**Automatic TakeOff Schematic**

How does it work?

To make the discussion of the schematic easier we talk about ‘Red air’, ‘Blue air’, ‘Grey air’, etc. i.e. which color hose is pressurized.

In all Germania/TechForAg air circuits, black hoses always supply the air. Usually at 70 psi.

Push the button of the PT-421 ‘Main Valve’. Black air goes to red – pushes retract cylinder down and supplies air to the ‘D’ restrictor. Also – blue circuit exhausts, vacuum valves opens.

‘D’ Restrictor reduces lots of air from red hose to very little air into grey hose.

Grey hose and all components connected to it, make up the ‘End-of-Milking’ circuit.

Never mind the large air chamber at the top. That’s the ‘Start-up Timer’ and we’ll get back to it later.

Small amount of air coming from ‘D’ Restrictor, tries to pressurize the grey circuit and all components connected to it. Typically takes anywhere from 5 to 15 seconds to pressurize it to about 33 psi. Exactly how much time depends on owner’s preference. Generally we recommend 10 sec, 7 sec is better.

When pressure in E-o-M timer reaches 32 psi PT-110 fires and pushes the start button out – machine retracts.

Theoretically, machine would always come off after 10 seconds. Not what we want. To prevent pressure from building we exhaust the air from the E-o-M Timer with the whisker valve.

Whisker valve is closed when not moved, open when moved to one side. As long as milk flows thru sensor, whisker valves is open, open, open, moved by the pendulum.

Leaves one problem – it’s virtually impossible to attach the four teat cups and get milk thru the sensor within the 10 second available.

That’s where the Star-Up Timer comes in. It opens and artificial leak for about 2 minutes, by opening a PT-210 2-way valve. When it times out, PT-210 closes and machine is now in ‘Automatic’.

At the end of milking as milk flow slows, pressure gradually builds in the E-o-M timer.

As it reaches 33 psi pressure pilot PT-110 fires and pushes start button out.