Right-hand/left-hand rotation. Greater torque in left-hand rotation, in order to loosen screws more easily
- ▶ CLEAN technology
- ▶ Minimal air consumption
- ▶ Quick-release chuck with double bit holder
- ▶ Clutch housing for screw supply (Fig. on page 62)


For screws from M 4 to M 6	Part number	Screw diameter at grade 8.8	Tightening torque (Nm), hard screwdriving application 30°
Straight screwdriver with lockover clutch  CLEAN	0 607 453 009	M 6	1.2–5.5
	0 607 453 010*	M 6	1.2–7
	0 607 453 233	M 6	1.2–3
	0 607 453 234	M 6	1.2–4.5
Straight screwdriver with shut-off clutch  CLEAN	0 607 453 229	M 5	1.2–4.5
	0 607 453 230	M 6	1.2–5.5
	0 607 453 231*	M 6	1.2–7
	0 607 453 232*	M 6	1.2–10
	0 607 453 235	M 6	1.2–3
	0 607 453 236	M 6	1.2–4.5
	0 607 453 237	M 6	1.2–5.5
	0 607 453 238*	M 6	1.2–7
	0 607 453 239*	M 6	1.2–10
	Straight screwdriver with S-Plus clutch for bypassing shut-off  CLEAN	0 607 453 240	M 6
0 607 453 241*		M 6	1.2–7
0 607 453 242*		M 6	1.2–10

Tightening torque (Nm), soft screwdriving application 720°	No-load speed (rpm)	Direction of rotation	Air consumption at no-load (l/s) (cfm)	Weight as per EPTA (kg) (lbs)	Bit holder (QRC = quick-release chuck)	Connecting thread	Hose inner diameter (mm)	Comments	Comes complete with
1.2-5	950	R/L	6.5	0.9	1/4" QRC	G 1/4"	6	Lever start	Suspension hook Clutch adjusting tool Hose nipple Clutch spring (yellow) or *clutch spring (blue)
			13.8	2.0					
1.2-7	600	R/L	7.5	0.9	1/4" QRC	G 1/4"	6		
			15.9	2.0					
1.2-2.5	2,200	R/L	6.5	0.9	1/4" QRC	G 1/4"	6	Push start	
			13.8	2.0					
1.2-3	1,500	R/L	6.5	0.9	1/4" QRC	G 1/4"	6		
			13.8	2.0					
1.2-3	1,500	R/L	6.5	0.9	1/4" QRC	G 1/4"	6	Lever start	Suspension hook Clutch adjusting tool Hose nipple Clutch spring (yellow) or *clutch spring (blue) Models ... 232 and ... 239 including auxiliary handle
			13.8	2.0					
1.2-5.5	950	R/L	6.5	0.9	1/4" QRC	G 1/4"	6		
			13.8	2.0					
1.2-7	600	R/L	6.5	0.9	1/4" QRC	G 1/4"	6		
			13.8	2.0					
1.2-10	380	R/L	6.5	0.9	1/4" QRC	G 1/4"	6		
			13.8	2.0					
1.2-2.5	2,200	R/L	6.5	0.9	1/4" QRC	G 1/4"	6	Push start	
			13.8	2.0					
1.2-3	1,500	R/L	6.5	0.9	1/4" QRC	G 1/4"	6		
			13.8	2.0					
1.2-5	950	R/L	6.5	0.9	1/4" QRC	G 1/4"	6		
			13.8	2.0					
1.2-7	600	R/L	6.5	0.9	1/4" QRC	G 1/4"	6		
			13.8	2.0					
1.2-10	380	R/L	6.5	0.9	1/4" QRC	G 1/4"	6		
			13.8	2.0					
1.2-5	950	R/L	6.5	0.8	1/4" QRC	G 1/4"	6	Push start	Suspension hook Clutch adjusting tool Hose nipple Clutch spring (yellow) or *clutch spring (blue) Model ... 242 including auxiliary handle
			13.8	1.8					
1.2-7	600	R/L	6.5	0.9	1/4" QRC	G 1/4"	6		
			13.8	2.0					
1.2-10	380	R/L	6.5	0.9	1/4" QRC	G 1/4"	6		
			13.8	2.0					

Your specialist retailer can provide you with information on the complete range of quality accessories.

400-watt lubrication-free straight screwdrivers



For screws from M 6 to M 8	Part number	Screw diameter at grade 8.8	Tightening torque (Nm), hard screwdriving application 30°
Straight screwdriver with shut-off clutch 	0 607 461 205	M 6	5.5–10
	0 607 461 206	M 8	5.5–15

400-watt rotary screwdrivers

- ▶ Most powerful rotary screwdriver
- ▶ External torque setting
- ▶ Wear-free shut-off clutch
- ▶ Variable due to modular system
- ▶ Ergonomic centre grip for optimum handling
- ▶ Robust, cold-insulating polyamide housing
- ▶ Exhaust air hose optional
- ▶ Low-vibration

180-watt lubrication-free centre grip screwdrivers

180-watt centre grip screwdrivers

- ▶ External torque setting without bit change
- ▶ Shut-off clutch for very fine torque setting and minimal torque dispersion
- ▶ Large torque range of 1.2 to 10 Nm
- ▶ Shut-off and lockover wrench in one due to “S-Plus” clutch
- ▶ Right-hand/left-hand rotation
- ▶ Greater torque in left-hand rotation, in order to loosen screws more easily
- ▶ CLEAN technology
- ▶ Minimal air consumption
- ▶ Quick-release chuck with double bit holder
- ▶ Clutch housing for screw supply (Fig. on page 62)

For screws from M 4 to M 6	Part number	Screw diameter at grade 8.8	Tightening torque (Nm), hard screwdriving application 30°
Centre grip screwdriver with lockover clutch 	0 607 453 434*	M 6	1.2–10
	0 607 453 438*	M 6	1.2–7
	0 607 453 435	M 6	1.2–5.5
	0 607 453 436	M 5	1.2–4.5
	0 607 453 437	M 5	1.2–3
	Centre grip screwdriver with shut-off clutch 	0 607 453 439*	M 6
0 607 453 441*		M 6	1.2–7
0 607 453 440		M 6	1.2–5.5
0 607 453 443		M 5	1.2–4.5
0 607 453 442**		M 6	0.5–2
Centre grip screwdriver with shut-off clutch 		0 607 453 429*	M 6
	0 607 453 433*	M 6	1.2–7
	0 607 453 430	M 6	1.2–5.5
	0 607 453 431	M 5	1.2–4.5
	0 607 453 432	M 5	1.2–3



Tightening torque (Nm), soft screwdriving application 720°	No-load speed (rpm)	Direction of rotation	Air consumption at no-load (l/s) (cfm)	Weight as per EPTA (kg) (lbs)	Bit holder (QRC = quick-release chuck)	Connecting thread	Hose inner diameter (mm)	Comments	Comes complete with
1.2-10	380	R/L	8.5	0.9	1/4" QRC	G 1/4"	6	Trigger start	Hose nipple G 1/4" Silencer Clutch adjusting tool Clutch spring (yellow) or *clutch spring (blue) Suspension hook
			18.0	2.0					
1.2-7	600	R/L	7.5	0.9	1/4" QRC	G 1/4"	6		
			15.9	2.0					
1.2-5	950	R/L	8.0	0.9	1/4" QRC	G 1/4"	6		
			16.9	2.0					
1.2-3	1,500	R/L	8.0	0.9	1/4" QRC	G 1/4"	6		
			16.9	2.0					
1.2-2.5	2,200	R/L	8.5	0.9	1/4" QRC	G 1/4"	6		
			18.0	2.0					
1.2-10	380	R/L	7.5	0.9	1/4" QRC	G 1/4"	6	Trigger start	Hose nipple G 1/4" Silencer Clutch adjusting tool Clutch spring (yellow) or *clutch spring (blue) or **clutch spring (white) Suspension hook
			15.9	2.0					
1.2-7	600	R/L	7.5	0.9	1/4" QRC	G 1/4"	6		
			15.9	2.0					
1.2-5	950	R/L	7.5	0.9	1/4" QRC	G 1/4"	6		
			15.9	2.0					
1.2-3	1,500	R/L	7.5	0.9	1/4" QRC	G 1/4"	6		
			15.9	2.0					
0.5-2	600	R/L	7.5	0.9	1/4" QRC	G 1/4"	6		
			15.9	2.0					
1.2-10	380	R/L	7.5	0.9	1/4" QRC	G 1/4"	6	Push and trigger start	Hose nipple G 1/4" Silencer Clutch adjusting tool Clutch spring (yellow) or *clutch spring (blue) Suspension hook
			15.9	2.0					
1.2-7	600	R/L	7.5	0.9	1/4" QRC	G 1/4"	6		
			15.9	2.0					
1.2-5	950	R/L	7.5	0.9	1/4" QRC	G 1/4"	6		
			15.9	2.0					
1.2-3	1,500	R/L	7.5	0.9	1/4" QRC	G 1/4"	6		
			15.9	2.0					
1.2-2.5	2,200	R/L	7.5	0.9	1/4" QRC	G 1/4"	6		
			15.9	2.0					

Your specialist retailer can provide you with information on the complete range of quality accessories.

400-watt centre grip screwdrivers

400-watt rotary screwdrivers

- ▶ Most powerful rotary screwdriver
- ▶ External torque setting
- ▶ Wear-free shut-off clutch
- ▶ Variable due to modular system
- ▶ Ergonomic centre grip for optimum handling
- ▶ Robust, cold-insulating polyamide housing
- ▶ Exhaust air hose optional
- ▶ Low-vibration

For screws from M 8 to M 10	Part number	Screw diameter at grade 8.8	Tightening torque (Nm), hard screwdriving application 30°
Centre grip screwdriver with lockover clutch 	0 607 461 407	M 10	8.5–26
Centre grip screwdriver with shut-off clutch 	0 607 461 405	M 8	5.5–15
	0 607 461 406	M 10	8.5–26

Tightening torque (Nm), soft screwdriving application 720°	No-load speed (rpm)	Direction of rotation	Air consumption at no-load (l/s) (cfm)	Weight as per EPTA (kg) (lbs)	Bit holder (QRC = quick-release chuck)	Connecting thread	Hose inner diameter (mm)	Comments	Comes complete with
8.5–21	400	R/L	13.5	1.5	7/16" QRC	G 1/4"	10	Trigger start	Clutch locking tab Hose nipple G 1/4" Silencer Auxiliary handle, diameter 46 mm
			28.6						
5.5–13	700	R/L	13.5	1.5	1/4" QRC	G 1/4"	10	Push and trigger start	Clutch locking tab Hose nipple G 1/4" Silencer Auxiliary handle, diameter 46 mm
			28.6	3.3					
8.5–21	400	R/L	13.5	1.5	1/4" QRC	G 1/4"	10		
			28.6	3.3					

Angle shut-off wrenches



- ▶ Shut-off clutch for very fine torque setting and minimal torque dispersion
- ▶ External torque setting
- ▶ Long lifetime
- ▶ Small, rotating angle head
- ▶ Exhaust air hose optional
- ▶ Low-noise




For screws from M 5 to M 10	Part number	Screw diameter at grade 8.8	Tightening torque (Nm), hard screwdriving application 30°
180-watt angle shut-off wrench with shut-off clutch  CLEAN	0 607 453 621	M 5	1.5–8
	0 607 453 622	M 5	1.5–8
	0 607 453 623*	M 6	2–10
	0 607 453 624*	M 6	2–10
	0 607 453 625*	M 8	2–15
	0 607 453 626*	M 8	2–15
	370-watt angle shut-off wrench with shut-off clutch 	0 607 451 600	M 10
0 607 451 601		M 10	7–27
0 607 451 604		M 10	7–30
370-watt angle shut-off wrench with shut-off clutch 	0 607 451 606	M 10	7–27
	0 607 451 607	M 10	7–27
	0 607 451 605	M 10	7–30
	0 607 451 602	M 10	7–28

Tightening torque (Nm), soft screwdriving application 720°	No-load speed (rpm)	Direction of rotation	Air consumption at no-load (l/s) (cfm)	Weight as per EPTA (kg)	Bit holder (hex = internal hexagon, square = external square)	Connecting thread	Hose inner diameter (mm)	Comments	Comes complete with		
1.5-7	670	R/L	5.5 11.6	1.2	1/4" square	G 1/4"	6	Centralised exhaust air guidance	Clutch adjusting tool Hose nipple Clutch spring (yellow) or *clutch spring (blue)		
1.5-7	670	R/L	5.5 11.7	1.2	1/4" hex	G 1/4"	6				
2-9	420	R/L	5.5 11.7	1.2	1/4" square	G 1/4"	6				
2-9	420	R/L	5.5 11.7	1.2	1/4" hex	G 1/4"	6				
2-14	260	R/L	5.5 11.7	1.2	1/4" square	G 1/4"	6				
2-14	260	R/L	5.5 11.7	1.2	3/8" square	G 1/4"	6				
7-24	360	R/L	14.0 30.0	1.7	3/8" square	G 1/4"	10			Decentralised exhaust air guidance	Clutch locking tab Hose nipple G 1/4" Silencer - plastic - sintered metal
7-24	360	R/L	14.0 30.0	1.7	1/4" hex	G 1/4"	10				
7-30	280	R/L	14.0 30.0	1.7	3/8" square	G 1/4"	10				
7-24	360	R/L	14.0 30.0	1.5	3/8" square	G 1/4"	10				
7-24	360	R/L	14.0 30.0	1.7	1/4" hex	G 1/4"	10	Centralised exhaust air guidance	Clutch locking tab Hose nipple G 1/4"		
7-30	280	R/L	14.0 30.0	1.7	3/8" square	G 1/4"	10				
7-26	360	R	14.0 30.0	1.7	3/8" square	G 1/4"	10				

Angle shut-off wrenches



- ▶ Shut-off clutch for very fine torque setting and minimal torque dispersion
- ▶ Long lifetime
- ▶ External torque setting
- ▶ Small, rotating angle head
- ▶ Exhaust air hose optional
- ▶ Low-noise



For screws from M 8 to M 16	Part number	Screw diameter at grade 8.8	Tightening torque (Nm), hard screwdriving application 30°
550-watt angle shut-off wrench with shut-off clutch 	0 607 452 603	M 6	16–40
	0 607 452 604	M 8	16–56
	0 607 452 605	M 8	20–68
	0 607 452 606	M 6	2–16
	Please order the angle screw head separately (see page 63)		
550-watt angle shut-off wrench with shut-off clutch 	0 607 452 607	M 8	20–68
740-watt angle shut-off wrench with shut-off clutch 	0 607 457 601	M 14	31–80
	0 607 457 600	M 14	39–100
	0 607 457 602	M 16	50–120

Tightening torque (Nm), soft screwdriving application 720°	No-load speed (rpm)	Direction of rotation	Air consumption at no-load (l/s) (cfm)	Weight as per EPTA (kg)	Bit holder (square = external square)	Connecting thread	Hose inner diameter (mm)	Comments	Comes complete with
16-40	570	R/L	22.0 47.0	1.6	3/8" square	G 1/4"	10	Centralised exhaust air guidance	Quick-change hose nipple Clutch adjusting tool
16-56	400	R/L	22.0 47.0	1.6	3/8" square	G 1/4"	10		
20-68	320	R/L	22.0 47.0	1.6	3/8" square	G 1/4"	10		
2-16	1,200	R/L	22.0 47.0	1.0	-	G 1/4"	10		
20-68	320	R/L	22.0 47.0	1.8	3/8" square	G 1/4"	10	Centralised exhaust air guidance	Quick-change hose nipple Clutch adjusting tool
31-70	270	R/L	21.5 45.6	3.6	1/2" square	G 3/8"	10	Decentralised exhaust air guidance	Clutch locking tab Hose nipple G 3/8" Suspension hook with support Silencer - plastic - sintered metal
39-90	200	R/L	21.5 45.6	3.6	1/2" square	G 3/8"	10		
50-110	100	R/L	21.5 45.6	3.6	1/2" square	G 3/8"	10		

Impulse drivers



- ▶ CLEAN technology
- ▶ Extremely lightweight impulse driver
- ▶ Ergonomic, fibre-reinforced polyamide housing with centre grip for balanced centre of gravity and optimum handling
- ▶ Wear-free shut-off clutch that reacts to mechanical centrifugal force
- ▶ Impulse unit with innovative, unique piston compression principle consisting of only three parts with seals. This means less oil consumption, rapid oil change and optimised integrated cooling
- ▶ High speed due to robust, powerful motor with dual chamber for fast, efficient working
- ▶ Right-hand/left-hand rotation. Greater torque in left-hand rotation, in order to loosen screws more easily
- ▶ Suspension hook for vertical and horizontal use

For screws from M 6 to M 10	Part number	Screw diameter at grade 8.8	Tightening torque (Nm), hard screwdriving application 30°	Tightening torque (Nm), soft screwdriving application 720°
Impulse driver with shut-off  CLEAN	0 607 661 509	M 6	8–18	5–15
	0 607 661 510	M 6	8–18	5–15
	0 607 661 505	M 8	16–35	12–29
	0 607 661 506	M 8	16–35	12–29
Impulse driver with shut-off  CLEAN	0 607 661 507	M 10	28–60	16–47




Recommended tightening torque based on fatigue limit of screw diameter, grade 8.8. Maximum tightening torque is peak torque regardless of screw size.

No-load speed (rpm)	Direction of rotation	Model series (W)	Air consumption at no-load (l/s) (cfm)	Weight as per EPTA (kg)	Bit holder (square = external square, QRC = quick-release chuck)	Connecting thread	Hose inner diameter (mm)	Comments	Comes complete with
4,000	R/L	400	16 33.9	1.1	3/8" square	G 1/4"	6	Torque can be set from outside on impulse mechanism	Hose nipple Allen key Suspension hook
4,000	R/L	400	16 33.9	1.2	1/4" QRC	G 1/4"	6		
4,500	R/L	400	16 33.9	1.1	3/8" square	G 1/4"	9		
4,500	R/L	400	16 33.9	1.1	1/4" QRC	G 1/4"	9		
4,700	R/L	400	17 36	1.3	1/2" square	G 1/4"	9	Torque can be set from outside on impulse mechanism	Hose nipple Allen key Suspension hook

Impact wrenches



- ▶ High speed for fast, efficient working
- ▶ Outstanding power and low weight
- ▶ Robust impact wrench with long lifetime
- ▶ Simply designed, powerful dual hammer mechanism made of high-alloy materials
- ▶ Impact force can be controlled via throttle valve

For screws from M 14 to M 22	Part number	Screw diameter at grade 8.8	Recommended tightening torque at 6.3 bar (Nm)
Impact wrench with 3-position torque control 	0 607 450 614	M 14	50–150
Impact wrench with 3-position torque control 	0 607 450 615	M 16	150–350
	0 607 450 618	M 16	150–300
Impact wrench with 3-position torque control 	0 607 450 616	M 22	300–900
	0 607 450 619	M 22	300–850

Recommended tightening torque based on fatigue limit of screw diameter, grade 8.8. Maximum tightening torque is peak torque regardless of screw size.

Max. tightening torque (Nm)	No-load speed (rpm)	Direction of rotation	Air consumption at no-load (l/s) (cfm)	Weight as per EPTA (kg)	Bit holder (square = external square)	Connecting thread	Hose inner diameter (mm)	Comments	Comes complete with
150	10,000	R/L	9.0 19.1	1.3	3/8" square	G 1/4"	10	Torque can be set in right-hand rotation	Suspension hook Quick-change hose nipple 3 609 202 911 3 609 202 846
350	7,000	R/L	15.0 31.8	2.4	1/2" square	G 1/4"	10	Torque can be set in right-hand rotation	Suspension hook Quick-change hose nipple 3 609 202 912 3 609 202 846
300	7,000	R/L	15.0 31.8	2.6	1/2" square + extended spindle	G 1/4"	10		
900	4,500	R/L	18.0 38.1	4.1	3/4" square	G 3/8"	13	Torque can be set in right-hand rotation	Suspension hook Quick-change hose nipple 3 609 202 913 3 609 202 848
850	4,500	R/L	18 38.1	5.9	3/4" square + extended spindle	G 3/8"	13	Torque can be set in right-hand rotation	Suspension hook Quick-change hose nipple 3 609 202 913 3 609 202 847

Tappers



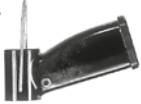




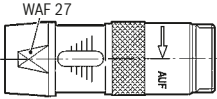


- ▶ One-handed left/right operation
- ▶ Long lifetime
- ▶ Outstanding power
- ▶ For any application
- ▶ Tightening torque can be controlled

For thread from M 5 to M 12	Part number	Thread and stud bolt diameter (mm)	Tightening torque (Nm)
Tapper with lockover clutch without chuck 	0 607 453 421	up to 5	1.2–5.5
	0 607 453 422	up to 5	1.2–4.5
Tappers without clutch 	0 607 461 413	up to 10	up to 26
Tapper with trigger start 	0 607 461 407	up to 10	8.5–26

No-load speed (rpm)	Direction of rotation	Model series (W)	Air consumption at no-load (l/s) (cfm)	Weight as per EPTA (kg) (lbs)	Bit holder (hex = internal hexagon, QRC = quick-release chuck)	Connecting thread	Hose inner diameter (mm)	Comments	Comes complete with
950	R/L	180	7.5	1.1	1/4" hex	G 1/4"	6	Can be used for thread-cutting in blind holes and as a stud bolt tightener	Clutch locking tab Silencer Guide sleeve Hose nipple G 1/4"
			15.9	2.4					
1,500	R/L	180	7.5	1.1	1/4" hex	G 1/4"	6		
			15.9	2.4					
400	R/L	400	13.5	1.5	7/16" QRC	G 1/4"	10	Direct drive with floating chuck For thread-cutting in feedthrough holes	Hose nipple G 1/4" Silencer Auxiliary handle, diameter 46 mm Floating chuck
			28.6	3.3					
400	R/L	400	13.5	1.5	7/16" QRC	G 1/4"	10	With clutch without chuck Can be used for thread-cutting in blind holes and as a stud bolt tightener	Clutch locking tab Hose nipple G 1/4" Silencer Auxiliary handle, diameter 46 mm
			28.6	3.3					

Accessories

Screwdrivers

		Part number	For model series (W)	Clamping diameter mm
Auxiliary handle sleeve – for straight screwdrivers 		3 600 499 001	120	–
			180	
Auxiliary handle – standard version 	Capacity: 46 mm diameter	3 602 025 009	400	46
Auxiliary handle – for straight screwdrivers 		3 607 031 352	120	–
		3 607 031 351	180	–
Suspension hook for angle wrenches 		2 601 310 002	370	38
Suspension hook with support option for pistol-grip and angle wrenches 		3 604 720 006	400	48–51
Exhaust air hose set 	centralised	3 600 712 008	20	–
	centralised	3 607 000 064	120/180	–
	Exhaust air set, decentralised, straight version	3 607 000 083	120/180	–
Exhaust air hose 	centralised, straight version	3 607 000 027	370/400/550	–
	centralised, for pistol-grip screwdrivers	3 607 000 011	400	–
	Exhaust air set, decentralised, straight version	3 607 030 024	400	–
Clutch housing for screw supply 		3 605 125 058	120	
		3 605 125 057	180	
Clutch spring, green, 0.5–0.8 Nm 		3 604 619 024	120/180/550	
Clutch spring, white, 0.5–2 Nm 		3 604 618 003	120/180	

Your specialist retailer can provide you with information on the complete range of quality accessories.

Accessories


Screwdrivers

			Part number	For model series (W)	Clamping diameter mm
Clutch spring, green, 0.06–0.3 Nm			3 604 616 006	20	
Clutch spring, brown, 0.2–0.6 Nm			3 604 610 016	20	
Clutch spring, orange, 0.5–1.0 Nm			3 604 618 005	20	
Guide sleeve			3 600 329 000	400	
Screw cap			3 600 508 014	400	
Spring			3 604 615 000	400	
Union nut			3 603 313 002	400	
Screw head		for 180-watt angle wrenches	0 607 453 631	180	
		1/4" quick-release chuck			
Angle screw head		1/4" square	0 607 453 617	180/370	
		1/4" internal hexagon	0 607 453 618	180/370	DWAS 16
			0 607 453 620	180/370	DWAS 16
		3/8" square	0 607 453 620	180/370	DWAS 16
		1/4" quick-release chuck	0 607 453 630	180/370	DWAS 16
Protective cap		for angle screw head 180 W	3 605 500 171		
		for angle screw head 370 W	3 605 500 175		
Extension		Length 200 mm	0 607 452 608	0 607 452 605	
			0 607 452 609	0 607 452 604	

Your specialist retailer can provide you with information on the complete range of quality accessories.

Accessories









Tappers



		Part number	For model series (W)	Comments
Twin-jaw chuck		(jointed) M 5 – M 12	3 608 573 000	for thread-cutting
		with 7/16" hex shank		

Accessories

20-watt screwdrivers

Accessories with 3 mm hex shank manufactured to DIN 3126
Integrated version for use with and without suction

	Part number	Size	Cross head type	Design	Shank length without drive (mm)
 Slotted screw 3-mm bits for 20-watt screwdrivers	3 608 520 001	0.5 x 3 mm			
	3 608 520 003	0.8 x 5 mm			
 Cross-head screw 3-mm bits for 20-watt screwdrivers	3 608 520 004	0 (2.8 mm)	Phillips		
	3 608 520 005	1 (4.5 mm)	Phillips		
	3 608 520 006	0 (2.8 mm)	Pozidriv		
	3 608 520 007	1 (4.5 mm)	Pozidriv		
 TORX 3-mm bits for 20-watt screwdrivers	3 609 202 738	T 5			
	3 609 202 739	T 6			
	3 609 202 740	T 7			
	3 609 202 741	T 8			
	3 609 202 742	T 9			
	3 609 202 743	T 10			
Blank for production of the guide sleeve 	3 600 723 001				

		Part number	For model series (W)	Comments
Storage valve 		3 609 202 829	20	
Sorting plates for screw/bolt size 	M 1.6/M 2	3 609 202 826	20	
	M 2.5	3 609 202 827	20	
	M 3/M 4	3 609 202 828	20	

Your specialist retailer can provide you with information on the complete range of quality accessories.

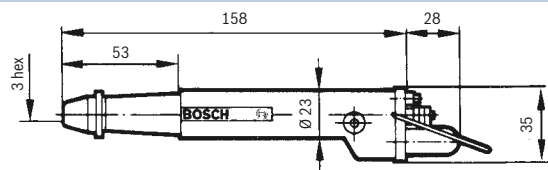
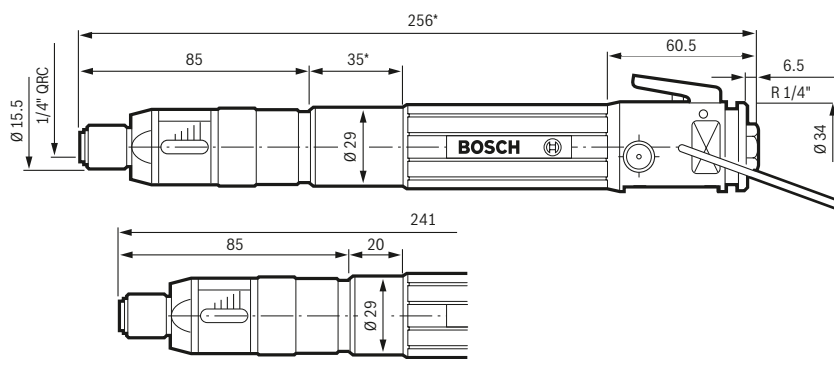
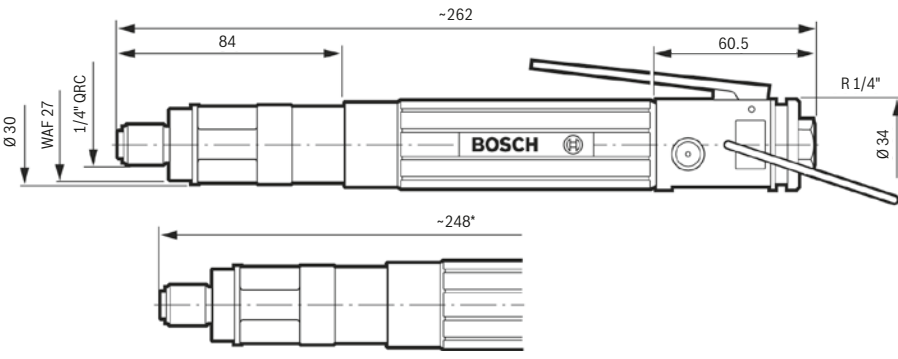
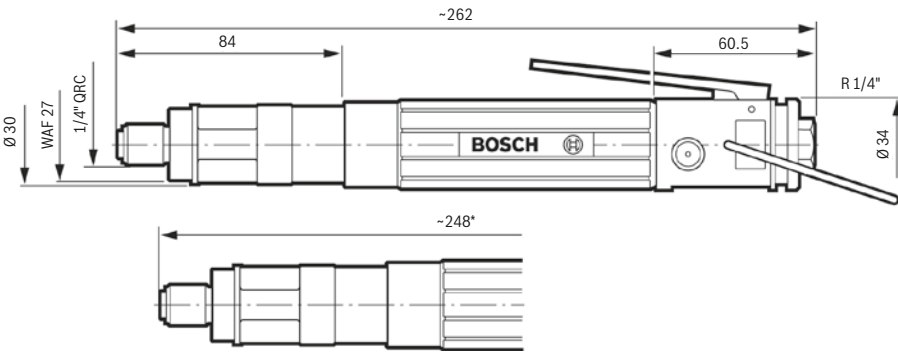
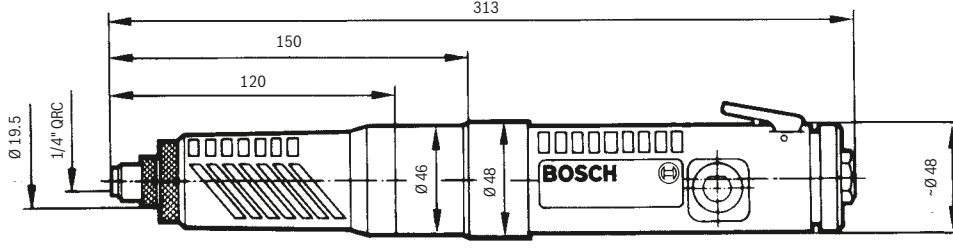
Screw counting port kit

Shut-off wrenches

		Part number	For model series (W)	Tool number
Screw counting port kit	Centre grip screwdrivers	3 609 202 745	180	0 607 453 429
				0 607 453 430
				0 607 453 431
				0 607 453 432
				0 607 453 433
				0 607 453 439
				0 607 453 440
				0 607 453 441
				0 607 453 442
				0 607 453 443
		3 609 202 746	400	0 607 461 405
				0 607 461 406
	Centre grip impulse drivers	3 609 202 745	300	0 607 661 509
				0 607 661 510
				0 607 661 505
				0 607 661 506
				0 607 661 507
	Angle wrenches	3 609 202 A08	550	0 607 452 603
				0 607 452 604
				0 607 452 605
			0 607 452 606	

Dimensional drawings

Straight screwdrivers

Size in mm	Part number
	0 607 459 203
	0 607 459 204
	0 607 459 205
	0 607 454 006
	0 607 454 007
	0 607 454 228*
	0 607 454 229
	0 607 454 230
	0 607 454 231
	0 607 454 232
	0 607 454 234
	0 607 454 235
	0 607 454 236
	0 607 454 237
	0 607 454 238
	0 607 454 239*
	0 607 453 009
	0 607 453 010
	0 607 453 229*
	0 607 453 230
	0 607 453 231
	0 607 453 232
	0 607 453 233*
	0 607 453 234*
	0 607 453 235*
	0 607 453 236*
	0 607 453 237
	0 607 453 238
	0 607 453 239
	0 607 453 240
	0 607 453 241
	0 607 453 242
	0 607 453 242
	0 607 461 205
	0 607 461 206

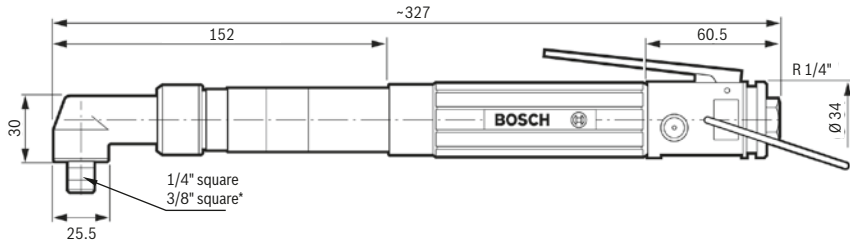
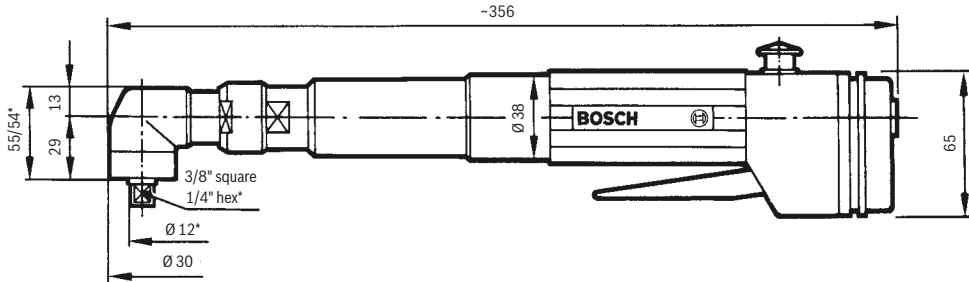
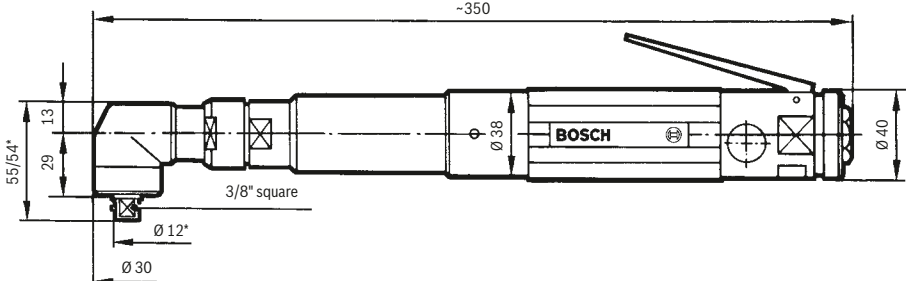
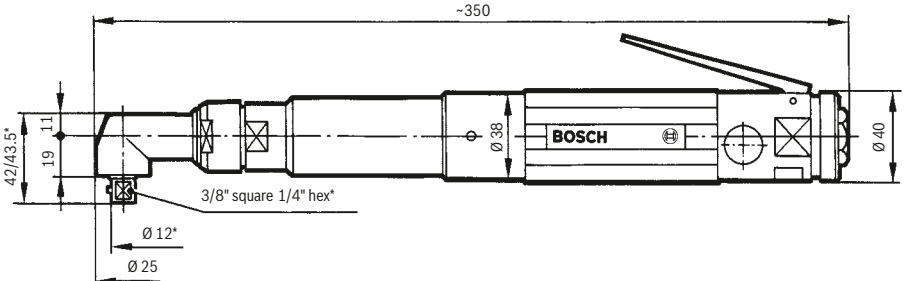
Dimensional drawings

Centre grip screwdrivers

Size in mm	Part number
	0 607 461 405
	0 607 461 406
	0 607 461 407*
	0 607 453 429*
	0 607 453 430*
	0 607 453 431
	0 607 453 432
	0 607 453 433
	0 607 453 434*
	0 607 453 435*
	0 607 453 436
	0 607 453 437
	0 607 453 438
	0 607 453 439*
	0 607 453 440*
	0 607 453 441*
	0 607 453 442*
0 607 453 443*	

Dimensional drawings

Angle shut-off wrenches

Size in mm	Part number
 <p>152, 30, 25.5, 1/4" square, 3/8" square*, 60.5, R 1/4", Ø 34, -327</p>	<p>0 607 453 621 0 607 453 622 0 607 453 623 0 607 453 624 0 607 453 625 0 607 453 626*</p>
 <p>55/64", 29, 13, 3/8" square, 1/4" hex*, Ø 12", Ø 30, Ø 38, -356, 65</p>	<p>0 607 451 600 0 607 451 601* 0 607 451 604</p>
 <p>55/64", 29, 13, 3/8" square, Ø 12", Ø 30, Ø 38, -350, Ø 40</p>	<p>0 607 451 602 0 607 451 605</p>
 <p>42/43.5", 19, 11, 3/8" square 1/4" hex*, Ø 12", Ø 25, Ø 38, -350, Ø 40</p>	<p>0 607 451 606 0 607 451 607*</p>

Dimensional drawings

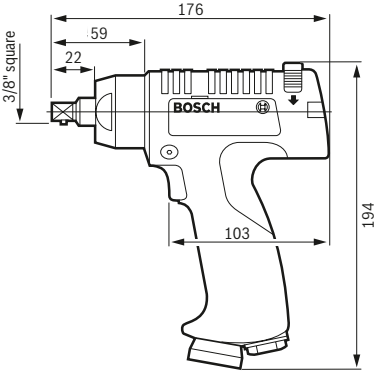
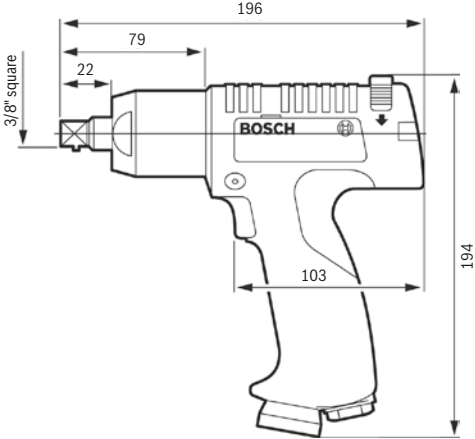
Angle shut-off wrenches

Size in mm	Part number
	0 607 452 603
	0 607 452 604
	0 607 452 605
	0 607 452 607
	0 607 452 606
	0 607 457 600
	0 607 457 601
	0 607 457 602
	0 607 457 602

The specified dimensions are not binding.

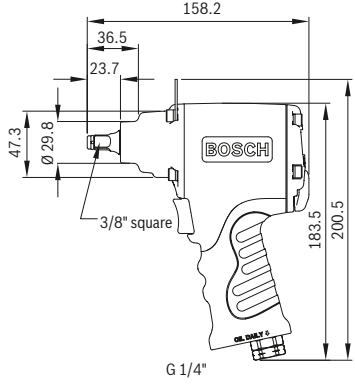
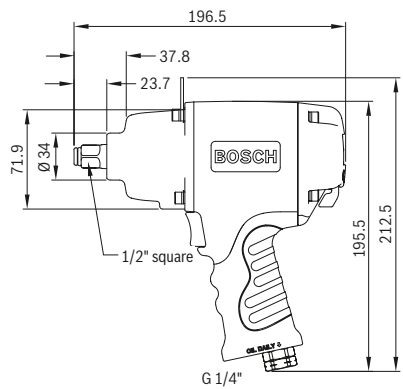
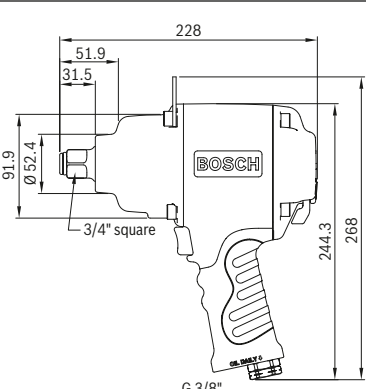
Dimensional drawings

Impulse drivers

Size in mm	Part number
 <p>Technical drawing of a Bosch impulse driver. Dimensions shown: 176 mm total length, 59 mm from front to start of handle, 22 mm from front to trigger guard, 103 mm handle width, and 194 mm height. The drive end is labeled '3/8" square'.</p>	0 607 661 505
	0 607 661 506
	0 607 661 509
	0 607 661 510
 <p>Technical drawing of a Bosch impulse driver. Dimensions shown: 196 mm total length, 79 mm from front to start of handle, 22 mm from front to trigger guard, 103 mm handle width, and 194 mm height. The drive end is labeled '3/8" square'.</p>	0 607 661 507

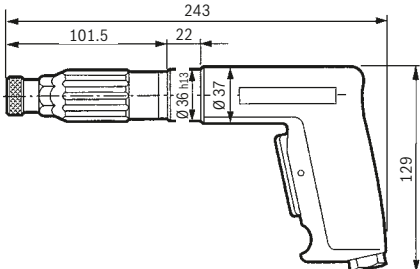
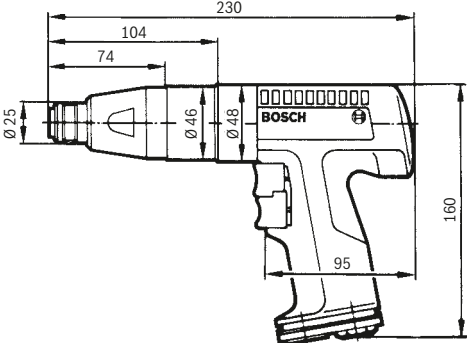
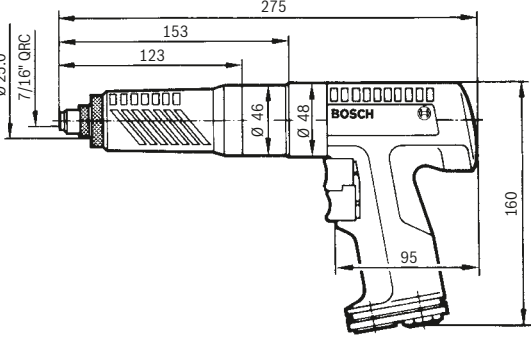
Dimensional drawings

Impact wrenches

Size in mm	Part number
	<p>0 607 450 614</p>
	<p>0 607 450 615</p> <p>0 607 450 618</p>
	<p>0 607 450 616</p> <p>0 607 450 619</p>

Dimensional drawings

Tappers

Size in mm	Part number
 <p>Technical drawing of a tapper. Dimensions shown: 101.5 (total length), 243 (total length including handle), 22 (distance from tip to handle start), 0.36 (tip diameter), 0.37 (handle diameter), and 129 (height).</p>	<p>0 607 453 421 0 607 453 422</p>
 <p>Technical drawing of a Bosch tapper. Dimensions shown: 230 (total length), 104 (length to handle), 74 (length to tip), 0.25 (tip diameter), 0.46 (main body diameter), 0.48 (handle diameter), 160 (height), and 95 (width at base).</p>	<p>0 607 461 413</p>
 <p>Technical drawing of a Bosch tapper. Dimensions shown: 275 (total length), 153 (length to handle), 123 (length to tip), 0.25.0 (tip diameter), 7/16" QRC (tip diameter), 0.46 (main body diameter), 0.48 (handle diameter), 160 (height), and 95 (width at base).</p>	<p>0 607 461 407</p>

4

Hose balancers, cable balancers








Bosch hose and cable balancers have a modular structure, enabling them to be quickly and easily adapted to different weight classes. Staff and goods are protected by the robust metal safety holder including spring hook, a cable pull with high-quality distributor valve and safety clutch, and a spring breakage protection feature. You will find more information on the following pages.



Hose balancers, cable balancers

- ▶ Robust metal safety holder including spring hook
- ▶ Cable pull with high-quality distributor valve and safety clutch for smooth pull-out
- ▶ Spring breakage protection for balancers with a load greater than 3 kg
- ▶ Cable change possible without disassembly of the spring drum
- ▶ Easy to change the weight class due to modular structure

For loads of 0.3 kg to 10 kg	Part number
Hose balancer 	0 607 950 938
	0 607 950 939
Cable balancer, small series 	0 607 950 950
	0 607 950 951
Cable balancer, small series 	0 607 950 952
	0 607 950 953
Cable balancer, medium series 	0 607 950 954
	0 607 950 955
	0 607 950 956
Balancer, small series 	0 607 950 958

Load min. (kg)	Load max. (kg)	Max. stroke (mm)	Weight as per EPTA (kg)	Comments
0.4	1.2	800	1.3	Hose balancer with adjustable load bearing range; equipped with quick-connect coupling 1 609 233 009 Hose diameter 5 mm
1.2	2.2	800	1.4	
0.5	1.2	2,000	0.6	Cable balancer with adjustable load bearing range Cable pull 2.0 m
1.0	2.0	2,000	0.6	
0.3	1.5	1,600	0.5	Cable balancer with adjustable load bearing range Cable pull 1.6 m
1.2	2.5	1,600	0.6	
2.0	5.0	3,000	3.3	Cable balancer with adjustable load bearing range Cable pull 3.0 m
4.0	8.0	3,000	3.7	
7.0	10.0	3,000	3.7	
1.2	2.6	1,600	1.4	Balancer with adjustable load bearing range Cable pull 1.6 m

Dimensional drawings

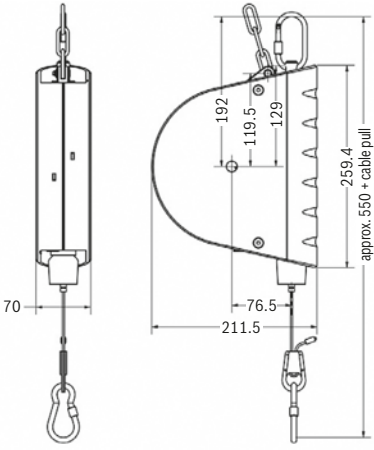
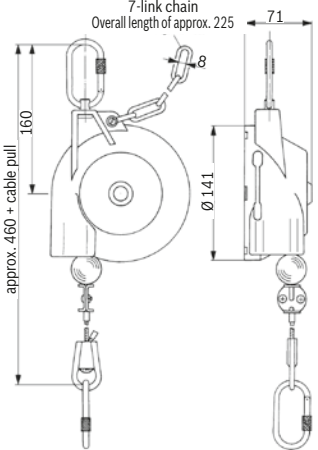
Hose balancers, cable balancers

Size in mm	Part number
	<p>0 607 950 938</p> <p>0 607 950 939*</p>
	<p>0 607 950 950</p> <p>0 607 950 951</p>
	<p>0 607 950 952</p> <p>0 607 950 953</p>

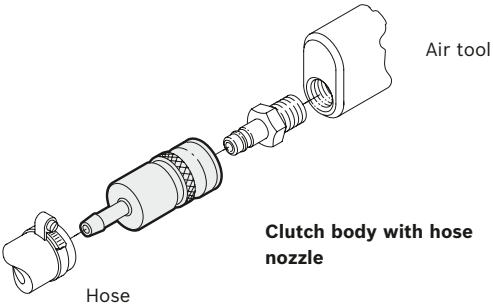
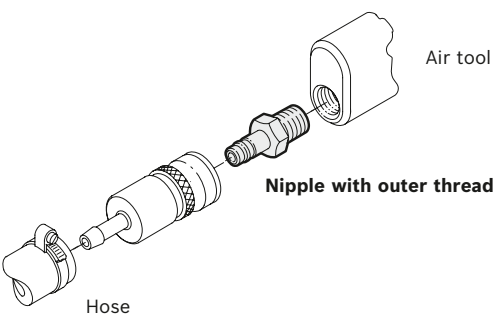
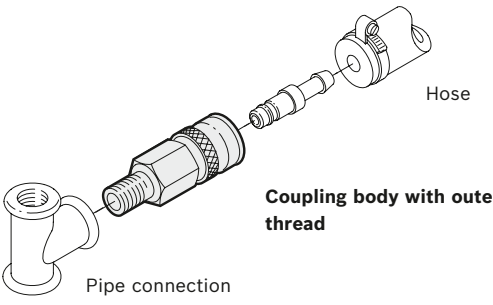
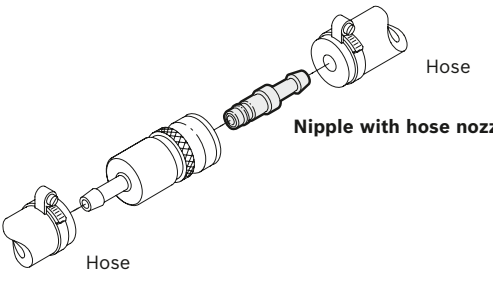
The specified dimensions are not binding.

Dimensional drawings

Cable balancers

Size in mm	Part number
	0 607 950 954
	0 607 950 955
	0 607 950 956
	0 607 950 957
	0 607 950 958

Quick-connect couplings

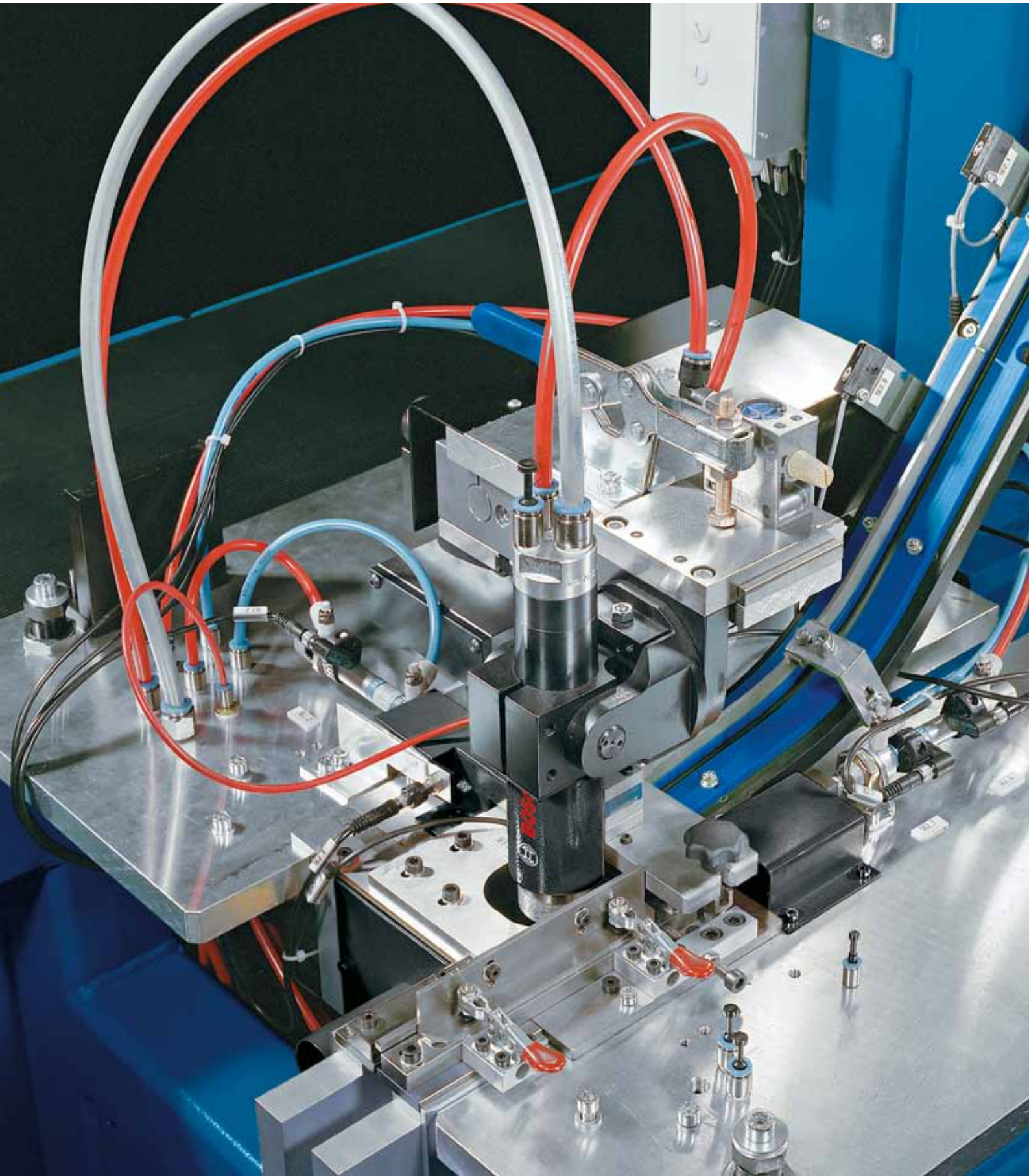
	Accessories part number	Air admission (l/s) at 6 bar and 0.5 bar pressure loss*
 <p>Clutch body with hose nozzle</p> <p>Hose</p> <p>Air tool</p>	1 609 233 013	66.5
		140.9
	1 609 233 014	66.5
		140.9
 <p>Nipple with outer thread</p> <p>Hose</p> <p>Air tool</p>	3 603 386 063	33
		69.9
	1 609 233 036	33
		69.9
	1 609 233 037	33
		69.9
	1 609 233 039	66.5
	140.9	
	66.5	
	140.9	
 <p>Coupling body with outer thread</p> <p>Hose</p> <p>Pipe connection</p>	1 609 233 018	33
		69.9
	1 609 233 021	66.5
		140.9
 <p>Nipple with hose nozzle</p> <p>Hose</p>	1 609 233 024	33
		69.9
	1 609 233 027	33
		69.9
	1 609 233 031	66.5
	140.9	

*Couplings with different air admission cannot be coupled to each other.

Hose connection diameter (mm)	Hose connection diameter (inches)	Thread connection
10	3/8"	-
13	1/2"	-
-	-	G 1/4"
-	-	G 3/8"
-	-	G 1/2"
-	-	G 3/8"
-	-	G 1/2"
-	-	G 3/8"
-	-	G 1/2"
6	1/4"	-
13	1/2"	-
13	1/2"	-

5

Motors





Bosch air motors are safe, versatile, extremely durable, and therefore perfect for continuous industrial use. They are immune to burn-out or spark formation. Moreover, their CLEAN technology ensures oil-free air and less noise at the workplace to protect staff and the environment.

Choose the right motor for your applications from a wide range of motors with different power ratings and speeds.



Motors

- ▶ Safe, versatile, extremely durable
- ▶ Reliable in continuous use
- ▶ No sparks are formed in the motor
- ▶ No burn-out
- ▶ CLEAN technology



From 120 to 180 watts	Part number	Stall torque (Nm)	No-load speed (rpm)
120-watt motor	0 607 954 304	2.1	2,200
	 0 607 954 305	1.0	4,900
180-watt motor	0 607 953 335	6.5	620
	 0 607 953 336	4.5	1,000
	0 607 953 337	3.0	1,600
	0 607 953 338	1.5	2,800
	0 607 953 340	1.0	3,800
	0 607 953 348	1.5	2,800
	0 607 953 331	7.7	740
	0 607 953 332	4.7	1,190
	0 607 953 333	3.2	1,875
	0 607 953 339	1.1	4,500

CLEAN

Direction of rotation (R = right L = left)	Power output (W)	Air consumption at no-load (l/s) (cfm)	Weight as per EPTA (kg)	Spindle dimensions (square = external square)	Connecting thread	Hose inner diameter (mm)	Operating curve	Comments	Comes complete with		
R	120	4.5	0.37	3/8"-24 UNF-2A	G 1/8"	6	66879	Activation via separate valve, no valve built in. Max. axial load of motor shaft $F_{AX} = 250$ N; max. radial load of motor shaft $F_{RA} = 10$ N	Hose nipple G 1/8" Silencer G 1/4"		
		9.5									
R	120	4.5	0.32	3/8"-24 UNF-2A	G 1/8"	6	71580				
		9.5									
R/L	180	5.5	0.68	3/8"-24 UNF-2A	G 1/8"	6	41437	Activation via separate valve, no valve built in. Max. axial load of motor shaft $F_{AX} = 400$ N; max. radial load of motor shaft $F_{RA} = 16$ N	Hose nipple G 1/8" Silencer G 1/4"		
		11.6									
R/L	180	5.5	0.68	3/8"-24 UNF-2A	G 1/8"	6	43748				
		11.6									
R/L	180	5.5	0.60	3/8"-24 UNF-2A	G 1/8"	6	48382				
		11.6									
R/L	180	5.5	0.68	3/8"-24 UNF-2A	G 1/8"	6	41655				
		11.6									
R/L	180	5.5	0.60	3/8"-24 UNF-2A	G 1/8"	6	55869				
		11.6									
R/L	180	5.5	0.60	Cyl. shaft diameter 10 ^{h6}	G 1/8"	6	41746			Similar to Fig. on page 102 Part no. 0 607 951 325	
		11.6									
R	180	5.0	0.68	3/8"-24 UNF-2A	G 1/8"	6	87354				
		10.6									
R	180	5.0	0.68	3/8"-24 UNF-2A	G 1/8"	6	89544				
		10.6									
R	180	5.0	0.60	3/8"-24 UNF-2A	G 1/8"	6	41407				
		10.6									
R	180	5.0	0.60	3/8"-24 UNF-2A	G 1/8"	6	53529				
		10.6									

Motors

- ▶ Safe, versatile, extremely durable
- ▶ Reliable in continuous use
- ▶ No sparks are formed in the motor
- ▶ No burn-out
- ▶ CLEAN technology

From 340 to 370 watts	Part number	Stall torque (Nm)	No-load speed (rpm)
340/370-watt motor 	0 607 951 304	25.0	490
	0 607 951 305	15.0	780
	0 607 951 306	9.0	1,400
	0 607 951 307	4.5	2,700
	0 607 951 300	25.0	600
	0 607 951 301	15.0	930
	0 607 951 302	9.0	1,620
	0 607 951 303	4.5	3,300
	0 607 951 322	22.0	540
	340-watt motor 	0 607 951 314	25.0
0 607 951 315		15.0	780
0 607 951 316		9.0	1,400

Direction of rotation (R = right L = left)	Power output (W)	Air consumption at no-load (l/s) (cfm)	Weight as per EPTA (kg)	Spindle dimensions (square = external square)	Connecting thread	Hose inner diameter (mm)	Operating curve	Atex certified	Comments	Comes complete with
R/L	340	14.5	0.90	3/8"-24 UNF-2A	G 1/8"	8	130695	yes	Activation via separate valve, no valve built in. Max. axial load of motor shaft $F_{Ax} = 850$ N; max. radial load of motor shaft $F_{RA} = 34$ N	Hose nipple G 1/8" Silencer G 3/8"
		30.7								
R/L	340	14.5	0.90	3/8"-24 UNF-2A	G 1/8"	8	146107			
		30.7								
R/L	340	14.5	0.90	3/8"-24 UNF-2A	G 1/8"	8	60628			
		30.7								
R/L	340	14.5	0.80	3/8"-24 UNF-2A	G 1/8"	8	102389			
		30.7								
R	370	12.5	0.90	3/8"-24 UNF-2A	G 1/8"	8	114435			
		26.5								
R	370	12.5	0.90	3/8"-24 UNF-2A	G 1/8"	8	120664			
		26.5								
R	370	12.5	0.90	3/8"-24 UNF-2A	G 1/8"	8	108461			
		26.5								
R	370	12.5	0.80	3/8"-24 UNF-2A	G 1/8"	8	123762			
		26.5								
R	370	11.5 24.4	0.90	3/8"-24 UNF-2A	G 1/8"	8	105449	yes	With underblow for better start-up under load	
R/L	340	13.5	0.87	3/8" square	G 1/8"	8	130695	yes	Activation via separate valve, no valve built in. Max. axial load of motor shaft $F_{Ax} = 850$ N; max. radial load of motor shaft $F_{RA} = 34$ N	Hose nipple G 1/8" Silencer G 3/8"
		28.6								
R/L	340	15.5	0.87	3/8" square	G 1/8"	8	146107			
		32.8								
R/L	340	14.5	0.87	3/8" square	G 1/8"	8	60628			
		30.7								

Motors

- ▶ Stirring or pumping liquid media
- ▶ Rolling e.g. hoses
- ▶ Adjusting, lifting and lowering e.g. roller blinds
- ▶ Tensioning straps

From 340 to 740 watts	Part number	Stall torque (Nm)	No-load speed (rpm)
340-watt motor 	0 607 951 325	25.0	490
	0 607 951 326	9.0	1,400
	0 607 951 318	25.0	490
340-watt motor 	0 607 951 323	25.0	490
500/550-watt motor 	0 607 952 303	28.0	650
	0 607 952 304	15.5	1,150
	0 607 952 305	6.5	2,700
	0 607 952 300	28.0	760
	0 607 952 301	15.5	1,350
	0 607 952 302	6.5	3,000
	620/740-watt motor 	0 607 957 301	36.0
0 607 957 300		36.0	720

Direction of rotation (R = right L = left)	Power output (W)	Air consumption at no-load (l/s) (cfm)	Weight as per EPTA (kg)	Spindle dimensions (square = external square)	Connecting thread	Hose inner diameter (mm)	Operating curve	Atex certified	Comments	Comes complete with			
R/L	340	14.5	0.90	Cyl. shaft diameter 12 j6	G 1/8"	8	140024	yes	Activation via separate valve, no valve built in. Max. axial load of motor shaft $F_{AX} = 850$ N; max. radial load of motor shaft $F_{RA} = 34$ N	Hose nipple G 1/8" Silencer G 3/8"			
		30.7											
R/L	340	14.5	0.90	Cyl. shaft diameter 12 j6	G 1/8"	8	63039						
		30.7											
R/L	340	13.5	0.90	Cyl. shaft diameter 10 h6	G 1/8"	8	133837						
		28.6											
R/L	340	14.5	0.98	3/8" square with axial balancing 10 mm stroke	G 1/8"	8	136982	yes	Activation via separate valve, no valve built in. Max. axial load of motor shaft $F_{AX} = 850$ N; max. radial load of motor shaft $F_{RA} = 34$ N	Hose nipple G 1/8" Silencer G 3/8"			
		30.7											
R/L	500	13.5	1.40	1/2"-20 UNF-2A	G 1/4"	10	98637	no			Activation via separate valve, no valve built in. Ventilation in the direction of rotation not being used. Max. axial load of motor shaft $F_{AX} = 1,250$ N; max. radial load of motor shaft $F_{RA} = 50$ N	Hose nipple G 1/4" Silencer G 1/2"	
		28.6											
R/L	500	13.5	1.40	1/2"-20 UNF-2A	G 1/4"	10	101085						
		28.6											
R/L	500	13.5	1.20	1/2"-20 UNF-2A	G 1/4"	10	103255						
		28.6											
R	550	12.0	1.40	1/2"-20 UNF-2A	G 1/4"	10	91348						
		25.4											
R	550	12.0	1.40	1/2"-20 UNF-2A	G 1/4"	10	93841						
		25.4											
R	550	12.0	1.20	1/2"-20 UNF-2A	G 1/4"	10	96270						
		25.4											
R/L	620	24.5	1.32	1/2"-20 UNF-2A	G 1/4"	10	71359	no	Activation via separate valve, no valve built in. Max. axial load of motor shaft $F_{AX} = 1,550$ N; max. radial load of motor shaft $F_{RA} = 62$ N	Hose nipple G 1/4" Silencer G 1/2"			
		51.9											
R	740	18.5	1.32	1/2"-20 UNF-2A	G 1/4"	10	66678						
		39.2											

Motors

- ▶ Stirring or pumping liquid media
- ▶ Rolling e.g. hoses
- ▶ Adjusting, lifting and lowering e.g. roller blinds
- ▶ Tensioning straps

From 620 to 740 watts

620/740-watt motor

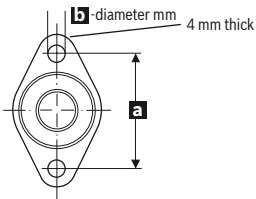


Part number	Stall torque (Nm)	No-load speed (rpm)
0 607 957 308	90.0	250
0 607 957 309	65.0	340
0 607 957 310	36.0	610
0 607 957 315	36.0	610
0 607 957 314	170.0	140
0 607 957 305	90.0	290
0 607 957 307	36.0	720
0 607 957 317	160.0	120

Direction of rotation (R = right L = left)	Power output (W)	Air consumption at no-load (l/s) (cfm)	Weight as per EPTA (kg)	Spindle dimensions (square = external square)	Connecting thread	Hose inner diameter (mm)	Operating curve	Atex certified	Comments	Comes complete with
R/L	620	24.0	2.10	1/2" square	G 1/4"	10	49375	yes	Activation via separate valve, no valve built in. Max. axial load of motor shaft $F_{Ax} = 1,550$ N; max. radial load of motor shaft $F_{RA} = 62$ N	Hose nipple G 1/4" Silencer G 1/2"
		50.9								
R/L	620	24.0	1.70	1/2" square	G 1/4"	10	51707			
		50.9								
R/L	620	24.0	1.70	1/2" square	G 1/4"	10	73715			
		50.9								
R/L	620	24.5	1.70	Cyl. shaft diameter 12 j6	G 1/4"	10	76035			
		51.9								
R	740	18.5	2.10	1/2" square	G 1/4"	10	54209			
		39.2								
R	740	18.5	2.10	1/2" square	G 1/4"	10	78289			
		39.2								
R	740	19.5	1.70	1/2" square	G 1/4"	10	68988			
		41.3								
R/L	620	17.5	2.10	1/2" square	G 1/4"	10		no		
		37.0								

Motors Accessories

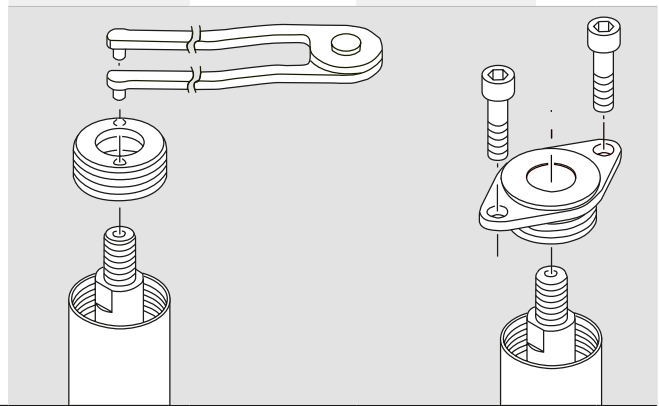
Mounting flange



Fitting the mounting flange

Unscrew the threaded ring with a hook spanner (left-hand thread!) and screw in the mounting flange. The motor can be bolted on to the mounting flange at the clamping device with two screws.

Part number	For motors in the model series	Thread	Size in mm	
			a	b
3 605 700 043	120 W	M 26 x 1 Left	51	7
3 605 700 044	180 W	M 30 x 1 Left	51	7
3 605 700 045	370 W/300 W	M 35 x 1 Left	57	7
3 605 700 046	550 W/740 W	M 45 x 1 Left	70	9
3 605 700 047	740 W	M 50 x 1 Left	70	9



Axial balancing

1/4" hex  1/4" QRC

3 607 030 018

Collet chuck

3/8"-24 UNF-2A



3/8" thread

Can only be used with separately ordered collet and locking nut 3 603 342 009

3 608 570 003

Can also be used for drills

0 607 154 101

0 607 153 520

Drill chuck, capacity 1-10 mm

Keyed chuck for drill spindle thread 1/2"-20 UNF-3A

1 608 571 081

Motors

Technical data

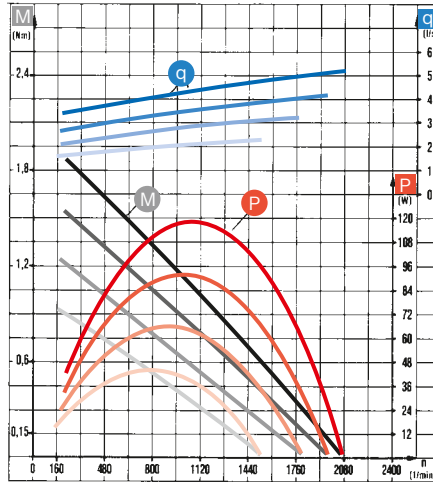
Air motors in the 120 W model series, air connection 6 mm inner diameter

Operating curves:

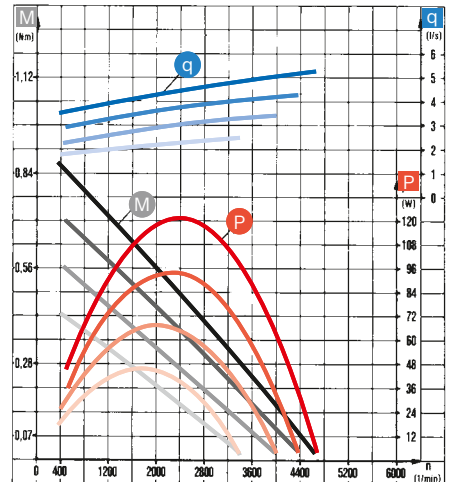
- M Torque
- P Power
- q Air consumption

- at 6.3 bar ————
- 5.3 bar ————
- 4.3 bar ————
- 3.3 bar ————

0 607 954 304 120 W series R
 Stall torque in "soft" screwdriving application (720° tightening angle) at
 6.3 bar = 2.1 Nm
 5.3 bar = 1.9 Nm
 4.3 bar = 1.5 Nm
 3.3 bar = 1.1 Nm



0 607 954 305 120 W series R
 Stall torque in "soft" screwdriving application (720° tightening angle) at
 6.3 bar = 1.0 Nm
 5.3 bar = 0.9 Nm
 4.3 bar = 0.7 Nm
 3.3 bar = 0.5 Nm



Motors

Technical data

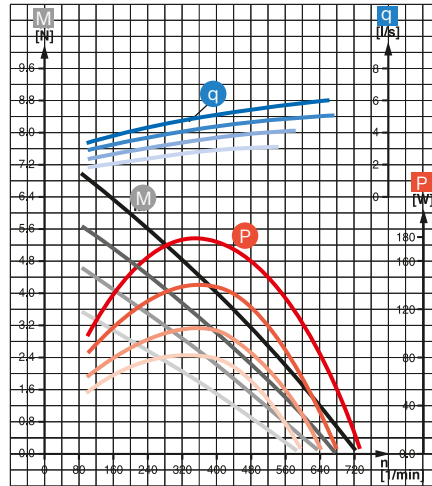
Air motors in the 180 W model series, air connection 6 mm inner diameter

Operating curves:

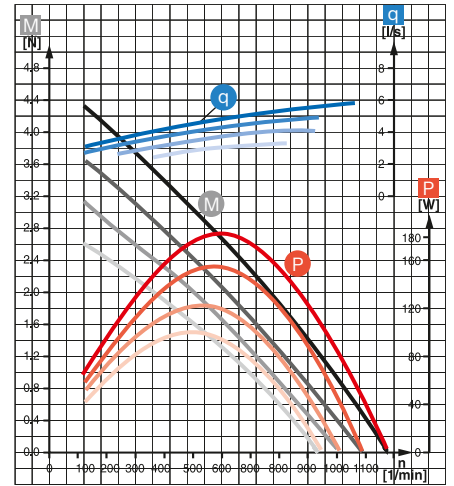
- M Torque
- P Power
- q Air consumption

at 6.3 bar	—	—	—
5.3 bar	—	—	—
4.3 bar	—	—	—
3.3 bar	—	—	—

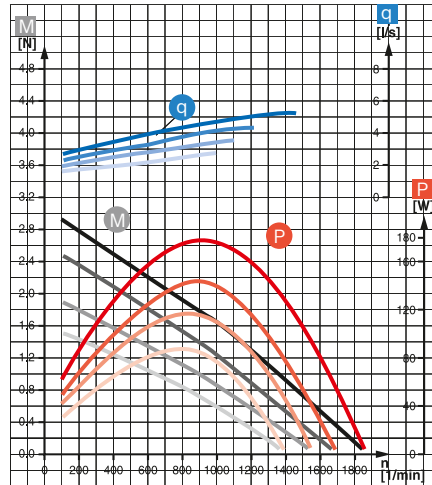
0 607 953 331 180 W series R
 Stall torque in "soft" screwdriving application (720° tightening angle) at
 6.3 bar = 7.7 Nm
 5.3 bar = 6.4 Nm
 4.3 bar = 5.2 Nm
 3.3 bar = 4.1 Nm



0 607 953 332 180 W series R
 Stall torque in "soft" screwdriving application (720° tightening angle) at
 6.3 bar = 4.7 Nm
 5.3 bar = 4.0 Nm
 4.3 bar = 3.5 Nm
 3.3 bar = 2.9 Nm



0 607 953 333 180 W series R
 Stall torque in "soft" screwdriving application (720° tightening angle) at
 6.3 bar = 3.2 Nm
 5.3 bar = 2.6 Nm
 4.3 bar = 2.0 Nm
 3.3 bar = 1.6 Nm



Motors

Technical data

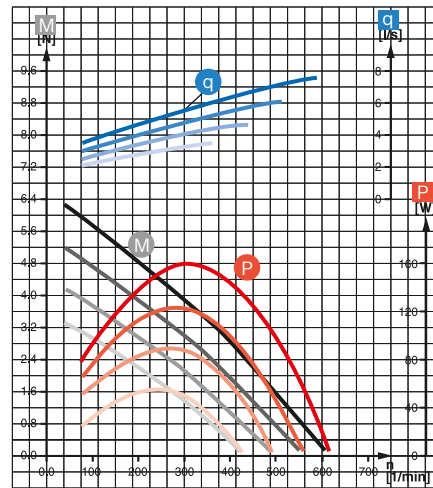
Air motors in the 180 W model series, air connection 6 mm inner diameter

Operating curves:

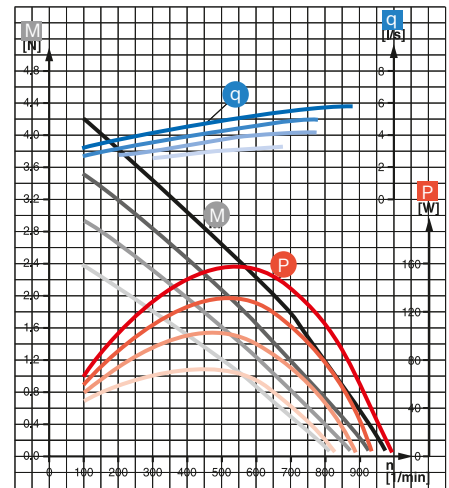
- M Torque
- P Power
- q Air consumption



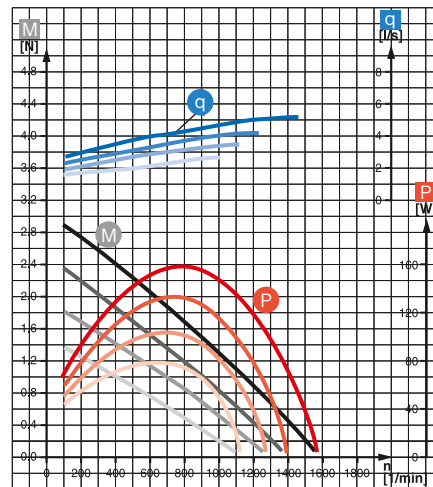
0 607 953 335 180 W series R/L
 Stall torque in "soft" screwdriving application (720° tightening angle) at
 6.3 bar = 6.5 Nm
 5.3 bar = 5.5 Nm
 4.3 bar = 4.4 Nm
 3.3 bar = 3.6 Nm



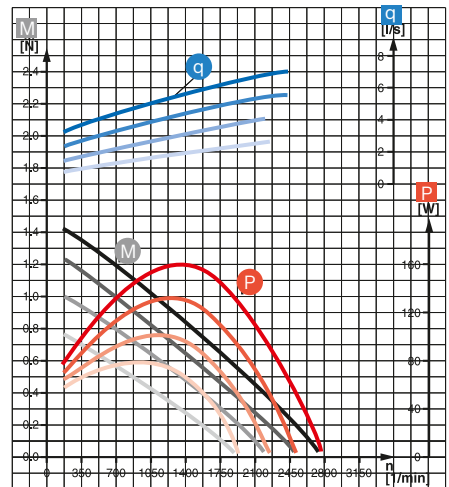
0 607 953 336 180 W series R/L
 Stall torque in "soft" screwdriving application (720° tightening angle) at
 6.3 bar = 4.5 Nm
 5.3 bar = 3.9 Nm
 4.3 bar = 3.2 Nm
 3.3 bar = 2.6 Nm



0 607 953 337 180 W series R/L
 Stall torque in "soft" screwdriving application (720° tightening angle) at
 6.3 bar = 2.9 Nm
 5.3 bar = 2.3 Nm
 4.3 bar = 1.8 Nm
 3.3 bar = 1.4 Nm



0 607 953 338 180 W series R/L
 Stall torque in "soft" screwdriving application (720° tightening angle) at
 6.3 bar = 1.4 Nm
 5.3 bar = 1.2 Nm
 4.3 bar = 1.0 Nm
 3.3 bar = 0.8 Nm



Motors

Technical data

Air motors in the 180 W model series, air connection 6 mm inner diameter

Operating curves:

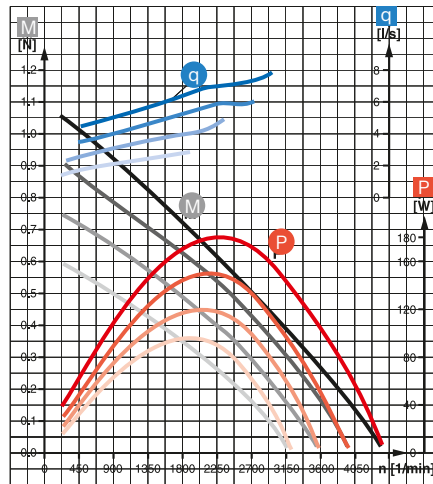
- M Torque
- P Power
- q Air consumption

- at 6.3 bar
- — —
 - 5.3 bar — — —
 - 4.3 bar — — —
 - 3.3 bar — — —

0 607 953 339
180 W series
R

Stall torque in "soft" screwdriving application (720° tightening angle) at

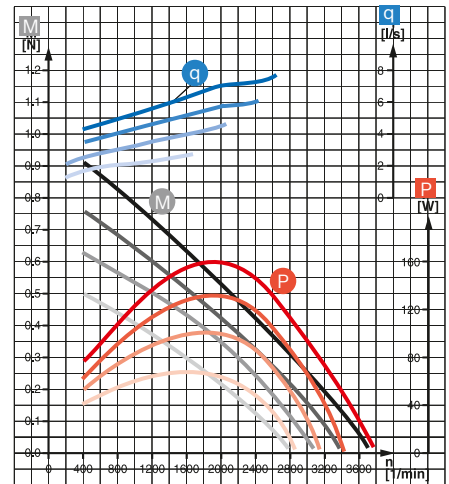
6.3 bar = 1.1 Nm
5.3 bar = 0.9 Nm
4.3 bar = 0.7 Nm
3.3 bar = 0.5 Nm



0 607 953 340
180 W series
R/L

Stall torque in "soft" screwdriving application (720° tightening angle) at

6.3 bar = 1.0 Nm
5.3 bar = 0.9 Nm
4.3 bar = 0.7 Nm
3.3 bar = 0.5 Nm



Air motors in the 340 W model series, air connection 8 mm inner diameter

Operating curves:

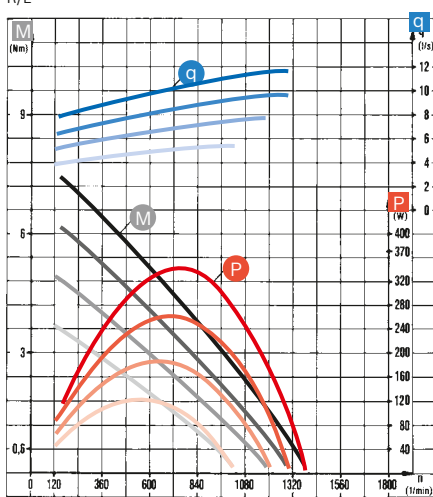
- M Torque
- P Power
- q Air consumption

- at 6.3 bar
- — —
 - 5.3 bar — — —
 - 4.3 bar — — —
 - 3.3 bar — — —

0 607 951 306
0 607 951 316
0 607 951 326
340 W series
R/L

Stall torque in "soft" screwdriving application (720° tightening angle) at

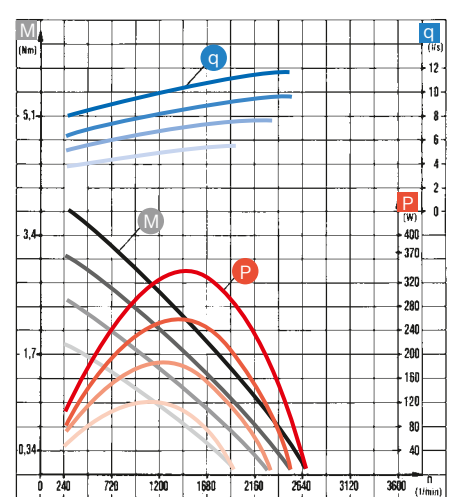
6.3 bar = 9.0 Nm
5.3 bar = 7.5 Nm
4.3 bar = 6.0 Nm
3.3 bar = 4.5 Nm



0 607 951 307
340 W series
R/L

Stall torque in "soft" screwdriving application (720° tightening angle) at

6.3 bar = 4.5 Nm
5.3 bar = 3.5 Nm
4.3 bar = 3.0 Nm
3.3 bar = 2.0 Nm



Motors

Technical data

Air motors in the 370 W model series, air connection 8 mm inner diameter

Operating curves:

- M Torque
- P Power
- q Air consumption

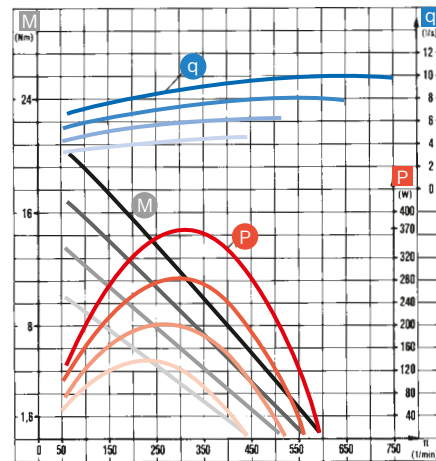
at 6.3 bar

5.3 bar		
4.3 bar		
3.3 bar		

0 607 951 300
0 607 951 322
370 W series
R

Stall torque in "soft" screwdriving application (720° tightening angle) at

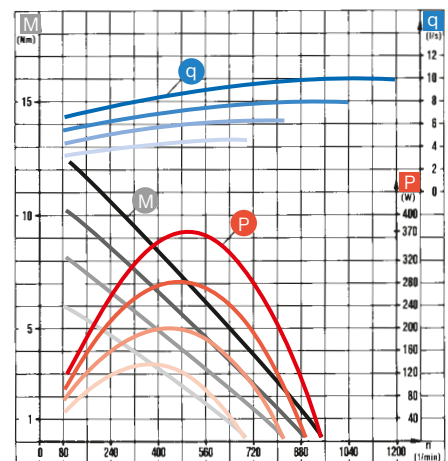
6.3 bar = 25.6 Nm
5.3 bar = 20.5 Nm
4.3 bar = 16.5 Nm
3.3 bar = 12.5 Nm



0 607 951 301
370 W series
R

Stall torque in "soft" screwdriving application (720° tightening angle) at

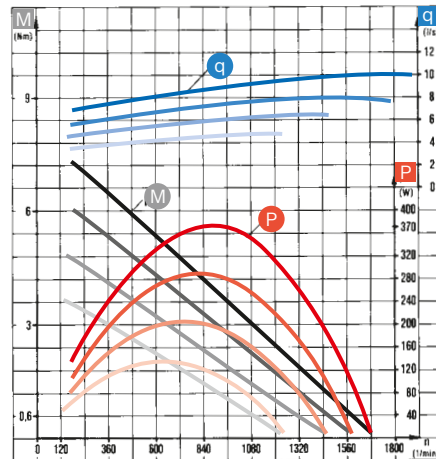
6.3 bar = 15.0 Nm
5.3 bar = 12.5 Nm
4.3 bar = 10.0 Nm
3.3 bar = 7.5 Nm



0 607 951 302
370 W series
R

Stall torque in "soft" screwdriving application (720° tightening angle) at

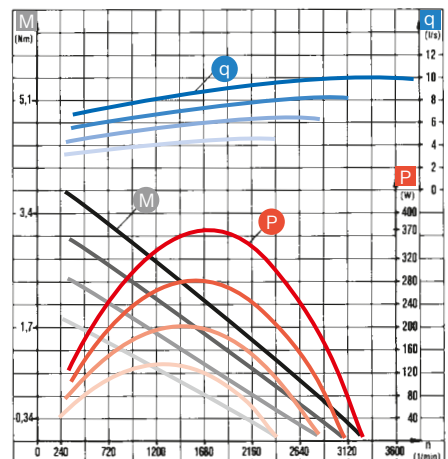
6.3 bar = 9.0 Nm
5.3 bar = 7.5 Nm
4.3 bar = 6.0 Nm
3.3 bar = 4.5 Nm



0 607 951 303
370 W series
R

Stall torque in "soft" screwdriving application (720° tightening angle) at

6.3 bar = 4.5 Nm
5.3 bar = 3.5 Nm
4.3 bar = 3.0 Nm
3.3 bar = 2.0 Nm

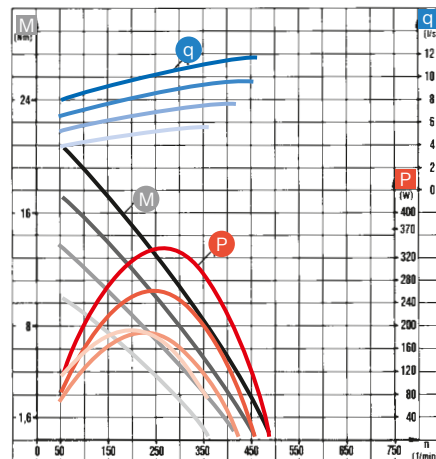


0 607 951 304
0 607 951 314
0 607 951 318
0 607 951 323
0 607 951 325

340 W series, R/L

Stall torque in "soft" screwdriving application (720° tightening angle) at

6.3 bar = 25.0 Nm
5.3 bar = 20.5 Nm
4.3 bar = 16.5 Nm
3.3 bar = 12.5 Nm

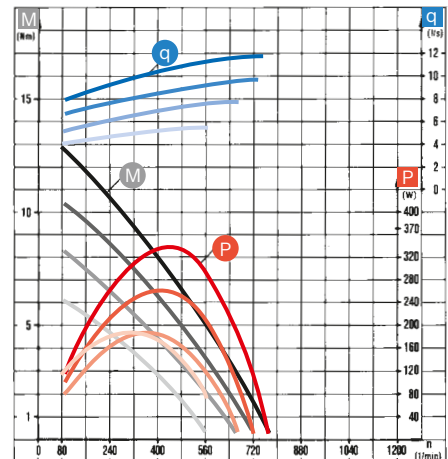


0 607 951 305
0 607 951 315

340 W series
R/L

Stall torque in "soft" screwdriving application (720° tightening angle) at

6.3 bar = 15.0 Nm
5.3 bar = 12.5 Nm
4.3 bar = 10.0 Nm
3.3 bar = 7.5 Nm



Motors

Technical data

Air motors in the 500 and 550 W model series, air connection 10 mm inner diameter

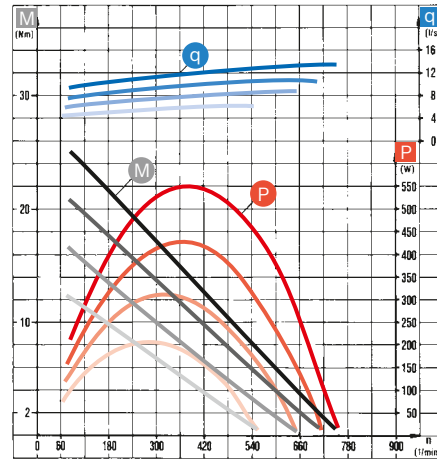
Operating curves:

- M Torque
- P Power
- q Air consumption

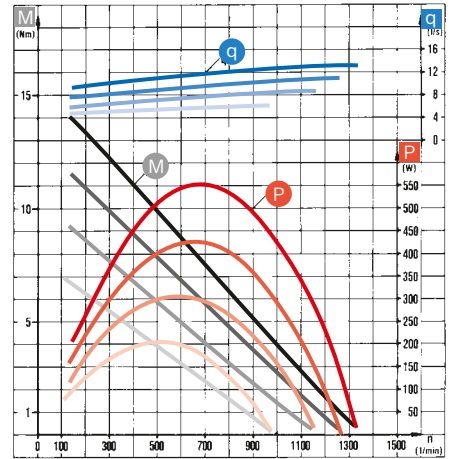
at 6.3 bar

5.3 bar		
4.3 bar		
3.3 bar		

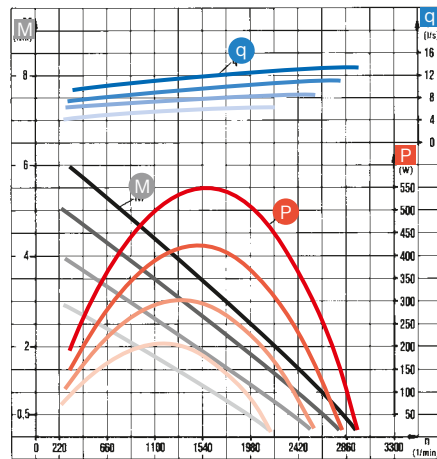
0 607 952 300 550 W series R
 Stall torque in "soft" screwdriving application (720° tightening angle) at
 6.3 bar = 28.0 Nm
 5.3 bar = 23.6 Nm
 4.3 bar = 18.5 Nm
 3.3 bar = 14.0 Nm



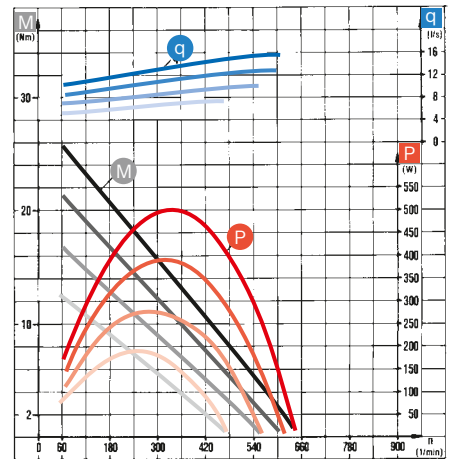
0 607 952 301 550 W series R
 Stall torque in "soft" screwdriving application (720° tightening angle) at
 6.3 bar = 15.5 Nm
 5.3 bar = 13.0 Nm
 4.3 bar = 10.0 Nm
 3.3 bar = 7.5 Nm



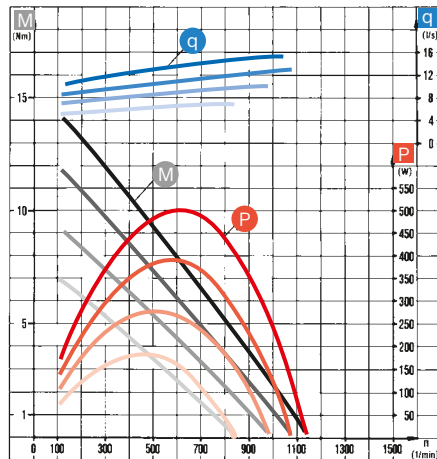
0 607 952 302 500 W series R
 Stall torque in "soft" screwdriving application (720° tightening angle) at
 6.3 bar = 6.5 Nm
 5.3 bar = 5.0 Nm
 4.3 bar = 4.0 Nm
 3.3 bar = 3.0 Nm



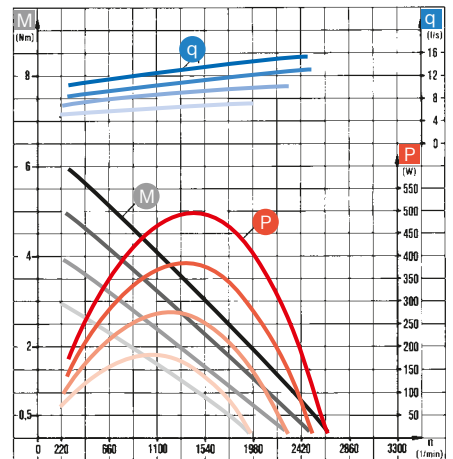
0 607 952 303 500 W series R/L
 Stall torque in "soft" screwdriving application (720° tightening angle) at
 6.3 bar = 28.0 Nm
 5.3 bar = 23.6 Nm
 4.3 bar = 18.5 Nm
 3.3 bar = 14.0 Nm



0 607 952 304 500 W series R/L
 Stall torque in "soft" screwdriving application (720° tightening angle) at
 6.3 bar = 15.5 Nm
 5.3 bar = 13.0 Nm
 4.3 bar = 10.0 Nm
 3.3 bar = 7.5 Nm



0 607 952 305 500 W series R/L
 Stall torque in "soft" screwdriving application (720° tightening angle) at
 6.3 bar = 6.5 Nm
 5.3 bar = 5.0 Nm
 4.3 bar = 4.0 Nm
 3.3 bar = 3.0 Nm



Motors

Technical data

Air motors in the 620 and 740 W model series, air connection 10 mm inner diameter

Operating curves:

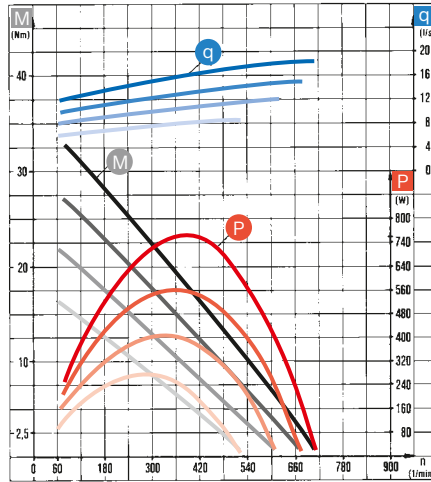
- M Torque
- P Power
- q Air consumption

at 6.3 bar	—	—	—
5.3 bar	—	—	—
4.3 bar	—	—	—
3.3 bar	—	—	—

0 607 957 300
0 607 957 307
740 W series
R

Stall torque in "soft" screwdriving application (720° tightening angle) at

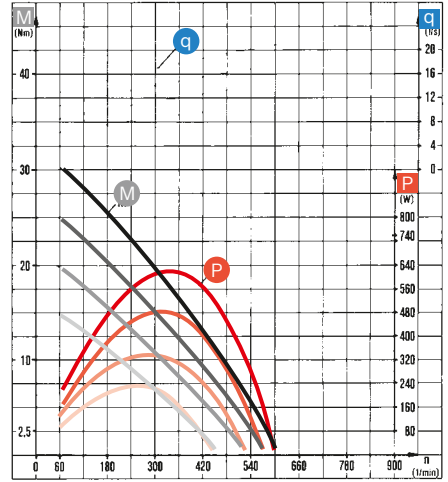
6.3 bar = 36.0 Nm
5.3 bar = 30.0 Nm
4.3 bar = 24.0 Nm
3.3 bar = 18.0 Nm



0 607 957 301
0 607 957 310
0 607 957 315
0 607 957 317
620 W series
R/L

Stall torque in "soft" screwdriving application (720° tightening angle) at

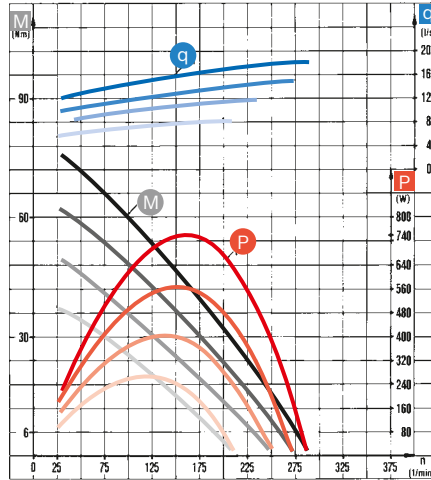
6.3 bar = 36.0 Nm
5.3 bar = 30.0 Nm
4.3 bar = 24.0 Nm
3.3 bar = 18.0 Nm



0 607 957 305
740 W series
R

Stall torque in "soft" screwdriving application (720° tightening angle) at

6.3 bar = 90.0 Nm
5.3 bar = 74.5 Nm
4.3 bar = 60.8 Nm
3.3 bar = 45.0 Nm



Motors

Technical data

Air motors in the 620 and 740 W model series, air connection 10 mm inner diameter

Operating curves:

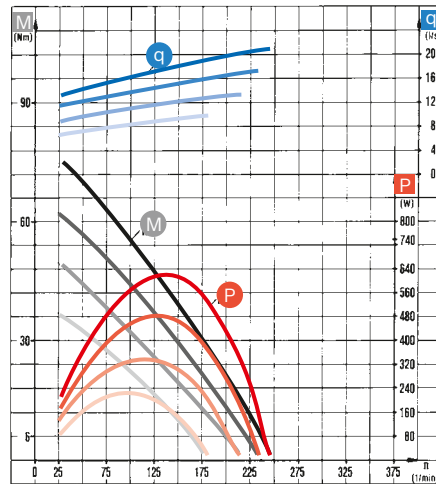
- M Torque
- P Power
- q Air consumption

at 6.3 bar	—	—	—
5.3 bar	—	—	—
4.3 bar	—	—	—
3.3 bar	—	—	—

0 607 957 308
620 W series
R/L

Stall torque in "soft" screwdriving application (720° tightening angle) at

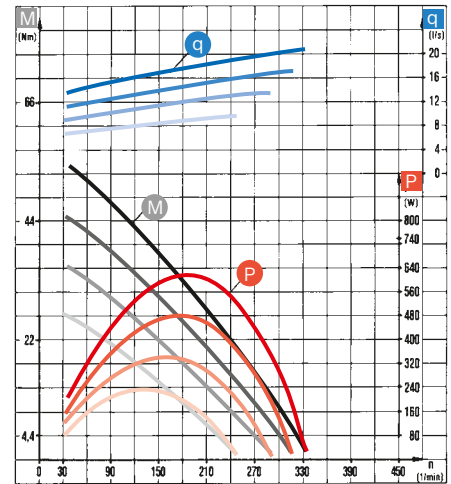
6.3 bar = 90.0 Nm
5.3 bar = 74.5 Nm
4.3 bar = 60.0 Nm
3.3 bar = 45.8 Nm



0 607 957 309
620 W series
R/L

Stall torque in "soft" screwdriving application (720° tightening angle) at

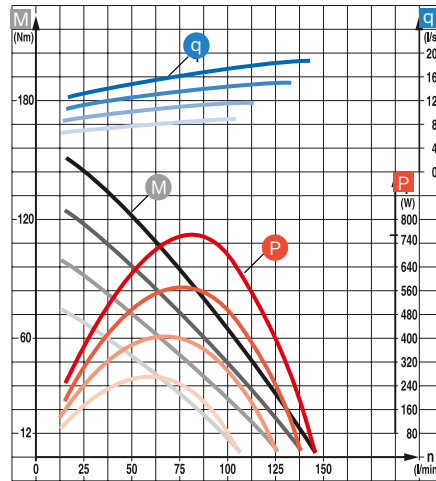
6.3 bar = 65.0 Nm
5.3 bar = 54.8 Nm
4.3 bar = 43.5 Nm
3.3 bar = 32.5 Nm



0 607 957 314
740 W series
R

Stall torque in "soft" screwdriving application (720° tightening angle) at

6.3 bar = 170 Nm
5.3 bar = 148 Nm
4.3 bar = 120 Nm
3.3 bar = 90 Nm



Dimensional drawings

Motors

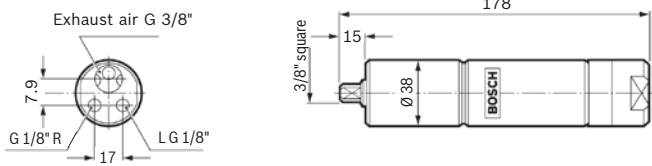
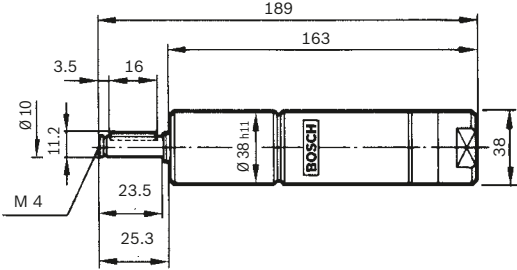
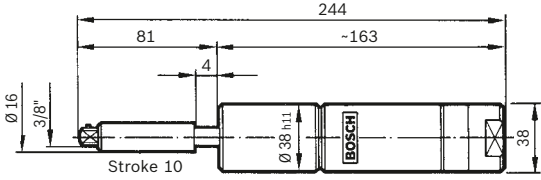
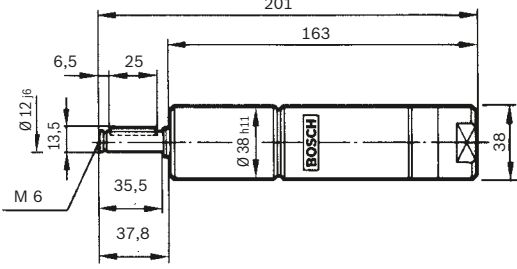
Size in mm	Part number
	0 607 954 304
	0 607 954 305
	0 607 953 335
	0 607 953 336
	0 607 953 337
	0 607 953 338
	0 607 953 340
	0 607 953 348
	0 607 953 331
	0 607 953 332
	0 607 953 333
	0 607 953 339
	0 607 951 304
	0 607 951 305
	0 607 951 306
	0 607 951 307*
	0 607 951 300
	0 607 951 301
	0 607 951 302
	0 607 951 303*
	0 607 951 322

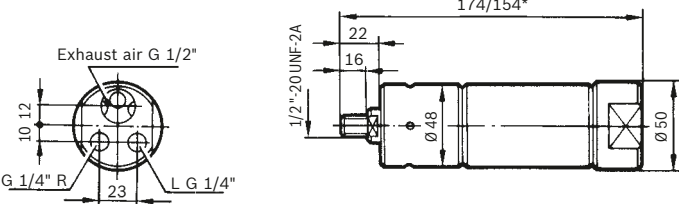
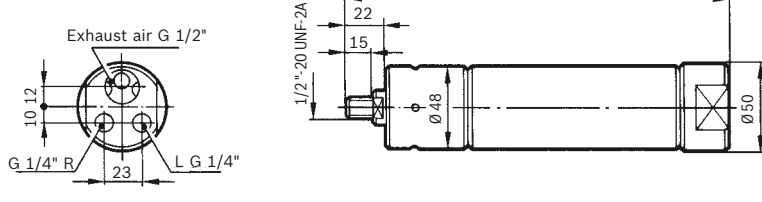
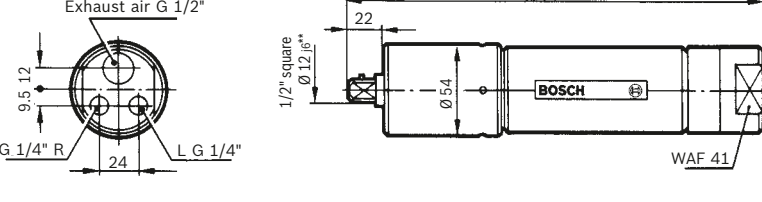
Purely right-hand rotators do not feature the “L” connection.

The specified dimensions are not binding.

Dimensional drawings

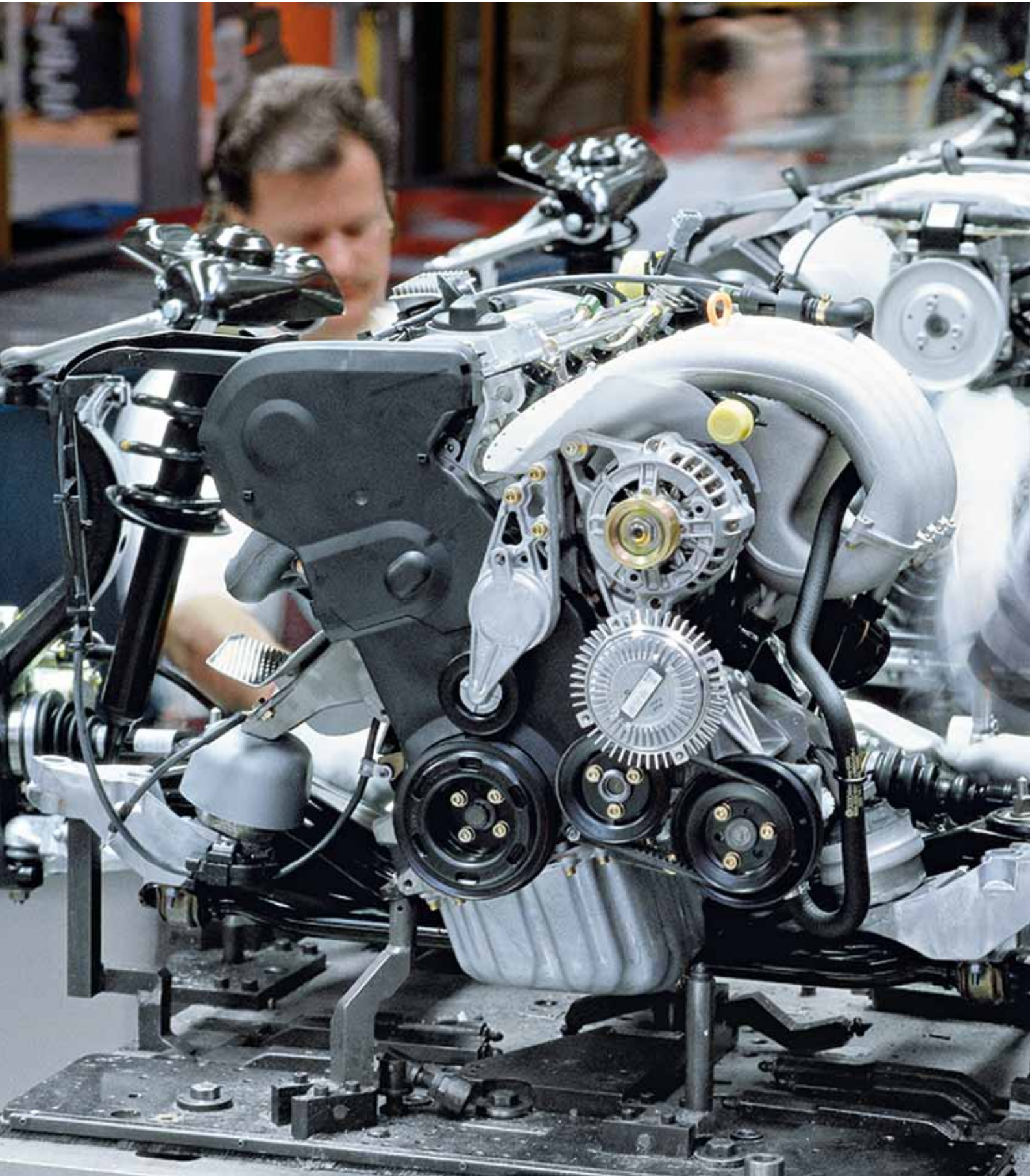
Motors

Size in mm	Part number
	0 607 951 314 0 607 951 315 0 607 951 316
	0 607 951 318
	0 607 951 323
	0 607 951 325 0 607 951 326

Size in mm	Part number
	0 607 952 303 0 607 952 304 0 607 952 305* 0 607 952 300 0 607 952 301 0 607 952 302*
	0 607 957 301 0 607 957 300
	0 607 957 308 0 607 957 309 0 607 957 310* 0 607 957 315** 0 607 957 314 0 607 957 305 0 607 957 307* 0 607 957 317

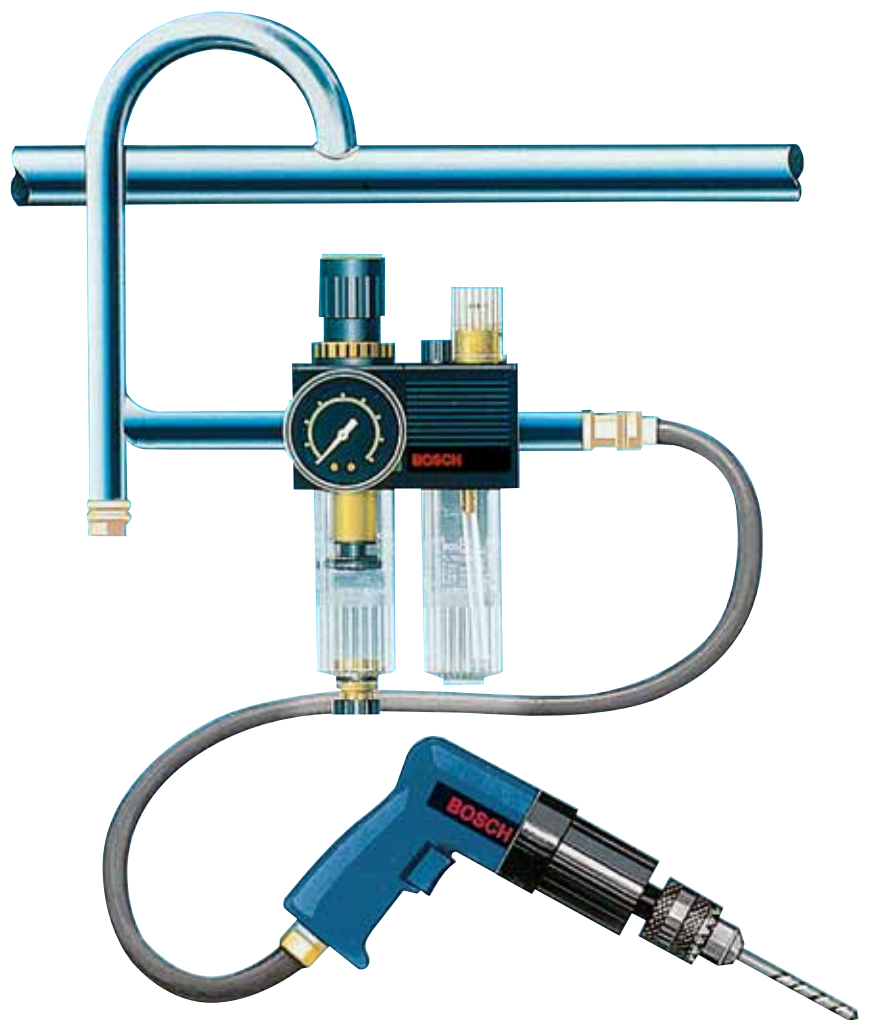
6

Air technology A guide for the user

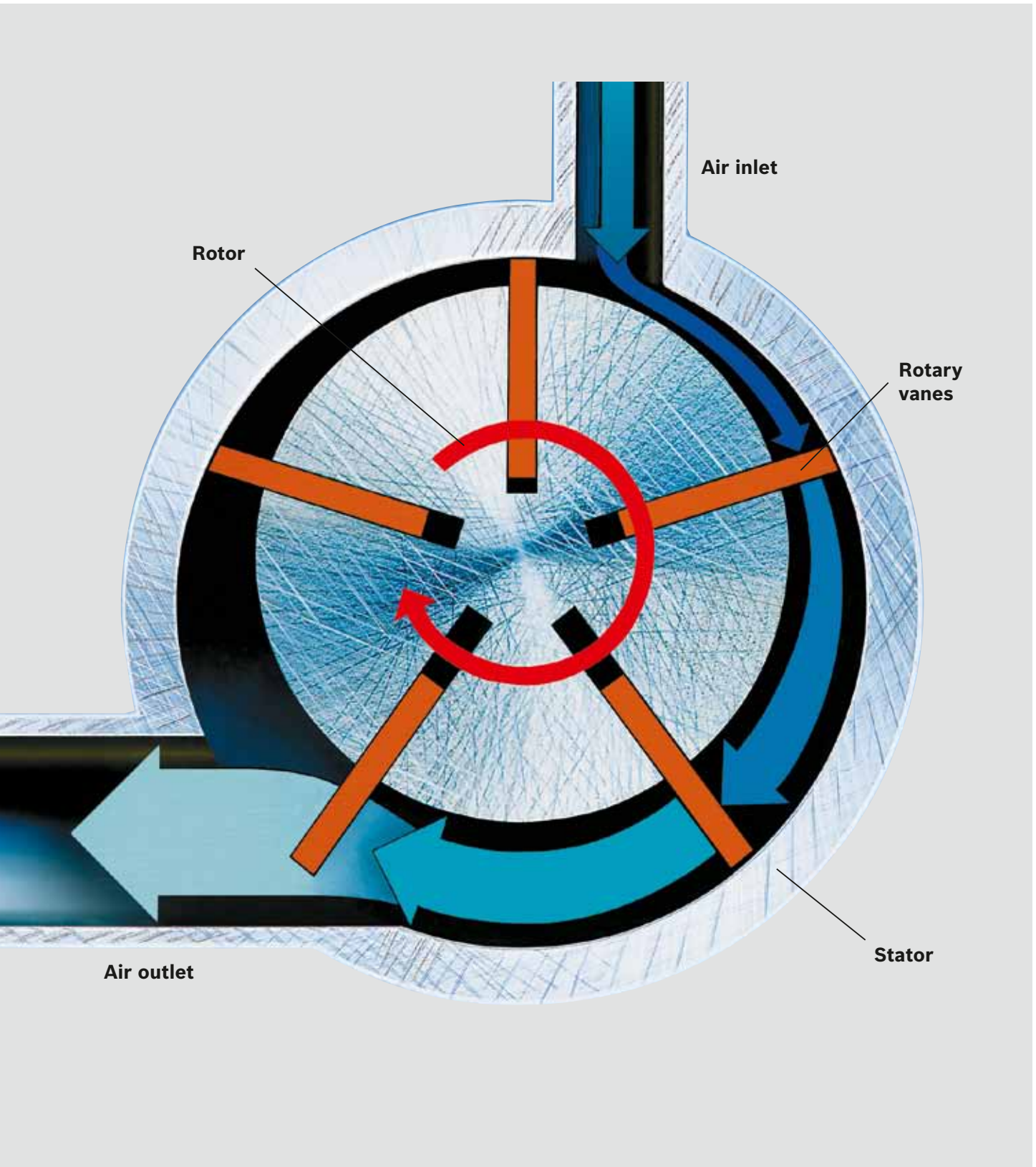


Air tools are an integral part of the production tool range from Bosch. We want to pass our extensive know-how on to you. This guide deals with the basic features of compressed air as a drive medium for air tools: the structure of the motor, the maintenance, the piping system with simple rough calculations, and possible operating errors.

We wish you much success with Bosch air tools!



Air technology used correctly



The driving force – The air motor

The individual tools are designed differently depending on the intended range of applications; the drive motor and its structure are, however, in principle always the same – apart from the different sizes. Due to its high power at small dimensions, the slide-valve motor or rotary vane motor is best suited to handheld air tools. It is driven by means of the expansion of compressed air, enabling it to perform mechanical work.

Essentially, the rotary vane motor consists of the stator, the rotor that holds the rotary vanes in longitudinal slots, and the sealing plates that close off the stator on both ends, and the rotor bearing. The eccentric arrangement of the rotor in relation to the stator creates a sickle-shaped work chamber that is divided into individual chambers by the rotary vanes. These chambers are sealed against one another, as their own centrifugal force means that the rotary vanes press against the inner wall of the stator when they are running. The compressed air flowing through the inlet channel presses on the vanes and makes the rotor turn. The air inlet and outlet are arranged depending on the desired direction of rotation. As a rule, in order to achieve the right working speed in each case, there are planetary gears in front of the motor.

The following typical features make the air motor the ideal drive element for all different kinds of application ranges:

- ▶ The air motor has constantly favourable torque behaviour for different applications. With increasing load and decreasing speed, the torque rises to a maximum at standstill (Fig. 1) – this is utilised, for example, in screwdrivers.
- ▶ It is possible to operate the motor until standstill, which rules out the possibility of failure due to overload.
- ▶ The standstill torque is infinitely adjustable by changing the pressure of the compressed air being supplied (pressure controller). The speed is infinitely adjustable by changing the flow rate (throttle valve).

- ▶ Small dimensions and a low weight allow for fatigue-free working and a versatile range of applications.
- ▶ The robust, uncomplicated design guarantees long runtime and low susceptibility to failure.
- ▶ Another advantage is the lack of susceptibility to external influences such as dust, moisture, etc.
- ▶ Air tools offer a high level of operational safety because the drive medium (air) is safe and – due to the lack of spark formation – cannot trigger an explosion (observe the special regulations for working in explosion-hazardous areas).

Since the expanding compressed air cools the tool, the machine does not overheat.

- ▶ Using the tools in wet and damp areas is not a problem.
- ▶ Easy maintenance and repair.
- ▶ The air pressure should not fall below 6.3 bar at the tool entrance (flow pressure) in order to ensure full power output at the working spindle.

Characteristic curves of an air motor

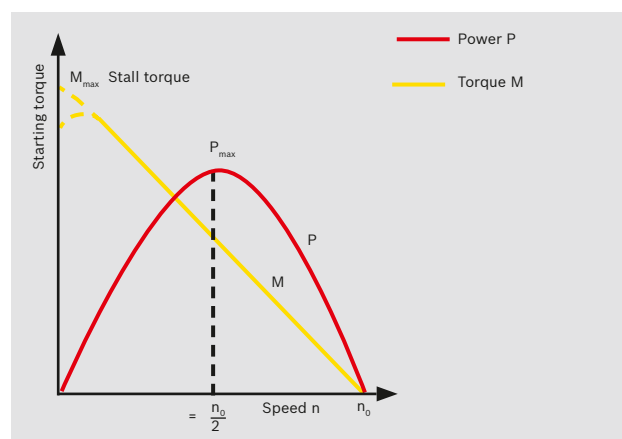


Fig. 1 Characteristic curves of an air motor

The maintenance unit

For optimum lifetime

Despite various measures (drainage systems etc. after the compressor), it cannot be avoided that the compressed air cools down further the longer the pipes are and, therefore, releases water again. Scale and rust can also occur – especially on older pipes. However, these constituents are separated if a compressed-air filter is installed shortly before the tool. A pneumatic oiler should certainly be installed downstream of the filter, in order to mix an oil mist with the throughflowing compressed air. This oil is required for lubrication of the air motor, especially in continuous operation.

Maintenance units should be connected as close as possible to the tool. Their size must correspond to the air throughput at the supply point. If a certain operating pressure is desired or pressure fluctuations from the supply lines are to be compensated, a pressure controller with manometer can be fitted in the maintenance unit between the filter and lubricator (Fig. 2). To achieve the longest possible lifetime of tools, the compressed air must be prepared by means of a maintenance unit. More details can be found in the operating instructions for air tools.

Oil for the maintenance unit or direct lubrication:
Motor oil SAE 20 or SAE 10.

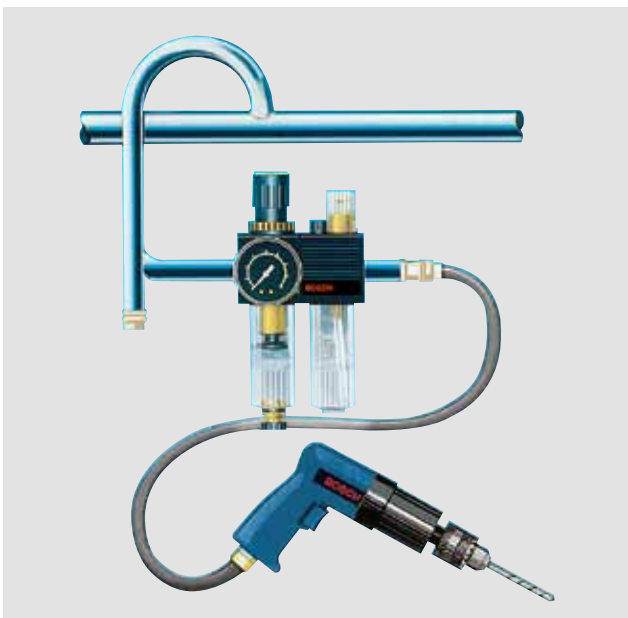


Fig. 2 Maintenance unit

C·L·E·A·N

C consumption optimised
L lubrication free
E ergonomic
A air tool
N noise reduction

The clean solution for air screwdrivers

Bosch has developed a new generation of air tools: the CLEAN series. “CLEAN” stands for consumption optimised, lubrication free, ergonomic, air tool and noise reduction.

The advantages:

- ▶ Up to 30% less air consumption than conventional air tools
- ▶ This reduces energy costs and protects the environment
- ▶ The tools are driven with oil-free compressed air – but also work with air containing oil
- ▶ No soiling of workpieces, the workplace stays clean
- ▶ The CLEAN screwdrivers are considerably quieter than other air screwdrivers

You will find suitable maintenance units at:
www.boschrexroth.com/pneumatics-catalog

The compressed-air system

First link in the chain

Although Bosch does not manufacture any compressed-air systems, we should still discuss the basic structure of this kind of system (please obtain more detailed information from the compressor manufacturer).

Compressor

The following four types of compressor are usually used:

- ▶ Piston compressor: Depending on the pressure range, there are one-stage or two-stage piston compressors, e.g. one-stage for a final pressure of up to approx. 10 bar, two-stage for a final pressure of up to approx. 17 bar
- ▶ Rotation compressor
- ▶ Screw-type compressor
- ▶ Turbo compressor

Pressure tank control

The compressed air conveyed by the compressor is stored in a pressure tank (air chamber), which also serves as a buffer to compensate pressure fluctuations. In this way, brief consumption peaks are covered without the operating pressure in the pipe fluctuating or dropping too severely. The air requirement when the consumption peaks are present should not exceed the delivery quantities of the compressor for a lengthy period of time.

The pressure in the tank is controlled by way of the fact that the compressor is switched off when a maxi-

mum pressure (e.g. 12 bar) is reached and is switched on when a pressure falls to a minimum value (e.g. 8 bar). During this time span, the pressure tank and the feed lines act as a reservoir for the tools.

Idle control

In the case of medium to large piston compressors, this usually takes place by opening and closing sliders or valves. This prevents continuous deactivation and activation of the electric motor and the associated high starting current.

Bypass on-off control

The bypass on-off control on small to medium-sized compressor systems is performed by means of a pressure monitor, which switches the electric motor on and off depending on the tank pressure.

The following rule of thumb applies:

$V \approx 0.9-1 Q$ with bypass on-off control

$V \approx 0.4 Q$ with idle control;

where

V = Chamber volume (m^3)

Q = Delivery quantity of the compressor (m^3/min)

Additional pressure tanks are often installed at the end of the piping system or before large-scale consumers, in order to compensate for high demand loads.

Correct dimensions for the piping system

The following simple example shows how the load of compressor and pressure tank can be determined depending on the consumer:

Compressor:

Delivery quantity 1,000 l/min (35.3 cfm)

Pressure tank:

Volume 500 l (17.6 cf)

Switching cycle between 12 and 8 bar

At a final pressure of 12 bar, the compressor switches off. Until the compressor is switched on again at 8 bar, 12 bar – 8 bar = 4 bar and thus 500 x 4 = 2,000 l (70.6 cf) is available to consuming devices in this range, i.e. at

air consumption of 2,000 l/min (70.6 cfm) a continuous operating period of 1 minute is possible or with air consumption of 500 l/min (17.6 cfm) an operating period of 4 minutes. Here, it must be borne in mind that many tools, especially screwdrivers, are only switched on for short periods. For example, if an impact wrench with an average air consumption of 20 l/s (42.4 cfm) is used four times a minute and works for 3 seconds per screw connection (3 x 4 seconds pure working time in one minute), it actually only requires 20 x 3 x 4 = 240 l (8.5 cf) in this period.

Therefore, $2,000 : 240 = 8.33$ minutes pass before the compressor switches on again at 8 bar network pressure.

As with the selection of the compressor and pressure tank, any increase in consumption that may occur later, e.g. due to production extension, must also be taken into account when setting up the supply network.

In practice, it is usually not possible to prevent the compressed air cooling in the pipe. To ensure that condensed water that occurs in the process cannot flow back towards the compressor, the pipes are laid at a slight incline of 2 to 3% in the direction of flow. Condensate traps can then collect the water at the lowest points of the piping system. To also keep the condensate away from the tapping points to a large extent, branch-offs are usually fed upwards out of the main pipe (Fig. 4).

The pipe or hose inner diameter has a major influence on the performance of the air tools.

Insufficiently dimensioned pipes increase the flow resistances and result in a corresponding drop in machine power.

The following factors must be taken into account when selecting the pipe cross-sections (if possible, not under 3/4" for pipelines):

- ▶ Air quantity, pipe pressure, flow velocity, pressure losses
- ▶ Length of the pipe
- ▶ Quantity and type of pipe fittings such as elbows, bends, T-pieces, constrictions, maintenance unit, couplings, etc.
- ▶ Future increase in air requirement and possible extension of the system

When determining and checking the pipe cross-section, take into account that all tools are never in use simultaneously. This is accounted for by multiplying with what is known as the demand factor (Fig. 3).

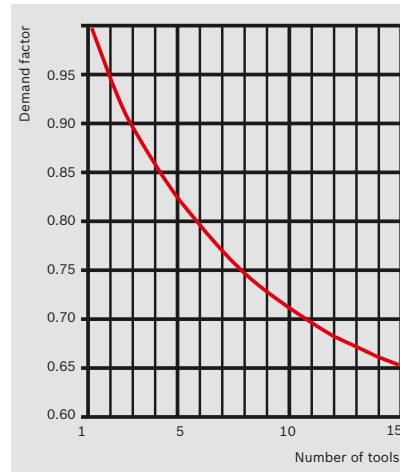


Fig. 3 Demand factor

The pressure loss caused by the resistance in the fittings etc. is accounted for by adding approx. 30% to the actual pipe length. The pressure loss to distant parts of the system should not amount to more than 10% of the network pressure, if possible. If pressure losses of 1 bar or more occur, the circumstances in the piping system absolutely must be examined. Generally, closed loop pipes are used in large piping systems because better supply of the active tapping points is guaranteed if the load is rising (Fig. 4).

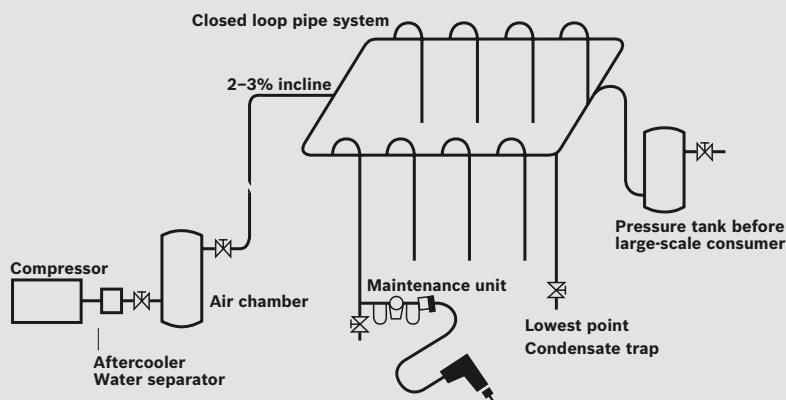


Fig. 4 Diagram of a compressed-air system

Pipe dimensioning

Rough calculation

Calculations using exact equations are very complex; besides, individual factors are difficult or even impossible to acquire. To nevertheless give you something to go by, the diagram (Fig. 5) for determining the pipe inner diameter can be used to perform a short rough calculation.

Example: the sum of the air consumption values of 6 machines results in 36 l/s (76.3 cfm). Fig. 3 provides a demand factor of 0.79 for 6 machines; this results in $36 \times 0.79 = 28.5$ l/s (60.4 cfm). With this value, you can calculate the dimensions of the pipe by using the diagram (Fig. 5). Based on the air quantity of approx. 28.5 l/s (60.4 cfm) decompressed air, this results in a pipe inner diameter of at least 1". A theoretical pipe length of 130 m (actual length 100 m + 30% allowance for pressure loss at fittings, elbows, etc.) results in a pipe inner diameter of 1.5".

If additional machines need to be connected to this pipe, their air consumption must be taken into account in the calculation.

An existing system can be checked in the same way. Unlike calculation of the pipe cross-sections, the compressor size is determined by the input factor. The input factor expresses the actual running time of the tool as a percentage. For systems that mainly have screwdrivers connected to them, this factor is in the range of approx. 5 to 15%; whereas for systems with grinders operated in continuous use (e.g. fettling shops), a value of 30 to 70% has to be expected. To determine the required compressor size as accurately as possible, it is however best to check the circumstances on-site and then determine the input factor, or consult a compressor manufacturer.

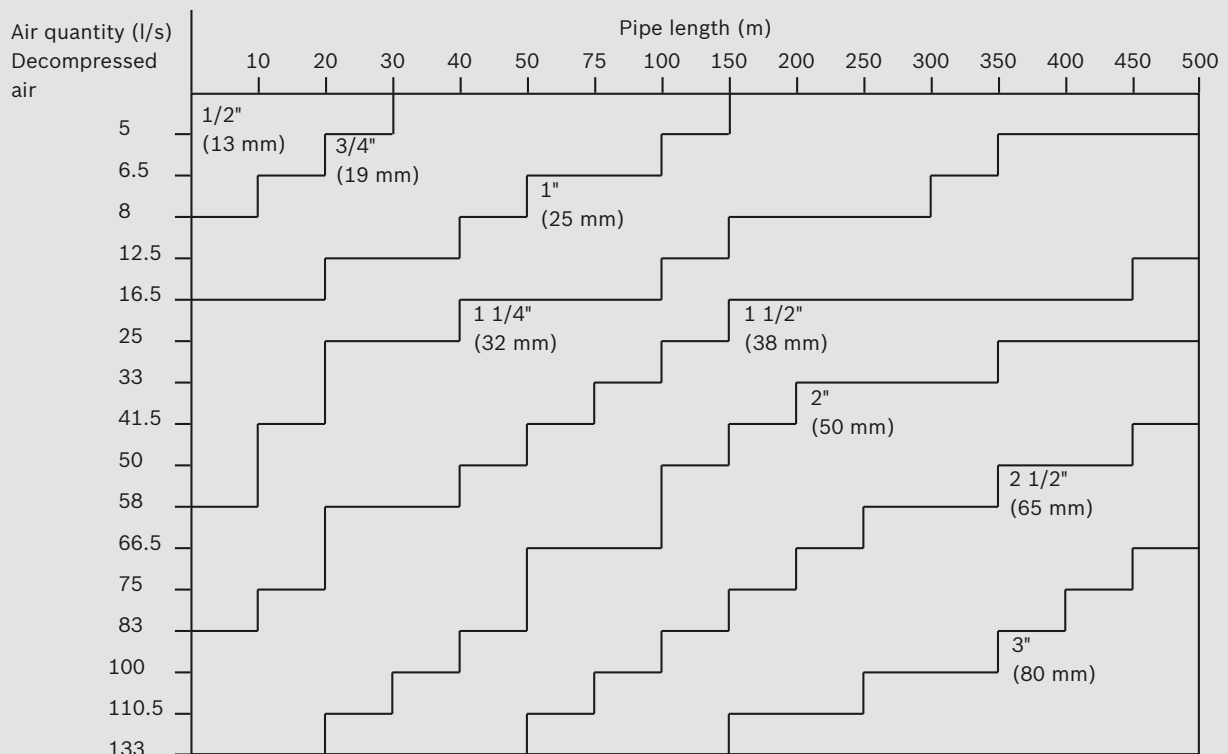


Fig. 5 Pipe dimensioning

More dynamics

due to speed control

From practical experience, for practical application: frequent operating errors

Certain operating errors are usually the cause of unsatisfactory results or faults.

The following are frequent errors:

- ▶ Incorrectly selected tools (machine too weak or too strong for the intended purpose)
- ▶ Insufficient air quantity and insufficient pressure or no constant pressure directly before the tool
- ▶ Insufficient cross-section of the feed line
- ▶ Missing maintenance devices, dirt, water and missing oil lead to premature failure of the machine due to fast wear and rust formation in the motor
- ▶ Knocked-out, blunt or unsuitable bits or abrasives reduce efficiency

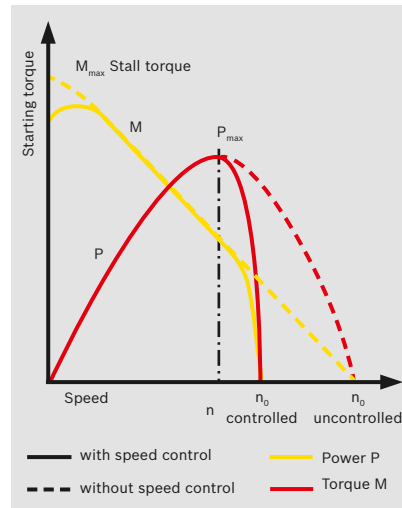


Fig. 6 Characteristic curves with and without speed control

The speed control offers the following advantages:

- ▶ High sanding performance
- ▶ Lower disc consumption
- ▶ Time saving
- ▶ Reduced motor wear
- ▶ Lower noise level

The sensitive speed controller enables virtually constant working speed and, therefore, grinding in the right range at a consistent circumferential speed. As the speed increases, the controller weights swivel outwards, causing the valve body to make the inflow cross-section smaller. If the speed is reduced, the force of the return spring outweighs them, and the cross-section enlarges (Fig. 7).

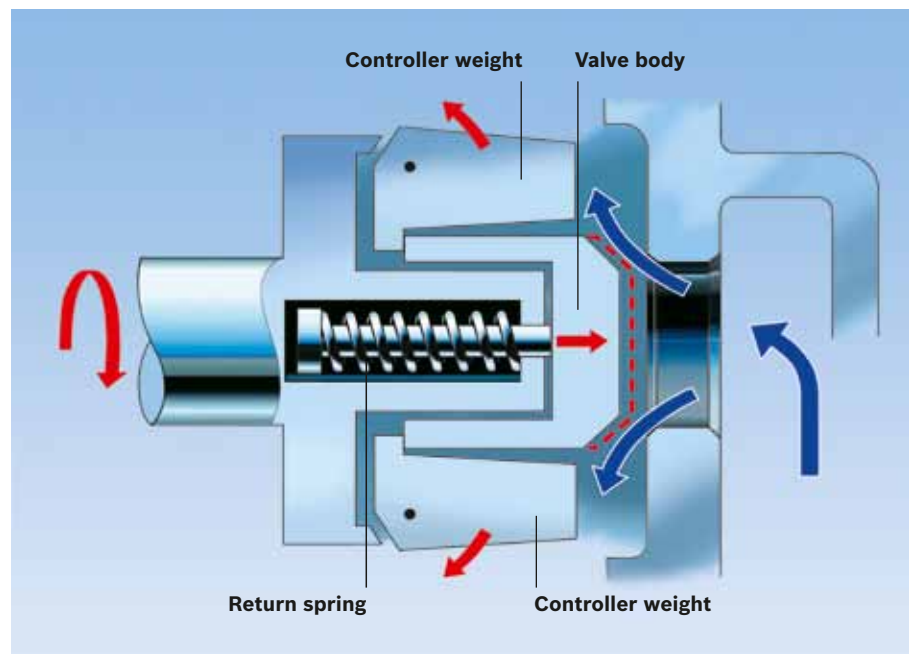


Fig. 7 Speed control

Exhaust air guidance, sound-proofing

The advantages:

- ▶ Environmentally friendly because the exhaust air can be diverted through the exhaust air hose at any position into the atmosphere or into an exhaust air tank and optimum sound-proofing is also achieved.
- ▶ In this way, exhaust air containing oil cannot contaminate any sensitive screwdriving parts, nor can it disperse chips or grinding dust.
- ▶ The user is not affected by the diverted compressed air.
- ▶ Exhaust air guidance improves the work conditions for the user. The auxiliary silencer or a hose nipple with exhaust air hose can be replaced in a very short time.



Fig. 8 The silencer reduces the work noise to a minimum

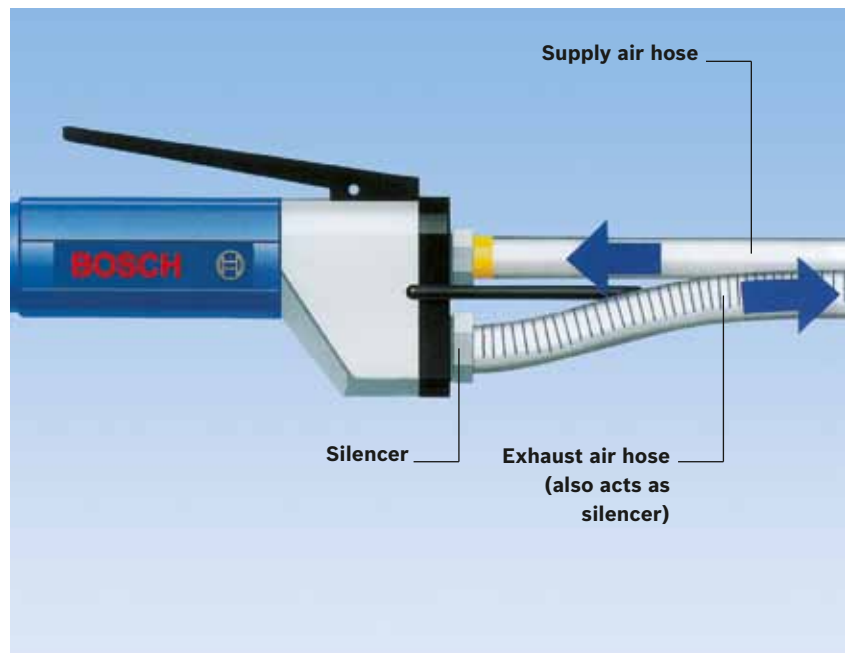
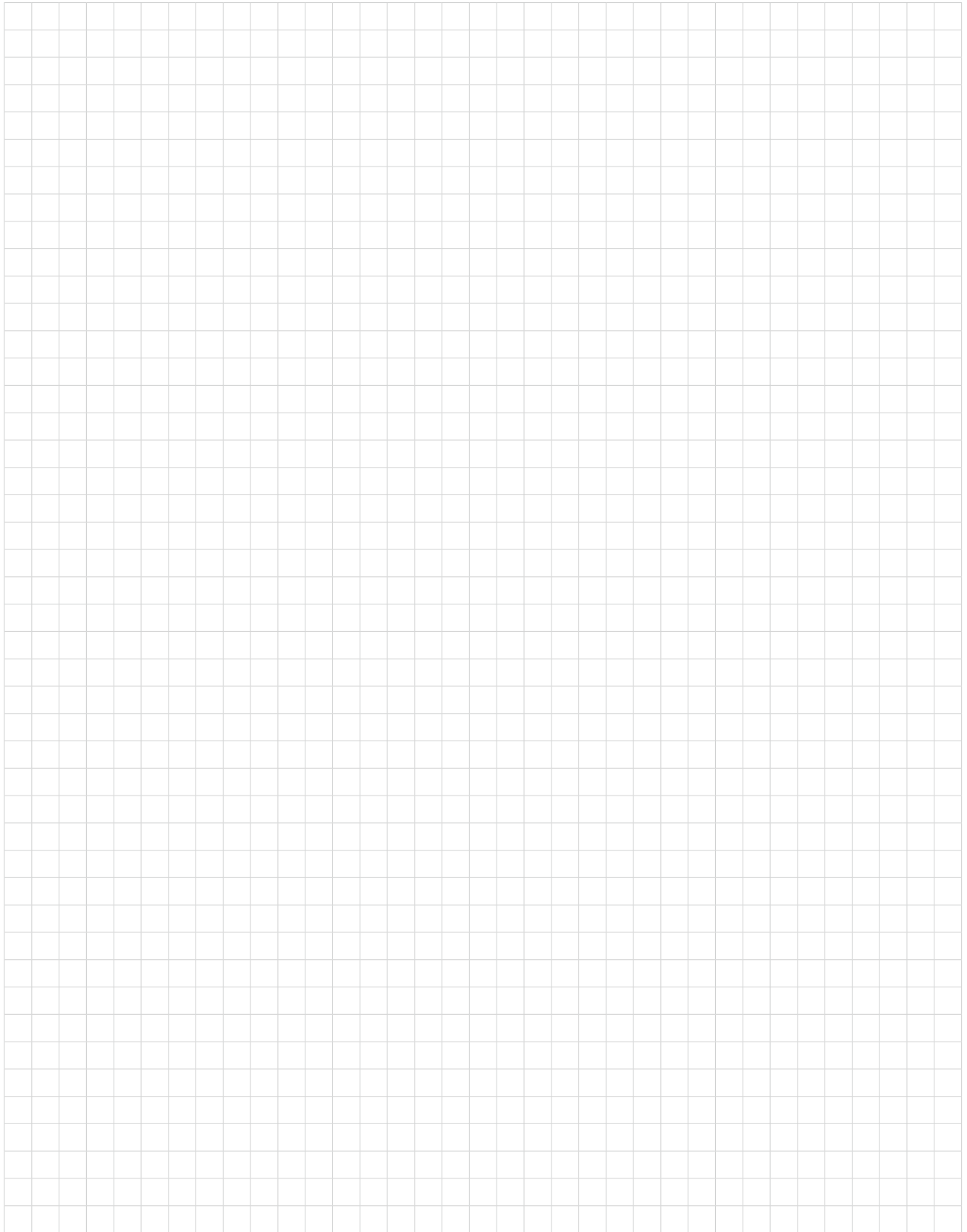
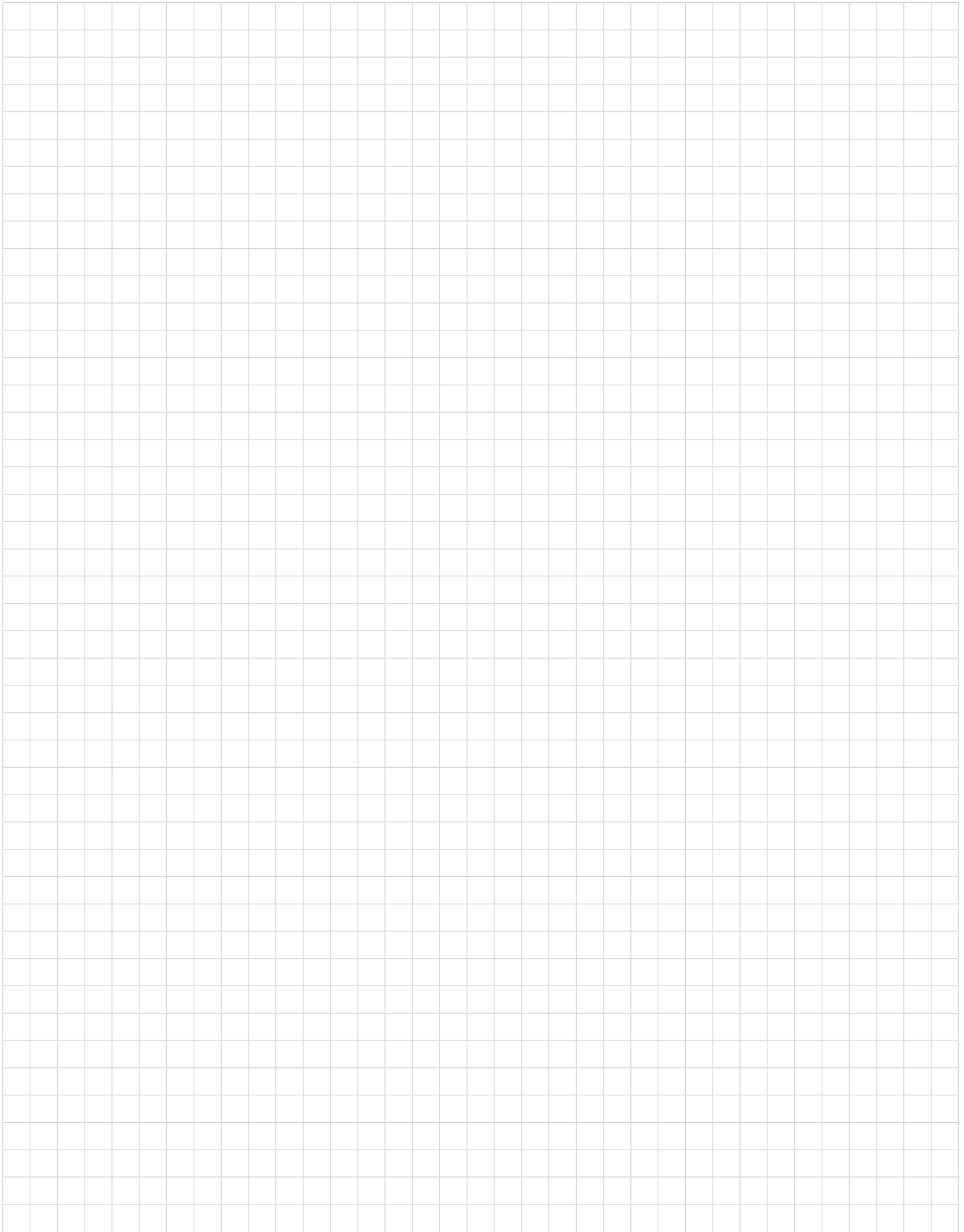


Fig. 9 The exhaust air hose protects the user, the environment and the workpiece

For your calculations





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