

SUPPLY TECHNICAL SPECIFICATIONS

Trigger Sprayer TS3 CRP Cylindrical Screw CA FT TS3 27 01 00

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1. PURPOSE

The purpose of this document is to define the main technical characteristics and the supply conditions of the product.

The Development of the project and the Technical and Engineering solutions are under responsibility, in order to match the performances and features stated in this document.

Thecharacteristics and the performances are under the responsibility of NORDTEK Ltd. that will guarantee them through an appropriate Quality System.

This document refers to the NORDTEK Ltd. Sprayer approved by the compatibility tests carried out by NORDTEK Ltd. and by the Customer. To carry out the tests NORDTEK Ltd. laboratory needs at least 10 litres of the product.

The Customer shall inform NORDTEK Ltd. of any change in the formula of its product: in this case, the test must be repeated.

NORDTEK Ltd. can not be considered responsible for any improper use of the sprayer: for example the use with untested products, incorrect filling operations, bottles outside specifications or other.

The customer is responsible for ensuring that the trigger is kept in the child-resistant mode. NORDTEK Ltd. expressly denies responsibility for any damages that may arise from the use of the Child Resistant product.

The CRP properties are guaranteed only if the bottles are in accordance with the bottle neck Specifications.

Any requirement not included or not specified in the present document must be discussed.

The user is supposed to be always in possession of this document's last issue.

2. APPLICABLE DOCUMENTS

The documents that may be a support of this Supply Technical Specifications are the following:

- EEC Rules
- ISO 9000 / ISO 2859;
- Procedures (Internal Procedures);
- Bottle Specifications.
- Neck finish drawings.



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3. QUALITY

3.1 QUALITY SYSTEM

NORDTEK Ltd. ensures the quality of the supplies through a Company Quality System, according to UNI EN ISO 9001.

Our main purpose is to strive for continuous improvement.

The system is integrated with its production process.

3.2 DEFINITION OF DEFECTS

The Faults of the supplies can have the following classification:

CRITICAL DEFECTS: all those defects that, as the common sense and experience show, make the article unusable and unsafe.

MAJOR DEFECTS: all those defects that without being critical may cause a failure, breakdown or substantially reduce the suitability and usefulness of the article.

MINOR DEFECTS: all those defects which do not substantially reduce the usefulness of the product as for its intended purpose; or defects representing a deviation from the established standards, not having any appreciable effects on its use or effective operation. Appearance defects.

3.3 GENERAL TABLE OF DEFECTS

The AQL (Acceptance Quality Level), defined according to defects, are the following:

Critical defect: AQL = 0.25

Major defect: AQL = 1

Minor defect: AQL = 4



3.3.1 Table T1 Description and classification of defects

	Critical	Major	Minor
	A.Q.L.=	A.Q.L.=	A.Q.L.=
Description and classification of general defects	0.25	1	4
Breakage or disassembling		Х	
Incorrect materials		Х	
Delivery incorrectly labelled			Х
Internal or external dirtiness			Х
Incorrect quantity			Х

Table T1 defines, by describing and classifying, the defects.

The batch will be representative of one continuous production (i.e.: one pallet is considered as one batch).

The sampling procedures and the criteria of acceptance are determined with reference to ISO 2859 rules (or Mil. Std 105 D); the Customer shall apply the same criteria.

The sampling programme shows the number of pieces for each batch which need to be controlled as well as the criteria to approve and accept the batch (acceptance or refusal numbers).



4. PERFORMANCES AND TEST METHODS

Note: in general, if not explicitly written, all the tests will be carried out using water. The tests will be carried out using only bottles defined between our company and the customer. In the following test procedures we often use the statement "normal condition of usage": with this expression we mean three consecutive full actuation of the sprayer in a time of 2 seconds (a rate of 90 strokes per minute).

4.1 Consumer characteristics: performances and description of test methods.

4.1.1 **Priming**

a) Description

The number of operations to prime the pump

b) Test methodology

Fill 20 bottles and screw the sprayers; open the pump rotating the ON/OFF device by 180° and actuate the pump. Count the number of operations (normal condition of usage); do not count the actuation with complete dose.

Carry out the test with bottle in up-right position.

4.1.2 **Dose**

a) **Description**

The quantity of product dispensed during a complete actuation of the trigger.

b) Test methodology

Fill 20 samples, operate the pump by applying the force near the joint pin of trigger lever. Record the weight variations of complete pack (trigger and bottle) for 3 consecutive cycles of 10 operations each, in normal condition of use.

4.1.3 **Atomization**

a) **Description**

The atomization is the capacity of a sprayer to dispense the product in tiny drops and with a spray pattern.

b) Test methodology

Fill 20 bottles, prime the pump (complete atomization on the full stroke of the trigger); after priming the pump, spray on blotting paper from a distance of 20 cm and measure the diameter of the spray pattern.

For Laundry/Carpet test must be done with the trigger at 45°, from a distance of 10 cm. The paper layed down on a flat surface.



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4.1.4 Foaming

a) Description

The foaming is the capacity of a sprayer to dispense the product as a foam

b) Test methodology

Fill 20 bottles with the foaming product, screw the sprayers on the bottles and prime the pump (complete actuation on the full stroke of the trigger). After priming the pump, put the sprayer in of the glass panel, where you have to foam, from a distance of 20 cm; carry out a full actuation in normal condition of usage (as above defined) on the surface, taking care that the surface is initially dry.

Check the quality of the spray pattern verifying the diameter and the adhesion on the surface. For Laundry/Carpet test must be done with the trigger at 45°, from a distance of 10 cm. The paper layed down on a flat surface.

4.1.5 Working life

a) Description

The sprayer performance shall not deteriorate after a long-term operating cycle.

b) Test methodology

Fit 10 samples on the proper machine (the reference is the machine) and submit them to an operating cycle of 5,000 operations (60 operations / min, samples in up position). Than check the performances in straight position and compare them with the target.

4.1.7 Leakage test

a) **Description**

No drops of the product shall be visible on the external body.

b) Test methodology

Fill 20 bottles (be sure that the bottles are in accordance with the technical specifications), screw the sprayers on the bottles.

It is possible to carry out the following test:

Put the samples horizontally at room temperature ($20 \pm 3^{\circ}$ C) and keep them in that condition for 1 hour (put white blotting paper under the bottles to mark leakage).

After 1 hour look for leakage

If a defect is present (bottle or trigger) it will become evident within 1 hour.

The test is carried out on the whole package, if the result is negative the complete package has to be verified to define if the leakage is caused by the trigger.



4.2 User characteristics: performances and description of test methods.

4.2.1 **Overall dimensions**

a) Description

The measured values shall be in accordance with the values recorded on the drawings encloses with relevant tolerances.

b) Test methodology

Dimensional survey of the value.

4.2.2 Dip tube length

a) Description

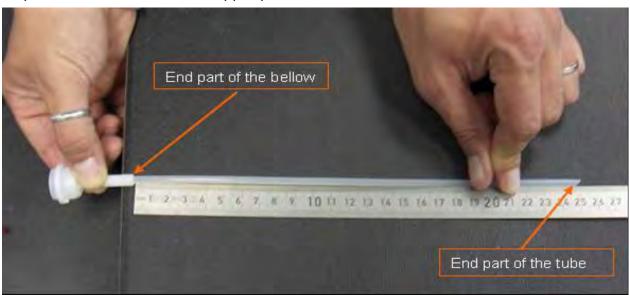
Dip tube length is defined as <u>outer part of the tube</u>. It is included from the end part of the bellow to the end part of the tube. That means the part of the tube inserted inside the bellow is not considered.

b) Test methodology

Since the bellow is placed inside the dip tube gasket, the direct measurement of the dip tube length is not possible unless trigger is disassembled.

In order to disassemble the trigger spray please proceed in this order:

- 1. pull off the shroud from the chassis
- 2. pull off the extension from the chassis
- 3. pull off the trigger lever from the chassis
- 4. pull off the bellow from the upper part of the chassis



To measure the length then it is necessary to use a rule having care to keep the tube straight; read the measure as shown on the picture above.



Table T2 - SUMMARY OF CHARACTERISTICS AND TARGET SPRAY VERSION

		Critical	Major	Minor
Characteristic	Target	A.Q.L.=	A.Q.L.=	A.Q.L.=
		0.25	1	4
Priming	10 full strokes max (at a rate of 90		Х	
Filling	strokes per minute)		^	
Dose (output per stroke)	1.2 ± 0.3 ml (up-right position)		Х	
Spray pattern diameter	250 mm ± 30 mm (from a distance of			>
Spray pattern diameter	25 cm)			^
Die toka estantian fana	1,5 Kg min - 15 N min. (new		V	
Dip tube retention force	samples)		X	
Din tuha langth	According to the technical sheet (+/-		V	
Dip tube length	2mm of tolerance)		Х	
Dip tube bending	See enclosed drawings			Х
Screw on torque	23 ± 3 Kg*cm - 230 ± 30 N*cm		Х	
Screw off torque (after ageing)	250 N*cm min		Х	
Leakage between trigger components	No leakage after 1 hour at R.T.	Х		
Working life	5.000 actuations (all the functional			Х
Working life	characteristics within the tolerances)			^
Aesthetics	As approved visuals – spray and foam			Х
Overall dimensions	See enclosed drawings			Χ

The CRP properties are guaranteed only if the bottles are in accordance with the bottle neck Specifications.

Table T3 - SUMMARY OF CHARACTERISTICS AND TARGET FOAM VERSION V20

All the spray characteristics are considered excepted those following reported.

Characteristic	Target	Critical A.Q.L.= 0.25	Major A.Q.L.= 1	Minor A.Q.L.= 4
Foam pattern dimension V20	200 ± 30 mm (from a distance of 20 cm)		Х	
Overall dimensions foam pattern V20	See enclosed drawings			Х

Table T4 - SUMMARY OF CHARACTERISTICS AND TARGET FOAM VERSION V30

All the spray characteristics are considered excepted those following reported.

Characteristic	Target	Critical A.Q.L.= 0.25	Major A.Q.L.= 1	Minor A.Q.L.= 4
Foam pattern dimension V30	70 ± 30 mm (from a distance of 20 cm)		Х	
Overall dimensions foam pattern V30	See enclosed drawings			Х

In certain conditions and only with particular formulations, in the first actuations the foam may not fully comply with the characteristics stated in this specification.



5. COMPONENT LIST - MATERIAL

Component	Material		
SHROUD	SHROUD		
CHASSIS	CHASSIS		
ACTUATOR EXTENSION		PP	
NOZZLE		PEHD	
BELLOW	Standard configuration	EVA	
BELLOW	Hydrocarbons configuration	TPE - E	
TRIGGER LEVER	PP		
DRIP FREE GASKET	EVA		
FOAMED GASKET (optional)	FOAMED PE		
FOAM DEVICE (optional)	PP		
DIP TUBE	70% PELD + 30% PEHD (from reel)		
SCREW COLLAR	PP or PEMD		
NET (optional)	PP		



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6. PACKING

The trigger sprayers are adequately packed and sent to the Customer.

In the definite quantity, the sprayers are placed in cardboard boxes.

The type of packing is suitable for internal handling and storage of the finished product. Any damages of the packing,

which are due to the transport and found by the Customer, on acceptance of incoming goods, should be pointed out by the Customer to the transporter.

The type of damages has to be reported on the transport document (CMR).

6.2 Packing specification

The pallets are suitable for correct handling.

Each pallet shall be stretch-wrapped with plastic film.

Box sizes (cm): $59 \times 50 \times 34$ No of units per box: $430 \pm 1\%$ Box weight Kq: 10.8

Pallet sizes (cm): 100 x 120 x 215

No of box per pallet: 24

No of units per pallet: $10320 \pm 1\%$

The triggers can be delivered also in a container: two different sizes are available:

20 Feet container:

Box sizes (cm): $59 \times 50 \times 34$ No of units per box: $430 \pm 1\%$ Box weight Kg: 10,8No of box container: 300

No of units per container: 129000 ± 1%

Wooden pallet not provided

40 Feet container:

Box sizes (cm): $59 \times 50 \times 34$ No of units per box: $430 \pm 1\%$ Box weight Kg: 10,8No of box container: 600

No of units per container: 258000 ± 1%

Wooden pallet not provided

Box weight and dimensions can change according to the product configuration and to environmental conditions (for example humidity percentage variations).

6.2 Packing identification

Each box is identified with a proper label that indicates:

Batch number	Production date
Customer's product code	NORDTEK product code
Delivery address	Line no.
Quantity per box	Box no.
Customer Description	Customer Code



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6.3 Storage specification

The temperature of the area where the pallets are stocked at the Customer's shall not be lower than 10° C; the relative humidity shall not be kept high for long periods,

i.e. shall not be higher than 70 - 80%, since this could cause the breaking of the packing cartons.

The pallets should be kept in the production department at least 24 hours to settle to room temperature ($20 \pm 3^{\circ}$ C) before being used (if the sprayers have been stocked in a

warehouse at low temperature it is necessary to leave the pieces in a warmer place for an enough period of time in order to allow the pieces to reach the above mentioned room temperature).

In order to prevent defects to the box/product just one pallet can be put on another one. NORDTEK IMEXCO Ltd. suggest to use FIFO system in the usage of the stock or a completely stock rotation every six months.

Note: make sure that the fitting process is carried out at room temperature (20 ±3°C) and in any case not under 17°.



7. CUSTOMER TECHNICAL SERVICE AND COMPLAINT MANAGEMENT

Customer technical service supports the customer providing with all necessary information and technical documents to permit the proper usage of our products in the capping process. In case of complaint, NORDTEK Ltd. will investigate the causes and provide for corrective actions (whether needed) in order to avoid the repetition of the event.

To achieve this aim following information will be requested:

- number of defective pieces and percentage;
- description of the fault;
- date of production;
- batch number. etc.

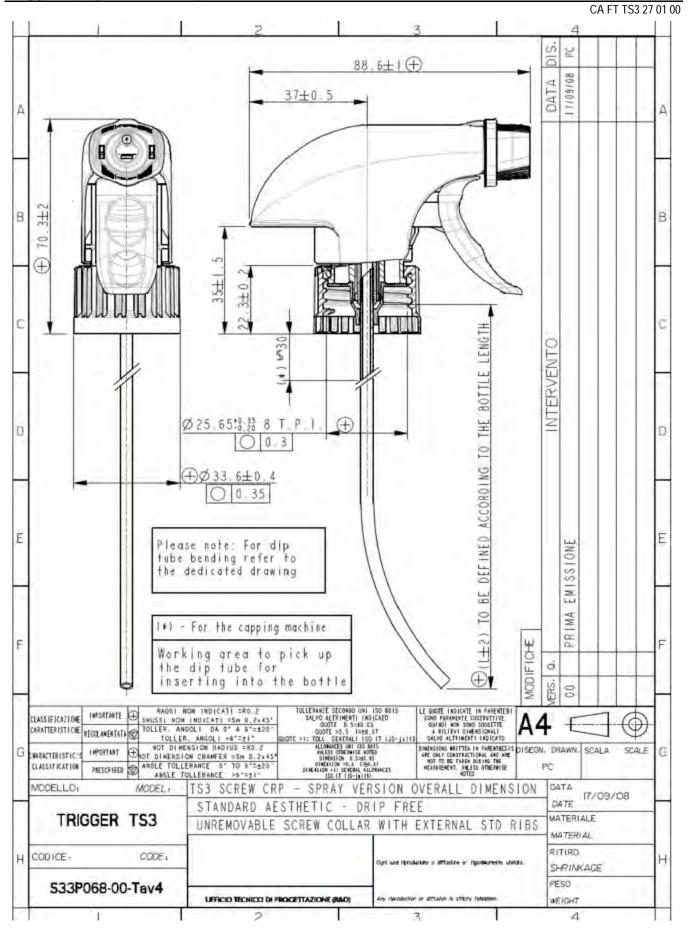
NORDTEK IMEXCO Ltd. is not liable for his own product after one year from the delivery time.

Note: representative samples are requested too.

8 ENCLOSURES

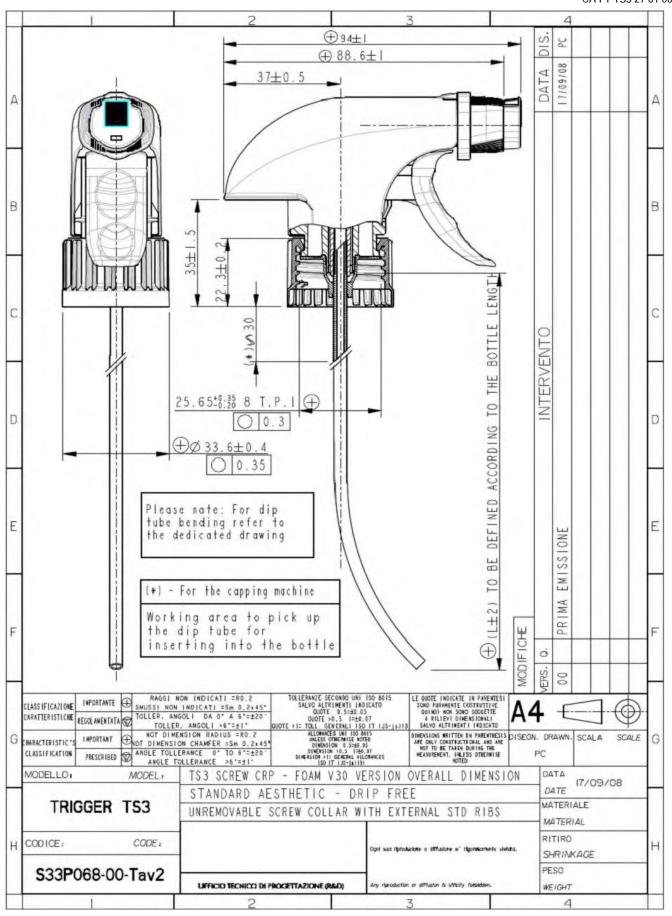
- S3KAAXR0R0R0J3Z RED
- S3KAAZR0R0R0A6Z RED
- S3KAAZV1V1V1A8Z GREEN







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