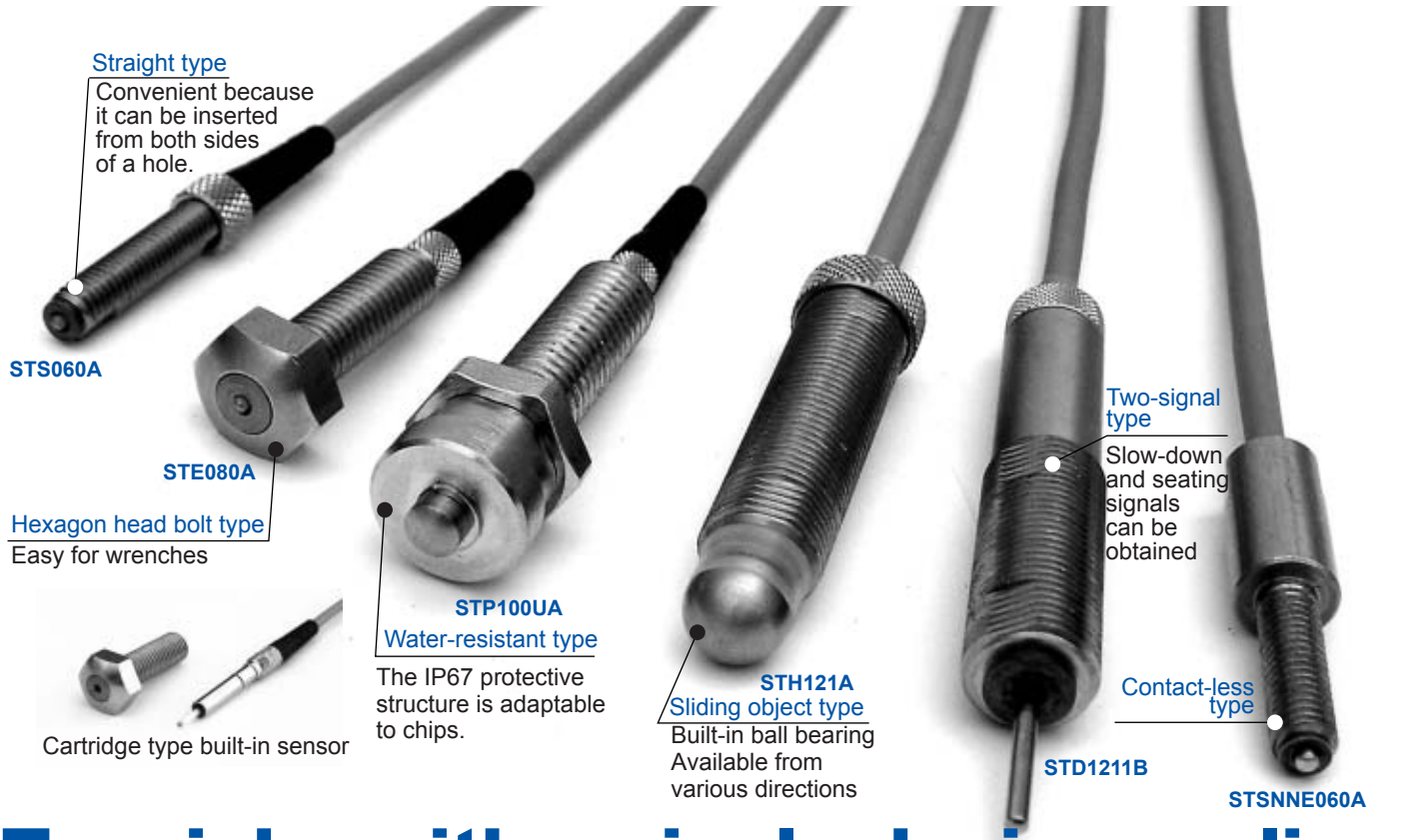
Stopper Bolt with Sensors (Contact/Contact-less)

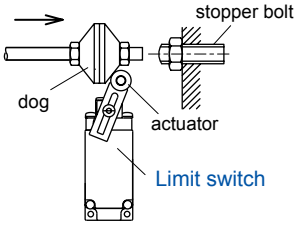


Two jobs with a single device realizes a reduction in machine size !

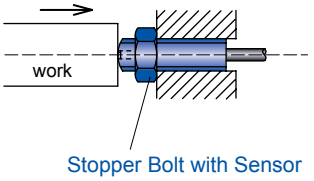
Contact life 10 million times. Stopper with Sensor.

Realization of reduced machine size by reducing the number of parts

When attempting to obtain position signals with microswitches, limit switches or proximity sensors in the past, it was necessary to provide a separate stopper bolt and sensor.
Our Stopper Bolt with Sensor integrates the stopper bolt and sensor into a single unit for greater freedom in design, saving of space and a reduction in the number of parts to realize more compact machine size.



Reducing the number of parts



Stopper Bolt with Sensor

Reduced maintenance costs

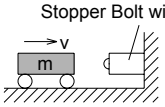
As a result of the sensor being of the cartridge type, maintenance can be performed easily without any twisting of cables during installation and replacement.
Unlike microswitches and limit switches, removal of the stopper bolt and re-adjustment are not required during replacement.

Both contact and contact-less types are available

Contact types are free of movement differential and temperature drift. Contact-less types eliminate all the disadvantages of non-contact sensors except for movement diffential and temperature drift, making it possible to utilize the advantages of contact-less sensors.

■ Expression to calculate shock resistance energy

Pure inertia collision

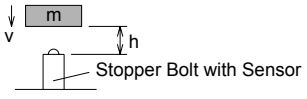


$E = 1/2mv^2$
m : Mass(kg)
v : Speed(m/s)

Example of calculation

m	v	$1/2mv^2$[J]
4	0.3	0.18
5	0.4	0.4
20	0.2	0.4

Vertical free fall



$E = mgh$
g : Gravitational acceleration(9.8m/s^2)
h : Dropping height (m)

m	h	$v = \sqrt{2gh}$	mgh[J]
0.4	0.05	1	0.2
0.4	0.1	1.4	0.4

Outline of Stopper Bolt with Sensors

Standard mechanical specifications

unit : mm

Type	STS	STE	STP	STF	STSNNE/STSNE
Form	Straight type	Hexagon head bolt type	Water-resistant type	Flat type	Straight type
Bearing type	Metal bearing				
Contact type	Contact				Contact-less (NPN / PNP)
Mode	A : NO (normally open)				
Repeatability	0.01			Vertical 0.02	0.01
Protective structure	IP40		IP67	IP40	IP67
Stroke	0.7			2	1.6
Pretravel	0.35			0.5 from stopper surface	0.8
Movement differential (M.D.)	0				0.04
Temperature drift	0				0.03/10～40℃(MAX)
Contact force	1 N			1.5～3N	1 N
Static load resistance	5000N			10000N	5000N
Shock resistance	0.4J				
Contact material	SUS HRc 55			SUS HRc 45～50	SUS HRc 55
Stopper material	SUS HRc 45～50				
Cable (oil-resistant)	2m 2-core ϕ3				2m 3-core ϕ4

Mechanical specifications of Sliding objects, rotating objects and angle of deviation

unit : mm

Type	STH	STHNNE/STHNE
Bearing type	Ball bearing type	
Contact type	Contact	Contact-less(NPN/PNP)
Mode	A : NO(normally open)	
Repeatability	0.01	
Protective structure	IP 67	
Stroke	0.7	1.6
Pretravel	0.35	0.8
Movement differential (M.D.)	0	0.04
Temperature drift	0	0.03/10～40℃(MAX)
Contact force	1.5 N	
Static load resistance	5000N	
Shock resistance	0.4J	
Contact material	SUS HRc 50～	
Stopper material	SUS HRc 50～	
Cable (oil-resistant)	2m 2-core ϕ3	2m 3-core ϕ4

Mechanical specifications of Slow-down and Seating two-signal

unit : mm

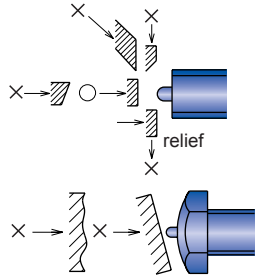
Type	STW	STD
Signal type	Slow-down 1 signal	Slow-down • seating 2-signal
Bearing type	Metal bearing	
Contact type	Contact	
Mode	B : NC(normally closed)	
Repeatability	0.01	
Protective structure	IP 40	
Stroke	10	
Pretravel	0	Signal-1 : 0 Signal-2 : 0.5 (from stopper surface)
Movement differential	0	
Temperature drift	0	
Contact force	1 N	Signal-1 : 2N Signal-2 : 4N
Static load resistance	5000N	
Shock resistance	0.4J	
Contact material	SUS HRc 55～	
Stopeer material	SUS HRc 45～50	
Cable (oil-resistant)	2m 2-core ϕ3	2m 3-core ϕ4

Electrical Specification • Circuit Diagram ☞ P5

Precautions for use

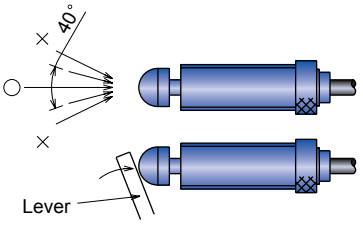
How to apply detecting objects Metal bearing type (STS • STE • STP • STSNNE)

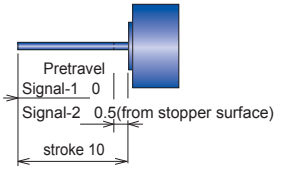
- Apply work at right angles. Otherwise, breakage may occur. (±3°)
- Be aware that if the detecting surface is inclined or dented, the contact may not be depressed, resulting in no output of seating signals, or breakage may occur.



How to apply detecting objects Bearing type (STH • STHNNE)

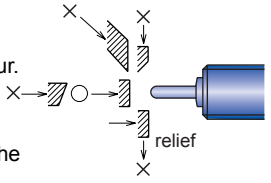
- Ball bearing type can be used for sliding and offset contact in every direction.





How to apply detecting objects Metal bearing type (STW • STD)

- Apply work at right angles. Otherwise, breakage may occur. (±1°)
- Be aware that if the detecting surface is inclined or dented, the contact may not be depressed, resulting in no output of seating signals, or breakage may occur.



Orders for heat-resistant (ambient temperature: 200℃) and sensors provided with vacuum, non-magnetic and other special specifications are also accepted. Please consult your dealer(not available for contact-less type).

Common Mechanical Specification

Working temperature range : 0～80℃
Contact life : 10 million times