

FINE-LUB OIL-AIR LUBRICATORS

- OAH** HIGH-PERFORMANCE TYPE
- OAE** ECONOMICAL TYPE
- OAM** HIGH CAPACITY TYPE

Select an oil-air lubricator from among three types depending on the priorities of your application



- Realize higher machine tool speed with NSK's reliable, compact oil-air lubricators
- Select from among three types that have been newly designed with additional functions



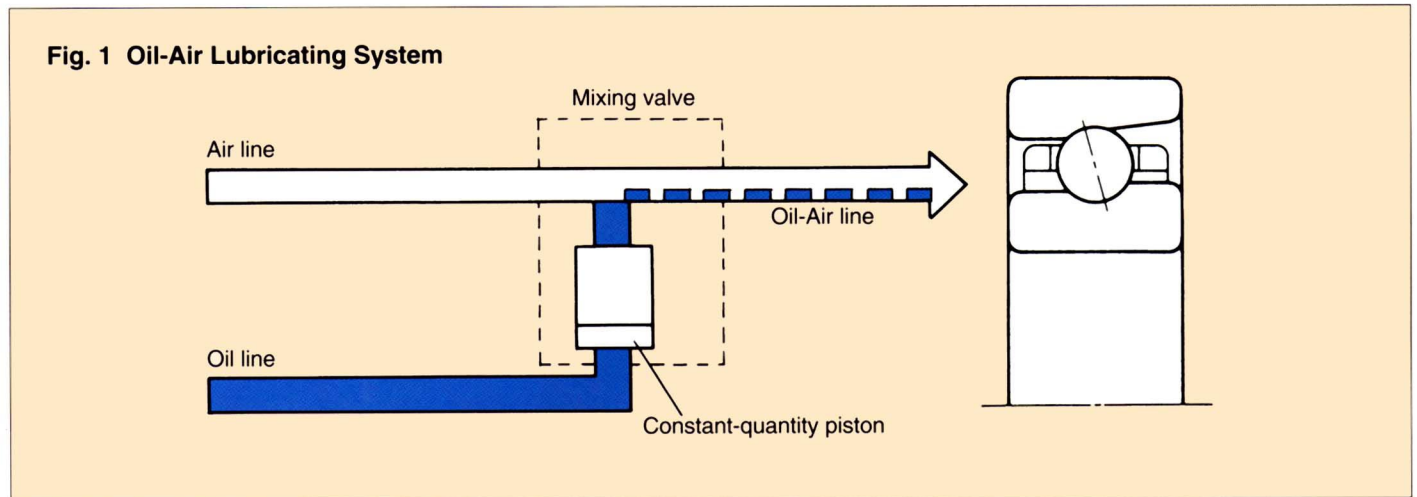
Remarkable technological innovation continues in the field of machine tools. Particularly, the speed of machine tool main spindles is increasing rapidly. Improving bearings and lubrication methods to facilitate higher speeds is therefore vital. Over ten years ago, NSK developed "FINE-LUB Oil-Air Lubricators." Adopted for use in many machine tools, they have earned a reputation for excellent performance and high reliability over the years. NSK has worked to constantly improve these products by applying knowledge gained through operating experience. For greater convenience and serviceability in a wider range of applications, NSK FINE-LUB Oil-Air Lubricators are now available in three newly designed types.

Features of Oil-Air Lubrication

●High-speed capacity and low dynamic torque

With oil-air lubrication (Fig. 1), constant-quantity pistons supply the minimum necessary amount of oil at preset intervals with a high

degree of reliability. As a result, high-speed operation without excessive torque and temperature rise is realized.



●Continuous supply of oil

Though oil is fed at preset intervals by the constant-quantity pistons, it arrives at the bearings at a nearly constant rate and temperature because it is carried along the supply tubes by a continuous flow of clean, dry compressed air.



●Reduced temperature rise

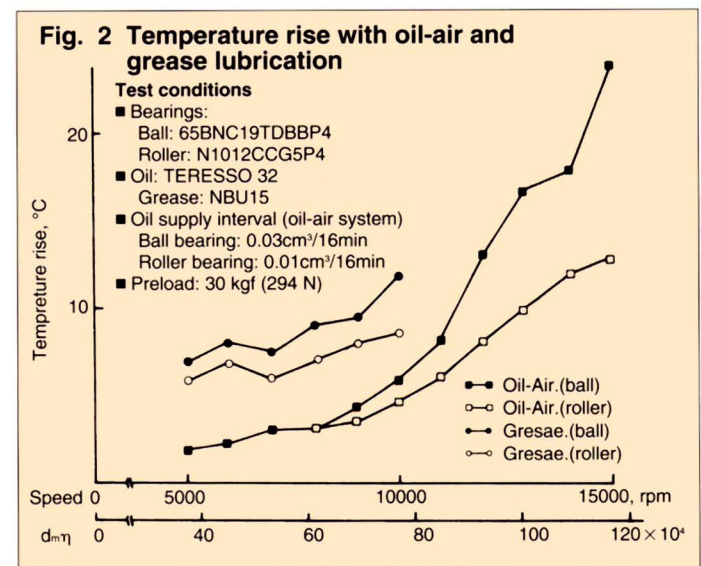
Because of the small amount of oil supplied, there is very little agitation resistance and temperature rise. In addition, the constant flow of compressed air through the spindle carries away heat. Fig. 2 compares temperature rise with oil-air and grease lubrication.

●Clean operation

Unlike oil mist lubrication systems, oil-air lubrication does not contaminate the surrounding area.

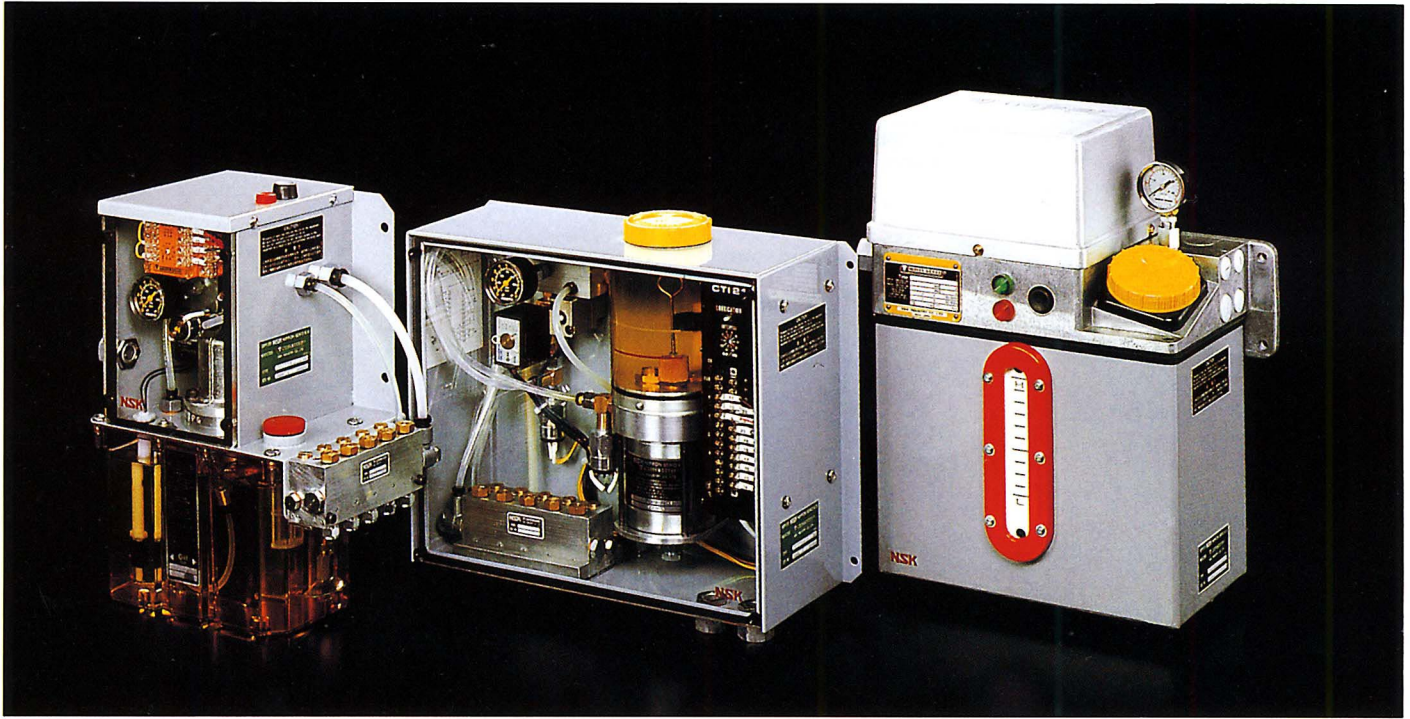
●Improved reliability

Because compressed air is used to transport oil to the bearings, the high air pressure inside the spindle stops coolant, cutting chips and other material from entering. Unlike grease and some forms of oil



lubrication, there is no concern with deterioration of the lubricant because only fresh clean oil is used. These advantages make NSK FINE-LUB Oil-Air Lubricators ideal for modern machine tools.

Description of and Operating Precautions for FINE-LUB



The two main parts in an NSK FINE-LUB system are the pump/control unit and mixing valve unit.

⟨Pump/Control Unit⟩

●Oil Pump

In the case of the OAH and OAE types an air-driven pump is used because these two models use low-viscosity oil. For the OAM high-capacity type, a geared pump is used because it can supply a larger quantity of oil.

●Ten Oil Supply Intervals

A timer allows selection of any one of ten different oil supply intervals: 1, 2, 4, 8, 16, 24, 32, 48, 64 and 128 minutes.

●Safety Devices

Various safety devices are standard to shut off power to the spindle motor and prevent bearing damage in case of a malfunction.

These devices include:

- 1) An oil level switch to monitor the lubricating oil level
- 2) A circuit to check power to the controller
- 3) An air pressure switch to monitor the air supply
- 4) An oil pressure switch to monitor pump operation

●Double float Switches

Double float switches that sound an alarm when the oil level is low are standard on the OAH and OAM types and optional on the OAE type.

●Control Circuit for Oil and Air Supply (for OAH only)

If a spindle is stopped for a long time while the oil and air, remain on, the bearings may become excessively lubricated. To prevent this, a controller starts and stops the oil and air depending on spindle.

⟨Mixing Valves⟩

In the mixing valve unit, constant-quantity pistons discharge very small quantities of oil.

Any one of five quantities can be selected: 0.01, 0.03, 0.06, 0.1 and 0.16cm³ per stroke. This ensures sufficient oil for safe bearing lubrication without causing excessive heat generation.

⟨Optional Parts⟩

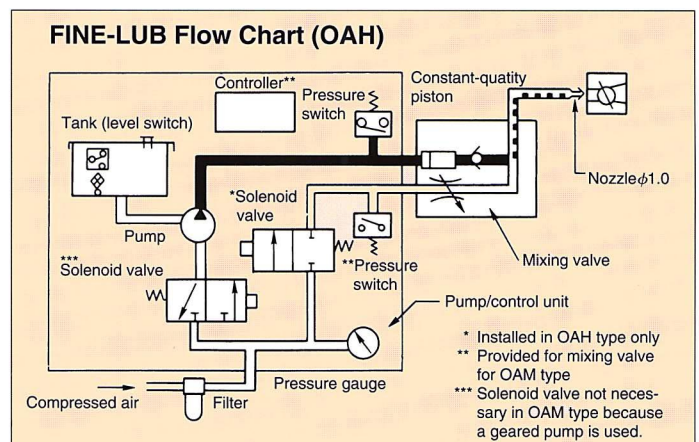
●Oil Filter and Air Bleed Valve

As optional equipment, a filter can be installed halfway between the pump/control unit and mixing valves to remove fine particles from the lubricating oil. An air-bleed valve convenient for purging air is also available.

⟨Precautions When Using FINE-LUB⟩

- Always use clean, dry compressed air at a pressure of 0.25 to 0.49 Mpa (2.5 to 5kgf/cm²). Preferably, it should be between 0.34 and 0.44 MPa (3.5 and 4.5 kgf/cm²).
- Use fresh clean lubricating oil with a viscosity of ISO VG 10 (ISO VG 20 for OAM) or more. Keep in mind that dust in the oil can shorten bearing life.
- Be sure to bleed air from all lines and other parts before starting operation. Refer to the operating manual for the procedure.
- For the OAH and OAE types, select the oil line between the pump/control unit and mixing valves with care. If plastic tubing is used, it should be of a type recommended by NSK. Please note that extra long oil lines can lead to damage of the mixing valves. Contact NSK if the length exceeds 5 m.

For oil-air lubrication to reach its full capability, it's important to select the optimum oil quantity, oil viscosity, and oil supply method for each bearing. NSK has much a lot of experience with oil-air lubrication and associated equipment. Please contact us when designing your system.



Types of NSK Oil-Air Lubricators

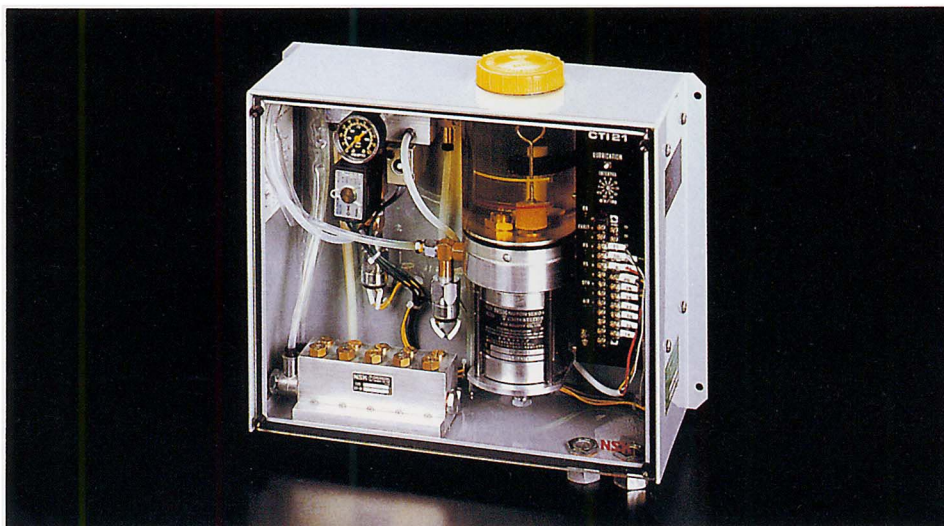
FINE-LUB lubricators are available in three types: OAH, OAE and OAM. The mixing valves for the units are available in five different discharge quantities. These can be combined to best suit the specific application.

OAH High-Performance Oil-Air Lubricator

These are high-performance units with newly developed controllers. They have the versatility and multi-functionality required for use in machine tools. The controller starts and stops the oil and air in response to signals indicating whether or not the spindle is in use. This prevents excessive oil from building up in the bearing.

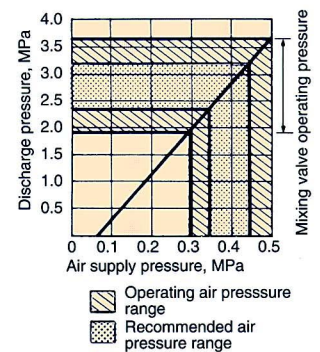
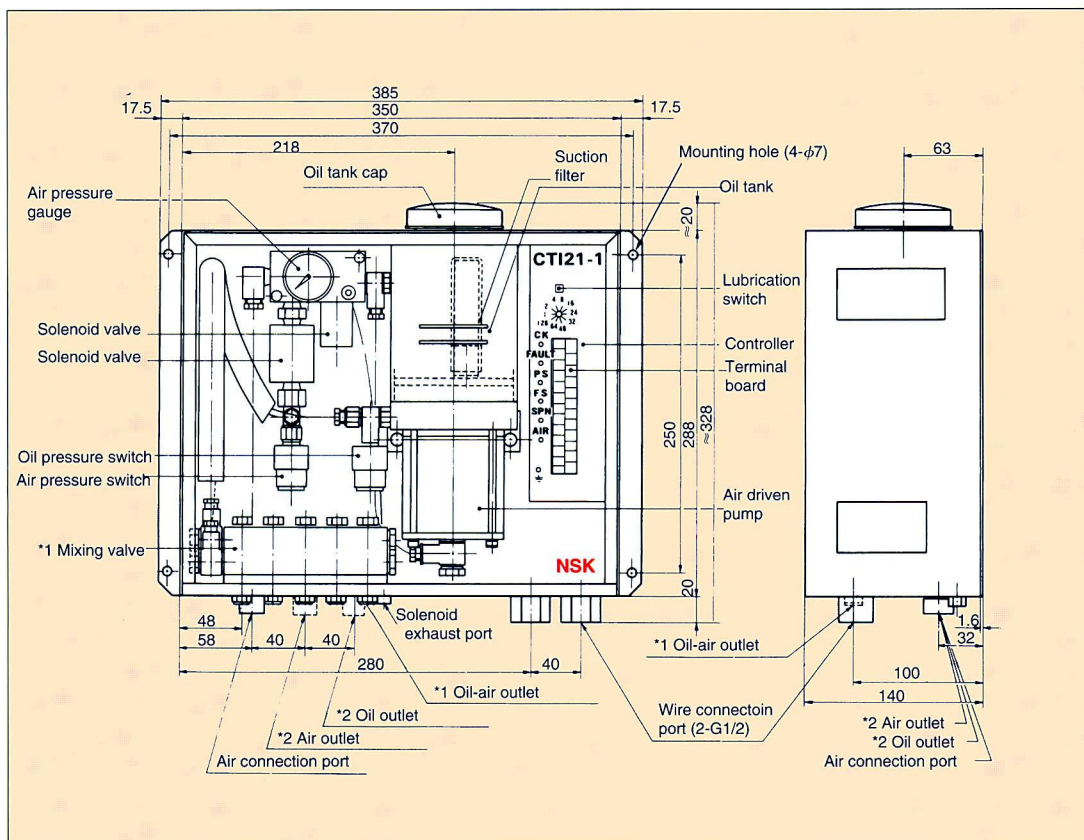
Model Numbers : With separate mixing valves OAH-220V
 With built-in mixing valves OAH-220V / MVA5-P1 × 4P2

Power source (If 100V, omitted)
 Mixing valve type (example)



Features

- A solenoid valve automatically stops the air supply to the mixing valves when power to the lubricator is shut off.
- An air driven pump allows use of low-viscosity lubricating oil.
- Standard equipment includes a removable suction filter (200 mesh), double float switch, and faulty-lubrication warning lamp.
- Units with built-in mixing valves (5 outlets max.) are also available.



Pump Pressure Ratio

Specifications:

- Lubricating oil: High-speed spindle oil or turbine oil
- Operating viscosity range: 10~68 mm²/s (10~68 cSt)
- Air supply pressure: 0.25~0.49 MPa (2.5~5 kgf/cm²)
- Power supply: 100V, 110V, 200V, 220V (Specify when ordering)
- Thank capacity: 0.74 ℓ
- Effective oil level: 0.56 ℓ
- Low oil warning level: 0.41 ℓ

Note:

- *1 Included only in lubricators with built-in mixing valves
- *2 Included only in lubricators with separate mixing valves

NSK FINE-LUB Lubricator, OAE Type

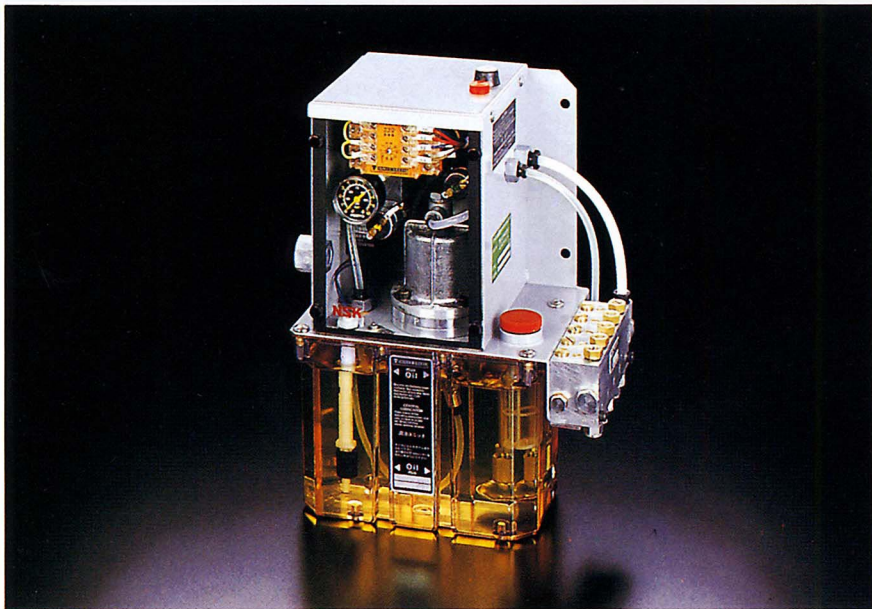
OAE Economical Oil-Air Lubricator

This unit has all the basic features of oil-air lubrication. Lubrication with this unit is extremely cost effective.

Model Numbers : With separate mixing valves OAE-220V

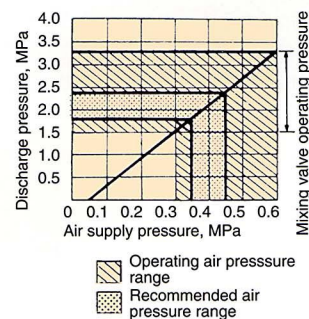
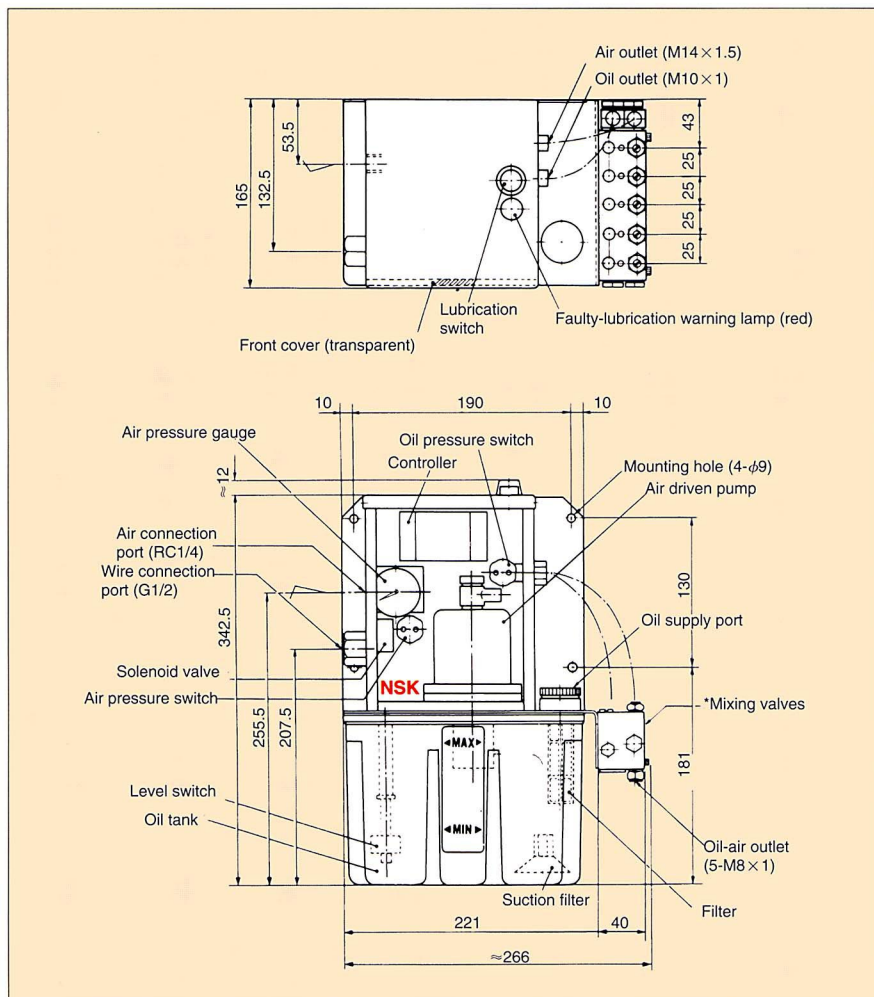
With attached mixing valves OAE-220V / MVA5-P1 x 4P2

Mixing valve type (example)
Power source (If 100V, omitted)



Features

- Air driven pump allows use of low-viscosity oil.
- Standard equipment includes safety devices such as oil and air pressure switches, oil level switch, and power failure warning (double float switch is optional; model no. OAE-DF).
- Large plastic oil tank (2.7 ℓ).
- Units with attached mixing valves (5 outlets max.) are also available.



Pump Pressure Ratio

Specifications:

Lubricating oil:
High-speed spindle oil or turbine oil
Operating viscosity range:
10~68 mm²/s (10~68 cSt)
Air supply pressure:
0.3~0.6 MPa (3~6 kgf/cm²)
Power supply:
100V, 110V, 200V, 220V
(Specify when ordering)
Tank capacity: 2.7 ℓ
Effective oil level: 1.7 ℓ

Note: The figure shows the type with mixing valves (MVA5) attached to the side. For the unit with separate mixing valves, the mixing valves marked with an asterisk are not included.

NSK FINE-LUB Lubricator, OAM Type

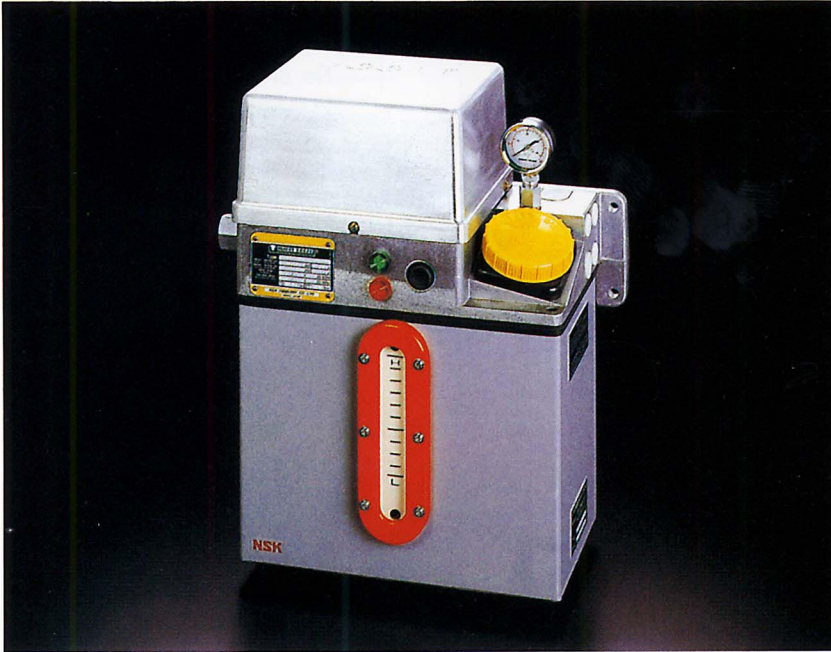
OAE High-Capacity Oil-Air Lubricator

This unit is designed specifically for large machines or those requiring high oil flow rates. It can be used even if the mixing valve and pump are separated by more than five meters.

Model Number :

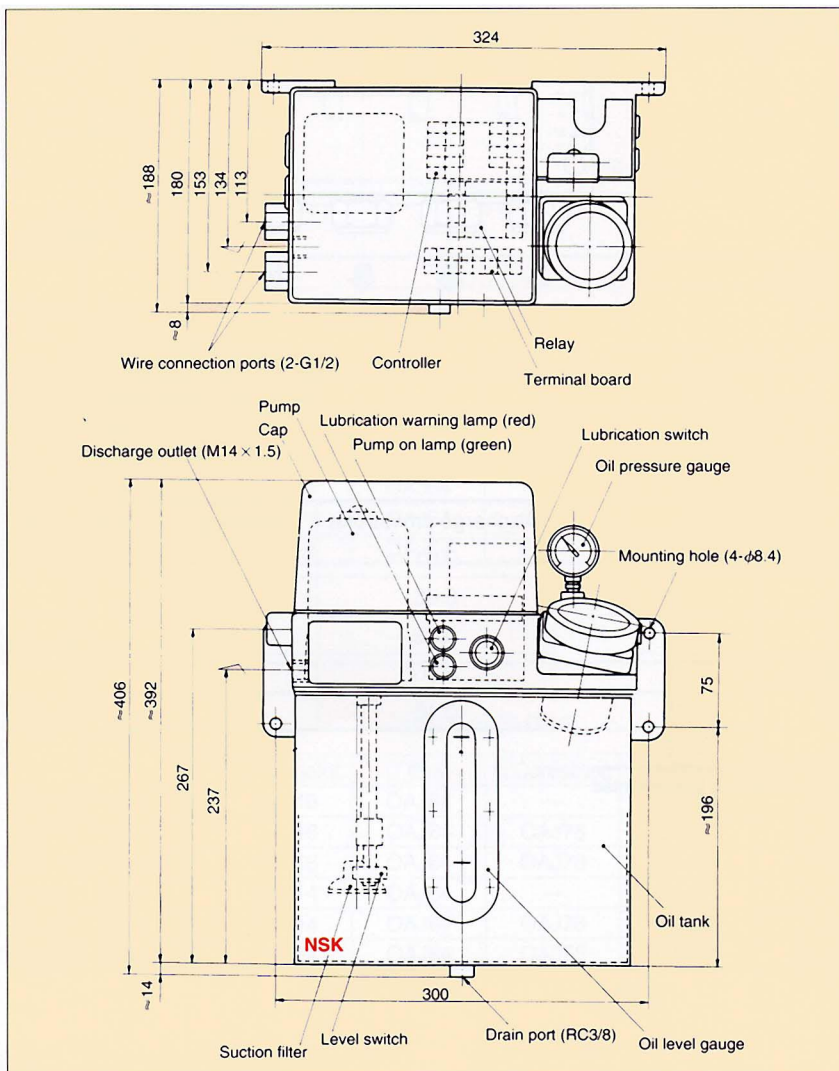
OAM-220V

Power source (If 100V, omitted)



Features

- The oil tank is metal and equipped with an oil level gauge.
- Four standard safety devices are included: oil and air pressure switches, a double float switch and power warning light.
- Oil and air pressure switches can be connected to the mixing valves using a pressure switch block.



Specifications:

Lubricating oil:
High-speed spindle or turbine oil

Operating viscosity range:
20~68 mm²/s (20~68 cSt)

Pump discharge pressure:
2.7 Mpa (27 kgf/cm²)

Power supply:
Controller: 100V, 110V, 200V, 220V
(Specify when ordering)

Motor: 220V (3 Phase)

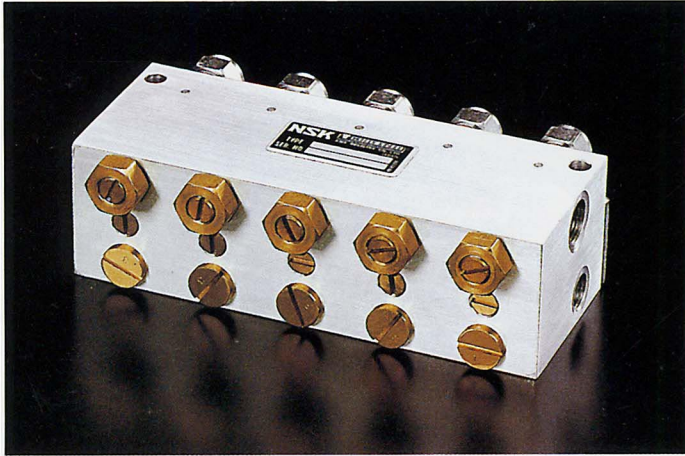
Tank capacity: 7.6 ℓ

Effective oil level: 4.5 ℓ

Accessories for NSK Oil-Air Lubricators

Mixing Valves (Utility model)

Mixing valves inject a very small quantity of oil periodically into an air stream that carries the oil to the bearings. Highly reliable, constant-quantity pistons are adopted, air bleeding of new mixing valves is made easier, and direct male-female joints for oil tubing eliminate the entry of debris during coupling.



Example model No.:

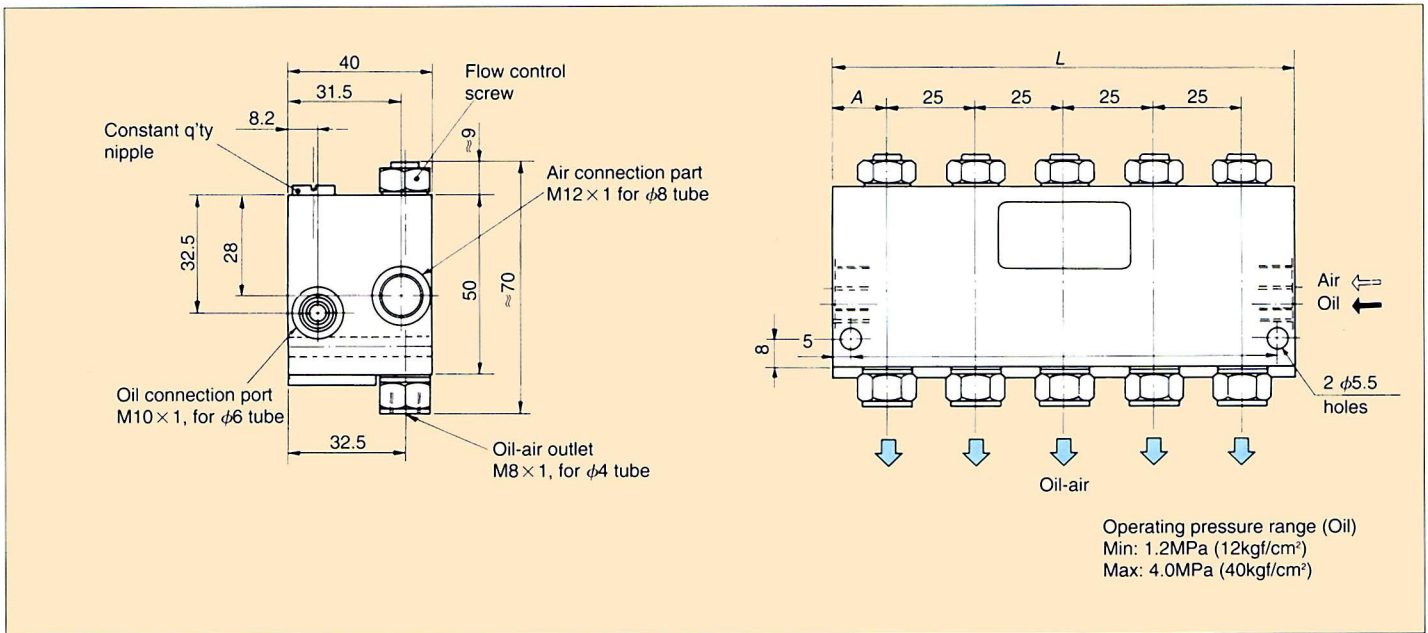
MVA5-P1 × 4P2

Total No. of valves

No. of valves + Oil Q'ty code
(4 outlet; oil discharge of 0.03cm³)

No. of valves + Oil Q'ty code
(1 outlet; oil discharge of 0.01cm³)

Note: Indication of the number of outlets is omitted when the number is one.



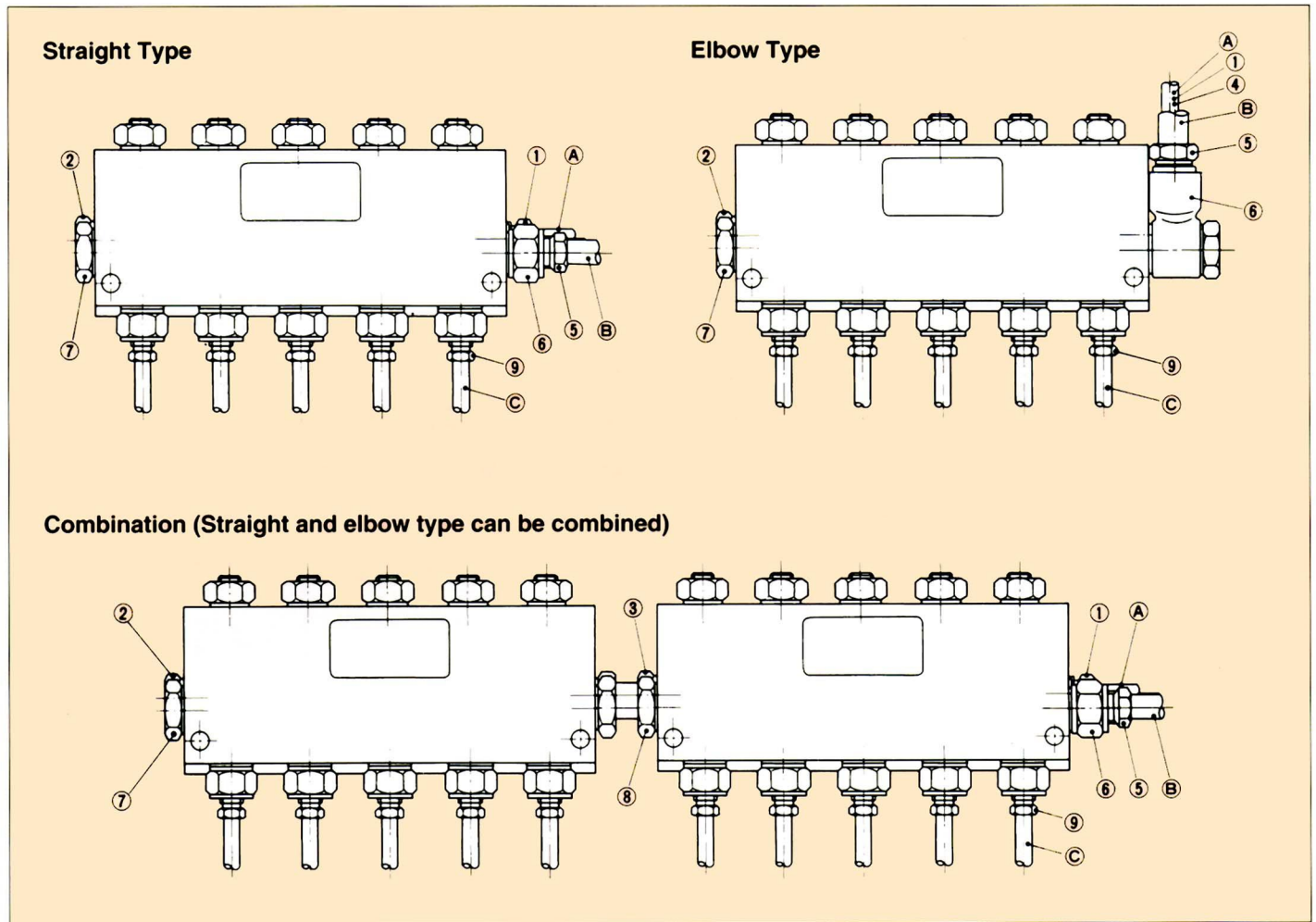
Model No.	No. of valves	L	l	A
MVA1	1	32	22	16
MVA2	2	55	45	15
MVA3	3	80	70	15
MVA4	4	105	95	15
MVA5	5	130	120	15
MVA6	6	155	145	15

Discharge cm ³ /stroke	Marking	Oil q'ty code
0.01	1	P1
0.03	3	P2
0.06	6	P3
0.10	10	P4
0.16	16	P5

※ Seven or more valves may be connected. In such a case, the structure includes two blocks jointed together.

Coupling Parts for Mixing Valves

These parts are used for connecting the mixing valves and their tubes.
Other parts should be selected from the ones listed on pages 12 and 15.



Straight Type

Part No.	Tube Material	No. of Outlets	Application						
			A Oil Pipe (O.D. φ6)			B Air Pipe (O.D. φ8)			C Oil-Air Tube (O.D. φ4)
			1 Pipe joint	2 Plug	3 Connecting	5, 6 EPipe joint	7 Plug	8 Connecting	9 Pipe joint (No. of outlets)
OAJ-S5	Plastic	5	OAJ16	OAJ64	—	OAJ28, OAJ72	OAJ9	—	OAJ11 (5)
OAJ-S8	Plastic	8	OAJ16	OAJ64	OAJ78	OAJ28, OAJ72	OAJ9	OAJ8	OAJ11 (8)
OAJ-S10	Plastic	10	OAJ16	OAJ64	OAJ78	OAJ28, OAJ72	OAJ9	OAJ8	OAJ11 (10)
OAJ-T5	Steel	5	OAJ14	OAJ64	—	OAJ12, OAJ72	OAJ9	—	OAJ11 (5)
OAJ-T8	Steel	8	OAJ14	OAJ64	OAJ78	OAJ12, OAJ72	OAJ9	OAJ8	OAJ11 (8)
OAJ-T10	Steel	10	OAJ14	OAJ64	OAJ78	OAJ12, OAJ72	OAJ9	OAJ8	OAJ11 (10)

Elbow Type

Part No.	Tube Material	No. of Outlets	Application								
			A Oil Pipe (O.D. φ6)				B Air Pipe (O.D. φ8)				C Oil-Air Tube (O.D. φ4) (No. of outlets)
			1 Pipe joint	2 Plug	3 Connecting	4 Elbow	5 Pipe joint	7 Plug	8 Connecting	6 Elbow	9 Pipe joint
OAJ-Y5	Plastic	5	OAJ16	OAJ64	—	OAJ21	OAJ28	OAJ9	—	OAJ77	OAJ11 (5)
OAJ-Y8	Plastic	8	OAJ16	OAJ64	OAJ78	OAJ21	OAJ28	OAJ9	OAJ8	OAJ77	OAJ11 (8)
OAJ-Y10	Plastic	10	OAJ16	OAJ64	OAJ78	OAJ21	OAJ28	OAJ9	OAJ8	OAJ77	OAJ11 (10)
OAJ-Z5	Steel	5	OAJ14	OAJ64	—	OAJ21	OAJ12	OAJ9	—	OAJ77	OAJ11 (5)
OAJ-Z8	Steel	8	OAJ14	OAJ64	OAJ78	OAJ21	OAJ12	OAJ9	OAJ8	OAJ77	OAJ11 (8)
OAJ-Z10	Steel	10	OAJ14	OAJ64	OAJ78	OAJ21	OAJ12	OAJ9	OAJ8	OAJ77	OAJ11 (10)

Accessories for NSK Oil-Air Lubricators

Oil filters remove minute particles in the oil, and air bleed valves offer convenience during oil filter cleaning and pipe maintenance. Use them together with the oil pressure-relief function of the pump and pressure switch block.

Pumps with oil pressure-relief monitoring devices are:

Models	High performance unit	:	OAH-1
	Economical unit	:	OAE-1
	High capacity unit	:	OAM-1

Pressure switches are recommended for the pressure switch block and mixing valve.

Oil Filters

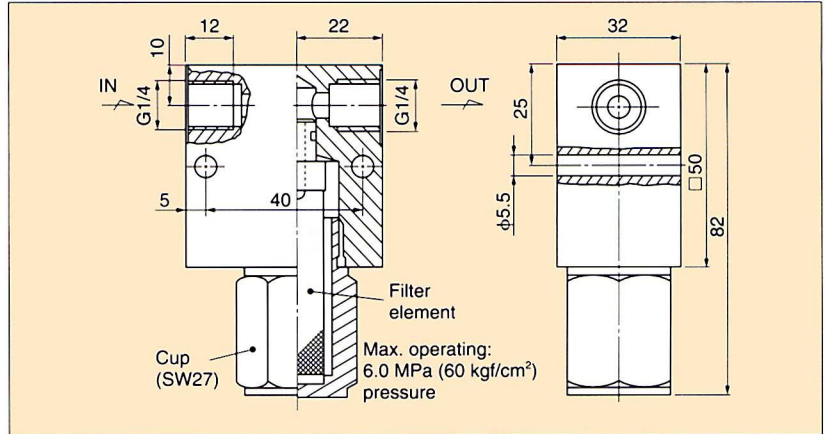
An oil filter can be installed between the pump/control unit and mixing valve of the oil-air lubrication system. The filter may be removed for cleaning when a hexagonal cup is removed.

An air bleeding valve is convenient to help purge air after cleaning the filter.

Select the appropriate type for the application.

Part No	Filtration capability(μm)	Filtration area (cm^2)	Order no. for replacement filter
OAV-02	3	18	OAV-02
OAV-03	20	18	OAV-03

Note: A clogged filter may cause trouble with the oil pressure-relief function of the oil-air unit resulting in failure of constant-rate discharge of the mixing valve. Clean the filter periodically. It is also recommended to mount a pressure-relief monitoring switch if a filter is used.
For details, contact NSK.

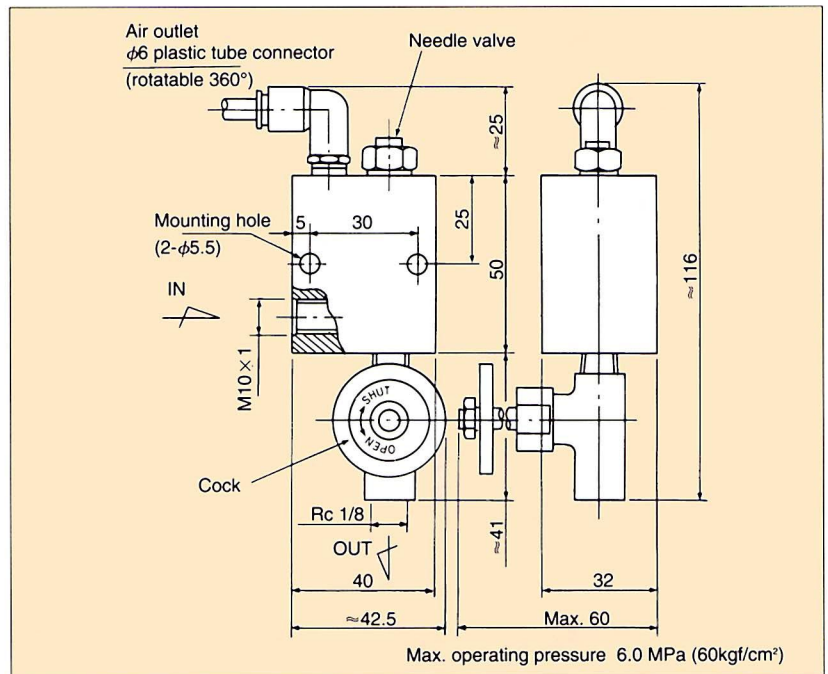


Air Bleed Valves

An bleed valves facilitate bleeding air after disconnecting oil lines or cleaning the oil filter during maintenance of the lubricator.

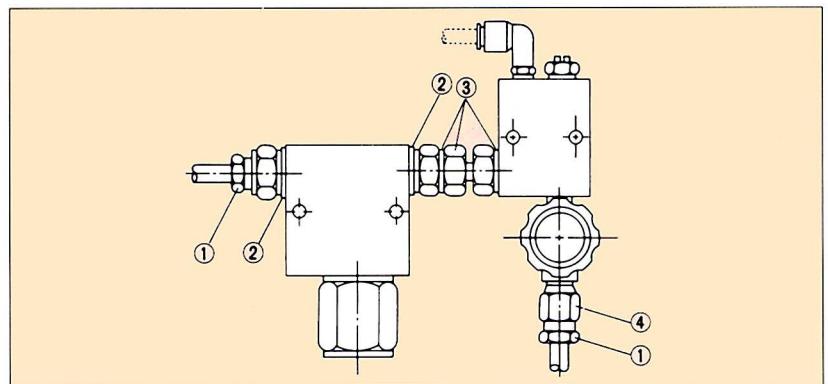
For details, contact NSK.

Part No.: OAV-01



Connecting Joints for Oil Filters and Air Bleed Valves

Coupling parts for oil filters and air bleed valves are available.



Part No.	Applicable tube	① Clamping nut sleeve inlet	② Male-female joint gasket	③ Connecting joint	④ Male-Female joint gasket
OAJ-V1	Plastic tube(O.D.φ6)	OAJ16 (×2)	OAJ74 (×2)	OAJ78	OAJ80
OAJ-V2	Steel tube(O.D.φ6)	OAJ14 (×2)	OAJ74 (×2)	OAJ78	OAJ80

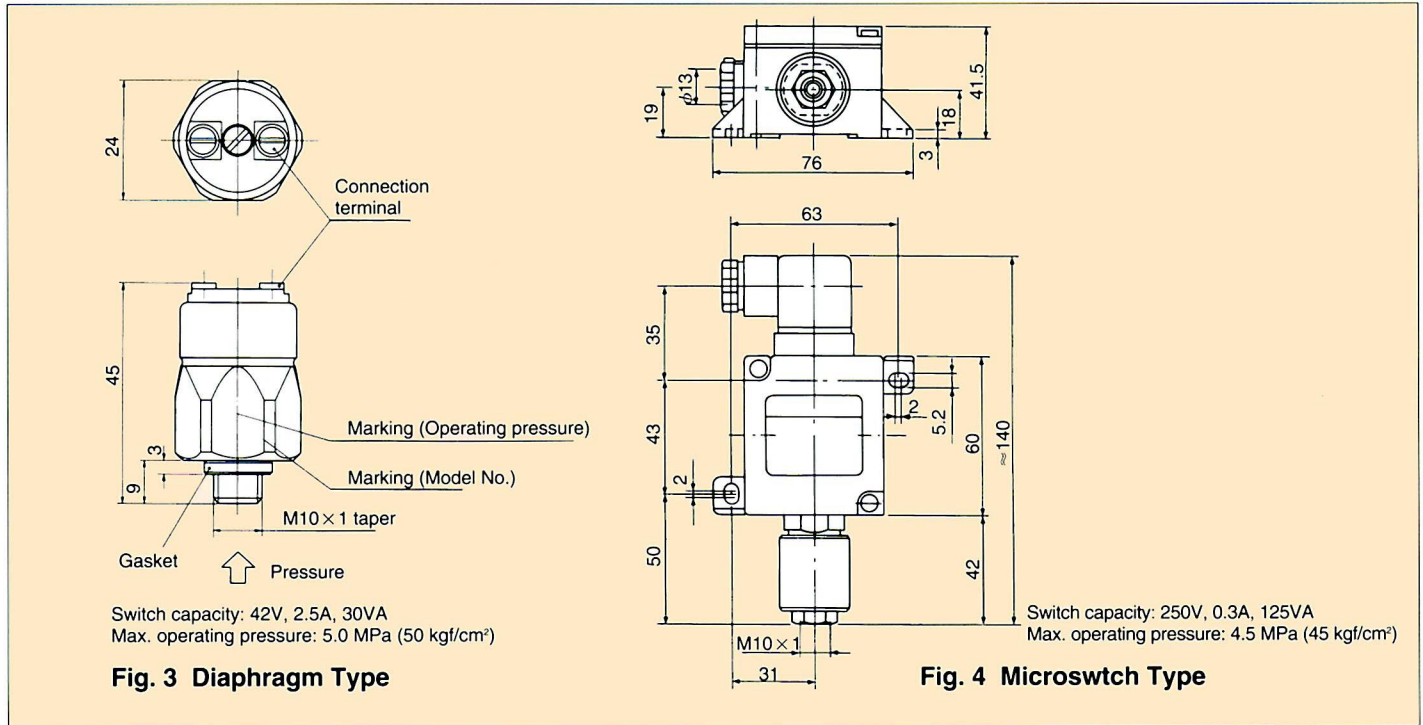
Accessories for NSK Oil-Air Lubricators

Pressure Switches

Pressure switch, which are used to monitor the operation of the OAH, OAE and OAM units.
Use an elbow joint when mounting the switch on a mixing valve.

Part No.	Location	Operating pressure (MPa)	Marking	Contact type	Drawing
OAG-PA2	For air pressure monitoring	0.15 ^{+0.10} _{-0.05}	110 200-1	NO	Fig.3
OAG-PA4	For air pressure monitoring	1.3 ^{+0.15} _{-0.10}	110 201-1	NO	Fig.3
DS-W1-2N	For oil pressure relief	0.1 ^{+0.03} ₀	—	1C	Fig.4

Remarks: A gasket and protective cap are included.



Plastic Tubing

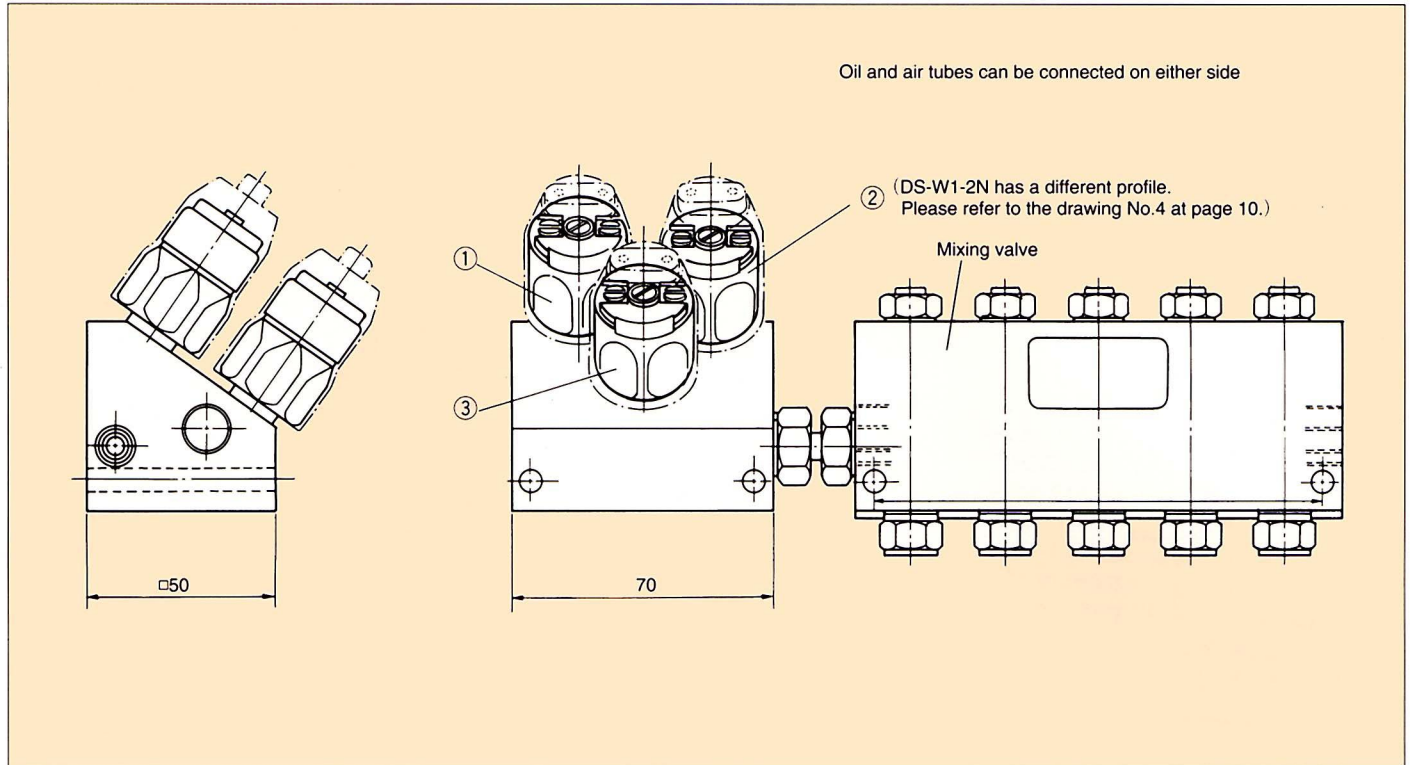
Use care when selecting plastic tubing for oil lines because the NSK Oil-Air Lubricator uses oil at high-pressure.

Parts No.	Location	Material	O.D./I.D. (mm)	Pressure capacity (MPa)	Length per roll (m)
OATB-04-20	Oil-air tubing	Transparent urethane tubing	4/2.2	1.0	20
OAT-06-20	Oil lines	Nylon tubing	6/4	4.5	20
OAT-08-25	Air lines	Nylon tubing	8/5.5	2.5	25

Accessories for NSK Oil-Air Lubricators

Pressure Switch Blocks

Pressure switch blocks are used to install pressure switches in the mixing valve. The mixing valve and pressure switch block can be connected using the coupling parts that are included.

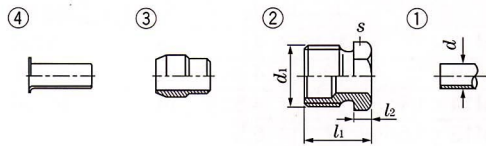


Part No.	Applicable unit	① For oil pressure monitoring	② For pressure relief monitoring	③ For air pressure monitoring
OAG-01	OAM type	OAG-PA4	Plug (OAJ64)	OAG-PA2
OAG-03	Checking oil pressure relief	OAG-PA4	DS-W1-2N	OAG-PA2

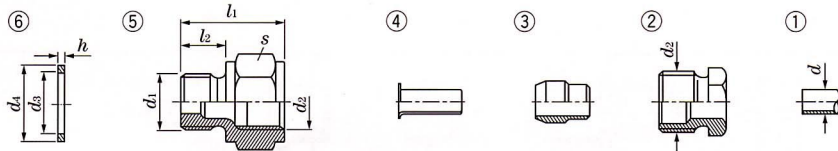
- Remarks
- OAG-01 includes the following coupling parts: one pc. OAJ8, one pc. OAJ78, two pcs. OAJ64 and one pc. OAJ9.
 - OAG-03 includes the following coupling parts: one pc. OAJ8, one pc. OAJ78, one pc. OAJ64, one pc. OAJ9, two pcs. OAJ14 and one pc. OAJ46.(DS-W1-2N is fixed using OJA14 and OAJ46.)
 - The pressure switches of OAG-PA2, OAG-PA4 and DS-W1-2N are not included with pressure switch blocks.

For Plastic Tubing

Tube coupling

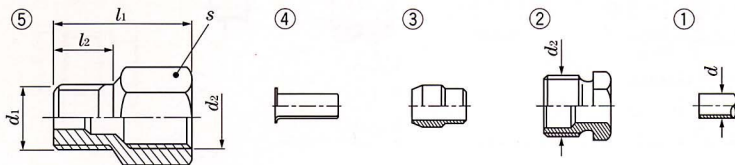


Part No.	①	②			③	④	
	Applicable tube O.D.	Clamping nut			Sleeve	Inlet	
	d	d_1	l_1	l_2	S	OAJ No.	OAJ No.
OAJ11	4	M 8×1	12	4	8	OAJ35	OAJ38
OAJ16	6	M10×1	13	4	10	OAJ36	OAJ39
OAJ28	8	M14×1.5	16	4.5	14	OAJ37	OAJ40



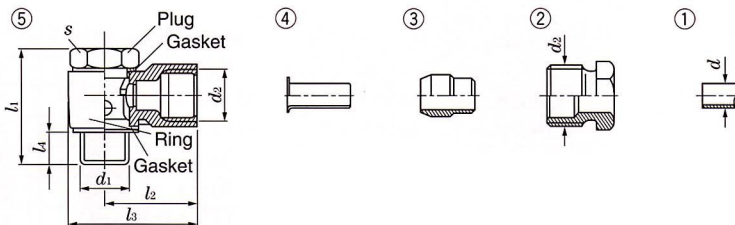
Male-female joints

Part No.	①	②	③	④	⑤				⑥			
	Applicable tube O.D.	Clamping nut	Sleeve	Inlet	Male-female joint				Gasket			
	d		d_2		d_1	d_2	l_1	l_2	s	d_3	d_4	h
OAJ18	8	M14×1.5 (OAJ28)			M12×1	M14×1.5	29	9	17	12.2	15.9	1.4
OAJ45	—				M14×1.5	RC1/4	29	9	17	14.2	17.9	1.5
OAJ63	8	M14×1.5 (OAJ28)			M10×1	M14×1.5	28	7.5	17	10.2	13.9	1
OAJ65	6	M10×1 (OAJ16)			R1/4	M10×1	20	10	17	13.3	17.9	1.5



Male-female joints (PT Threads)

Part No.	①	②	③	④	⑤				
	Applicable tube O.D.	Clamping nut	Sleeve	Inlet	Male-female joint				
	d		d_2		d_1	d_2	l_1	l_2	s
OAJ42	8	M14×1.5			R1/4	M14×1.5	24.5	11	17
OAJ43	6	M10×1			R1/8	M10×1	18	7.5	12

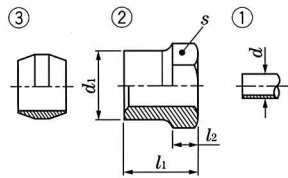


Universal joints-Elbow type

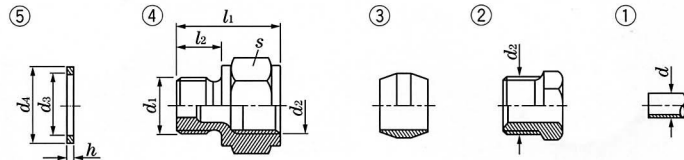
Part No.	①	②	③	④	⑤						⑥	
	Applicable tube O.D.	Clamping nut	Sleeve	Inlet	Universal joint						Gasket	
	d		d_2		d_1	d_2	l_1	l_2	l_3	l_4	s	h
OAJ 7	6	M10×1 (OAJ16)			M12×1	M10×1	34	25	35.2	7.5	17	1.4
OAJ19	8	M14×1.5 (OAJ28)			M12×1	M14×1.5	34	27	37	7.5	17	1.4

For Steel Tubing

Tube coupling

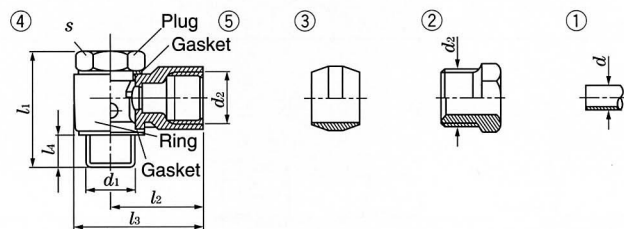


Part No.	①	②				③
	Applicable tube O.D.	Clamping nut				Sleeve
	d	d_1	l_1	l_2	S	OAJ No.
OAJ10	4	M 8×1	12	4	8	OAJ54
OAJ14	6	M10×1	13	4	10	OAJ55
OAJ12	8	M14×1.5	16	4.5	14	OAJ56
OAJ53	10	M16×1.5	17	5.5	17	OAJ75



Male-female joints

Part No.	①	②	③	④	⑤				⑥			
	Applicable tube O.D.	Clamping nut	Sleeve	Inlet	Male-female joint				Gasket			
	d		d_2		d_1	d_2	l_1	l_2	s	d_3	d_4	h
OAJ 2	8	M14×1.5 (OAJ12)		M12×1	M14×1.5	29	9	17	12.2	15.9	1.4	
OAJ 3	10	M16×1.5 (OAJ53)		M12×1	M16×1.5	31	9	19	12.2	15.9	1.4	
OAJ15	8	M14×1.5 (OAJ12)		M10×1	M14×1.5	28	7.5	17	10.2	13.9	1	
OAJ13	10	M16×1.5 (OAJ53)		M14×1.5	M16×1.5	29	9	19	14.2	17.9	1.5	

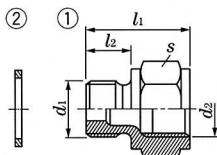


Universal joints-Elbow type

Part No.	①	②	③	④							⑤
	Applicable tube O.D.	Clamping nut	Sleeve	Universal joint							Gasket
	d	d_2		d_1	d_2	l_1	l_2	l_3	l_4	s	h
OAJ5	6	M10×1 (OAJ14)		M12×1	M10×1	34	25	35.2	7.5	17	1.4
OAJ6	8	M14×1.5 (OAJ12)		M12×1	M14×1.5	34	27	37	7.5	17	1.4

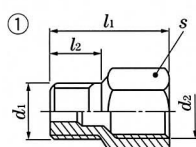
Common Parts

Male-female joints (sealed by gasket)



Part No.	①					②
	Male-female joint					Gasket
	d_1	d_2	l_1	l_2	s	OAJ No.
OAJ46	M10×1	M10×1	18	7.5	14	OAJ32
OAJ70	M10×1	M14×1.5	28	7.5	17	OAJ32
OAJ49	M10×1	RC1/4	26.5	7.5	17	OAJ32
OAJ71	M12×1	M10×1	19	9	17	OAJ33
OAJ72	M12×1	M14×1.5	29	9	17	OAJ33
OAJ48	M12×1	RC1/4	29	9	17	OAJ33
OAJ50	M14×1.5	M10×1	18	9	17	OAJ34
OAJ73	M14×1.5	M16×1.5	29	9	19	OAJ34
OAJ45	M14×1.5	RC1/4	29	9	17	OAJ34
OAJ74	R-1/4	M10×1	20	10	17	OAJ81

Male-female joints (PT Threads)

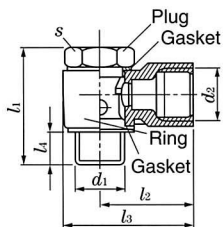


Part No.	①				
	Male-female joint				
	d_1	d_2	l_1	l_2	s
OAJ79	R1/4	M14×1.5	24.5	11	17
OAJ80	R1/8	M10×1	18	7.5	12

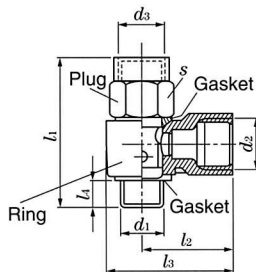
Common Parts

Universal joints

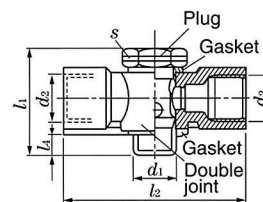
Elbow type



L type

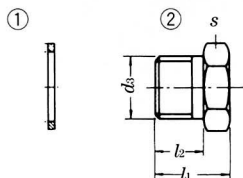


T type



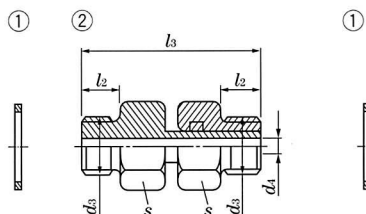
Part No.	Joint shape	Applicable tube O.D.	Universal joint								Gasket OAJ No.
			d_1	d_2	d_3	l_1	l_2	l_3	l_4	S	
OAJ21	Elbow type	6	M10×1	M10×1	—	26	21	28.5	6.5	14	OAJ32
OAJ76	Elbow type	6	M12×1	M10×1	—	34	25	35.2	7.5	17	OAJ33
OAJ77	Elbow type	8	M12×1	M14×1.5	—	34	27	37	7.5	17	OAJ33
OAJ20	Elbow type	8	M14×1.5	M14×1.5	—	34	27	37	7.5	17	OAJ34
OAJ83	L type	6	M10×1	M10×1	M10×1	33	25	35.2	6.5	14	OAJ32
OAJ51	L type	6	M12×1	M10×1	M10×1	38	25	35.2	7.5	17	OAJ33
OAJ52	L type	6, 8	M12×1	M10×1	M14×1.5	44	25	35.2	7.5	17	OAJ33
OAJ29	L type	8	M14×1.5	M14×1.5	M14×1.5	43	27	37	7.5	17	OAJ34
OAJ30	T type	8	M14×1.5	M14×1.5	—	34	54	—	7.5	17	OAJ34

Plug



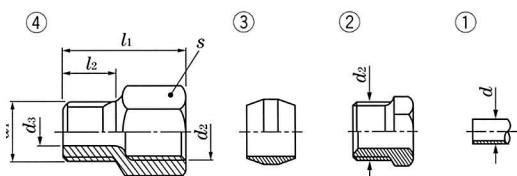
Part No.	① Gasket	② Plug			
	OAJ No.	d_3	l_1	l_2	S
OAJ17	OAJ31	M 8×1	10	6	11
OAJ64	OAJ32	M10×1	12	7	12
OAJ 9	OAJ33	M12×1	12	7	17
OAJ84	OAJ34	M14×1.5	12	7	17

Connection joint



Part No.	① Gasket	② Connection joint (universal)				
	OAJ No.	d_3	d_4	l_1	l_2	S
OAJ8	OAJ33	M12×1	4	33	7	17
OAJ78	OAJ32	M10×1	3.5	33	7	14

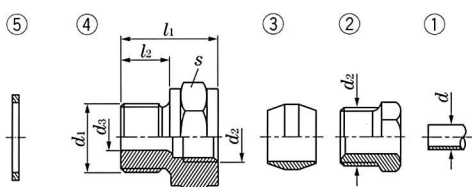
Through joint (with tapered threads)



Part No.	① Applicable tube O.D.	② Clamping nut	③ Sleeve	④ Through joint (tapered)				
	d	OAJ No.		d_1	d_2	l_1	l_2	d_3
OAJ24	4	OAJ10	*M 8×1 Taper	M 8×1	17	7.4	4.1	11
OAJ25	6	OAJ14	*M10×1 Taper	M10×1	18	7.4	6.1	14
OAJ41	4	OAJ10	*M10×1 Taper	M 8×1	16	7.4	4.1	11
OAJ47	4	—	R1/8	M 8×1	16.5	8	4.1	10
OAJ59	6	OAJ14	R1/8	M10×1	18	7.5	6.1	12
OAJ88	4	OAJ10	R1/4	M 8×1	14	9	4.1	14
OAJ89	4	OAJ10	R1/8	M 8×1	16.5	8	4.1	10

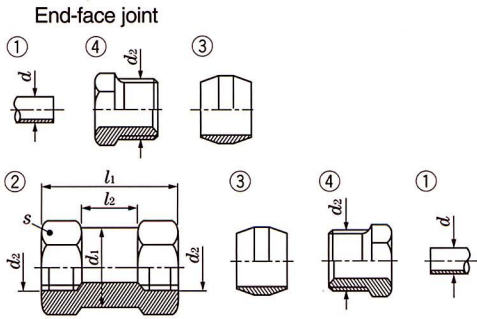
* Use straight female threads for side on which the through joint is mounted

Through joint (with gasket)



Part No.	① Applicable tube O.D.	② Clamping nut	③ Sleeve	④ Through joint					⑤ Gasket
	d	OAJ No.		d_1	d_2	l_1	l_2	d_3	S
OAJ26	4	OAJ10	M12×1	M 8×1	18	9	4.1	17	OAJ33
OAJ27	6	OAJ14	M12×1	M10×1	19	9	6.1	17	OAJ33

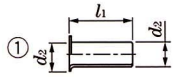
Common Parts



Part No.	①	②					③	④
	Applicable tube O.D.	End-face joint					Clamping nut	Sleeve
	d	d_1	d_2	l_1	l_2	S	OAJ No.	
OAJ22	4	9.8	M 8×1	28	8	10	OAJ10	
OAJ23	6	11.8	M10×1	31	11	12	OAJ14	

Spare Parts

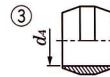
Inlet (for plastic tube)



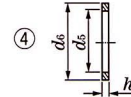
Sleeve (for plastic tube)



Sleeve (for steel tube)



Gasket



Part No.	Applicable tube O.D.	①		
		l_1	d_1	d_2
OAJ38	4	10	2.2	3.8
OAJ39	6	12	3.9	5.8
OAJ40	8	15	5.4	7.8

Part No.	Applicable tube O.D.	②
		d_3
OAJ35	4	4
OAJ36	6	6
OAJ37	8	8

Parts No.	Applicable tube O.D.	③
		d_4
OAJ54	4	4
OAJ55	6	6
OAJ56	8	8
OAJ75	10	10

Part No.	Applicable thread	④		
		d_5	d_6	h
OAJ31	M 8	8.2	11.4	1
OAJ32	M10	10.2	13.9	1
OAJ33	M12	12.2	15.9	1.4
OAJ34	M14	14.2	17.9	1.5
OAJ81	R1/4	13.3	17.9	1.5

Accessories for NSK Oil-Air Lubricators

OIL SUPPLY NOZZLES (utility model pending)

These oil-air supply nozzles were developed to ensure a stable supply of oil to bearings. There is a design appropriate for each bearing type and size.

Design and Mounting

Model	Angular Contact Ball Bearings			Cylindrical Roller Bearings	
	XB-D series	XB-S series	XB-U series	XC-S series	XC-U series
Nozzle Design					
	Nozzle mounting				

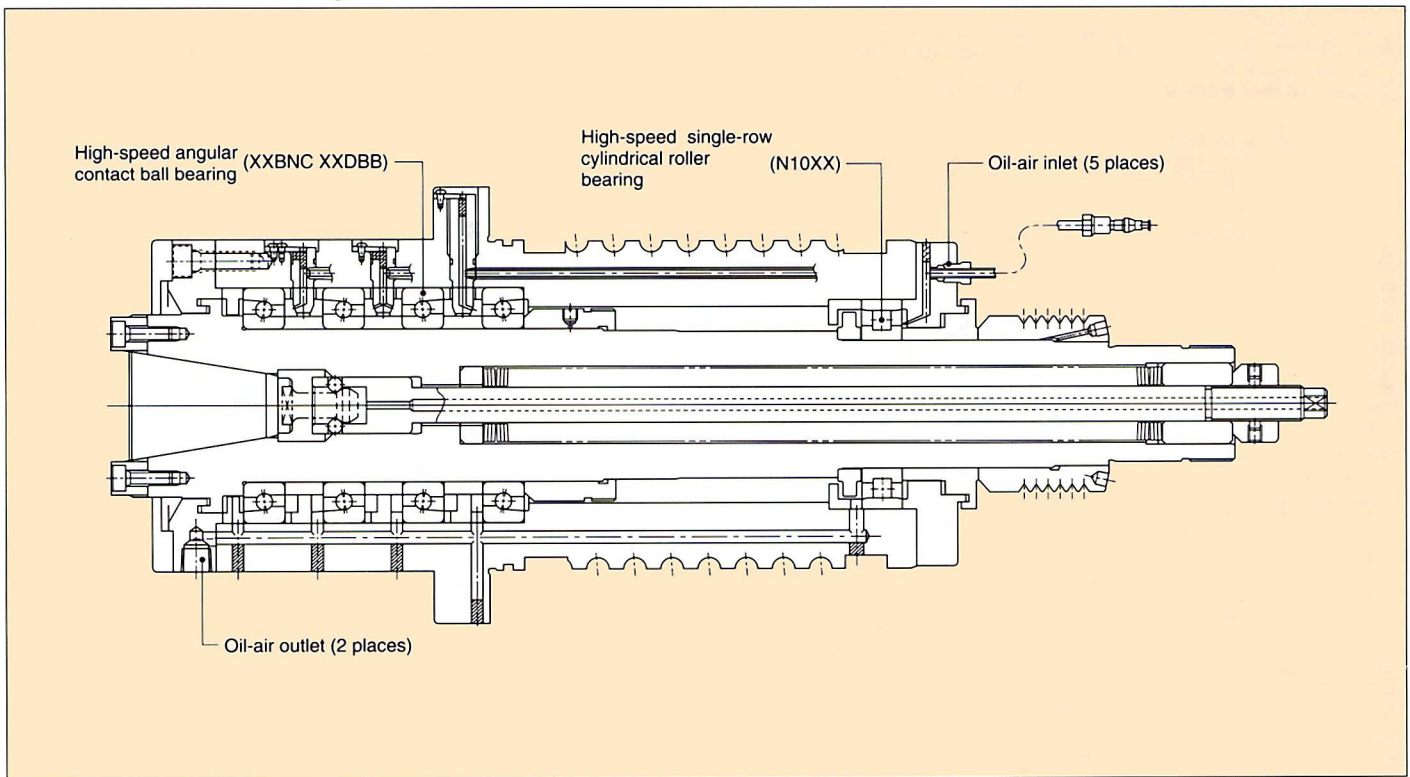
Mounting Dimensions Table

Model No.	Applicable Bearing No.			Nozzle Length Under Neck	Mounting Dimensions				
	70XXTY series	BNC10TY series	BNC19T series		L	X	T		
XB-D20S-1	—	—	40BNC19T	20	8.5	13.0			
			45BNC19T						
			50BNC19T						
XB-S20S-1	—	—	55BNC19T	20	8.0	12.5			
			60BNC19T						
			65BNC19T						
XB-U20S-1	7008TY	40BNC10TY	—	20	7.5	12.0			
	7009TY, 7010TY	45BNC10TY	70BNC19T				20	6.5	11.0
		50BNC10TY	75BNC19T						
XB-D25S-1	—	55BNC10TY	85BNC19T	25	10.5	15.0			
		60BNC10TY	90BNC19T						
		65BNC10TY	95BNC19T						
XB-S25S-1	7011TY, 7012TY, 7013TY	—	—	25	10.0	14.5			
	—	—	100BNC19T				25	9.0	13.5
	7014TY	70BNC10TY	105BNC19T						
XB-U25S-1	7015TY	—	—	25	8.0	12.5			
	—	—	120BNC19T				25	7.5	12.0
	7016TY, 7017TY	80BNC10TY	85BNC10TY						
XB-D30S-1	—	—	90BNC10TY	30	10.5	15.0			
			95BNC10TY						
			100BNC10TY						
XB-S30S-1	7018TY, 7019TY, 7020TY	—	—	30	10.0	14.5			
		—	105BNC10TY				—	30	9.0
XB-U30S-1	—	—	110BNC10TY	30	7.5	12.0			
		—	120BNC10TY						
XC-S15S-1	—	—	—	15	8.5	13.0			
XC-U15S-1	—	—	—	15	7.0	11.5			
XC-S20S-1	—	—	—	20	10.0	14.5			
XC-U20S-1	—	—	—	20	10.0	14.5			

NSK Cartridge Spindles (Oil-Air Lubrication Type)

NSK produces standard cartridge spindles for machining centers. These spindles are capable of high speeds with oil-air lubrication. We recommend using these spindles together with FINE-LUB. For details, refer to NSK catalogue no. E2202 "Standard Spindles."

A Series for Machining Centers



M Series for Machining Centers (Integrated-Motor Type)

