Chemical Engineering 512

Nuclear Reactor Transient Modeling

Lecture 7

Valves, Form Losses, Wall Friction

Spiritual Thought

"There is nothing that has come or will come into your family as important as the sealing blessings. There is nothing more important than honoring the marriage and family covenants you have made or will make in the temples of God."

-Henry B. Eyring

Objectives

- Review wall friction
- Review form losses
- Review Valves
- Work on Group Project secondary loop (or turbine)

Wall Friction

- Volume Control Flags – tlpvbfe
- 0 = wall friction activated
- 1 = wall friction deactivated

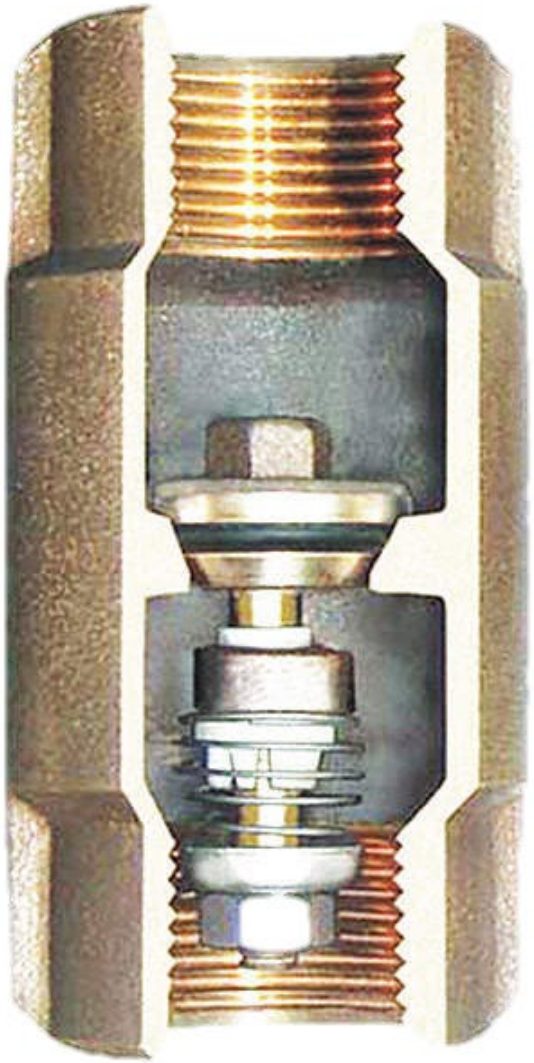
Form Losses

- Can be input on card CCC0901 for pipes
- Can be input on card CCC010X for junctions
- Junction control flag - jefvcahs
- 0 = smooth/no area change
- 1 = full abrupt area change
- 2 = partial abrupt area change

Valve Types

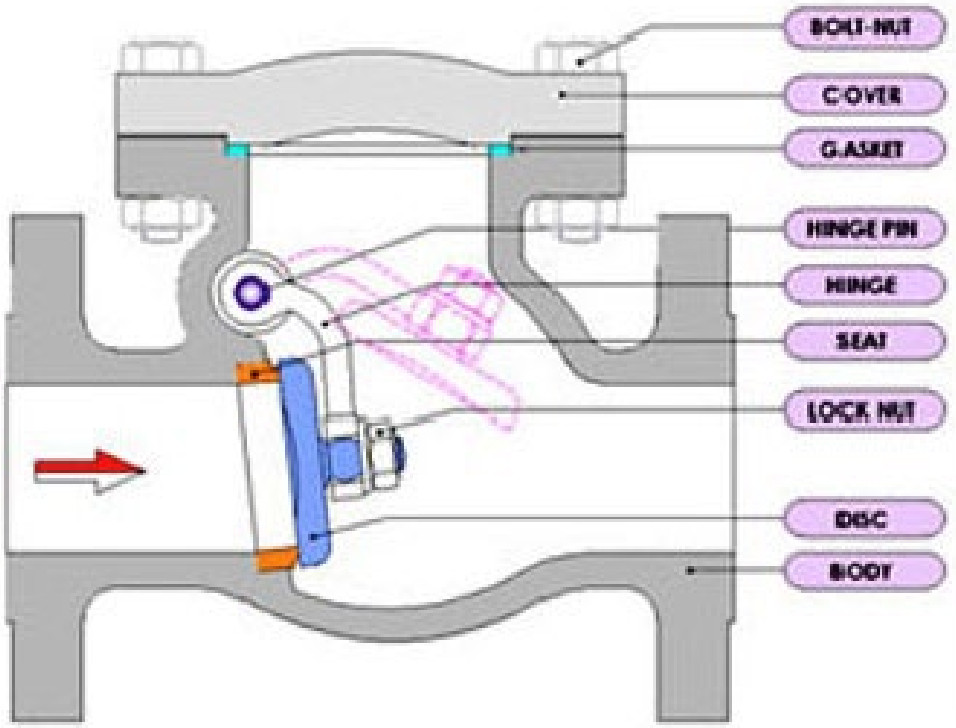
- Check Valve
- Trip Valve
- Inertial Swing Check Valve
- Motor Valve
- Servo Valve
- Relief Valve

Check Valve

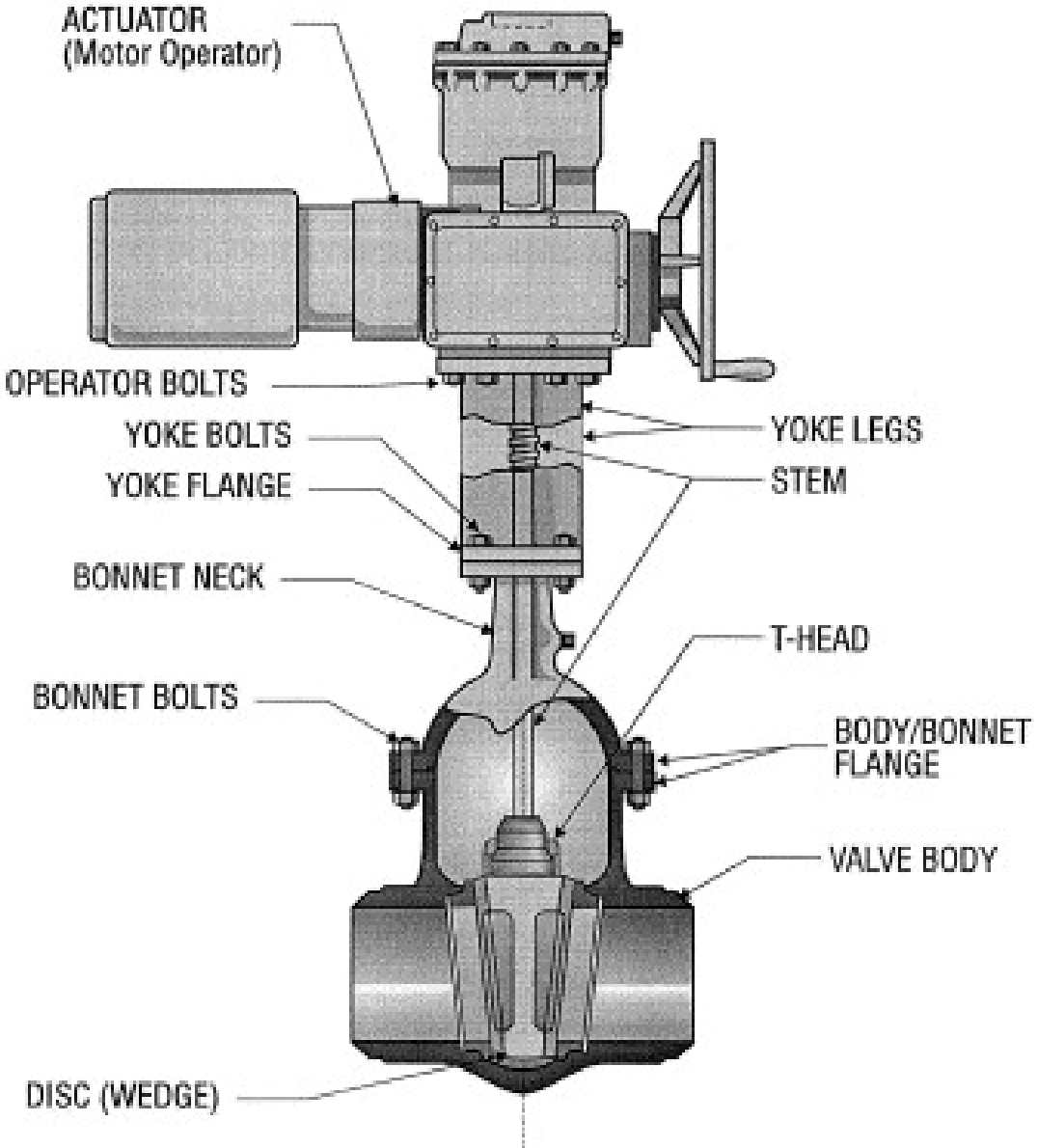


Trip Valve

Inertial Swing Check Valve



Motor Valve


ACTUATOR
(Motor Operator)
OPERATOR BOLTS
YOKE BOLTS
YOKE FLANGE
BONNET NECK
BONNET BOLTS
DISC (WEDGE)
YOKE LEGS
STEM
T-HEAD
BODY/BONNET
FLANGE
VALVE BODY

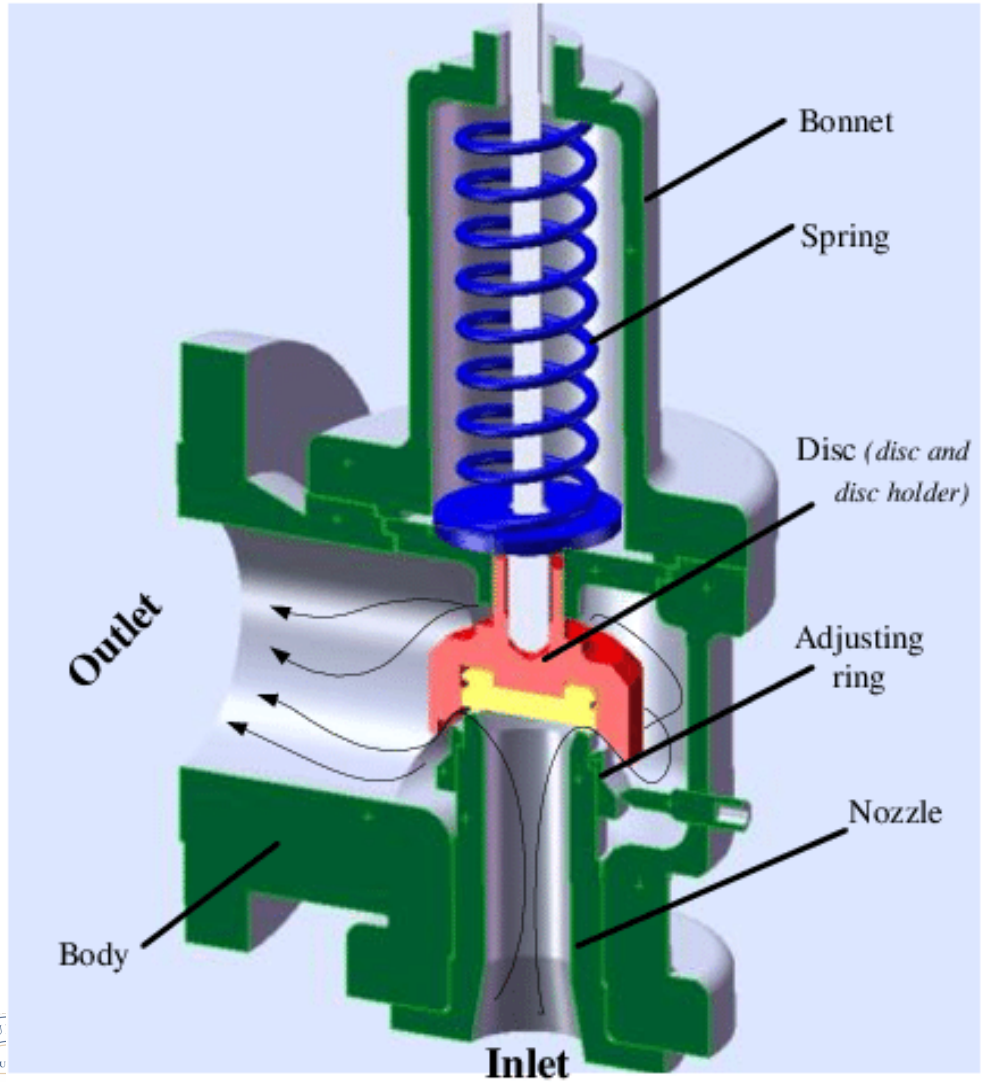
Servo Valve

Valve Input

- CCC0000 name type
- CCC0101 From To Area Af Ar efvcahs
- CCC0201 Vel/Mfr Liquid Vapor Interface
- CCC0300 ValveType
- CCC0301 Parameters

```
**********************************
*          Valve - 140           *
**********************************
*          Name      Type
1400000    valve     valve
*          From       To          Area  Af   Ar   Efvcahs
1400101    130010000  150000000   0.0   0.0  0.0  0000000
*          Vel/Mfr  Liquid  Vapor  Interface
1400201    1        0.0     0.0    0.0
*          ValveType
1400300    trpvlv
*          Parameters
1400301    402
```

Relief Valve



Assignment

- Watch DVD sections 33-38 before next Class
- Homework 4 is due Thursday (10/2) at midnight