RRA MANUAL TEST

rra

REFRIGERANT RISK ASSESSMENT

RRA Test Manual

OBJECTIVE

Gas extraction and testing can be carried out to identify suspected contamination of R134a or R404a (HCFK) refrigerant with a false refrigerant containing R40 (Methyl Chloride).

This test shows R40 and also has a certain sensitivity to some other organ chlorines, but not (in all cases) as disruptive or dangerous (need) to be. The main goal of this test is to protect the safety of all people involved or nearby refrigerant systems. The presence of R40 in a refrigerant system is an enormous safety risk. The risk of contact and or working on these contaminated systems is reduced to a minimum by using our test before handling, loading and or repairing these systems. When there is a positive result, which conclude that R40 may exist in the system, this system must be marked as “dangerous“ and handled with care accordingly local safety protocols.

This method is designed to use a sample with a minimal amount of equipment, where the set-up, preparation & gas sample test are carried out at a distance from the reefer machine.

An objective of this procedure is for all stages to be carried out to minimize health and safety risks.

WARNINGS

Before proceeding, first read through the whole manual to ensure the process is fully understood, always be sure to use the latest version of this manual. The latest version can found at www.rratest.com.

R40 can react with aluminum components in the compressor to form a pyrophoric gas TMA (Trimethylaluminum).

The process must be perfectly followed in chronological sequence. Each step must be carried out as described. **NO** step should be ignored or its position modified in the process.

It is advised that only competent, fully trained and licensed personnel who are authorized to work with refrigerants should conduct this procedure. At least two persons should be present at the test. The second person does not have to be a licensed technician but should be available to give assistance to the person doing the test, if required.

No sampling method can be completely risk free. Operators should consider that the risk of not sampling and testing before working on a machine is likely to be greater.

IMPORTANT

As we are continuously working on the improvement of products, we reserve the rights to change the specifications without any prior notice.

PREPARATION

PRE-STEPS AT THE REEFER UNIT

1. The reefer unit must be positioned away from any electrical source, flames or open fire, heating source or static electricity.
2. The reefer unit must be un-plugged from electrical source.
3. No personnel are permitted inside the refrigerated container while samples are being taken.
4. Use Safety tape to set up a safe zone for testing and restrict access by un-authorized personnel.
5. Enforce a non smoking zone. In the safety zone any work involving heating or open flame should be forbidden.
6. Provide a class C (dry powder) & class D fire extinguisher.
7. Wear personal protective equipment for safety, such as goggles, gloves, high visibility vest & safety helmet.
8. Visually inspect the refrigeration system for any unusual damage and/or corrosion.

TOOLS & EQUIPMENT PRE CHECK

Before setting up the extraction system, ensure all components are in full working order and fit for purpose. Check all seals and ensure all shut off valves are fully operational.

TOOLS / PARTS REQUIRED

- 99,99 % purity by volume N2 (nitrogen) in bottle.
- Electrical or the optional Hand Vacuum Pump.
- Gas Analysis Bag.
- RRA Extraction Device, incl. Adapters and Couplings.
- Personal Protective Equipment Safety Goggles and Gloves.
- Colorimetric Detector Tubes.
- RAE sample hand pump.

PRE- CHECK

- Check the Gas Sample Hand Pump for leak tightness, as described in the Enclosed Gas Pump Manual.

IMPORTANT

If at any time during the procedure smoke or something unusual is observed at the machine or sampling unit, the test must be terminated immediately.

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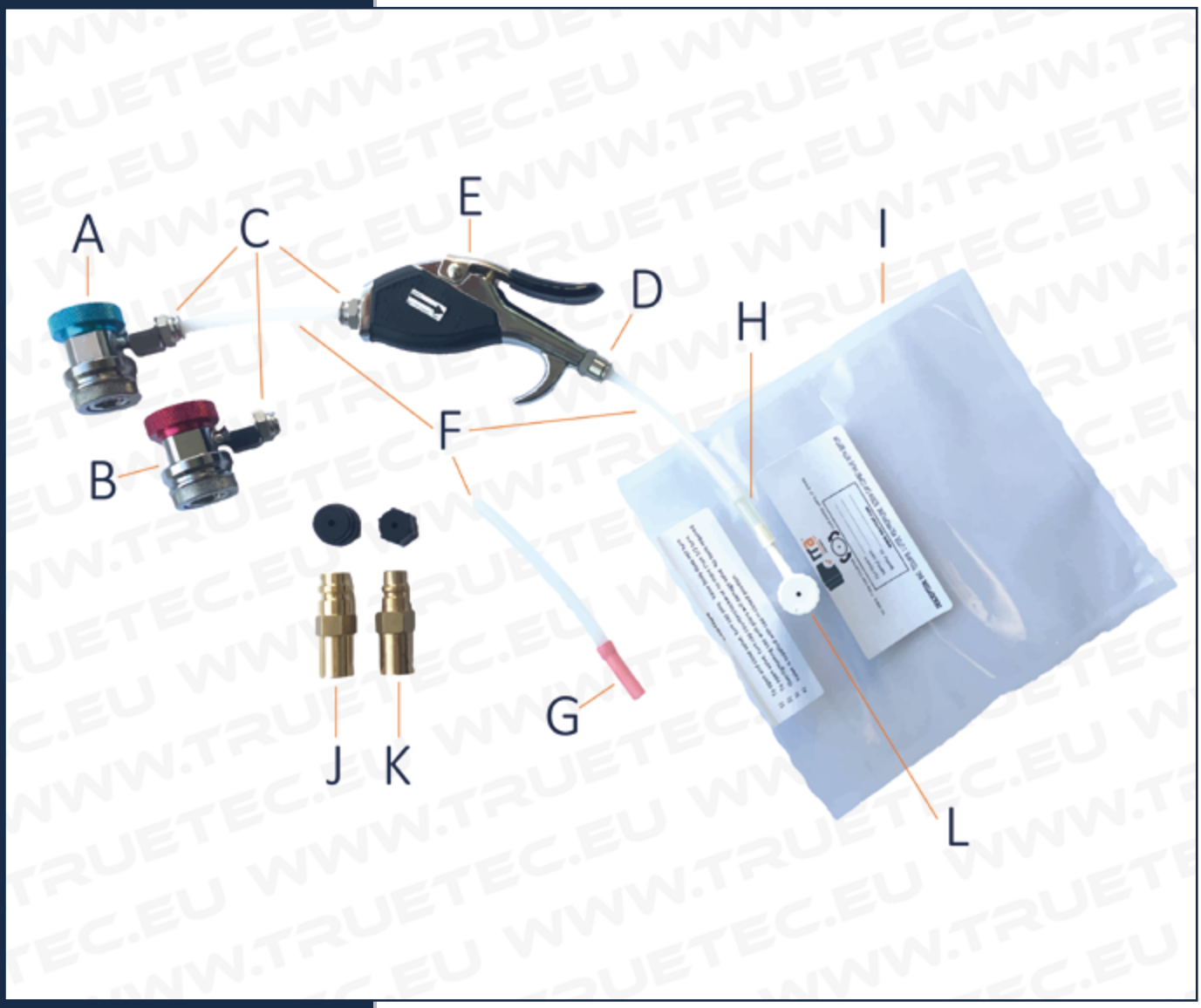
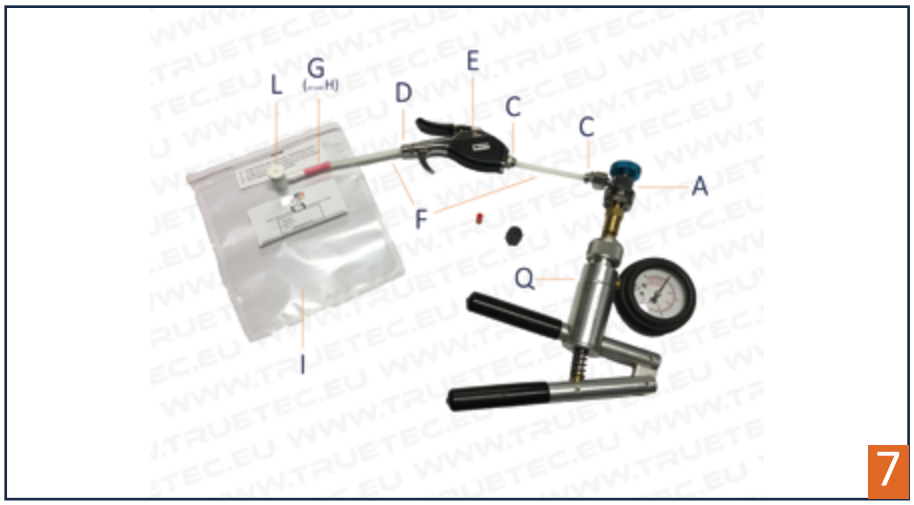


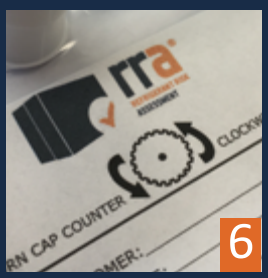
CONTENT EXTRACTION DEVICE		PRODUCT CODE
A.	RRA Quick Coupling HS	RRA-5035
B.	RRA Quick Coupling LS	RRA-5036
C.	RRA RVS Coupling 1/4”	RRA-5045
D.	RRA RVS Coupling 1/8”	RRA-5046
E.	RRA Safety Valve	RRA-5028
F.	White RRA Connection Tube	RRA-5021
G.	Pink RRA Connection Tube	RRA-5032
H.	Blank RRA Connection Tube	RRA-5031
I.	RRA Gas Sampling Bags	RRA-5030
J.	RRA Adapter DV	RRA-5033
K.	RRA Adapter SV	RRA-5034
L.	Gas Sample Bag Valve	-
M.	Pre-filter detector Tube: 1	RRA-5012
N.	Analyser detector Tube: 2	RRA-5012
O.	Gas Sampling Hand Pump LP-1200	RRA-5023
P.	Gas Sampling Hand Pump ASP-40	RRA-5022
Q.	RRA Vacuum- & Pressure Pump	RRA-5024

IMPORTANT
Check the refrigerant system pressure. If there is a vacuum or no pressure is present **DO NOT PROCEED**! Contact the owner for further instructions.

START
GAS EXTRACTION

1. Make sure that the Quick Coupling “A or B” is closed by turning completely Anti-clockwise the wheel.
2. Connect the White RRA Connection Tube into the RRA RVS Coupling “C” of the RRA Quick Coupling “A or B”. Make sure that the tube is pushed to the end of the valve “C” completely to avoid air leakiness.
3. Now, connect the other side of the White RRA Connection Tube “F” to RRA RVS Coupling “C” of the Safety Switch “E”, following the direction of the arrow and make sure that the tube is pushed to the end of valve “C”.
4. Connect a new White RRA Connection Tube “F” to the outlet of valve “E” and make sure that the tube is pushed to the end of valve “C” and install the Rubber Tube “H or G” to the other side of the tube.
5. Connect the Rubber Tube “H or G” over the Valve “L” of Gas Sample Bag “I”.
6. Open the valve “L” of the Gas Sample Bag as shown on the bags label.
7. Attach the coupling “A or B” to a Electrical or the Optional Hand Vacuum Pump “Q” by using the Adapters “J or K”, open the Quick Coupling by turning clockwise the wheel “A or B” and Vacuum the Extraction Device completely by pressing the Safety Valve switch “E”.
8. Detach the Vacuum Device by closing the Quick Coupling “A or B” (turn the wheel anti- clockwise). The Extraction Device will remain in vacuum condition.
9. Connect the Gas Extraction Device on the Refrigeration Unit, Low or High Side can be used (Advise: avoid connections where oil may come out).
10. Open the Quick Coupling “A or B” carefully by slowly turning the wheel clockwise while the switch of the Safety Valve “E” is pressed to regulate the Gas Flow and fill the analysis bag up to 50% of its volume.
11. Close the Quick Coupling “A or B“ by turning the wheel anti-clockwise.
12. Close valve “L” on the Gas Sample Bag “I” and detach the RRA Extraction Device from the Refrigerant System.
13. Detach the Sample Bag from the Extraction Device.





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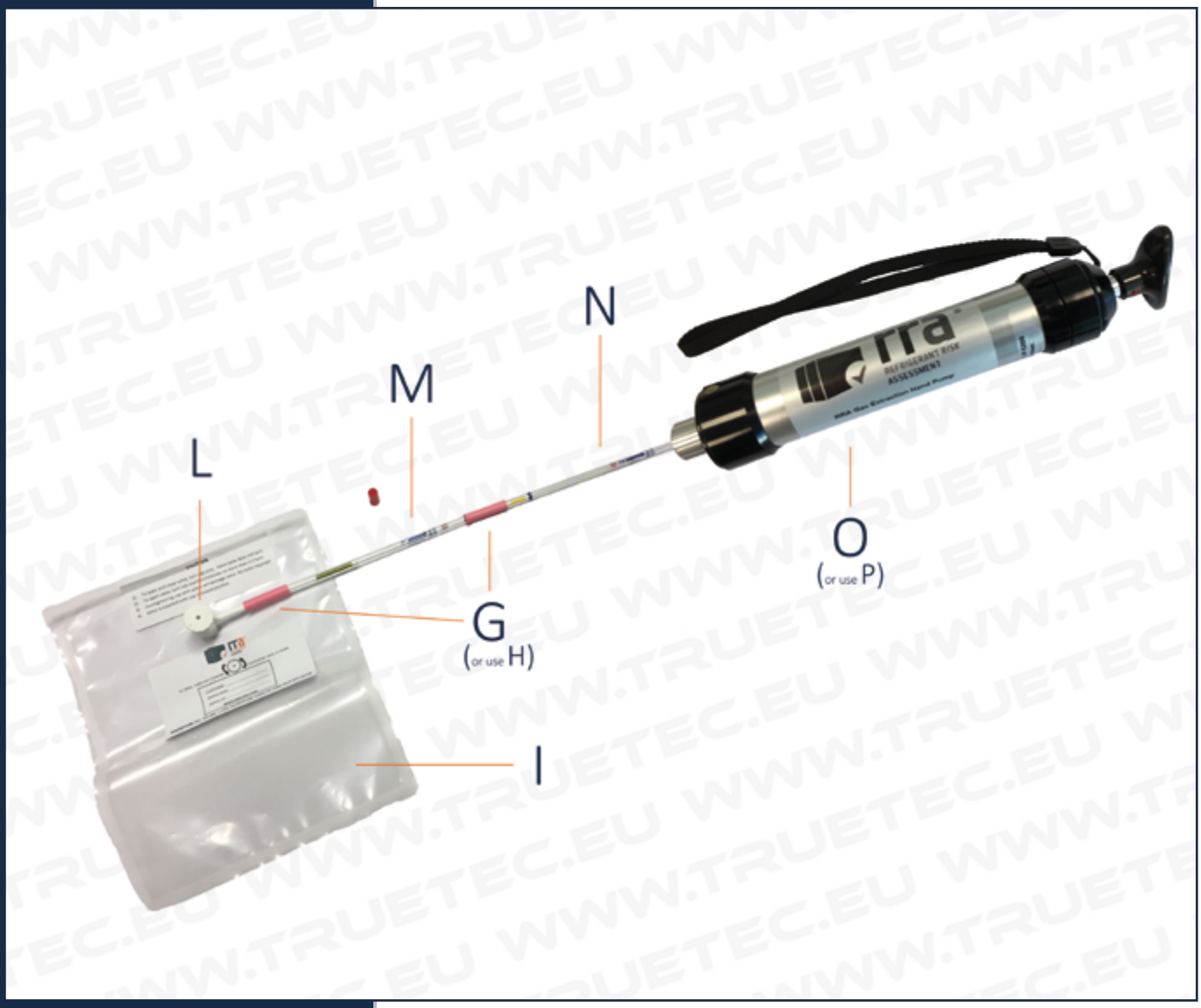

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IMPORTANT

The process of breaking the tube ends can generate flying glass bits and leave the tube with sharp edges. Use eye and hand protection while breaking the tube ends.

IMPORTANT

This test is an indicative field test where the chance of false negatives is reduced to a minimum level. We advise to conduct a lab test when there is any doubt about the results.

START
GAS MEASUREMENT

1 Break the end Tips off one fresh “Pre-filter detector” tube “M” and one ‘Analyser’ Tube “N” in the ‘Tube tip Breaker’ of the Gas Sampling Pump.

2 Connect the open ends of the Tubes with the chemical resistant Rubber Tubing “G or H”, except the outlet of Tube: 2 only after breaking both ends of the detector tubes and ensuring that the Rubber Tubing is tightly fitted.

3 Connect the Detector Tube “M”, marked with the number: 1 to the Gas Sampling Bag with the Rubber Tubing “G or H” the direction of the Arrow of tube 1 must be pointed out of the bag.

4 Connect now the Outlet of Tube: 1 with the Rubber Tubing “G or H” to the inlet of tube: 2 “N” and Insert the outlet of the Analyser Tube: 2 securely into the Gas Sample Pump inlet. Now the direction of the Arrows should be all pointed to the Gas Sample Pump “O”.

5 Make certain that the Gas Sample Pump Handle is pushed all the way in. Align the guide Marks on the Gas Sample Pump Body and Handle (100).

6 Open the Valve “L” on the Gas Sample Bag as shown on the instruction Label of the Gas Sample Bag.

7 Pull the Gas Sample Pump Handle all the way out until it locks on. One Pump stroke is 100ml. Wait about 15 seconds, during which time the Discoloration of the Analyser Tube: 2 “N” must be continually monitored. Then confirm the completion of the sampling by checking the ‘end of flow’ indicator, located on the Plunger Handle.

8 If there is no Colorization, give one more Pump stroke as described in item “7” for a more accurate measurement.

9 Check carefully for any discoloration. If you are sure and convinced there is no visible discoloration, the risk of a contaminated system is minimal and the analysis bag can be flushed with nitrogen and re-used.

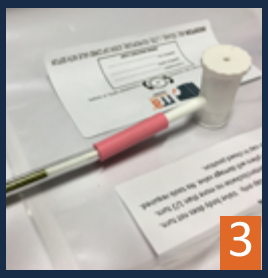
10 Discoloration apparent similar to the following pictures. Risk of contaminated system is highly apparent.

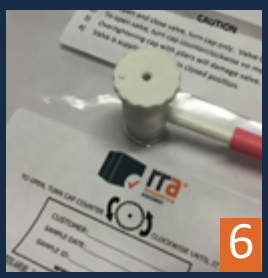
Minor yellow discoloration: The chance of a contamination is highly apparent, the concentration of contamination will be minimal.

Yellow discoloration: A low concentration of R40 / R142b (<150ppm) may be apparent.

Yellow- orange discoloration: indicates the likely presence of R40 and / or R142B >150 ppm. Lab analysis is highly recommended. Further actions are required according lab results and safety protocols accordingly your company’s safety instructions.

In higher ambient temperatures, the colours in the detection tubes may fade after 10 or 15 minutes so written notes or photos are recommended. Any colour change in the analyse and / or pre-tube indicates that there is some contamination present. The risk assessment refrigerant tube is suitable for a single measurement and cannot be reused, even if there is no discoloration occurred. Used tubes need to be disposed as chemical waste according to local regulations.





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START
CLEANING EXTRACTION DEVICE

1 After each use, especially when contaminated refrigerant has been found, the extraction device must be cleaned to avoid wrong detection on future tests. Please follow the next steps.

2 Attach the Low or High Pressure Adapter “J or K” to the Nitrogen Cylinder.

3 Make sure that the wheel of the Low or High Pressure Quick Coupling “A or B” is turned anti-clockwise and connected to the Adapter “J or K”.

4 Press the Safety Switch Valve “E”.

5 Open the Quick Coupling “A or B” carefully by turning the wheel clockwise and let the nitrogen blow out any residue remaining in the extraction device.

6 Turn the wheel of quick coupling “A or B” anti-clockwise and detach from the Adapter “J or K”.

NOTE
To clean a CFK contamination is easier than R40 / R142b contamination. If not successful, vacuum the extraction device and repeat the nitrogen flush.

NOTIFICATIONS REGARDING USE AND PURPOSE.

- These tests are designed for risk assessment and safety purposes only.
- Analyzing the samples by an accredited laboratory will give confirmation of results.
- TRUETEC cannot be held responsible for the results.
- TRUETEC cannot in any way be held responsible for any consequences involving this test.
- Users must be aware of legislation that applies in the area (country) where the testing is being carried out.
- Follow closely those regulations regarding waste refrigerants and other chemicals which must be disposed of in a proper way.
- TRUETEC is not responsible in any way for the disposal of any waste.
- It is entirely the responsibility of the user of the equipment (detector tube with pump) to see that the equipment is operated, maintained, and repaired in strict accordance with the manufacturer's instructions provided with the equipment. It is also the responsibility of the user to ensure that the tubes are not used beyond their expiration date. The manufacturer and manufacturer's distributors are not otherwise liable for any incorrect measurement and its consequences of any damages resulting from user's negligence or otherwise.

DISCLAIMER

RRA has carefully selected all the materials for our kit. The parts work in cooperation with each other. Original replacement parts must be ordered as RRA kit is a system which has a proven track record in determining risks involved in refrigerants and the contamination thereof. Serious issues to health and even possible death can result from using incorrect materials and not reverting to our user manual. RRA does not accept any responsibility for incorrect measurements made with aftermarket gasbags or other parts what so ever not supplied by RRA. Any quality issues implied by the use of aftermarket parts either good or bad can never lead to a liability to the RRA system.

CONTACT

For technical support and/or questions, please contact us

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CAUTION

In case the glass tube would break and the chemical powder is spilled on hands or other body parts, please rinse off with lots of water, if the powder is swallowed, please contact a medical doctor immediately.

REFRIGERANT RISK ASSESSMENT

RRA IS A REGISTERED
TRADEMARK OF TRUETEC B.V.

RRATEST.COM

MORE INFORMATION

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