Studding Manual for NEXEN Winter Tires

WINGUARD winSpike 3 | WINGUARD winSpike WH62 | WINGUARD winSpike SUV WS62 | WINGUARD winSpike | WINGUARD winSpike SUV

NEXEN TIRE

Contents

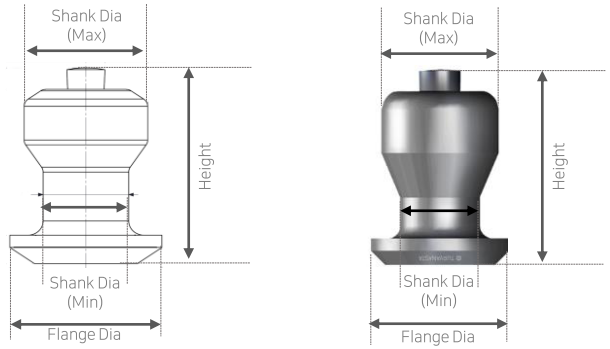
01 Stud list for NEXEN winter tires

NEXEN TIRE

Maker	Exclusive product for NEXEN TIRE  Turvanasta	 Turvanasta	 Turvanasta	 Turvanasta	 Turvanasta
Stud Model	8-11/2 NXA	8-11/2 Alu	8-10/2GT(MD)	8-11/2T	8-13/2T
Pattern	WINGUARD winSpike 3	WINGUARD winSpike WH62 / WINGUARD winSpike SUV WS62 / WINGUARD winSpike / WINGUARD winSpike SUV	WINGUARD winSpike WH62	WINGUARD winSpike SUV	WINGUARD winSpike SUV
Height	11mm	11mm	10mm	11mm	13mm
Shank Dia(Max/Min)	6.5/4.5	6.6/4.5	6.5/4.5	6.6/4.5	6.5/3.7
Flange Dia	8mm	8mm	8mm	8mm	8mm
Type	Double Body	Double Body	Double Body	Double Body	Double Body
Material	Aluminum	Aluminum	Aluminum	Steel	Steel
Cavity			O		
Region	Nordic countries & Worldwide	Nordic countries & Worldwide	Nordic countries & Worldwide	Nordic countries & Worldwide	Nordic countries & Worldwide

- The use of studs is restricted in some regions, so the consumer must be aware of the legal regulations and restrictions in his/her region.
- All studded tires comply with the stud regulation in Nordic countries. Finland, Norway and Sweden requires type approval of studs to ensure they are within the prescribed values.
- Mandatory use of Turvanasta studs for Nordic countries.

Name of each part



Stud type for NEXEN winter tire line

Stud Model	Pattern	Tire Line	Protrusion Height
8-11/2 NXA	WINGUARD winSpike 3	PCR/SUV	Min. 1.0mm Max. 1.2mm
8-11/2 Alu	WINGUARD winSpike WH62 WINGUARD winSpike	PCR	Min. 1.0mm Max. 1.2mm
	WINGUARD winSpike SUV WS62 WINGUARD winSpike SUV	SUV	Min. 1.0mm Max. 1.2mm
8-10/2GT(MD) 1)	WINGUARD winSpike WH62	PCR	Min. 1.0mm Max. 1.2mm
8-11/2T	WINGUARD winSpike SUV (C)	Commercial 2)	Min. 1.0mm Max. 1.2mm
8-13/2T	WINGUARD winSpike SUV (LT)	LT 3)	Min. 1.0mm Max. 1.2mm

Annotation

1) 8-10/2GT(MD) : Use this stud type only for 195/65R15 95T XL(15848), 205/55R16 94T(15849) and 205/60R16 92T(16248) with 190holes
2) Commercial : Written Size C on sidewall (ex. 205/65R16C)
3) LT-Metric : Written LT Size on sidewall (ex. LT265/65R17)

Stud regulation in Scandinavia and road wear test

Stud Regulation

New restrictions on the number of studs on studded tires were introduced in 2013.

Regulations now limits the number of the studs to 50 pieces per meter of rolling circumference. Also other factors are limited. For passenger car tires, stud force is limited to 120N, stud weight to 1.1g and protrusion to 1.2mm.

Alternatively, one or all these factors can be ignored if the tires can be tested in a special wear test, the so-called road wear test, to be approved. Tires that pass the road wear test, even though they have considerably more studs, are present on the market.

The road wear test shall ensure that the tested tire will not cause more road wear than a tire with a maximum of 50 studs per meter rolling circumference.

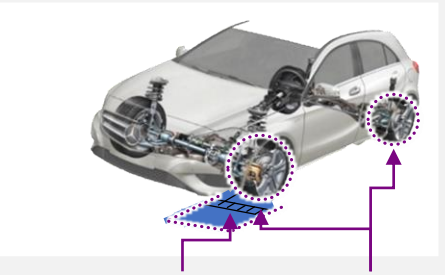
Road Wear Test

The road wear test has been developed to determine road wear caused by studded winter tires. Specially manufactured stones samples are weighted precisely before and after testing, the weight loss describing the road wear in grams.

In order to get type approval for a tire and stud combination, the road wear must be below a limit value defined by The Finnish Transport Safety Agency, Trafi. If the type approval is granted based on an road wear test certificate, there are no other restrictions for stud configuration.

| Preparing Stone Sample |

| Road Wear Test |



- Preparing stone samples(granite) in 3 rows, 5 test sample per row(15 totally).
- Vehicle overruns 200 times (400 times for 2 tires) at 100km/h.
- Stones samples are weighted before and after testing. Wear results is average value of the three row wear sums.

Stud regulation in Scandinavia and road wear test

Road wear test specifications for type approval of studded tires

Load index category	Below 600kg	600~800kg	Over 800kg	C
Test tire size	175/65R14	195/65R15	235/65R17	195/70R15C
Alternative test tire sizes	185/60R15 195/55R16	205/55R16 225/45R17	255/55R18 255/50R19	215/65R16C 225/65R16C
Limit value for approval	0.9g	1.1g	1.4g	1.8g
Approval	• If result is more than 10% lower than the limit value of the category. • If two test results are below the limit value.			

04 Instructions for studding a tire

NEXEN TIRE

- Always follow all safety instructions and equipment operating directions provided by the manufacturers of the studs and stud-installation equipment.
- Highly recommended to use either full automatic or semi-automatic studding machine than simple studding gun.
- Always use the recommended stud model and dimension on the list.

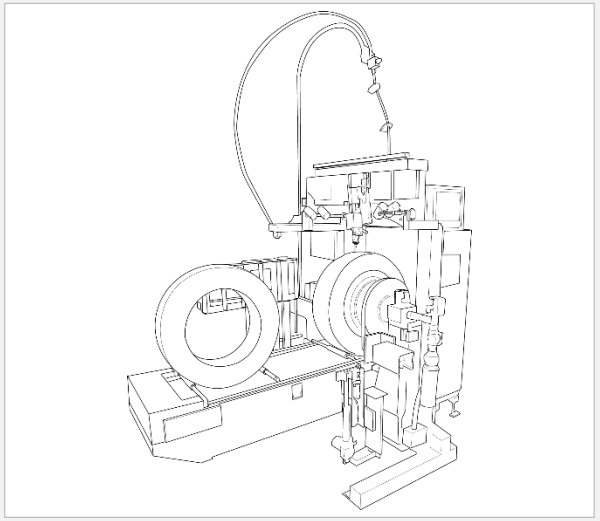
Setting into operation

The workplace of the operator is in front of the machine. No other person is allowed to be at the machine during operation.

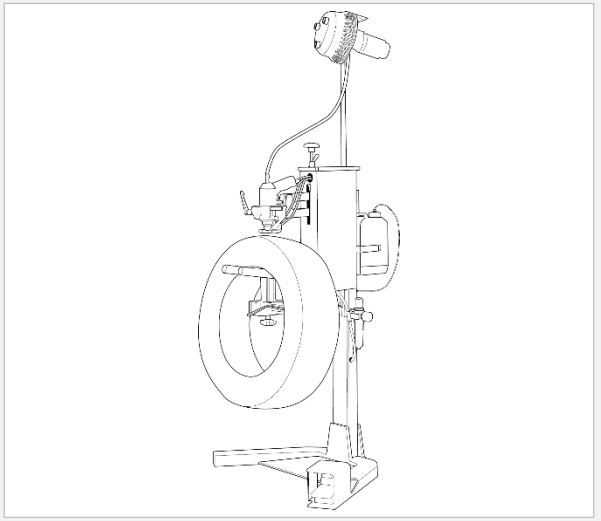
Studding machine and tires should be placed indoors with the temperature above 18℃ before studding.

Never use oil-based lubricants for studding. A 2% soapy water solution is desired.

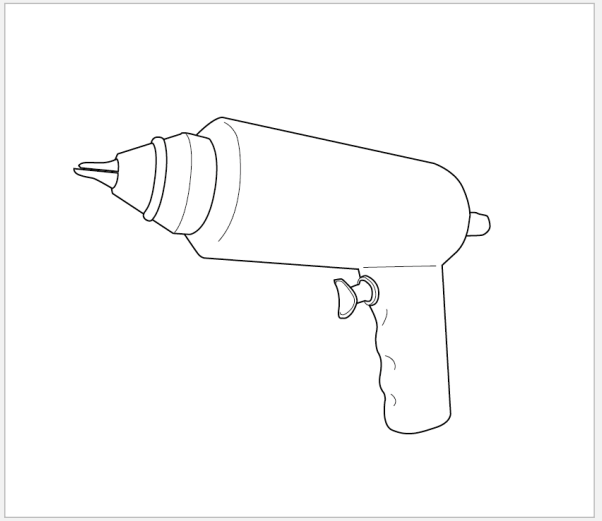
| Fully Automatic |



| Semi-Automatic |



| Stud Gun |



Operation of the semiautomatic machine

Place the tire over the tire shoe of the tire support. The tire support is engaged in vertical position.

Adjust the tire grip until the tire can be easily turned on the rollers.

Adjust the distance between the spreader finger and the tire tread to 15~20mm.

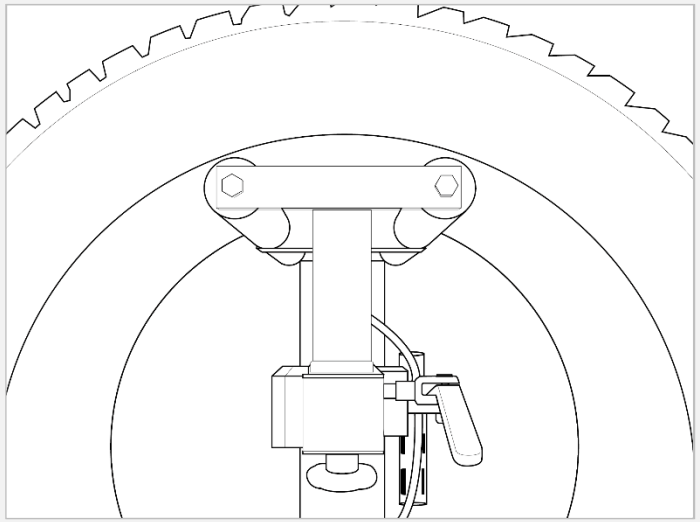
Fill the feeder with approx. 500 studs and allow the feeding hose of the gun to be filled with studs.

Adjust the tire position until the stud hole is directly under the spreader finger.

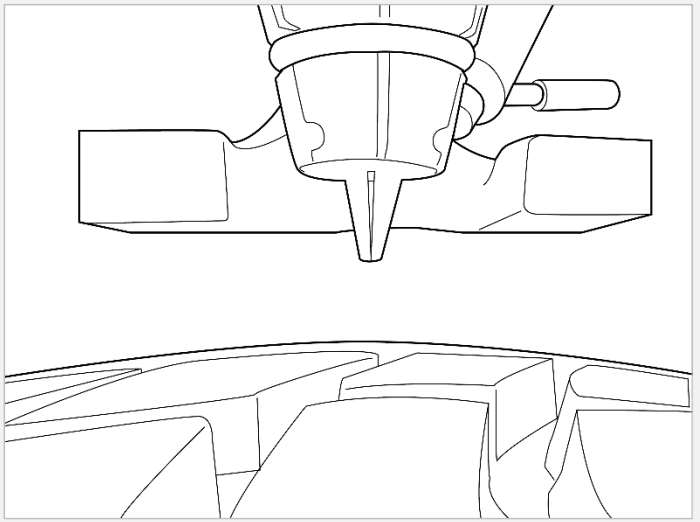
Upon operation of the foot valve the machine is inserting the stud. The stud is automatically sprayed with lubricant soap water while inserted.

In case of faults during insertion, adjust the working pressure applied on the machine for correct stud insertion over the tire tread.

| Tire hung over the tire shoe |



| Adjusting the distance |

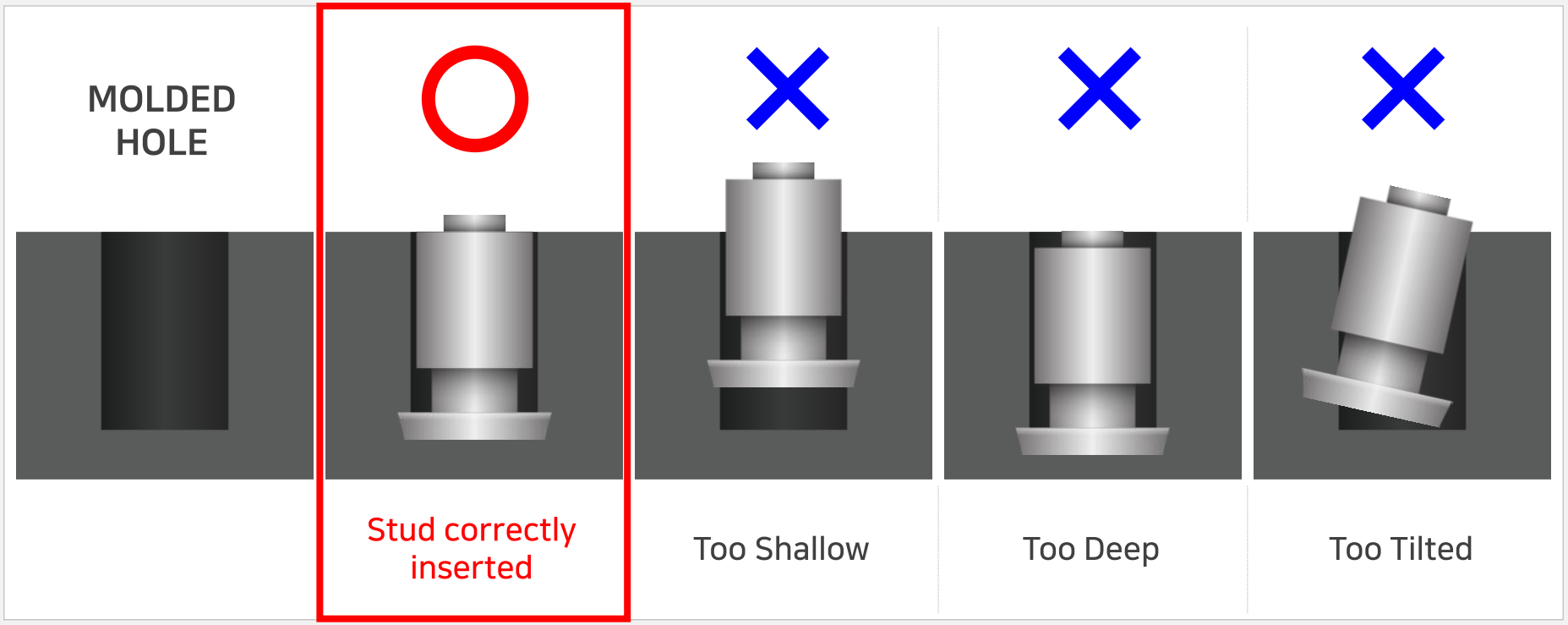


Inspection

A leaning stud will not seat properly into the tire and may cause premature stud failure or ejection.

The stud should not protrude more than max. protrusion height above the tire tread or less than min. protrusion height, stud that dose not properly seat into the tire will cause stud ejection and tire performance drop.

A properly inserted stud should appear to be nearly flush with the tire surface as illustrated below. Only the stud tip should protrude above the tire surface.



Additional recommendations for studs utilization

- Always follow the manufacturer's recommendations for proper stud size.
- A winter tire has to be studded correctly to guarantee good tire life.
- Any claim(stud loosing, tire damage, tire performance drop or other loss) caused by improper stud seating or usage of non approved studs is not accepted.
- The newly studded tires need to be driven to break in. Avoid fast accelerations, hard braking and restrict speeds to a maximum of 100km/h during the first 500km.
- Studded winter tires should only be used in sets of four. Never mount two studded tires on a vehicle with two nonstudded tires. This can cause unpredictable vehicle control issues.
- The performance of studded tires(stud wear, protrusion, stud loosing) is dependent on the service conditions and air pressure. Stud loosing complaints caused by hard driving, low air pressure and misuse are not accepted.
- Observe the legal speed limits for studded tires as well as the recommended speed limit of the tire manufacturer.

- End of Document -