

ZEROMAX™

System Guide



Zero Leak Access Port System

For Refrigerant Systems Using Process “Stub” Tubes



Near-Zero-Emission Access & Processing for Small-Capacity Refrigerant Systems

Eliminate the process stub tube, the pinch-&-weld operation and leak-prone piercing valves — while keeping a hermetic, metal-to-metal seal and easy, repeatable system access for rework, service and end-of-life recovery.



www.fastestinc.com/access-ports/zeromax

Scan to view the ZeroMax™ product page

The **ZeroMax™ System** eliminates the need for Process “Stub” Tubes or crimp-type capping systems and their associated crimping & welding equipment. OEMs and Service Technicians gain an easy, repeatable system access for rework, service, and end-of-life refrigerant recovery — that doesn’t leak.

Unlike a stub tube — which is permanently closed with a manual pinch-&-brazed or an expensive automatic ultrasonic welder, and later re-accessed only with leak-prone piercing “saddle” valves — the ZeroMax Access Port seals **hermetically, metal-to-metal**, with no elastomers in the primary seal path. A properly torqued Dust Cap provides a redundant, second hermetic seal for two degrees of leak protection.

The system is centered on the ZeroMax high-flow Access Port. With a Ø0.2” (5 mm) nominal flow path and a 750 psig (51.7 bar) pressure rating, it is compatible with current (R-410A, R-134a) and Next-Gen A2L/A3 flammable refrigerants — enabling **safer processing** and near-zero refrigerant emissions when used with a reclaim system. Because every port is a discrete connection, ZeroMax also adds a **Poka-Yoke** advantage over stub tubes on lines running multiple refrigerants.

ZeroMax Zero-Leak Access Port

- Compact Ø0.2” (5 mm) nominal flow path, sized for small-capacity systems
- Metal-to-metal hermetic sealing — no elastomers in the primary seal path
- Flow-through Plug (Core) eliminates packings/seals for a reliable hermetic seal every time
- Compatible with current and Next-Gen A2L/A3 refrigerants (contact FasTest)



Access Port — Dust Cap, Plug (Core) & Seat

ZeroMax Access Port Seat

- Saddle-Mount standard; Stub-tube & threaded seats available (contact FasTest)
- Brazes directly into the system tube or valve block
- The same Seat is shared by every Processing Tool for easy integration into system plumbing
- Replaces the stub tube, the pinch-&-weld operation and leak-prone piercing valves



ZeroMax Access Port & Processing Connectors

Section 1 – ZeroMax Overview

ZeroMax Ecosystem Overview	2
ZeroMax Zero-Leak Access Port	3
ZeroMax Processing Tools	4
Service Tool & Torque Accessories	5
ZeroMax Ecosystem Summary	6
ZeroMax vs. Process Stub Tubes	7

Section 2 – ZeroMax Integration

Handling, Seat & Core Installation, Lubrication	8
Torque, Processing, Testing & Maintenance	9
Seat & Core Installation	10

Section 3 – ZeroMax Processing Steps

Processing Overview & Station 1–2	11
Station 3 – Evacuation	12
Station 4 – Refrigerant Charge	13
Stations 5–7 – Seal, Fine Leak Check & Service	14

Section 4 – Installation & Operation Instructions

Access Port – Seat, Plug & Dust Cap	15
MBE / Leak Test & MBV Evacuation Tool	16
RQD Charge & Traveler Tool	17
Service Tool, Torque & Notifications	18

The ZeroMax™ System is not just a component — it is a complete, integrated tooling ecosystem built around a single high-flow Access Port. Every station in the refrigeration process connects to the same Seat, so leak testing, evacuation, charging and field service all share one clean, hermetic, high-conductance flow path.



Access Port

Seat, Plug (Core) & Dust Cap. Brazed into the system; provides the hermetic, metal-to-metal high-flow connection point.



Processing Tools

Quick-connect ball-latching Leak Test, Traveler, Evacuation, Charge & Service tools with a safety-latch sleeve that will not release under pressure.

A Complete Tooling Solution

- **ZeroMax Access Port** — Saddle-Mount standard (Seat **CMHU08B01**, Plug/Core **CMC04**)
- **Leak Test / MBE Tool (CMPT10)** — valveless ball-latch for high-flow leak & burst testing
- **Traveler Tool (CMPT40)** — valved ball-latch; loads the Plug and travels the line, then torques it in
- **MBV Evacuation Tool (CMPT20)** — valved ball-latch; seals vacuum instantly on disconnect
- **RQD Charge Tool (CMPT30)** — lever-operated valved ball-latch for the refrigerant-charge process
- **Service / Repair Tool (CMPT50)** — internal ball valve; replaces the Plug while under pressure
- **Torque Driver** — calibrated electronic tool that applies proper sealing torque to the Plug
- **EvacMax Cart** — turn-key vacuum system tuned to the ZeroMax high-flow path

System desired outcomes: eliminate the process stub tube, the pinch-&-weld operation and the \$30k+ ultrasonic welder; drive refrigerant loss during processing toward zero with reclaim; provide easy rework and end-of-life recovery; and stay compatible with all current and Next-Gen refrigerants (contact FasTest for A2L/A3 flammable applications).

ZeroMax Zero-Leak Access Port™

Compact Access Port for Small-Capacity Refrigerant Systems



Dust Cap, Plug (Core) & Seat

- 1 Designed for small-capacity refrigeration, including Next-Gen A2L/A3 flammable refrigerants
- 2 Metal-to-metal hermetic sealing — no elastomers in the seal path
- 3 Compact, flow-through Plug (Core) seals the port
- 4 Multiple Seat options for easy integration — Saddle-Mount standard; Stub-tube & threaded available
- 5 A properly torqued Dust Cap adds a redundant hermetic seal for two degrees of leak protection

SPECIFICATIONS

Seat Styles	Saddle-Mount standard. Stub-tube, panel-mount & threaded options available (contact FasTest).
Pressure Rating	750 psig (51.7 bar)
Leak Rating	Not measurable, hermetic
Flow Diameter	Ø0.2" (5 mm) nominal
Flow Rate	5.0 scfm (8.0 Nm ³ /hr)
Installed Size	½" × 0.85" long
Weight	0.02 lb (Access Port)
Material	Brass; PVC Dust Cap
Refrigerant Compatibility	Current (R-410A, R-134a) & Next-Gen A2L/A3 — R-32, R-454B, R-1234yf/ze, R-290, R-600a and more (contact FasTest)

ORDERING INFORMATION

Component	Style / Size	Part Number
ZeroMax™ Seat	Saddle Mount	CMHU08B01
ZeroMax™ Plug (Core)	Mates with ZeroMax™ Seat	CMC04
ZeroMax™ Seat	Stub-tube / Panel / Threaded	Contact Factory
ZeroMax™ Dust Cap	PVC	Contact FasTest
ZeroMax™ Access Port Assembly	Seat + Plug + Cap	CMPT-ASSY

Ball-latching connectors with a safety-latch sleeve that will not disconnect under pressure. For repair kits and main seals, contact FasTest.

Leak Test / MBE Tool

PN: CMPT10



Valveless design to maximize flow. Connects to the Seat at the leak-test station to pressurize and relieve testing gas. Safety latch will not disconnect under pressure.

Pressure	750 psig (51.7 bar)
Flow Dia.	Ø0.2" (5 mm) nom.
Flow Rate	5.0 scfm (8.0 Nm³/hr)
Dimensions	Ø1.5" (38 mm) × 1.5" (38 mm)
Ports	¼ NPT media port
Material	Stainless Steel

MBV Evacuation Tool

PN: CMPT20

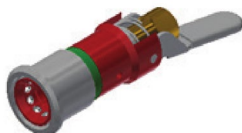


Internal valve instantly seals vacuum when disconnected. Connects to the Traveler at the evacuation station. Safety latch will not disconnect under pressure.

Pressure	20 micron – 750 psig (51.7 bar)
Flow Dia.	Ø0.2" (5 mm) nom.
Flow Rate	5.0 scfm (8.0 Nm³/hr)
Dimensions	Ø1.9" (48 mm) × 3.4" (86 mm)
Ports	¼ NPT media port
Material	Stainless Steel

RQD Charge Tool

PN: CMPT30



Lever-operated internal valve for easy connection to the Traveler. Connects at the charge station to fill refrigerant; reclaim before disconnect for near-zero emissions.

Pressure	750 psig (51.7 bar)
Flow Dia.	Ø0.2" (5 mm) nom.
Flow Rate	5.0 scfm (8.0 Nm³/hr)
Dimensions	Ø1.95" × 4.7"; +handle 7.68"
Material	SS / Brass / Aluminum

Traveler Tool

PN: CMPT40



Internal valve. Loads the Plug, connects to the Seat and "travels" the assembly line through processing; the hex torques the Plug into the Seat before removal.

Pressure	750 psig (51.7 bar)
Flow Dia.	Ø0.2" (5 mm) nom.
Flow Rate	5.0 scfm (8.0 Nm³/hr)
Dimensions	Ø1.5" (38 mm) × 2.4" (61 mm)
Feature	Hex to torque Plug into Seat
Material	Stainless Steel

Maintenance: a daily / weekly / periodic inspection by a competent person is recommended. FasTest refurbishes connectors after 30,000 fill cycles; the main seal is replaced at least every 1,000 cycles (daily visual inspection recommended). Use only original FasTest spare parts. Lubricate on regular intervals with a lubricant compatible with the user application.

Service / Repair Tool PN: CMPT50

An all-in-one tool for installation and service technicians. Adds an internal ball valve so it can **replace a Plug (Core) while the system is under pressure** — with no loss of refrigerant charge. Use to recover refrigerant, leak test, evacuate, charge, and reseal.

- Ball-latching connector with an internal ball valve; safety latch will not disconnect under pressure
- T-Handle replaces the Plug; ¼ FNPT accessory cap for leak-test, evacuation & charge processing
- Recovery / vent capability prevents refrigerant emission to the environment



Service / Repair Tool — CMPT50

Pressure	20 micron (0.02 torr) – 600 psig (43 bar)
Flow Diameter	Ø0.2" (5 mm) nominal
Flow Rate	5.0 scfm (8.0 Nm³/hr)
Dimensions	14.28" (363 mm) handle-in / 19.57" (497 mm) handle-out × Ø1.98" (50 mm)
Material	Stainless Steel & Brass

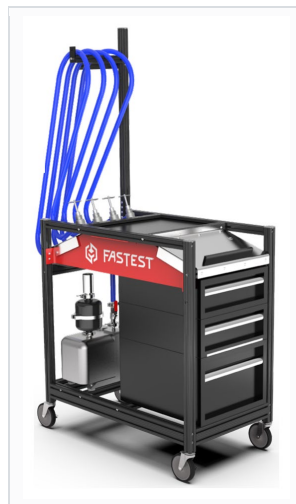
Torque Driver & Evacuation System

Torque Driver

Electronic torque hold-and-drive tool used on the Traveler hex to close and torque the ZeroMax Plug (Core) into the Seat. The **hold-and-drive head transfers no torque to the braze joint**, protecting the brazed connection. Electronic torque control assures a consistent, repeatable hermetic seal. 20 V rechargeable; ≈ 3 lb.

EvacMax Evacuation Cart

A turn-key, integrated vacuum system of properly matched components, optimized for the ZeroMax high-flow path for the fastest possible evacuation. Set target vacuum & decay limits, monitor in real time, and store / download evacuation data to drive process improvement and reduce production Takt time.



FasTest EvacMax Evacuation Cart & Data-Acquisition System

ZeroMax Ecosystem Summary™



At-a-glance comparison of the ZeroMax Access Port and its Processing Tools. Each tool shares the same Ø0.2" (5 mm) nominal high-flow path and connects to the same Access Port Seat.

	Access Port (Seat, Plug & Cap)	Leak Test / MBE (CMPT10)	MBV Evacuation (CMPT20)	RQD Charge (CMPT30)	Traveler (CMPT40)	Service (CMPT50)
Function	Hermetic high-flow connection point	Valveless straight-through. Leak / burst test.	Valved evacuation; seals vacuum on disconnect	Lever-valved charging via Traveler	Valved; loads Plug & travels the line	Replaces Plug under pressure; all field processes
Pressure Rating	750 psig (51.7 bar)	750 psig (51.7 bar)	20 micron – 750 psig	750 psig (51.7 bar)	750 psig (51.7 bar)	20 micron – 600 psig (43 bar)
Flow Rate	5.0 scfm (8.0 Nm³/hr)	5.0 scfm	5.0 scfm	5.0 scfm	5.0 scfm	5.0 scfm
Flow Dia. Ø	Ø0.2" (5 mm)	Ø0.2" (5 mm)	Ø0.2" (5 mm)	Ø0.2" (5 mm)	Ø0.2" (5 mm)	Ø0.2" (5 mm)
Size	½" × 0.85" long	Ø1.5" × 1.5"	Ø1.9" × 3.4"	Ø1.95" × 4.7" (+7.68" handle)	Ø1.5" × 2.4"	14.28"/19.57" × Ø1.98"
Material	Brass	Stainless Steel	Stainless Steel	SS / Brass / Alum.	Stainless Steel	SS & Brass



Access Port



MBE — CMPT10



Traveler — CMPT40



RQD — CMPT30



Service — CMPT50

Features & Benefits

- High-flow, high-conductance design; Access Ports seal hermetically metal-to-metal
- Quick-connect Processing Tools are easy to use, durable and work with reclaim systems
- Compatible with current and Next-Gen A2L/A3 refrigerants (contact FasTest)
- Poka-Yoke advantage vs. stub tubes on lines running multiple refrigerants
- Reduced total cost of processing & improved Takt time / throughput
- Near-zero refrigerant emissions when processing with reclaim; no leak-prone valve packings
- Easy field commissioning, rework and service; increased product quality
- Simple end-of-life refrigerant recovery

The ZeroMax Access Port replaces the process stub tube, the pinch-&-weld operation and leak-prone piercing valves — reducing refrigerant loss, connections, tooling and total cost of processing. Figures below are from FastTest's PTAC-baseline value analysis.

UP TO
100%
Reduction in Refrigerant Loss to Atmosphere
0.208 oz per unit eliminated when processed with reclaim

BASELINE: PTAC SYSTEM		
Metric	Process Stub Tube	ZeroMax™
Connections per unit	18	16 (-11%)
Tools / QCs used (incl. charge gun)	9	8 (-11%)
Trapped / lost refrigerant	0.208 oz	0.02 oz (0 w/ full reclaim)
Processing-tool flow rate	3.5 scfm	4.2 scfm (+20%)
Permanent seal method	Pinch-&-weld; \$30k+ ultrasonic welder	Torqued metal-to-metal Plug
Post-process access	Leak-prone piercing valve (~1 scfm)	Re-openable hermetic port
Approx. cost per unit	~\$4.00	~\$3.00

Notes: costs are estimated and per unit; prices are nominal as volumes & material costs fluctuate. Trapped-refrigerant figures exclude rework; ZeroMax releases 0.037 oz only if trapped volume is dumped rather than reclaimed. Actual results depend on unit volume, refrigerant, line layout and reclaim practice.

The ZeroMax System

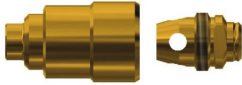
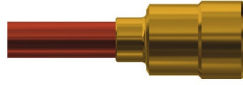
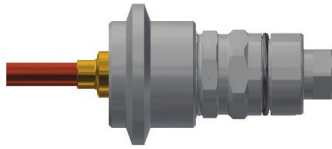
- Up to 100% reduction in refrigerant loss to atmosphere (0.208 oz/unit)
- Poka-Yoke option vs. stub tubes when multiple refrigerants are processed
- 11% reduction in connections and 11% reduction in tools used
- 20% increase in flow (4.2 vs 3.5 scfm), which can improve throughput / Takt time
- Easy rework accessibility with hermetic sealing reliability
- Robust, dedicated tooling built for the manufacturing environment
- Field serviceability and simple end-of-life refrigerant recovery
- Safer processing of flammable A2L & A3 refrigerants

ZeroMax Integration™

Handling, Installation & Lubrication



The ZeroMax System reduces evacuation and charging time while dramatically reducing leakage compared to process-tube methods. This is a summary of proper technique and best practice for handling, installing and using the system.

Material Handling	Seat Installation
 ZeroMax Plugs (Cores) should remain in their protective packaging until assembly is required, to ensure cleanliness and eliminate damage. Just prior to assembly, remove the Plug from its tray. Prior to use, inspect Seats internally for contamination such as dust, dirt or braze slag, and confirm the sealing area is clean.	 Braze the Seat only into the tube or valve block using good brazing practices, before installing / threading the Plug into the Seat. Keep material and contamination out of the inside of the Seat so sealing ability is not affected. Back-gas with nitrogen to minimize oxidation; a 5%–15% silver-content braze alloy works best.
Plug (Core) Installation	Lubricate
Just prior to assembly, make sure the Plug and the Seat I.D. — especially the sealing area and the angled seat — are free of contamination and foreign particulates (braze slag). Lightly lubricate the Plug sealing surface with a compatible refrigerant oil, then thread the Plug into the Seat with the Traveler and torque to the specified sealing parameters.	Lubricate the Plug sealing surface with POE or other suitable oil before installing / torquing into the Seat. Lubricate the tool Main Seals on a regular basis with a silicone or petroleum-jelly grease, and replace them when worn or damaged to maintain leak-free sealing.
Torque	
Close and torque the Plug (Core) into the Seat with the Traveler using the FasTest Torque Driver or a calibrated torque tool, driving to the specified sealing parameters to achieve a hermetic metal-to-metal seal. The Torque Driver's hold-and-drive head transfers no torque to the braze joint, protecting the brazed connection — so no separate counter-torque is required at this connection. After torquing, verify the Plug is fully seated; if a leak is suspected, re-check torque or replace the Plug before charging. Cleanliness of the sealing surfaces is the single most important factor for a reliable hermetic seal.	
 Torque via CMPT40 Traveler hex	

Testing  A proof or leak test can be performed by pressure decay, bubble, or helium / hydrogen mass spectrometer. Disengage the connector used to reach the Access Port before concluding the test, so the Access Port seal integrity is also tested. The port may hold test-media residue that leads to a false positive; blow the port with dry nitrogen and re-test before concluding there is a positive leak.	Evacuation  Load the Plug into the Traveler until it is retained by the snap ring, then latch the Traveler onto the Seat. Attach the MBV Evacuation Tool to the Traveler and evacuate to the target vacuum. The Plug remains held out of the flow path for maximum flow. When target vacuum is reached, disconnect the MBV — the unit remains under vacuum with the Traveler attached.
Charging  Connect the RQD Charge Tool (or MBV / charge gun) to the Traveler on the evacuated unit and weigh the correct charge into the system per the design specification — an automated weight-charging device gives the least opportunity for error. Reclaim trapped refrigerant before disconnecting for near-zero emissions.	Final Testing When testing for refrigerant leaks after charging, flush the Access Port area with an inert gas such as nitrogen to remove any refrigerant traces left from charging. This avoids false-positive readings caused by residual refrigerant near the port.
Maintenance A regular maintenance schedule keeps connectors working at peak efficiency. A daily, weekly and periodic inspection by a competent person is recommended; the user must establish a maintenance interval based on the media and operational environment. Inspection should include damage or loose components, leak tightness, ease of operation, sufficient lubrication, wear and dirt accumulation. FasTest recommends refurbishing a connector after 30,000 fill cycles, and replacing the main seal at least every 1,000 cycles (daily visual inspection for tears or cracks). Lubricate the Main Seals regularly and use only original FasTest spare parts.	

ZeroMax Seat & Core Installation



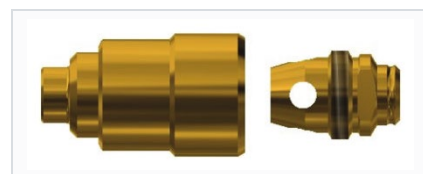
The Saddle-Mount Seat (CMHU08B01) is brazed into the tube or valve block; the Plug (Core, CMC04) is then threaded and torqued into the Seat to form the hermetic, high-flow Access Port.

Brazed Seat

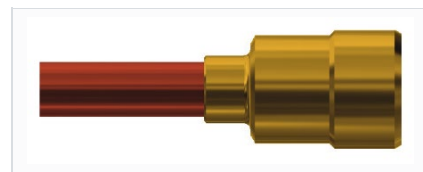
- Braze the **Seat only** onto the tube or valve block — install the Plug (Core) afterward, never braze with the Core installed
- Back-gas with nitrogen, use vapor flux, or induction braze to keep sealing surfaces free of spatter and oxidation
- A 5%–15% silver-content braze alloy works best; a clean sealing surface is a must for a leak-free joint — avoid overheating

INSTALLATION PROCEDURE — ALL SEATS & CORES

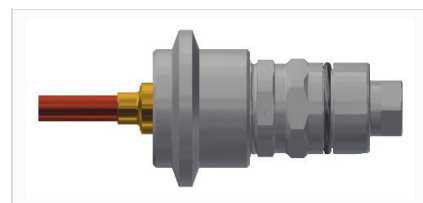
- Step 1** ZeroMax Cores should remain in protective packaging until assembly is required, to ensure cleanliness and eliminate damage. Just prior to assembly, remove the Core from its packaging tray.
- Step 2** Braze the **Seat only** onto the tube or valve block before installing / threading the Core into the Seat.
- Step 3** Make sure there is no contamination in the I.D. of the Seat, **especially the angled sealing area**. Clean the Seat I.D. thoroughly.
- Step 4** Make sure the Core is free of contamination and foreign particulates (braze slag). Lightly lubricate with compatible refrigerant oil.
- Step 5** Thread the Core into the Seat with the Traveler and apply torque with the FasTest Torque Driver to the specified sealing parameters — the hold-and-drive head imparts no torque to the braze joint.



Seat & ZeroMax Core



Example: tube brazed to Seat



Apply torque via CMPT40 Traveler



Stub-Tube Seat (contact FasTest)



Saddle-Mount Seat — CMHU08B01 (standard)

Note: Steps 3–4 apply to all seat styles (Saddle, Stub-tube, Threaded). A contaminated or oxidized sealing surface is the most common cause of a leaking Access Port.

Processing a small-capacity system with the ZeroMax ecosystem follows a simple station-based flow. Each station uses a dedicated quick-connect tool that shares the same high-flow Access Port.

1 Seat Install	2 Burst / Leak Test	3 Evacuation	4 Refrigerant Charge	5 Seal / Reclaim	6 Fine Leak	7 Service
--------------------------	-------------------------------	------------------------	--------------------------------	----------------------------	-----------------------	---------------------

Station 1 – Seat Installation

Description	Installation of the Access Port Seat onto the refrigeration system.
Assumptions	Saddle-mount tube has the correct hole size, is free of burrs, and has clearance for attaching Processing Tools. Standard brazing practices apply.
Tool Used	No tool required for this station.
Specifics	Braze the Seat with up to 5% (up to 15%) silver solder. Back-gas, vapor-flux, or induction braze to keep sealing surfaces free of spatter or oxidation. A clean sealing surface is a must for a leak-free joint.
Concerns / Addressed	Overheating & contamination of the sealing surface → proper tools and operator training required.



Saddle-Mount Seat

Station 2 – Burst / Gross Leak Test • MBE Tool (CMPT10)

Description	Burst test and gross leak test. The high-flow MBE design gives rapid fill & vent and lets contamination pass through the connector, minimizing clogging with debris.
Assumptions	Seat is already brazed onto the system. The Plug (Core) is not installed at this station.
Tool Used	Leak Test / MBE Tool (CMPT10).
Specifics	Tool stays with the station; connect on entrance and exit. Check the Seat for debris at the end of the test and clean if necessary.
Concerns / Addressed	Accidental removal under pressure → the actuation sleeve has an internal mechanism (green “go” ring) that prevents removal under pressure. Clogging → straight-through, maximum-diameter flow lets debris clear the Seat.



MBE Tool — CMPT10

Processing Steps — Station 3: Evacuation



Traveler (CMPT40) + MBV Evacuation Tool (CMPT20). The Traveler loads and holds the Plug out of the flow path for maximum flow, then travels the line with the unit; the MBV provides the valved vacuum connection and instantly seals vacuum on disconnect.

Description	Evacuation of the system — typically the longest cycle time, requiring the greatest flow. The system must remain under vacuum upon exit from the station.
Assumptions	Seat already brazed; MBV connected to a vacuum pump. Vacuum pump and unit move down the line together; typically 1–2 connection points per circuit.
Flow Path	Ø0.2" (5 mm) nominal, unobstructed.
Flow Rate	4.2–5.0 scfm — valving is designed to flow greater than the Seat itself.



Seat + Traveler + MBV

PROCEDURE

- Step 1** Load the Traveler with the ZeroMax Core using the load station — the Core is held in place by a snap ring (no threading is required to retain it at this point).
- Step 2** Attach the loaded Traveler onto the Seat. The safety latch locks the Traveler to the Seat under pressure.
- Step 3** Attach the MBV Evacuation Tool to the extended end of the Traveler for full-flow evacuation and evacuate to the target vacuum.
- Step 4** At target vacuum, disconnect the MBV — the MBV instantly seals the vacuum and the unit remains in a vacuum state with the Traveler attached.

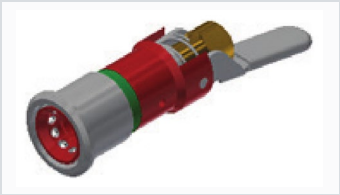
Concerns addressed: the Core is locked in the Traveler for a fast, accurate load; the valving flows greater than the Seat for maximum evacuation; and the Traveler is designed for seal longevity in the manufacturing environment. **Never disconnect the Traveler while the system is under vacuum** before the Core is threaded, torqued and sealed.

Processing Steps — Station 4: Refrigerant Charge



RQD Charge Tool (CMPT30) (or MBV / charge gun) connects to the **Traveler** already on the unit. The lever-operated valve opens the flow path for charging; the system is under charge pressure upon leaving the station.

Description	Connect to the evacuated, sealed system to charge. Trapped refrigerant in the Traveler / tool / hose can be reclaimed prior to disconnect.
Assumptions	Unit is under vacuum on arrival with the Traveler attached, and fully charged on exit. A small amount of air inclusion is acceptable.
Tool Used	RQD Charge Tool (CMPT30), MBV, or charge gun — connected to the Traveler.
Flow Rate	4.2–5.0 scfm @ Ø0.2" (5 mm) nominal path.



RQD Charge Tool — CMPT30

PROCEDURE

- Step 1** Latch the RQD Charge Tool onto the extended end of the Traveler (lever-operated ball & sleeve action).
- Step 2** Rotate the lever to the open position to open the flow path.
- Step 3** Charge refrigerant into the system, weighing the correct charge per the design specification — an automated weight-charging device gives the least opportunity for error.
- Step 4** When charging is complete, rotate the lever closed, reclaim trapped refrigerant, and disconnect the RQD from the Traveler. The Traveler remains with the unit in a charged state.

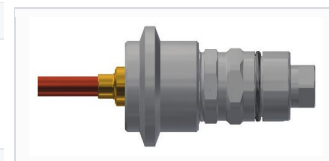
Concern addressed: disconnecting while under pressure → the safety-latch sleeve will not allow the tool to be disconnected while under pressure, and the internally valved Traveler stays locked to the Seat. Zero-emissions potential when a reclaim system is used.

Processing Steps — Stations 5–7



Station 5 – Close / Seal, Reclaim & Remove Traveler

Description	Seal the unit, complete processing and remove all tools.
Tool Used	FasTest Torque Driver (or similar) and the RQD for reclaim.
Specifics	Attach the Torque Driver to the Traveler and torque the Core into the Seat to the specified parameters to seal the port. Use the RQD to evacuate trapped refrigerant, then remove the RQD and Traveler (Traveler returns to Station 2). Zero-emissions potential with reclaim.
Concerns / Addressed	Proper metal-to-metal seal and torque → cleanliness is critical; proven CoreMax sealing technology; torque controlled by the Torque Driver, which imparts no torque to the braze joint.



Torque Core via Traveler hex

Station 6 – Fine Leak Check

Description	Check the system for leaks and make sure the ZeroMax Access Port is sealed.
Tool Used	No tooling required for this station.
Concerns / Addressed	Leakage at the Access Port → if the Plug is suspected of leaking, check torque or replace the Plug with the Service Tool (CMPT50) without depressurizing the system or recovering refrigerant.

Station 7 – Service / Rework • Service Tool (CMPT50)

Description	If the unit needs rework or the Access Port is leaking, the ZeroMax port provides access without a piercing valve or refrigerant loss. If the Core is leaking, use the Service / Repair Tool to change it under pressure; if the system needs reprocessing, connect the Traveler, untorque the Core, and reclaim / reprocess (Steps 2–6).
Tool Used	Service / Repair Tool (CMPT50) with a Torque Driver, or the Traveler + RQD.
Concerns / Addressed	Proper Plug sealing → use proper sealing / torquing technique. Zero-emissions potential with reclaim; the repair tool is used only a fraction of the cycles of standard processing tools.



Service Tool — CMPT50

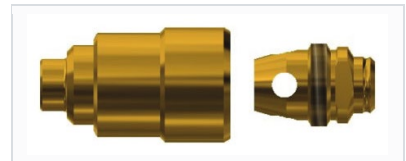
ZeroMax™ Access Port – Seat, Plug & Dust Cap

Installation between Plug (Core) and Seat. Please read all steps before installing the Plug into the Seat.

- Step 1** ZeroMax Plugs (Cores) should remain in their protective packaging until assembly is required, to ensure cleanliness and eliminate damage. Just prior to assembly, remove the Plug from the tray.
- Step 2** Install the **Seat first** — braze the Saddle-Mount Seat into the tube or valve block (or thread a threaded Seat into its mating port) **before** installing the Plug into the Seat.
- Step 3** Make sure there is no contamination in the I.D. of the Seat, especially the angled sealing area. (Steps 3–4 apply to all Seat styles.)
- Step 4** Make sure the Plug is free of contamination and foreign particulates. Lightly lubricate the sealing surface with a compatible refrigerant oil.
- Step 5** Thread the Plug into the Seat with the Traveler and torque to the specified sealing parameters using the FasTest Torque Driver.



Dust Cap, Plug (Core) & Seat — CMHU08B01 / CMC04



Seat & ZeroMax Core

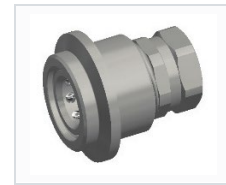
The Torque Driver's hold-and-drive head imparts **no torque to the braze joint**. Saddle-mount installations require the correct minimum bore — confirm the target install parameters with FasTest engineering for your specific port.

Dust Cap Installation

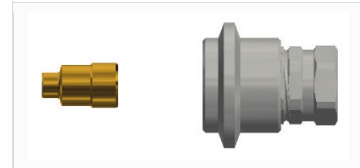
- After processing, thread the PVC Dust Cap onto the Seat to protect the sealing surfaces.
- The Dust Cap prevents contamination from entering the sealing surfaces and provides a redundant, second barrier for two degrees of leak protection.

MBE / Leak Test Tool Operation – CMPT10

- Step 1** Pull the sleeve (knurled portion) back and slide the connector over the Seat until it stops.
- Step 2** Release the sleeve — it snaps forward, driving the latching balls into the groove on the Seat. Confirm the balls are locked (green “go” ring) before processing.
- Step 3** Perform the pressure / leak test (fill & vent) through the port. Check the Seat for debris at the end of the test and clean if necessary.
- Step 4** Once complete, pull the sleeve back and remove the connector.



MBE Tool — CMPT10



Seat inserted & connected

WARNING: this connector is not internally valved. All pressure must be dissipated before disconnection. The safety-latch sleeve will not disconnect while under pressure.

MBV Evacuation Tool Operation – CMPT20

- Step 1** Load the Plug into the Traveler and latch the Traveler onto the Seat (see RQD / Traveler operation).
- Step 2** Pull the MBV sleeve back, slide the MBV onto the extended end of the Traveler, and release to latch.
- Step 3** Evacuate to the target vacuum through the full-flow path.
- Step 4** At target vacuum, pull the sleeve back and disconnect — the MBV instantly seals the vacuum; the unit remains under vacuum with the Traveler attached.

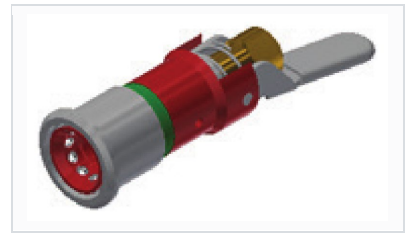


Evacuation: Seat + Traveler + MBV — CMPT20

Never disconnect the Traveler while the system is under vacuum before the Core is threaded, torqued and sealed.

RQD Charge Tool Operation – CMPT30

- Step 1** Retract the sleeve and position the lever, then slide the RQD onto the extended end of the Traveler; release the sleeve so the gripping balls secure the connection.
- Step 2** Rotate the lever to the **open** position to open the flow path.
- Step 3** Charge refrigerant into the system per the design specification.
- Step 4** When complete, rotate the lever to the **closed** position, reclaim trapped refrigerant, then retract the sleeve and remove the RQD from the Traveler.

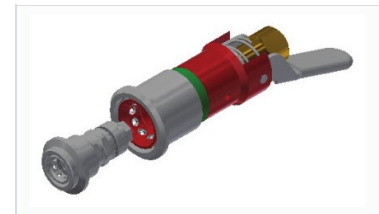


RQD Charge Tool — CMPT30 (lever-operated valve)

WARNING: the sleeve locks under pressure and will not allow disconnection while under pressure. Reclaim / vent before removing the tool.

Traveler Tool Operation – CMPT40

- Step 1** At the load station, insert the ZeroMax Core into the Traveler — it is held by the snap ring (no threading required at this point).
- Step 2** Retract the Traveler sleeve, slide the connector over the Seat until it stops, and release so the gripping balls secure it. The sleeve locks under pressure.
- Step 3** Process the unit (evacuate, charge) with the MBV / RQD attached to the Traveler's extended end; the Traveler travels the line with the unit.
- Step 4** When processing is complete, use the Traveler hex with the Torque Driver to torque the Core into the Seat, then reclaim, retract the sleeve and remove the Traveler.



Traveler Tool — CMPT40 (valved, with torque hex)

The Traveler "locks" under pressure to prevent accidental disconnect and stays valved throughout processing.

Service / Repair Tool Operation – CMPT50

Use to recover refrigerant, leak test, evacuate, charge, or replace a Plug (Core) while the system is under pressure. The internal ball valve isolates the tool so the Plug can be changed with no loss of refrigerant.

- Step 1** Attach the Service Tool to the Seat (slide the sleeve forward to latch).
- Step 2** To replace a Plug: un-torque the Plug (CCW) with the T-Handle, pull the T-Handle back, and close the ball valve to isolate the process flow.
- Step 3** Inspect / replace the Plug, re-open the valve, thread the Plug into the Seat (CW) and torque to the specified sealing parameters. Reclaim / vent, then disconnect.



Service / Repair Tool — CMPT50 (internal ball valve)

WARNING: the sleeve has an internal safety-lock that will not allow disconnection while under pressure. Reclaim / vent before removing the tool.

NOTIFICATIONS, WARRANTY & PATENTS

Notifications & Copyright. Specifications in this guide are subject to change without notice. FasTest reserves the right to make modifications and makes no guarantee of the accuracy of the information contained herein. FasTest is a registered trademark with the U.S. Patent & Trademark Office. © 2026 FasTest Inc. All rights reserved. No part of this publication may be reproduced without written permission.

Patents. ZeroMax™ incorporates FasTest's patent-pending Access Port technology. FasTest aggressively pursues and protects its proprietary information and intellectual property. All products are designed and manufactured by FasTest Inc., USA.

Limited Express Warranty. FasTest Inc. warrants its products against defects in workmanship and materials for 12 months from the date of sale by FasTest Inc. or its authorized distributor. This warranty is void if the product is misused, tampered with, or used contrary to FasTest's written recommendations and/or instructions. See website for complete warranty information.

Custom Applications & Certifications. FasTest has full engineering and manufacturing capability to provide special accommodations for specific applications. FasTest Inc. is ISO 9001 certified. Contact: fastsales@fastestinc.com · (800) 444-2373.