

Test Method

~~Setup~~ ITP

- Yellow line P&ID to check everything is connected ✓
as per ~~ITR001~~ ~~ITR002~~ ~~ITR003~~ ~~ITR004~~ ~~ITR005~~ ~~ITR006~~ ~~ITR007~~ Drawing
- Complete Failsafe ~~Test~~ ~~ITR~~ tests as per ITR001 - NC
- Complete pressure tests as per ITR002 ✓
- Complete Tidal volume tests as per ITR003 ✓
- Complete B.P.M tests as per ~~ITR~~ ITR004 ✓
- Complete ~~humidity~~ ^{FiO₂} tests as per ITR005 - NC
- Complete humidity tests as per ITR006 - NC
- Complete Alarm tests as per ITR007 - NC

~~Pressure~~
~~Tidal volume~~
~~RR (B.P.M)~~
~~FiO₂~~

ITR001 - Fail safes

Not completed due to Alarms not incorporated in code & battery not yet hooked up to device

| Action ✓ | Expected Result | Actual Result | Reason if different |
|---|---|---------------|---------------------|
| loss of AC during normal operation | no change in normal operation ✓ | | |
| loss of AC & DC power during normal operation | Inspiratory line closes & expiratory opens cycling stops and | | |
| loss of pressure during normal operation | All lines open allowing manual ventilation. | | |
| over ^{supply} pressure during normal operation (P > 5 bar) | no change in normal operation | | |
| Valve Supply Valve stuck open | Over pressure alarm raised. Expiration valve opened to compensate. | | |
| | | | |

ITR002 - Pressure tests

Over pressure test

- Set IP to 60 cm H₂O and ~~expiratory~~ PEEP to 20 cm H₂O
- Allow system to run for 1 minute & record results, look for leaks

| IP | PEEP | Leaks | Notes | Resolution |
|----|------|-------|-------|------------|
| | | | | |

Pressure range tests

| IP _{SP} | PEEP _{SP} | IP _{Recorded} | PEEP _{Recorded} | TV _{Recorded} | Notes |
|--------------------------------------|--------------------------------------|------------------------|--------------------------|------------------------|---|
| 40 40 cm H ₂ O | 20 20 cm H ₂ O | 35 cm H ₂ O | 8 cm H ₂ O | 1000 mL | PEEP not being controlled accurately due to leakage in expiratory line. |
| 30 cm H ₂ O | 20 cm H ₂ O | 28 cm H ₂ O | 8 cm H ₂ O | 850 mL | |
| 20 cm H ₂ O | 5 cm H ₂ O | 22 cm H ₂ O | 5 cm H ₂ O | 400 mL | |
| | | | | | |

C.L. = Compliance level

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ITR004 - B.P.M tests

| B.P.M _{sp} | ^{Foot} B.P.M _{recorded} | Time for single breathe | using Stop watch |
|---------------------|--|-------------------------|---|
| 5 | 4.4 | 4.2 12s | |
| 6 | 5.9 | 10s | |
| 7 | 6.9 | 8.5s | |
| 8 | 7.8 | 8s | |
| 9 | 8.7 | 6.5s | |
| 10 | 9.7 | 6s | |
| 11 | 10.6 | 5.5s | |
| 12 | 11.7 | 5s | |
| 13 | 12.5 | 4.5s | |
| 14 | 13.5 | 4s | |
| 15 | 14.4 | 4s | |
| 16 | 15.3 | 3.5s | |
| 17 | 16.2 | 3s | |
| 18 | 17.1 | 2.5s | |
| 19 | 18.0 | 3s | |
| 20 | 18.8 | | ↑ Hard to accurately time fast breathing ↓ |

ITR005 - FiO₂ tests

Not completed, no access to Oxygen source.

| F_iO_2 sp | F_iO_2 recorded | IP recorded | PEEP recorded | B.P.M recorded | TV recorded | Notes |
|-------------|-------------------|------------------------|---------------|----------------|-------------|-------|
| | | | | | | |

Not completed, no access to oxygen source

| Humidity SP | FiO ₂ SP | IP recorded | PEEP recorded | T.V. recorded | Humidity recorded |
|-------------|---------------------|-------------|---------------|---------------|-------------------|
| | | | | | |

ITR007 - Alarm tests

Not completed. Alarms
not incorporated in code yet.

| Action | Expected Result | Actual result | Resolution | notes |
|--------|-----------------|---------------|------------|-------|
| | | | | |