**Troubleshooting Germania TakeOffs (All Models)**

**Air Pressure**

Check the system pressure. Germania TakeOffs operate on 70 psi. Incorrect air pressure affects End-of-Milking timing.

**Trouble Shooting With a Test Gauge**

Your complimentary Parts Kit came with a test gauge, 0 to 60 psi, with some grey hose and a hose T. Remove the grey hose from the Whisker Valve/Flow Sensor and connect grey hose of test gauge.

Learn how to read the test gauge on a good machine first, *while the cow is milking, from beginning to end.* There’s a certain pattern of how the needle moves:

* At the beginning of milking needle doesn’t move at all.
* After the 2-minute timer times out the needle moves very fast in the range of 0 to 5 psi.
* And at the milk-out phase the needle gradually moves to 10 psi and back to 0, 14 psi and 0, 8 and 0, 20 and 0, etc. in a random pattern, since every cow milks out differently, until it eventually reaches 35 psi, give or take, and the machine comes off. The key here is that the gauge *returns to 0* inbetween slugs going thru the sensor, *and* it gradually climbs again.

If a machine comes off early and assuming the whisker valve is the problem, the gauge climbs to 5 and 7 and 10 psi and when a slug hits the bell, needle goes to 0 *but then instantly back up to where it was, let’s say 12 psi*, instead of climbing gradually from 0. There is the problem. Replace whisker valve.

For the more technically curious among of you, here’s what’s happening in the grey timing circuit:

With everything working honky-dory, i.e. normal operation

* The air coming from the D-Restrictor gradually pressurizes the grey circuit.
* When a slug hits the bell, the whisker valve opens and releases a small amount of that air. If the machine comes off too early, unfortunately, no matter how fast the cow milks, the whisker valve never releases all of the air coming from the D-restrictor and the pressure gradually increases until the machine comes off too early.
* How to solve that problem? I added the EV-125 Quick Exhaust on top of the timing chamber. Now, whenever the whisker valve opens to release that small amount of air, it cause a *pressure drop in the grey circuit*. That pressure drop in turn causes the EV-125 to open, which releases *all of the* air from the grey circuit and the timing chamber.
* But if the rubber seal inside the whisker valve is screwed up, it doesn’t release enough air to cause the pressure drop and the EV-125 never opens, pressure gradually increases and machine comes off too early.

**(15) Possible Reasons why machine might come off early**

1. **Make sure the air bleed hole of the claw is open**. Flow sensor works on the pendulum principle, milk slugs set it to swinging. If there’s no bleed air, there are no slugs. Machine will come off early even is the claw air bleed is only partially plugged.
2. **End-of-Milking timers may be too short.** We generally recommend may be 7 seconds for end-of-milking timing, meaning some milk will be left in the udder. If you prefer to draw the fumes out of the udder, you may need 15 or 20 second timers.
3. **Cow never let the milk down**
4. **Old milk hose at Pinch Valve**., that short one. Partially collapsed hose restricts milk flow into sensor, resulting in weak slugs.
5. **Wire of whisker valve broke off.**
6. **Ring at top of sensor shaft fell off.**
7. **Whisker not engaged with ring**
8. **Sensor bell broken off**
9. **Sensor bell moved up on shaft**, slugs don’t reach it.
10. **Restrictor is leaking internally,** supplying more air to timing circuit than whisker valve can get rid off. Replace D-Restrictor.
11. **Milk hose from claw to sensor too short.** There must be a generous loop before the hose goes into the sensor, at least 8” vertical incline so proper slug can form.
* When you push the start button, machine starts, but instantly shuts off when you let the button go. Two possible cause - PT-421 Main valve is not working properly. Replace PT-421.
1. **Someone replaced the PT-100 and/or the PT-210 on the 2 min. Start-Up Timer, but installed them up-side- down.** When the machine is not milking air from the blue hose must actuate the PT-100 pilot. Remove pilot from PT-210 2-way valve and watch it operate.
2. **Someone replaced the # 14 Flow-Control on the 2-min timer and installed it the wrong way around.** Remove and turn 180 dgr. When FC is disconnected from grey hose, but still connected to blue *and* the machine is off – a full stream of air must escape from the Flow-Control.
3. **PT-110 (or 34-AS – we use these pilots interchangeably) pilot fires much too early.** It’s supposed to fire at 32 psi, give or take a couple. But if the internal components became weak with age, it may fire at 10 or 15 psi – much too early. Check pressure with the pressure gauge in your Self-Service Parts Kit.
4. **If all else fails – swap components!** Swap components with a neighboring machine that works correctly – Flow-sensor, PT-110 pilot, D-restrictor, End-of-Milking timer, 2-min. Start-up Timer and see if you can make the neighboring machine fail.