pf - 4
PG-139

PRE-FILLING DAMPERS WITH NITROGEN AT ELEVATED PRESSURES

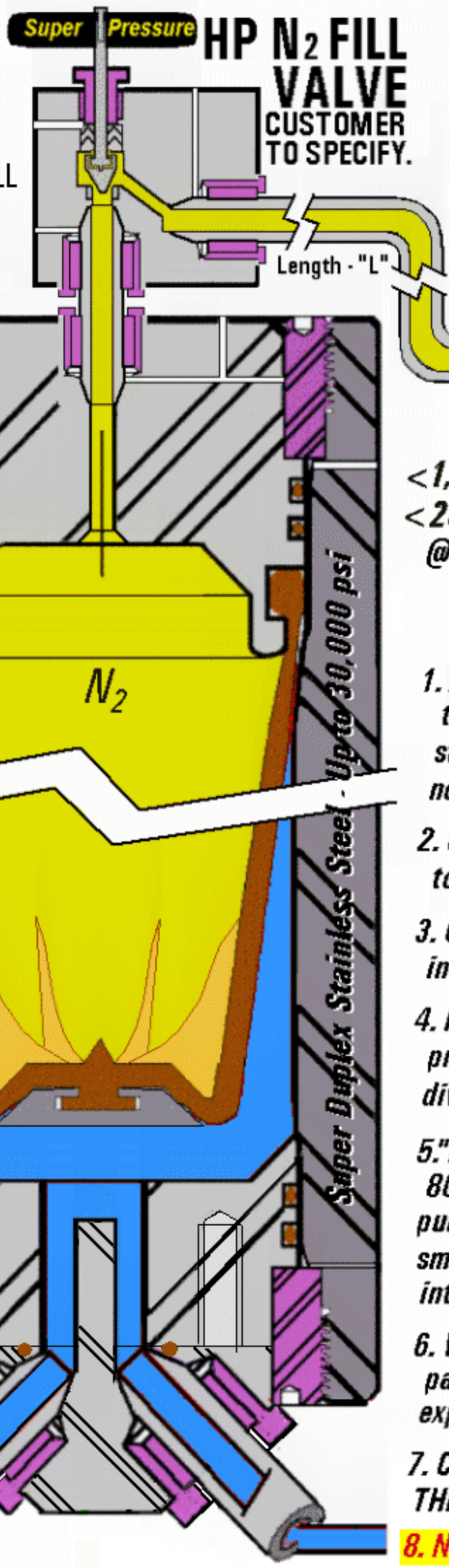
TO REDUCE THE OVERALL COST OF DAMPER + PRE-FILLING EQUIPMENT IN THE RANGE 2,000 psi (140 bar) up to 10,000 psi (690 bar), it is often less expensive to oversize the damper.

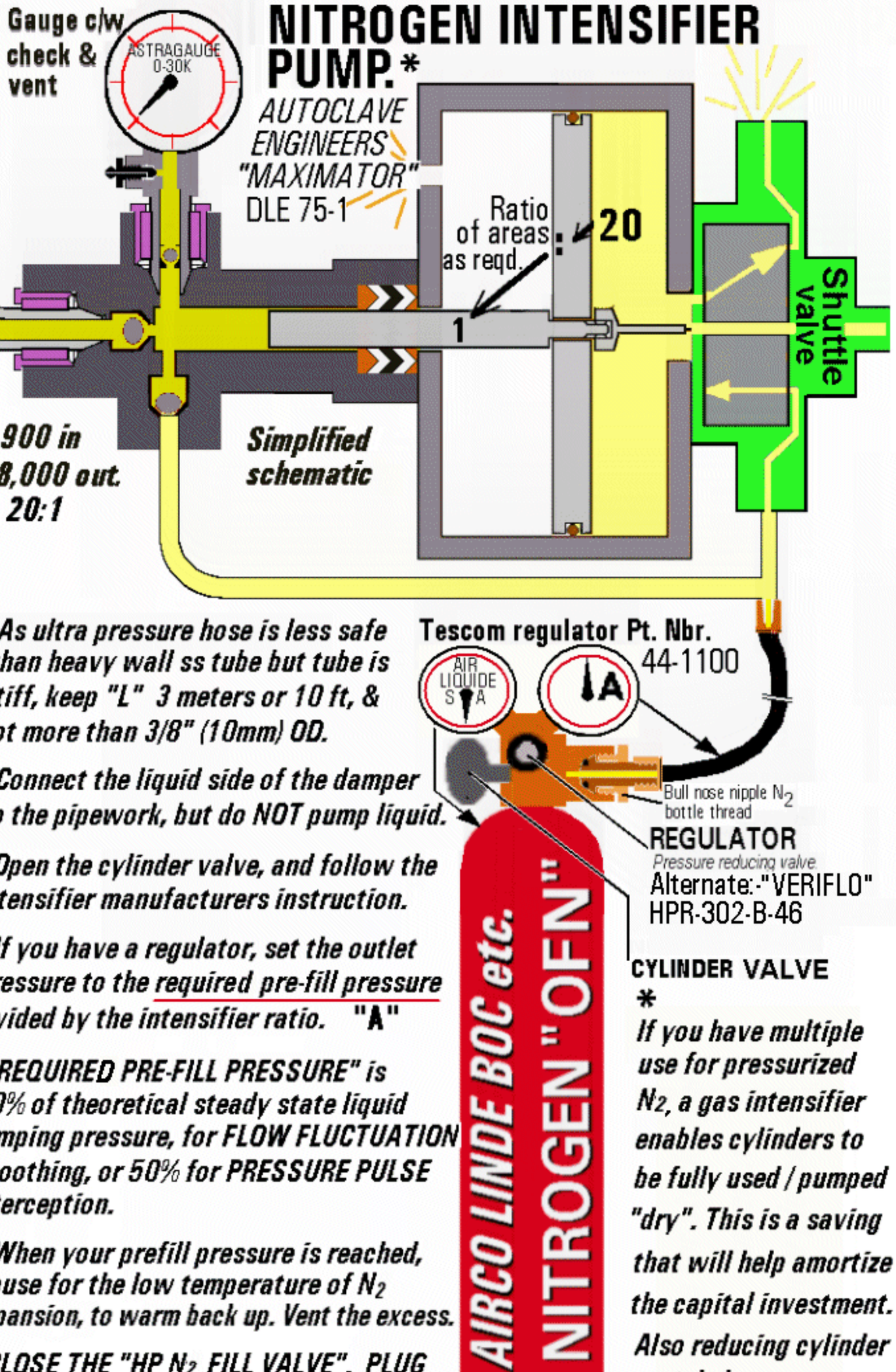
For example, from a readily available N_2 bottle at 2,000 psi in summer, or 1,900 in winter; to use in a 9,500 psi (650 bar) system :- You can oversize by the ratio of 1,900 to 9,500 psi, IE 5:1, make the damper 5x larger. When your system reaches 9·5 K, the N_2 will be 20% of its starting volume, but as the damper is 500% oversized, you will have the smoothness specified, but you will not need a gas intensifier pump as shown below.

ABOVE 10K psi THE METHOD SHOWN BELOW IS ALMOST ESSENTIAL.

pf - 1

AUTOCLAVE
20SC4072
1/4" HEAVE WALL
WALL TUBE,
20,000 PSI
Series.





1. *As ultra pressure hose is less safe than heavy wall ss tube but tube is stiff, keep "L" 3 meters or 10 ft, & not more than 3/8" (10mm) OD.*

2. *Connect the liquid side of the damper to the pipework, but do NOT pump liquid.*

3. *Open the cylinder valve, and follow the intensifier manufacturers instruction.*

4. *If you have a regulator, set the outlet pressure to the required pre-fill pressure divided by the intensifier ratio. "A"*

5. *"REQUIRED PRE-FILL PRESSURE" is 80% of theoretical steady state liquid pumping pressure, for FLOW FLUCTUATION smoothing, or 50% for PRESSURE PULSE interception.*

6. *When your prefill pressure is reached, pause for the low temperature of N_2 expansion, to warm back up. Vent the excess.*

7. *CLOSE THE "HP N_2 FILL VALVE". PLUG THE VALVE TUBE CONNECTION.*

8. *Never run with anything more connected.*

* *If you have multiple use for pressurized N_2, a gas intensifier enables cylinders to be fully used / pumped "dry". This is a saving that will help amortize the capital investment. Also reducing cylinder rental charges.*

NOT TO SCALE

NOTE:- The undercarriage "shock struts" of aircraft, are filled from 6000 psi nitrogen cylinders, as are BOP accs, on oil rigs. so HP N_2 does exist.

THE EQUIPMENT PART NUMBERS AND SOURCES NOTED ABOVE ARE WHAT WE USE IN OUR SHOP. WE HAVE FOUND THEM TO BE SATISFACTORY, BUT AS THEY ARE NOT PRODUCED UNDER OUR QA SYSTEM, WE DO NOT WARRANT THEIR SAFETY OR LIFE.