CLAIMS:

1. A fluid pressure reducing valve apparatus comprising:

- a spring loaded pressure reducing valve~~regulator~~ having:
  - a body containing a chamber,
  - a liquid supply orifice into the chamber and a liquid outlet from the chamber,
  - a regulation plate opposed to the orifice and subject in use to supply liquid acting on it,
  - a spring acting to urge the plate towards to the orifice and
  - a diaphragm between the regulation plate and the body to close the chamber between them and subject in use to regulated pressure in the chamber
- a controllable motor drive acting between the body and an end of the spring remote from the regulation plate,
- a flow meter downstream of the outlet and
- a controller arranged to receive flow data from the flow meter and to control the servo motor for withdrawal of the remote end of the spring in accordance with flow rate measured by the flow meter;

the arrangement being such that in use for increase in demand flow, the regulation~~or~~ plate is partially withdrawn to maintain downstream pressure on such increase and vice versa.

2. A fluid pressure reducing valve apparatus as claimed in claim 1, wherein the apparatus is adapted for reducing the pressure of water.

3. A fluid pressure reducing valve apparatus as claimed in claim 1, wherein the apparatus is adapted for reducing the pressure of hydrocarbons fluids both liquid and gaseous.

4. A fluid pressure reducing valve apparatus as claimed in claim 1, claim 2 or claim 3, wherein the controllable motor drive is a servo motor drive.

5. A fluid pressure reducing valve apparatus as claimed in claim 4, wherein the controller is adapted for calculation of the server motor action in spring positioning in accordance with a substantially linear downstream pressure and flow rate relationship.

6. A fluid pressure reducing valve apparatus as claimed in claim 5, wherein the calculation is based on pressure to be achieved in terms of servo positioning of the spring.

7. A fluid pressure reducing valve apparatus as claimed in claim 5, wherein the calculation is based on servo positioning of the spring alone.

8. A fluid pressure reducing valve apparatus as claimed in claim 5, wherein the calculation is based on a lookup table of downstream pressure and flow rate.

9. A fluid pressure reducing valve apparatus as claimed in claim 8, wherein the lookup table includes (a) values of pressure to be achieved~~.~~; or (b)

~~10. A fluid pressure reducing valve apparatus as claimed in claim 8, wherein the lookup table includes~~ spring positions in terms of servo revolutions.

10~~1~~. A fluid pressure reducing valve apparatus as claimed in any preceding claim, wherein the regulation plate is provided in abutment with a central region of the diaphragm, with a guide rod extending into a centring guide in the orifice.

11~~2~~. A fluid pressure reducing valve apparatus as claimed in any one of claims 1 to 9~~10~~, wherein the regulation plate is provided spaced from the diaphragm, on a guide rod extending from the diaphragm into a centring guide in the orifice.

12~~3~~. A fluid pressure reducing valve apparatus as claimed in any preceding claim, wherein the spring is a compression spring acting on the side of the diaphragm remote from the orifice.

13~~4~~. A fluid pressure reducing valve apparatus as claimed in any one of claims 1 to 11~~2~~, wherein the spring is a tension spring acting on the side of the diaphragm near to the orifice.

14~~5~~. A fluid pressure reducing valve apparatus as claimed in any preceding claim, wherein the ~~a~~ controllable motor drive includes a nut and lead screw device arranged to act on the spring at an end remote from the diaphragm and actuatable by a motor of the drive.

15~~16~~. A fluid pressure reducing valve apparatus as claimed in any preceding claim in combination with a remote pressure sensor for measuring downstream pressure to be maintained.