MOTION & CONTROL™
NSK

NSK Grease Unit

The NSK Grease Unit is a compact and easy-to-use lubrication unit for use on the NSK Linear Guides™, ball screws and Monocarriers™.
We provide a wide variety of grease to choose from to meet your needs.

NSK Grease Unit

For lubrication of the guiding and feeding parts of the NSK Linear Guides™, ball screws and Monocarriers™

Appropriate lubrication of guiding and feeding parts is essential to maximizing the efficiency and usefulness of machinery from engineering tools to semiconductor equipment.
NSK provides various types of grease units that you can choose from for use in high-speed, high-load, oscillating, and high-temperature environments or clean rooms.

Features of NSK Grease Unit

NSK provides compact, hand-operated grease pumps and a wide variety of nozzles that enable you to easily apply grease to guiding and feeding parts.
You can easily attach a bellows tube container to the pump.
The name of the grease being used is on the bottom of the bellows tube container.
Containers are color-coded to make it easier to identify the type of grease after the container is attached to the pump.

Configurations of NSK Grease Unit

NSK Grease

General, High-load

NSK Grease AS2
(NSK GRS AS2)
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Low-temperature, Low-Torque, Eco Mark Certificate No.05 110 005

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Oscillation, High-speed, Low-Torque

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NSK Hand Grease Pump Unit

NSK Hand Grease Pump (A straight nozzle is provided with a hand grease pump.)
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Grease Nozzle (sold separately with grease pump)

-NSK straight nozzle
-NSK chuck nozzle
-NSK fitting nozzle
-NSK point nozzle
-NSK flexible nozzle
-NSK flexible extension pipe
-NSK straight extension pipe
-NSK MCH exclusive fitting nozzle

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NSK Grease

General High-load

NSK Grease AS2

Reference No. : NSK GRS AS2

Quantity: 80 g Tube color: Brown

Feature

It is an environmentally friendly and widely used grease for high load application. It is mineral oil based grease containing lithium thickener and several additives. It is superb in load resistance as well as stability in oxidization. It not only maintains good lubrication over a long period of time, but also demonstrates superb capability in retaining water. Even containing a large amount of water, it does not lose grease when it is softened.

Application

It is a standard grease for general NSK linear guides, ball screws and monocarriers. It is prevalently used in many applications because of its high base oil viscosity, high load resistance, and stability in oxidization.

Range of use temperature

-10 to +110ºC

Properties

Thickener	Lithium soap
Base oil	Mineral oil
Consistency	275
Dropping point	181ºC
Volume of evaporation	0.24% (99ºC, 22 hr)
Copper plate corrosion test	Satisfactory (100ºC, 24 hr)
Oil separation	2.8% (100ºC, 24 hr)
Base oil kinematic viscosity	130 mm^2/s (40ºC)

Maintains good lubrication over a long period of time

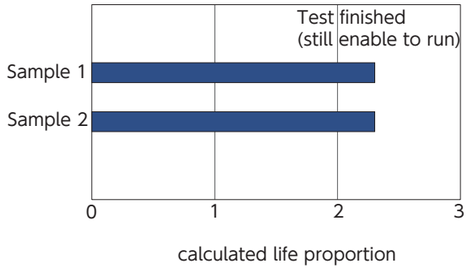
Sample: Ball Screw

Shaft diameter	36 mm
Lead	10 mm
Dynamic load rating	27 200 N

Test conditions

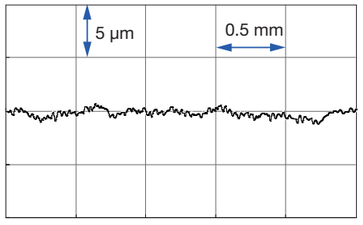
Load	7 300 N
Rotational speed	1 000 min^{-1}
Stroke	60 mm
Intervals of replenishments	Periodically

Result of durability test (example)

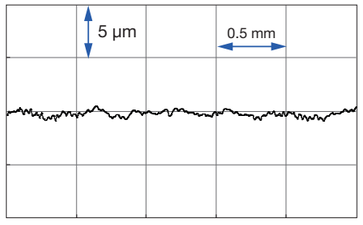


Comparison of ball screw track surfaces

Before running



After running



High-speed

NSK Grease LR3

Reference No. : NSK GRS LR3

Quantity: 80 g Tube color: Green

Feature

It contains a special synthetic oil for high temperature and stability, and a carefully selected anti-oxidation agent. This grease dramatically increases lubrication life under high temperature conditions. It is used for high speed, medium load. Lubrication life exceeded 2 000 hours in the endurance test at 150ºC. Its rust prevention capacity in severe conditions such as water and moist environments is further strengthened.

Application

It is a standard grease for ball screws PSS type (shaft dia. 15 mm or over), FSS type and VFA type. It is ideal for operation with medium load, at high speed such as positioning in high tact material handling equipment.

Range of use temperature

-30 to +130ºC

Properties

Thickener	Lithium soap
Base oil	Synthetic oil
Consistency	235
Dropping point	205ºC
Volume of evaporation	0.3% (99ºC, 22 hr)
Copper plate corrosion test	Satisfactory (100ºC, 24 hr)
Oil separation	1.8% (100ºC, 24 hr)
Base oil kinematic viscosity	29 mm^2/s (40ºC)

Suitable for high-speed operation

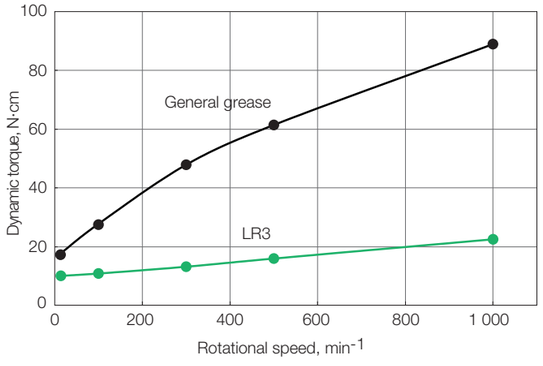
Sample: Ball screw

Shaft diameter	32 mm
Lead	5 mm

Test conditions

Stroke	300 mm
Rotational speed	10 to 1 000 min^{-1}

Torque characteristics of ball screw



NSK Grease

NSK Grease LG2

Reference No. : NSK GRS LG2

Quantity: 80 g Tube color: Blue

Clean

Feature

This grease was developed by NSK to be exclusively used for linear guides, ball screws and Monocarriers in clean room. Compared to the fluorine grease which are commonly used in clean room, LG2 has several advantages such as;
higher in lubrication function, longer lubrication life, more stable torque (resistant to wear) and higher rust prevention. In dust generation, LG2 is more than equal to fluorine grease in keeping dust volume low. Since the base oil is not a special oil but a mineral oil, LG2 can be handled in the same manner as general greases.

Application

LG2 is a lubrication grease for rolling element products such as linear guides, ball screws and monocarriers for semiconductor and liquid crystal display (LCD) processing equipment which require a highly clean environment.
It is a standard grease for NSK standard ball screw USS type.
* Wash the linear guides and ball screws to remove oil prior to applying Clean Grease LG2 , so the grease functions are fully utilized.
* Clean grease is exclusively used for clean environments under normal pressure.

Range of use temperature

-20 to +70ºC

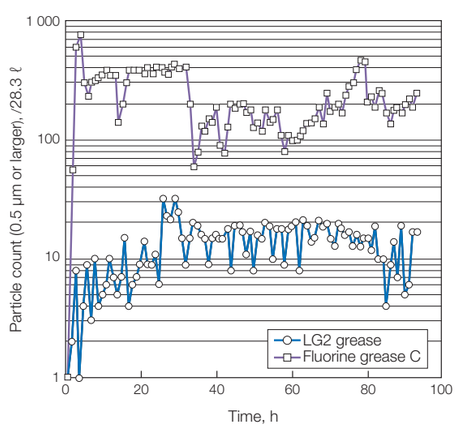
Properties

Thickener	Lithium soap
Base oil	Mineral oil + synthetic hydrocarbon oil
Consistency	199
Dropping point	201ºC
Volume of evaporation	1.40% (99ºC, 22 hr)
Copper plate corrosion test	Satisfactory (100ºC, 24 hr)
Oil separation	0.8% (100ºC, 24 hr)
Base oil kinematic viscosity	30 mm^2/s (40ºC)

Low-dust emission, low friction, low torque

▶ Sample: Linear Guide

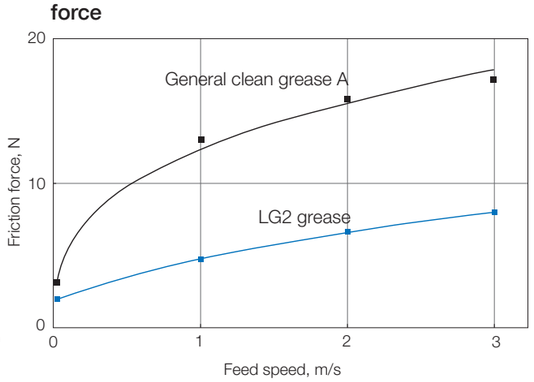
▶ Dust emission from linear guide



▶ Test condition

Stroke	1 500 mm
Feed speed	0.1 to 3 m/s

▶ Measurement result of linear guide friction force



NSK Grease LGU

Reference No. : NSK GRS LGU

Quantity: 80 g Tube color: Yellow

Clean High-temperature

Feature

This is a proprietary urea grease of NSK featuring low dust emission exclusively for ball screws and linear guides which are used in clean rooms.
In comparison with fluorine base grease, which has been used commonly in clean rooms, LGU has better lubricating property, longer duration of lubricant, better torque variation, much better anti-rust property, and equivalent or better dust emission. In addition, this grease can be handled in the same way as the other common grease because high-grade synthetic oil is used as the base oil.
LGU grease contains much less metallic elements compared to LG2 grease. It can be used in high temperature environment.

Application

This is exclusive lubrication grease for ball screws and linear guides that are installed in equipment that requires cleanliness, as same as LG2 grease, and it can be used in high temperature range.
* Wash the linear guide and ball screws to remove oil prior to applying Clean Grease LGU, so the grease functions are fully utilized.
* Clean grease is exclusively used for clean environments under normal pressure.

Range of use temperature

-30 to +120ºC

Properties

Thickener	Urea
Base oil	Synthetic hydrocarbon oil
Consistency	201
Dropping point	260ºC
Volume of evaporation	0.09% (99ºC, 22 hr)
Copper plate corrosion test	Satisfactory (100ºC, 24 hr)
Oil separation	0.6% (100ºC, 24 hr)
Base oil kinematic viscosity	95.8 mm^2/s (40ºC)

Superb low torque, low friction as well as LG2

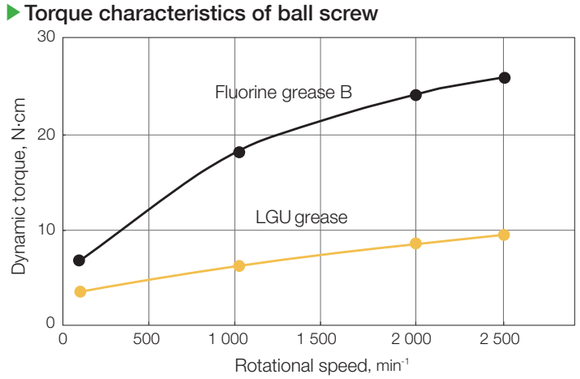
▶ Sample: Ball screw

Shaft diameter	20 mm
Lead	10 mm

▶ Test condition

Stroke	700 mm

▶ Torque characteristics of ball screw



NSK Grease

Low-temperature Light-load

NSK Grease PS2

Reference No. : NSK GRS PS2

Quantity: 80 g Tube color: Orange

Feature

The major base oil component is synthetic oil with mineral oil. It is an excellent lubrication especially for low temperature operation. It is for high speed and light load.

Application

It is a standard grease for NSK miniature linear guides and ball screws. It is especially superb for low temperature operation, but also functions well in normal temperatures, making it ideal for small equipment with light load.

Range of use temperature

-50 to +110°C

Properties

Thickener	Lithium soap
Base oil	Synthetic oil + mineral oil
Consistency	275
Dropping point	190°C
Volume of evaporation	0.60% (99°C, 22 hr)
Copper plate corrosion test	Satisfactory (100°C, 24 hr)
Oil separation	3.6% (100°C, 24 hr)
Base oil kinematic viscosity	15.9 mm^2/s (40°C)

Good operability in low-temperature conditions

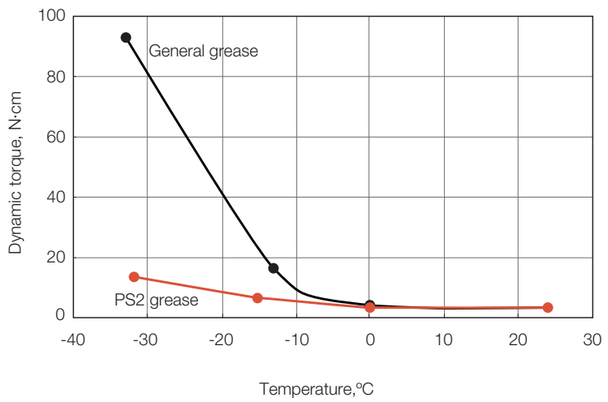
▶ **Sample: Ball screw**

Shaft diameter	16 mm
Lead	5 mm

▶ **Test condition**

Rotational speed	100 min^{-1}
Stroke	120 mm
Temperature	−32 to +24°C

▶ **Torque characteristics of ball screw**



Oscillation

NSK Grease NF2

Reference No. : NSK GRS NF2

Quantity: 80 g Tube color: Gray

Feature

It uses high-grade synthetic oil as the base oil and urea base organic compound as the thickener.

It has remarkable anti-fretting corrosion property. It can be used in wide temperature range, from low to high, and has superior lubrication life.

Application

This grease is suitable for ball screws and linear guides of which application include oscillating operations.

Range of use temperature

-40 to +100°C

Properties

Thickener	Urea
Base oil	Synthetic hydrocarbon oil
Consistency	311
Dropping point	250°C
Volume of evaporation	0.2% (99°C, 22 hr)
Copper plate corrosion test	Satisfactory (100°C, 24 hr)
Oil separation	0.6% (100°C, 24 hr)
Base oil kinematic viscosity	26 mm^2/s (40°C)

Suitable for oscillating operation

▶ **Sample: Linear Guide**

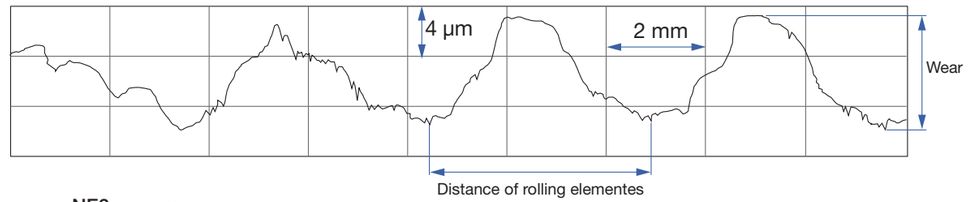
Model No.	LH25

▶ **Test condition**

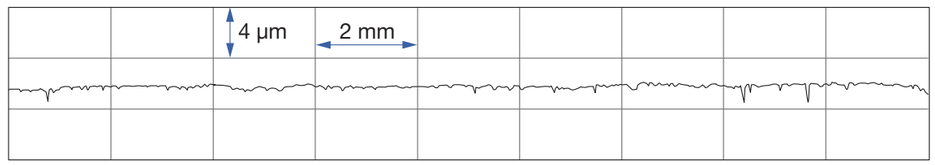
Stroke	5 mm
Grease quantity	2.5 cc/1 Ball slide
Total stroke	10 million times

▶ **Comparison of linear guide track surfaces after operation (measured in the long direction of the ball slide)**

General grease



NF2 grease



NSK Grease

NSK Grease NS7

Reference No. : NSK GRS NS7

Quantity: 80 g Tube color: Yellow green

Low-temperature Low-Torque

Feature

It has remarkable torque characteristics (low torque), and can be used wide temperature range.

Range of use temperature

-40 to +130°C

Properties

Thickener	Lithium soap
Base oil	Ester oil
Consistency	250
Dropping point	192°C
Volume of evaporation	0.3% (99°C, 22 hr)
Copper plate corrosion test	Satisfactory (100°C, 24 hr)
Oil separation	1.2% (100°C, 24 hr)
Base oil kinematic viscosity	24.1 mm^2/s (40°C)

* For details of NSK Grease NS7, please contact NSK.

Eco Mark Certificate
No. 05 110 005

Grease that decomposes easily in the environment.
Biodegradability: 60% or more in 28 days
(according to the OECD 301C test)

NSK Grease NSL

Reference No. : NSK GRS NSL

Quantity: 80 g Tube color: Purple

Oscillation High-speed Low-Torque

Feature

It has anti-fretting property and superb torque characteristics (low torque) for high-speed operation.

Range of use temperature

-40 to +130°C

Properties

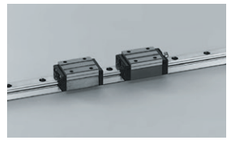
Thickener	Lithium soap
Base oil	Synthetic hydrocarbon oil + ester oil
Consistency	280
Dropping point	200°C
Volume of evaporation	0.31% (99°C, 22 hr)
Copper plate corrosion test	Satisfactory (100°C, 24 hr)
Oil separation	1.3% (100°C, 24hr)
Base oil kinematic viscosity	169 mm^2/s (40°C)

* For details of NSK Grease NSL, please contact NSK.

Standard grease

The greases (or rust preventive oil) on the table below will be packed (or applied) into the products if not specified.

Packed grease for NSK Linear Guides



Model	Packed grease
NH	AS2
VH	
NS	
LW	
DH	
DV	
DS	
PU	PS2
LU	
PE	
LE	
Miniature LH	AS2
RA	
RB	
LA	
HA	
HS	

Packed grease for Ball Screws

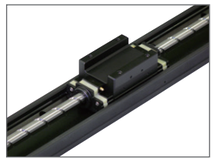
"ϕ** [mm]×**" [mm] in model indicates shaft dia. and lead of ball screw.

Category	Type / Application		Model		Packed grease
Finished shaft end	Compact FA	High-accuracy, clean	USS		LG2
		General	PSS	ϕ12 or less	PS2
				ϕ15 or over	LR3
		Transfer equipment	FSS		LR3
	Miniature, fine lead		MA		PS2
	Small equipment		FA	ϕ10×4、ϕ12×5	PS2
				except above	LR3
	Machine tools		SA		Rust preventive agent
	Stainless steel		KA		Rust preventive agent
	Transfer equipment		VFA		LR3
			RMA		Rust preventive agent
Blank shaft end	Miniature, fine lead		MS		Rust preventive agent
	Small equipment		FS		Rust preventive agent
	Machine tools		SS		Rust preventive agent
			HSS		Rust preventive agent
	Transfer equipment		RMS		Rust preventive agent
			RNFTL		Rust preventive agent
			RNFBL		Rust preventive agent
			RNCT		Rust preventive agent
			RNFCL		Rust preventive agent
			RNSTL		Rust preventive agent

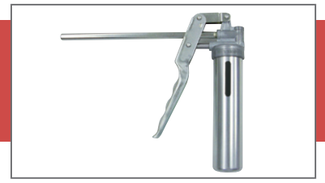
* Please apply lubricant (oil or grease) before use for the products which only rust preventive agent is applied at time of delivery.

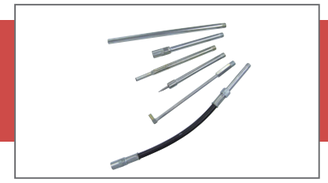
Packed grease for Monocarriers

Model	Packed grease
MCM	AS2
MCH	



NSK Hand Grease Pump Unit





Feature

▶ Easy operation
Can be operated by one hand, yet there is no worry to making a mistake.

▶ Inserting by high pressure
Insert at 15 MPa.

▶ No leaking
Does not leak when held upside down.

▶ Easy to change grease
Simply attach grease in bellows tubes.

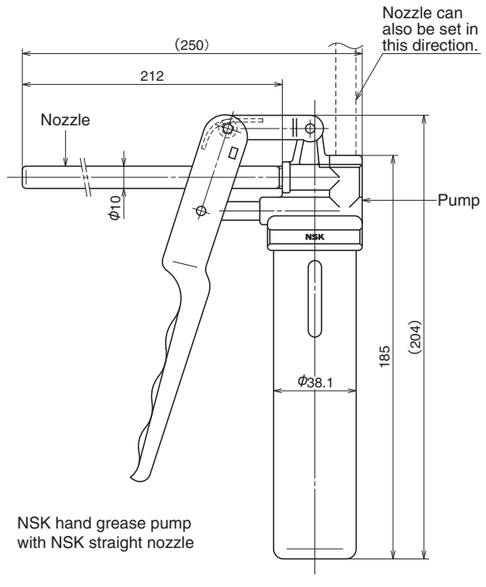
▶ Prevents entry of foreign matter
Foreign matter such as dust cannot enter since grease can be changed while in bellows tubes.

▶ Remaining grease
Can be confirmed through slit on pump.

▶ Several nozzles
Six types of nozzles and two extension pipes to choose from.

NSK Hand Grease Pump (Reference number: NSK HGP)

(Contains one NSK straight nozzle)

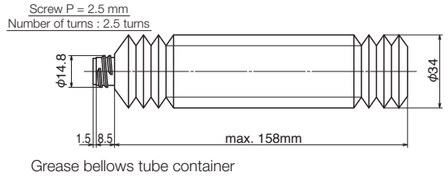


NSK hand grease pump with NSK straight nozzle

▶ Specifications

Discharge pressure	15 MPa
Spout volume	0.35cc /shot
Mass of main body (without nozzle)	240 g
Provided nozzle	90 g
Body diameter	ϕ38.1 mm
Accessory	Several nozzles for a unique application can be attached

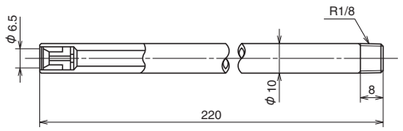
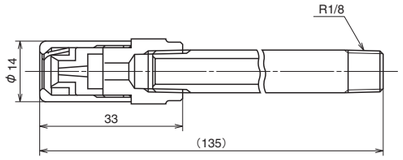
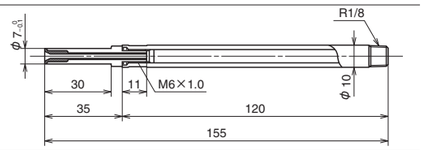
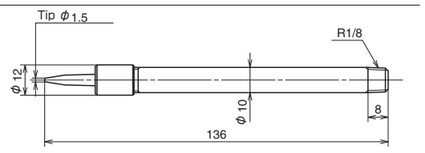
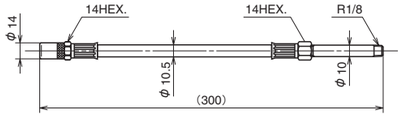
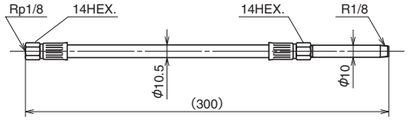
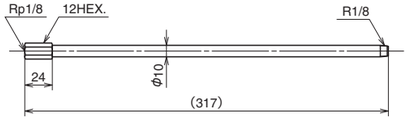
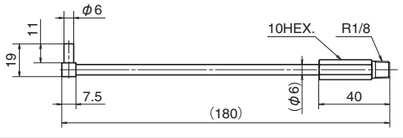
Bellows tube (Common to each grease)



Grease bellows tube container

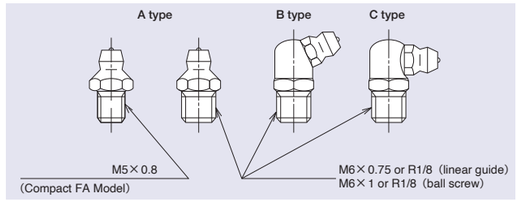
Grease nozzle

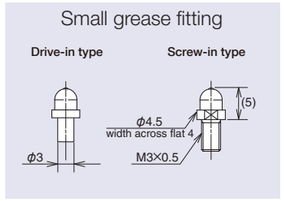
▶ Specifications

Type	Reference No.	Application	Dimensions
NSK straight nozzle 	NSK HGP NZ1	Used with grease fittings A, B, and C under the JIS B1575 standard.	
NSK chuck nozzle 	NSK HGP NZ2	Same as above except the nozzle and fitting are coupled by a chucking mechanism at the tip that makes pressing the pump unnecessary.	
NSK fitting nozzle 	NSK HGP NZ3	Exclusively used with the -ϕ3 drive-in grease fitting.	
NSK point nozzle 	NSK HGP NZ4	Used for linear guides that do not have a grease fitting. Supplies grease directly to the ball grooves or to the inside through an opening in the slide.	
NSK flexible nozzle 	NSK HGP NZ5	Features a flexible chuck nozzle. Used where straight nozzles can't be used.	
NSK flexible extension pipe 	NSK HGP NZ6	Used for longer reach. A flexible extension pipe connects the grease pump and nozzle.	
NSK straight extension pipe	NSK HGP NZ7	Used for longer reach. A straight extension pipe connects the grease pump and nozzle.	
NSK MCH exclusive fitting nozzle 	NSK HGP NZ8	For MCH Model grease replenishment	

Applicable Grease Nozzle and Grease Fitting

▶Grease fitting specifications





The tables show applicable nozzles and fittings for each products, models and sizes.

▶Applicable grease nozzles for NSK linear guides

Model	Model No.	Tap hole for grease fitting	Standard grease fitting	Straight nozzle NZ1	Chuck nozzle NZ2	Drive-in fitting nozzle NZ3	Point nozzle NZ4	Flexible nozzle NZ5
NH	NH15	ϕ3	Drive-in type			○		
	NH20, 25, 30, 35*1	M6×0.75	B type	○	○			○
	NH45, 55, 65	Rc1/8	B type	○	○			○
VH	VH15	ϕ3	Drive-in type			○		
	VH20, 25, 30, 35*1	M6×0.75	B type	○	○			○
	VH45, 55	Rc1/8	B type	○	○			○
NS	NS15	ϕ3	Drive-in type			○		
	NS20, 25, 30, 35*1	M6×0.75	B type	○	○			○
LW	LW17	ϕ3	Drive-in type			○		
	LW21, 27, 35*1	M6×0.75	B type	○	○			○
	LW50	Rc1/8	B type	○	○			○
DH	DH15	ϕ3	Drive-in type			○		
	DH20, 25, 30, 35*1	M6×0.75	B type	○	○			○
	DH45, 55, 65	Rc1/8	B type	○	○			○
DV	DV15	ϕ3	Drive-in type			○		
	DV20, 25, 30, 35*1	M6×0.75	B type	○	○			○
	DV45, 55	Rc1/8	B type	○	○			○
DS	DS15	ϕ3	Drive-in type			○		
	DS20, 25, 30, 35*1	M6×0.75	B type	○	○			○
PU	PU09, 12	—	—				○	
	PU15	ϕ3	Drive-in type			○		
LU	LU05, 07, 09, 12, 15	—	—				○	
PE	PE09, 12	—	—				○	
	PE15	ϕ3	Drive-in type			○		
LE	LE05, 07, 09, 12, 15	—	—				○	
Miniature LH	LH08, 10	—	—				○	
	LH12	ϕ3	Drive-in type			○		
RA	RA15, 20	ϕ3	Drive-in type			○		
	RA25, 30, 35*1	M6×0.75	B type	○	○			○
	RA45, 55, 65	Rc1/8	B type	○	○			○
RB	RB30	ϕ3	Drive-in type			○		
	RB35, 45	M6×0.75	B type	○	○			○
	RB55, 65	Rc1/8	B type	○	○			○
LA	LA25, 30, 35*1	M6×0.75	B type	○	○			○
	LA45, 55, 65	Rc1/8	B type	○	○			○
HA	HA25, 30, 35*1	M6×0.75	B type	○	○			○
	HA45, 55	Rc1/8	B type	○	○			○
HS	HS15	ϕ3	Drive-in type			○		
	HS20, 25, 30, 35*1	M6×0.75	B type	○	○			○

1 If using a chuck nozzle, avoid interference with table and rail.
* For PU, LU, PE, LE, and Miniature LH Models, apply grease directly to ball groove, etc. using point nozzle.
* A long threaded grease fitting is required for NSK linear guides because of dust-resistant parts.

▶Applicable grease nozzle for Ball Screws

Category	Type / Application		Model (Unit of shaft dia. : mm)		Tap hole for grease fitting	Standard grease fitting	Straight nozzle NZ1	Chuck nozzle NZ2	Drive-in fitting nozzle NZ3	Point nozzle NZ4	Flexible nozzle NZ5
Finished shaft end	Compact FA	High-accuracy, clean	USS		M5×0.8	A type	○	○		○	○
		General	PSS			A type	○*1	○*1		○	○*1
		Transfer equipment	FSS			A type	○*1	○*1		○	○*1
	Miniature, fine lead		MA	Shaft dia. 12 or less	—	—				○	
				Shaft dia. 16 or over	M6×1	—				○	
	Small equipment		FA		M6×1	—	○*2	○*2		○	○*2
	Machine tools		SA	Shaft dia. 36 or less	M6×1	—	○	○		○	○
				Shaft dia. 40 or over	Rc1/8	—	○	○		○	○
	Stainless steel		KA	Shaft dia. 12 or less and lead 2 or less	M3×0.5	—			○	○	
				except above	M6×1	—	○*2	○*2		○	○*2
	Transfer equipment		VFA	Shaft dia. 12 or less	ϕ2.7	—				○	
				Shaft dia. 15 or over	ϕ3.5	—				○	
			RMA		—	—				○	
Blank shaft end	Miniature, fine lead		MS	Shaft dia. 12 or less	—	—				○	
				Shaft dia. 16 or over	M6×1	—				○	
	Small equipment		FS		M6×1	—	○*2	○*2		○	○*2
	Machine tools		SS	Shaft dia. 36 or less	M6×1	—	○	○		○	○
				Shaft dia. 40 or over	Rc1/8	—	○	○		○	○
			HSS		M6×1	—	○	○		○	○
	Transfer equipment		RMS		—	—				○	
			RNFTL	Shaft dia. 12 or less	M3×0.5	—			○	○	
				Shaft dia. 14 or over	M6×1	—	○	○		○	○
			RNFBL	Shaft dia. 12 or less	M3×0.5	—			○	○	
				Shaft dia. 14 or over	M6×1	—	○	○		○	○
			RNCT		—	—				○	
			RNFCL	Shaft dia. 12 or less	M3×0.5	—			○	○	
				Shaft dia. 15 or over	M6×1	—	○	○		○	○
			RNSTL		M6×1	—	○	○		○	○

*1 Unavailable for shaft dia. 25 mm *2 Installation of nozzle may not be possible with A-type grease fitting.
Notes: 1) NSK ball screws are not normally equipped with grease fittings excluding the Compact FA model. Tap holes are provided for users to install grease fittings as necessary.
2) Small (screw-in) fittings are available for M3×0.5 tap holes. Please contact NSK.
3) VFA models do not support grease fittings. Apply grease directly inside the nut through the oil hole using a point nozzle.
4) MA, RMA, MS, RMS, and RNCT models have no tap hole, apply grease directly to the screw shaft and ball grooves using a point nozzle.

▶Applicable grease nozzles for Monocarriers and Toughcarriers

Model	Model No.	Tap hole for grease fitting	Standard grease fitting	Straight nozzle NZ1	Chuck nozzle NZ2	Drive-in fitting nozzle NZ3	Flexible nozzle NZ5	MCH exclusive fitting nozzle NZ8
MCM	MCM02	—	—					
	MCM03, 05, 08, 10	ϕ3	Drive-in type			○		○*
	MCM06	M6×0.75	A type	○	○		○	
MCH	MCH06, 09, 10	ϕ3	Drive-in type					○
TCH	TCH06, 09, 10	ϕ3	Drive-in type					○

* Use of NZ3 is recommended.

Precautions

- Do not mix greases of different brands because the grease structure may be destroyed.
- Grease viscosity varies by temperature. Viscosity is particular high in winter due to low temperatures. Pay attention to increases in linear guide and monocarrier sliding resistance, and ball screw and monocarrier torque in such conditions.
- When the ambient temperature is low, or in winter, if it is difficult to pump out the grease from the container, wait until the grease is softened.
- In locations where coolant is dispersed or scattered, emulsification of lubricants and rinsing with water may significantly deteriorate the integrity of the lubricant and the efficacy of the grease.
  Protect the grease unit from coolant by shielding it with a cover, etc.
- If you wish to obtain a copy of SDS, please contact NSK.

Before use of NSK Linear Guides, Ball Screws and Monocarriers

Wipe off rust preventive oil before use if it is supplied to the products.
For the products not applied grease, try the system a few times (operate the slide of linear guide, ball nut of ball screw or monocarrier slider for whole stroke length 5 to 10 times) after supplying grease, and wipe off excess grease.

Intervals of checks and replenishments

Although the grease is of high quality, it gradually deteriorates and its lubrication function diminishes. Also, the grease in the slide, ball nut and monocarrier slider is gradually removed by stroke movement. In some environments, the grease becomes dirty, and foreign objects may enter. Grease should be replenished depending on frequency of use.
The following is a guide of grease replenishment intervals.

Intervals of checks	Items to check	Intervals of replenishments
3 - 6 months	Dirt, foreign matters such as cutting chips	Usually once per year. Every 3 000 km for material handling system that travels more than 3 000 km per year. Replenish if checking results warrant it necessary.

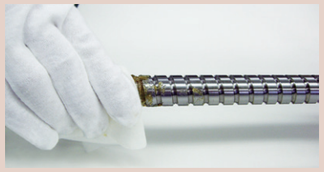
How to replenish the grease and volume of grease replenished

Supply required amount through grease fitting by a grease pump. Wipe off old grease and accumulated dust before supplying new grease. If grease fitting is not used, or there is no holes for grease replenishment, apply grease directly to the rail or to the ball groove of the screw shaft, and move a slide, ball nut or monocarrier slider few strokes so the grease permeates into the slide, monocarrier slider and inside the nut.

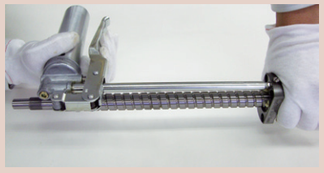
Once grease is replenished, another supply is not required for a long time. But under some operational conditions, it is necessary to periodically replenish grease.
When replenishing using a grease pump, fill the inside of slide, ball nut and monocarrier slider with grease. Supply grease until it comes out from the slide, ball nut or monocarrier slider area. Move slide, ball nut and monocarrier slider by hand while filling them with grease, so the grease permeates all areas.
Do not operate the machine immediately after replenishing. Always try the system a few times to spread the grease throughout the system and to remove excess grease. Trial operations are necessary because the resistance to sliding force and screw torque greatly increases immediately after replenishment (full-pack state) and may cause problems. Wipe off excess grease that accumulates at end of rail and screw shaft after trial runs so the grease does not move to other areas.

How to replenish

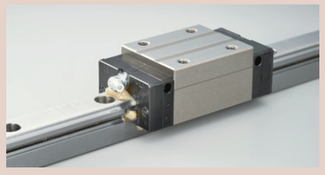
1 Wipe off old greases on the rail and screw shaft by clean cloth.

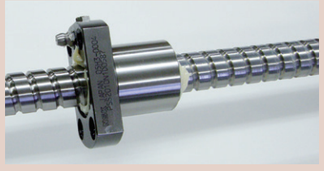


2 Supply grease until it comes out from the slide or ball nut area. Move the slide or ball nut by hand while filling them with grease.



3 Full-pack state.





Internal space

Refer to the tables below for the grease quantity of full-pack state.

Inside space of the slide of linear guide

▶ NH, DH Models

Unit: cm^3

Model / Model No.	NH, DH	
	High-load type	Super-high-load type
15	3	4
20	6	8
25	9	13
30	13	20
35	22	30
45	47	59
55	80	100
65	139	186

▶ VH, DV Models

Unit: cm^3

Model / Model No.	VH, DV	
	High-load type	Super-high-load type
15	3	4
20	6	8
25	9	13
30	13	20
35	22	30
45	47	59
55	80	100

▶ NS, DS Models

Unit: cm^3

Model / Model No.	NS, DS	
	Medium-load type	High-load type
15	2	3
20	3	4
25	5	8
30	8	12
35	12	19

▶ LW Model

Unit: cm^3

Model / Model No.	LW
17	3
21	3
27	7
35	24
50	52

▶ PU, LU Models

Unit: cm^3

Model / Model No.	PU		LU	
	Standard type	High-load type	Standard type	High-load type
05	—	—	0.1	—
07	—	—	0.1	—
09	0.2	0.3	0.2	0.3
12	0.3	0.4	0.3	0.4
15	0.8	1.1	0.8	1.1

▶ PE, LE Models

Unit: cm^3

Model / Model No.	PE		LE		
	Standard type	High-load type	Medium-load type	Standard type	High-load type
05	—	—	0.1	0.1	—
07	—	—	0.1	0.2	0.3
09	0.4	0.5	0.2	0.4	0.5
12	0.5	0.7	0.3	0.5	0.7
15	1.2	1.6	0.8	1.2	1.6

▶ Miniature LH Model

Unit: cm^3

Model / Model No.	LH
08	0.2
10	0.4
12	1.2

▶ RA Model

Unit: cm^3

Model / Model No.	RA	
	High-load type	Super-high-load type
15	1.0	1.5
20	2	2.5
25	3	3.5
30	5	6
35	6	8
45	10	13
55	15	20
65	33	42

▶ LA Model

Unit: cm^3

Model / Model No.	LA	
	High-load type	Super-high-load type
25	8	12
30	14	18
35	21	29
45	38	48
55	68	86
65	130	177

▶ RB Model

Unit: cm^3

Model / Model No.	RB	
	High-load type	Super-high-load type
30	5	6
35	6	8
45	10	13
55	15	20
65	33	42

▶ HA, HS Models

Unit: cm^3

Model / Model No.	HA	HS
15	—	5
20	—	9
25	16	16
30	27	25
35	42	40
45	67	—
55	122	—

Inside space of ball nut

Unit of shaft dia. ·lead : mm

▶ Compact FA-PSS, FA-USS, and FA-FSS Models

Shaft dia.·lead-ball turns	Inside space (cm^3)	Shaft dia.·lead-ball turns	Inside space (cm^3)	Shaft dia.·lead-ball turns	Inside space (cm^3)
0608-2E	0.2	1205-3E	1	2020-2E	3.2
0608-4E	0.3	1210-3E	1	2030-3E	4.6
0612-2E	0.2	1220-2E	1.2	2040-2E	5.3
0612-4E	0.3	1230-2E	1.5	2060-2E	7
0810-2E	0.4	1505-3E	2	2505-3E	4.4
0810-4E	0.5	1510-3E	2	2510-4E	4.7
0815-2E	0.4	1520-2E	2.8	2520-2E	3.9
0815-4E	0.6	1530-2E	3.4	2525-2E	4.3
1005-3E	0.8	2005-3E	3.4	2530-2E	5.5
1010-2E	0.7	2010-3E	3.2	2550-2E	7.7

▶ High-Speed SS Model

Shaft dia.·lead-ball turns	Inside space (cm^3)
3205-5	10
3210-5	43
4010-5	52
4012-5	67
4016-4E	40
4020-4E	47
4510-5	58
5010-5	64
5012-5	99

▶ Tube recirculation (single nut)

Shaft dia.·lead-ball turns	Inside space (cm^3)	Shaft dia.·lead-ball turns	Inside space (cm^3)	Shaft dia.·lead-ball turns	Inside space (cm^3)	Shaft dia.·lead-ball turns	Inside space (cm^3)
1004-2.5	0.8	2004-5	2.7	2520-2.5	12	3610-5	32
1205-2.5	1.2	2005-5	4.3	2525-1.5	7.5	4005-10	14
1210-2.5	1.4	2010-2.5	4.7	2805-5	6	4010-5	30
1405-2.5	2.2	2020-1.5	4.2	3205-5	7	4012-5	34
1408-2.5	2.1	2504-5	3.2	3206-5	9.5	4510-5	34
1510-2.5	2.3	2505-5	5	3210-5	22	5010-5	37
1605-2.5	2.6	2506-5	7	3225-2.5	17	5010-10	59
1616-1.5	2.1	2510-3	9.5	3232-1.5	15		

▶ Deflector (bridge) recirculation (single nut)

Shaft dia.·lead-ball turns	Inside space (cm^3)	Shaft dia.·lead-ball turns	Inside space (cm^3)
0401-2	0.1	1602-4	1.6
0601-3	0.2	1602.5-4	1.6
0801-3	0.3	2505-6	6.5
0801.5-3	0.2	2510-4	10
0802-3	0.3	3205-8	9.5
1002-3	0.4	3210-6	28
1002.5-3	0.6	4010-8	42
1202-3	0.5	5010-8	52
1202.5-3	0.8		

Inside space of the slide of monocarrier

Model No.	Lead (mm)	Inside space (cm^3)
MCM02	1	0.3
	2	0.3
MCM03	1	1
	2	0.9
	10	1.8
	12	1.7
MCM05	5	4.2
	10	4
	20	2.1
	30	2.0

Model No.	Lead (mm)	Inside space (cm^3)
MCM06	5	8.3
	10	6.5
	20	5.5
MCM08	5	11.6
	10	9.8
	20	8.7
	30	4.3
MCM10	10	19.4
	20	17.4
	30	8.8

Model No.	Lead (mm)	Inside space (cm^3)
MCH06 MCL06	5	2.8
	10	2.7
	20	2.7
MCH09	5	5.8
	10	5.8
	20	5.6
MCH10	10	10.9
	20	10.1

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