

The Tracoe logo, featuring the word "TRACOE" in a bold, white, sans-serif font. Above the letter "A" are three concentric white arcs of increasing size, resembling a stylized signal or a medical probe tip. The background of the entire slide is a blurred image of numerous white, bulbous medical connectors or catheter tips, with some showing small blue markings. Overlaid on the right side of the image are three thin, white, concentric arcs that mirror the design of the Tracoe logo.

TRACOE

Tracoe Twist & Tracoe Twist Plus **From insertion to decannulation**

Atos

Atos Medical, part of Coloplast





Tracheostomy care at every stage

Tracoe Twist and Twist Plus tracheostomy tubes are suitable for use across all stages of the patient journey, beginning with ventilation in ICU as the primary tube of insertion. These tubes are designed to meet the unique needs of each patient throughout his or her weaning pathway up to the potential final point of decannulation.

The applicability of the tubes at each of these stages offers consistency and familiarity for caregivers, and healthcare providers, therefore simplifying the care process.

Tracoe Twist and Twist Plus tracheostomy tubes offer a wide range of features, such as: with and without high-volume low-pressure cuff (HVLP), subglottic suction and fenestration. All these features can also be combined in one multifunctional tube.

Cuffed Twist and Twist Plus tubes are also available as primary tubes (P-tubes) for initial insertion during percutaneous tracheostomy.

Enhancing airflow

Tracoe Twist and Twist Plus tubes are manufactured with polyurethane, a material that allows for thinner cannula walls, while still maintaining tube stability and integrity. This material softens when exposed to body temperature.

The thin but sturdy tube walls allow a suitable fit of the inner cannula into the outer cannula and create a **good inner to outer diameter ratio**. This serves as the basis for increasing airflow, as thinner cannula walls enable placement of a larger inner diameter tube. The result is an increased amount of air supply delivered to the patient – an important component for proper ventilation and breathing.

Tracheostomy tubes impose differing pressure and resistance to air flow than a native upper airway.¹ For appropriate breathing and ventilation to occur, the largest possible lumen should be utilized, as small modifications in airway dimensions can impose significant changes in respiratory workload.²

Therefore, every millimeter of space the tube occupies in the tracheal lumen is crucial. For example, if the inner diameter is reduced from 8 to 7 mm, the air supply is 41% smaller and breathing becomes more difficult. A change from 8 to 9 mm improves the value by 60%, while the work of breathing remains the same based on Hagen-Poiseuille equation for laminar flow.

		ID = 7 mm reduces the air by 41%		Patient gets 100% air with an ID = 8 mm	ID = 9 mm provides the patient with 60% more air with the same effort		
Inner diameter (ID)	6 mm	7 mm	8 mm	9 mm	10 mm		
Air stream relative to ID 8 mm (=100%)*	32%	59%	100%	160%	244%		

Q	Flow rate
P	Pressure
r	Radius
η	Fluid viscosity
l	Length of tubing

*Hagen-Poiseuille-Equation

According to the Hagen-Poiseuille law, assuming laminar flow, resistance is inversely proportional to the fourth power of the radius. Thus, a small change in radius may have a significant effect on work of breathing and airflow. If airflow is turbulent, then the effect of a change in radius is even more pronounced.²

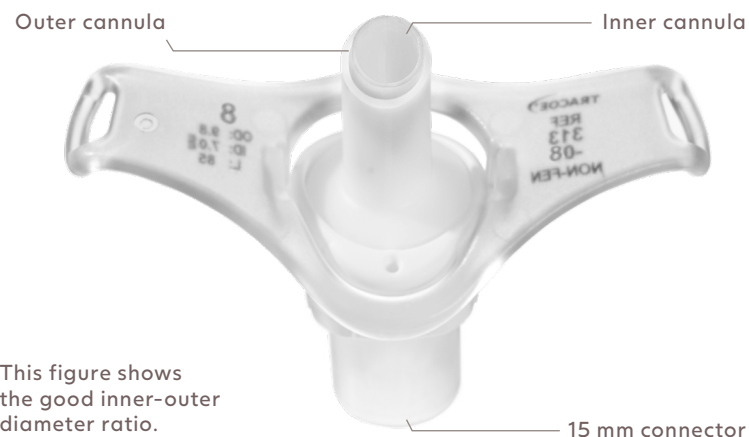
$$Q = \frac{\pi Pr^4}{8\eta l}$$

It's the inner values that count!

The inner diameter of tracheostomy tubes is the critical measurement, as the inner cannula serves as the actual airway while the dimension of the outer cannula that can be inserted is limited by the existing tracheal lumen.³ The importance of a tube's inner diameter is depicted in the Twist and Twist Plus product lines, as the size listed for the tube indicates the inner cannula's inner diameter - the actual airway for the patient.

Creating clarity

Sizing in the product line is transparent. With the Twist and Twist Plus tubes, **sizing always corresponds to the inner diameter of the inner cannula**. For example, if the neck flange says size 08, the lumen of the inner cannula is 8 mm. In addition, color coding on outer packaging, inner cannulas connectors, and inscribed information on the neck flange make certain device features identifiable, providing consistency and clarity for the user and healthcare provider.



This figure shows the good inner-outer diameter ratio.





Optimized extraction

Tracoe Twist Extract and Tracoe Twist Plus Extract tubes are designed with an **innovative, flat, subglottic suction channel** at the outer bend of the tube which connects to a suction port to remove secretions that pool above the cuff. The larger flow cross-section coupled with the lowest possible suction point right above the cuff improves suction performance by enabling quick secretion extraction and reducing residues.

VAP prevention

Ventilator-associated pneumonia (VAP) is a significant cause of morbidity and mortality in critically ill patients who require mechanical ventilation. Subglottic secretions above the cuff are associated with bacteria colonization of the lower respiratory tract, causing VAP. Subglottic suctioning reduces the volume of secretions and therefore the risk of bacterially contaminated secretions entering the lower respiratory tract. For this reason, it is recommended as a preventing measure for ventilator-associated pneumonia.⁴

- The advanced suction channel provides a significantly improved suction performance*
- The larger flow cross-section and the lower suction point enable efficient suctioning*
- Secretions are suctioned more rapidly and more thoroughly*

*Compared to the predecessor model

Approved for above cuff vocalization

Additionally, the Tracoe Extract tubes are approved for Above Cuff Vocalization (ACV) or “speaking during mechanical ventilation”. ACV is an intermittent voicing technique for awake, alert, cooperative, mechanically ventilated, or spontaneously breathing patients

with a cuffed tracheostomy tube and intact larynx who cannot tolerate cuff deflation, speaking valves, or tube occlusion to produce voice.

The suction port in Twist Extract or Twist Plus Extract tubes can be used to introduce air or compressed oxygen into the subglottic lumen.

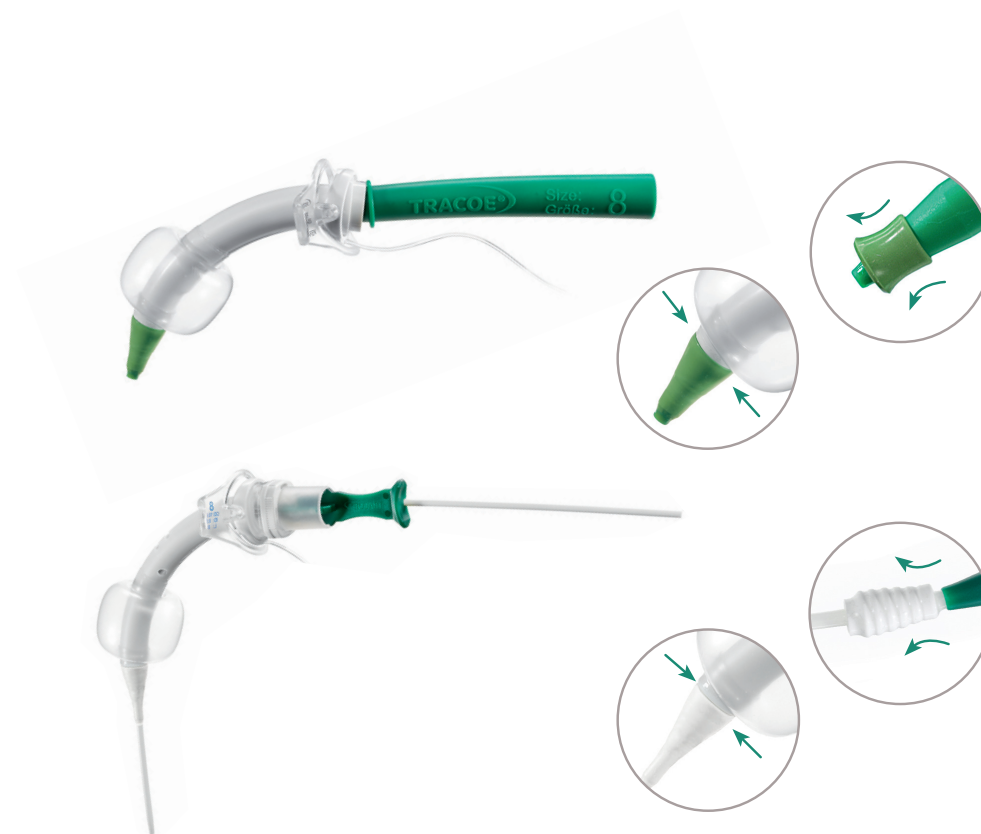
In most cases, the resultant stream of air enables the patient to phonate or even speak.⁵ Furthermore, ACV can be used to ventilate the upper airways, especially the vocal cords, without the need for a deflated cuff.⁵

Airflow to the upper airways is a prerequisite for phonation attempts and has dysphagiological potential: e.g., by stimulating the olfactory and taste buds.⁶ It has been shown to improve the patient’s communication, secretion management and quality of life.⁷

Minimally traumatic insertion

All Tracoe Twist and Twist Plus tracheostomy tubes with low pressure cuffs, incl. the Extract tubes, are available as primary tubes for insertion during percutaneous tracheostomy and for use during complex tube changes and reinsertion, in combination with a Seldinger guide wire. The minimally traumatic inserter or insertion system is supplied pre-installed onto the

tracheostomy tube (P-tube) and bridges the gap in diameter between the inserter and the distal end of the tube with a foldable silicone sleeve. This means that use of the Twist and Twist Plus tubes can begin in the ICU as the primary tube and continue throughout the “life” of the tracheostomy as the patient proceeds to differing levels of care.



Adjusting mobility

The movable neck flange swivels in both vertical and horizontal directions, following the patient's desired head movements. Forward angled eyelets in the neck flange allow application of threading the neck strap.



Colored identification

The advanced design incorporates a distinct visual indicator that enables HCPs to identify the fenestrated or non-fenestrated nature of the Tracoe Twist or Twist Plus tracheostomy tube and inner cannulas.

Non-fenestrated



Green lettering on the neck flange indicates a non-fenestrated outer cannula.



Non-fenestrated Tracoe Twist Plus inner cannulas are identified by a white locking ring.

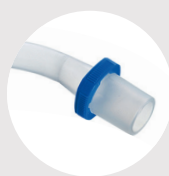


Non-fenestrated Tracoe Twist inner cannulas are identified by white 15 mm connectors.

Fenestrated



Blue lettering on the neck flange indicates a fenestrated outer cannula.



Fenestrated Tracoe Twist Plus inner cannulas are identified by a blue locking ring.



Fenestrated Tracoe Twist inner cannulas are identified by blue 15 mm connectors.

Product info card

All Twist and Twist Plus tubes are delivered with a product info card that contains device information with two detachable labels to facilitate documentation and transfer of information.

To meet the market demands of both today and tomorrow, we use the globally recognized GS1 labeling standards (Global Standards One), which is also reflected in the content of the product info card.

LOT number

Expiry date

Manufacturing date

Size data

LOT

1000001417

REF 450-09

Cuff

Size 9

TRACOE vario

2026-12

EXP Date

2021-12

MAN Date

TL

MAX

TL

MIN

OD

ID

CD

CD

BA 100 °

OD 12.3 mm

TL 66.0-93.0 mm

CD 30 mm

ID 9.0 mm

Order number and additional information

Size and product line

QR code containing all information on LOT and GTIN numbers, expiry date

(01)04035324012305

(10)1000001417

(17)261201

Accès à la base de données

Etiquette détachable

TRACOE

CE

Twist features

Double cannula system

Thin, stable tube walls

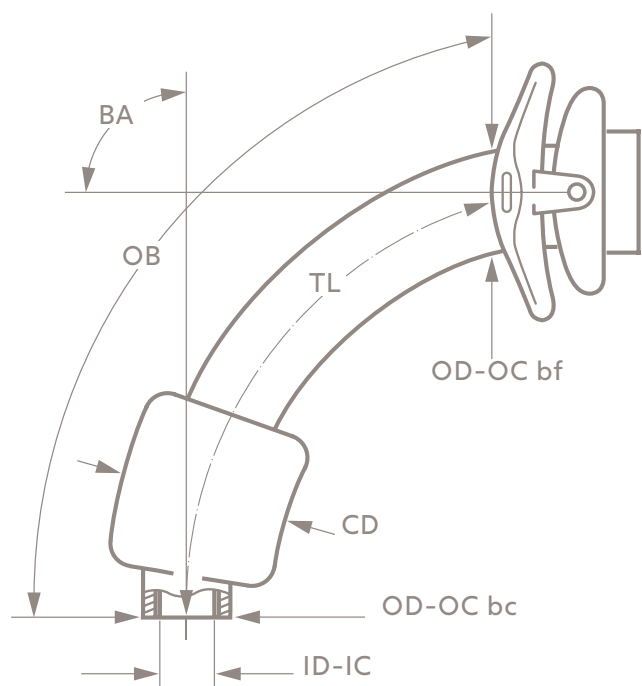
Good inner-outer-diameter ratio

Curved neck flange with double-swivel

Locking of inner cannula by twisting connector

Manufactured from polyurethane

Technical data



Size	ID-IC	OD-OC bc	OD-OC bf	TL	OB	BA	CD
	mm	mm	mm	mm	mm	°	mm
04	4.0	7.2	8.6	59	63.0	110	15
05	5.0	8.6	10.1	66	73.0	100	18
06	6.0	9.2	10.8	72	79.5	95	23
07	7.0	10.4	12.0	74	80.5	95	26
08	8.0	11.4	12.7	76	83.0	90	28
09	9.0	12.5	14.2	78	88.5	90	30
10	10.0	13.8	15.2	80	89.5	90	32

ID-IC: inside diameter (clear width) at bottom of inner cannula;

OD-OC bc: outside diameter at bottom of outer cannula; **OD-OC bf:**

outside diameter of outer cannula behind the flange; **TL:** along centre line from start of neck flange to bottom of tube; **OB:** length along outer bend from start of neck flange to bottom of tube; **BA:** bending angle; **CD:** cuff diameter

Thermo-sensitive
material

All materials
are DEHP-free

High-volume low-pressure
cuff made with medical
grade PVC

Radiopaque and sterile

Inner cannula lock

The inner cannula connects into the outer tube by twisting the 15 mm connector until it clicks into place. Confirmation of locked position is indicated by alignment of the knobs.

Supply information

Twist tubes are supplied with a perforated obturator (from size 06 and above), a wide adjustable neck strap, an Occlusion Cap (with fenestrated Twist tubes), and a product info card with two detachable labels – this provides an all in one package for tube changes.



Ordering information

Ref.no	Description	Available sizes
REF 301	Tracoe Twist C	04-10
REF 302	Tracoe Twist C-Fen	04-10
REF 303	Tracoe Twist	04-10
REF 304	Tracoe Twist Fen	04-10
REF 306	Tracoe Twist Extract	05-10
REF 888-306	Tracoe Twist Extract-Fen	06-10
REF 501	Tracoe Twist Spare IC 15 mm	04-10
REF 506	Tracoe Twist Spare IC 15 mm Fen	04-10
REF 301-P	Tracoe Twist C-P	07-09
REF 302-P	Tracoe Twist C-Fen-P	07-09
REF 306-P	Tracoe Twist Extract-P	07-09
REF 888-306-P	Tracoe Twist Extract-Fen-P	07-09

To order, specify: REF + Size, e.g. REF 304-08

TRACOE Twist Plus

Twist Plus features

Double cannula system with inner cannula pre-assembled

Extra thin, stable tube walls

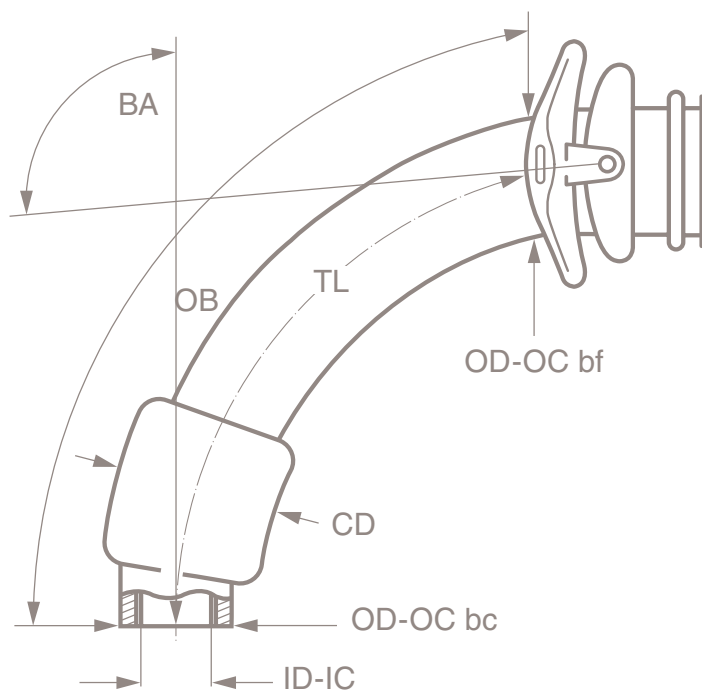
Increased inner-outer diameter ratio

Longer tube length

Curved neck flange with double-swivel

Double fenestration at inner and outer bend

Technical data



Size	ID-IC	OD-OC bc	OD-OC bf	TL	OB	BA	CD
	mm	mm	mm	mm	mm	°	mm
07	7.0	9.8	10.1	85	91	100	26
08	8.0	10.8	11.1	88	95	100	28
09	9.0	11.8	12.1	90	99	100	30
10	10.0	12.8	13.1	92	102	100	32

ID-IC: inside diameter (clear width) at bottom of inner cannula;

OD-OC bc: outside diameter at bottom of outer cannula;

OD-OC bf: outside diameter of outer cannula behind the flange;

TL: along centre line from start of neck flange to bottom of tube;

OB: length along outer bend from start of neck flange to bottom of tube;

BA: bending angle; **CD**: cuff diameter

Locking ring
to secure inner in
outer cannula

High-volume low-
pressure cuff made with
medical grade PVC

Radiopaque
and sterile

Manufactured from PU,
thermosensitive material

All materials
are DEHP-free

Increased inner-outer-diameter ratio

Twist Plus tubes are designed with even thinner walls than the Twist tubes, meaning Twist Plus tubes are at comparably higher capacity for inner lumen space. This provides optimized respiratory airflow, as a smaller outer diameter with a larger inner lumen allows a tight fit of the inner cannula in the outer tube. This enables placement of a larger inner diameter tube, thereby resulting in increased amount of air supply delivered to the patient.

Longer tube length

Tubes in the Twist Plus range are slightly longer in length than Twist tubes. Studies have suggested patients may benefit from longer tube lengths in instances where a standard length does not extend optimally into the tracheal lumen. This may cause injury as the distal end of the tube can impinge upon the posterior wall of the trachea.⁸

Double fenestration

Twist Plus tubes contain fenestrations at two locations: the outer bend has multiple fenestrations, and the inner bend houses two additional phonation holes. This contributes to increased avenues for air to pass through the tube and be redirected up to the vocal cords.

Inner cannula pre-assembled

Tubes in the Twist Plus range come pre-assembled with an inner cannula already inserted in the outer cannula. This creates a more seamless tube change by preventing the need to insert the inner cannula after tube placement.

Locking ring

The inner cannula with the 15 mm connector is constructed in one piece and secured into the outer cannula by turning the locking ring only.



Supply information

Twist Plus tubes are supplied with a perforated obturator, a wide adjustable neck strap, an Occlusion Cap (with fenestrated Twist Plus tubes), and a product info card with two detachable labels - this provides all in one package for tube changes.



Ordering information

Ref.no	Description	Available sizes
REF 311	Tracoe Twist Plus C	07-10
REF 312	Tracoe Twist Plus C-Fen	07-10
REF 313	Tracoe Twist Plus	07-10
REF 314	Tracoe Twist Plus Fen	07-10
REF 316	Tracoe Twist Plus Extract	07-10
REF 888-316	Tracoe Twist Plus Extract-Fen	07-10
REF 521	Tracoe Twist Plus Spare IC 15 mm	07-10
REF 523	Tracoe Twist Plus Spare IC 15 mm Fen	07-10
REF 311-P	Tracoe Twist Plus C-P	07-10
REF 312-P	Tracoe Twist Plus C-Fen-P	07-10
REF 316-P	Tracoe Twist Plus Extract-P	07-10
REF 888-316-P	Tracoe Twist Plus Extract-Fen-P	07-10

To order, specify: REF + Size, e.g. REF 311-08

References

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3. Byron Mullins, J., Templer, J. W., Davis, W. E., Kong, J., & Hinson Jr, J. Airway resistance and work of breathing in tracheostomy tubes. *The Laryngoscope*. 1993; 103(12):1367-1372.
4. Suger-Wiedeck, H., Unertl, K., von Baum, H. Prävention der nosokomialen beatmungsassoziierten Pneumonie. Empfehlung der Kommission für Krankenhaushygiene und Infektionsprävention (KRINKO) beim Robert Koch-Institut. *Bundesgesundheitsblatt*. 2013; 56:1578-1590.
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6. Niers, N. Subglottische Luftinsufflation bei tracheotomierten PatientInnen: ACV: "Above cuff vocalisation" oder "Above cuff ventilation?". *LOGOS Online*. 2019.
7. Pandian, V., Cole, T., Kilonsky, D., Holden, K., Feller-Kopman, D. J., Brower, R., et al. Voice-related quality of life increases with a talking tracheostomy tube: a randomized controlled trial. *The Laryngoscope*. 2020; 130(5):1249-1255.
8. Mallick, A., Bodenham, A., Elliot, S., & Oram, J. An investigation into the length of standard tracheostomy tubes in critical care patients. *Anaesthesia*. 2008; 63(3):302-306.

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