



TELEDYNE TEST SERVICES
Everywhereyoulook™

Valve Diagnostic Testing and Maintenance

Seventh Annual QUIKLOOK Users Group Meeting

August 14 & 15, 2013



Presented by: **Rich Enos**



TELEDYNE TEST SERVICES

Everywhereyoulook™

Valve Diagnostic Testing and Maintenance

Midas WL

**MOV Integrated Design
Analysis System
WEAK LINK
Software**

Principal Engineer

Richard A. Enos



MidasWL Analysis Software - Features

- Software is an Engineering Tool
- Software use is controlled by the Utility
- Software is Appendix B – QA Software
- Software is User Friendly
- Software User Manual - documents required analysis inputs for individual component configurations
- Software is customized to use Site Specific Design Acceptance Criteria and Material Properties



MidasWL - New Items Added in 2013

- User Input - Material Properties Capability
- 3D-SRSS(XYZ) Seismic Analysis Capability
- Gate Valve Stem Pinned Link Evaluation
- Actuator Adapter Plate Bolts Evaluation
- Bonnet Neck and Valve Neck Gusset/Ribs
- Butterfly HBC Adapter Plate Bolts Eval
- Butterfly Yoke Leg Evaluations
- Butterfly Yoke Bolting Evaluation
- Butterfly Yoke Weld Evaluations

MidasWL Analysis Software - Structure

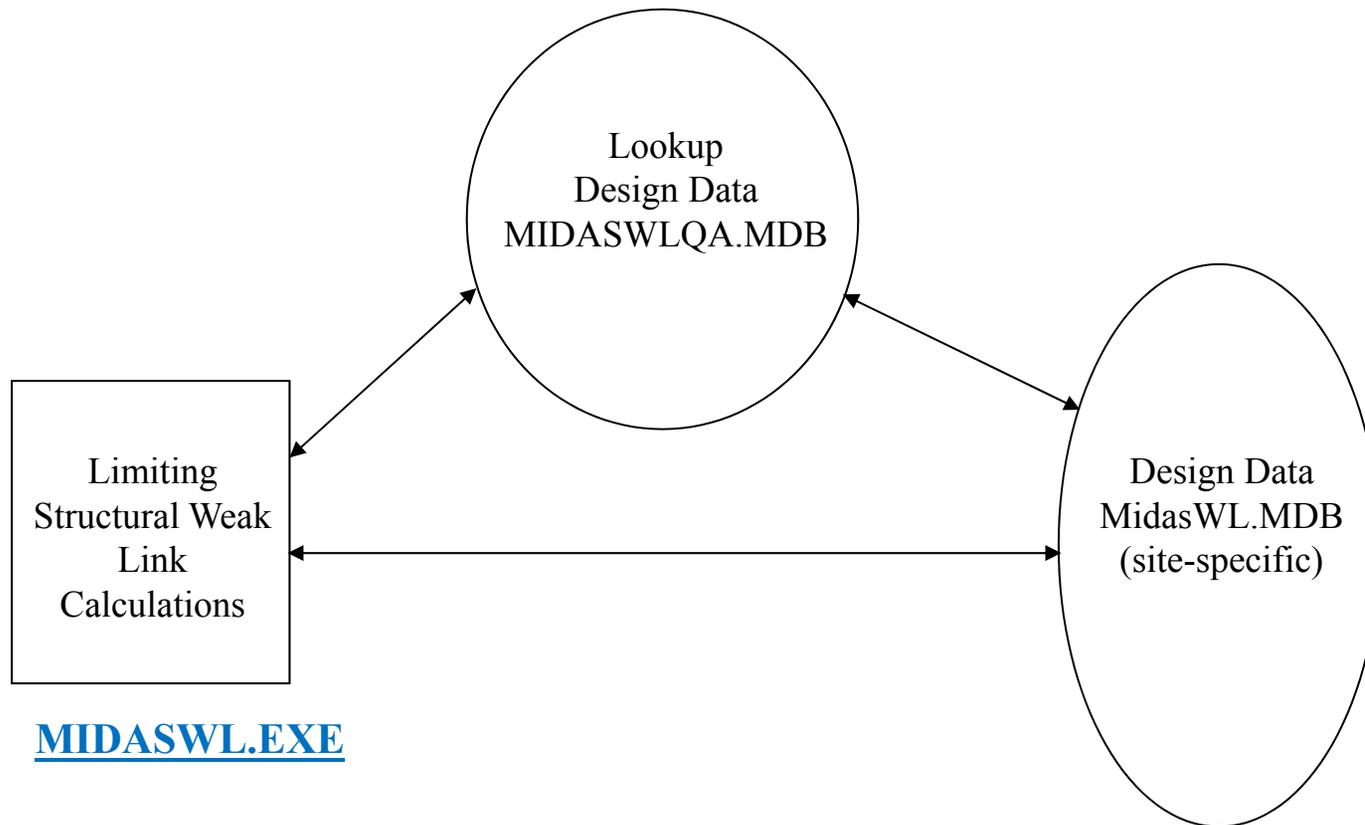


Table 1: Listing of MIDASWL Components Versus Valve Type

| Midas Weak Link | | Component Sub Type | Valve Type | | | | | |
|-----------------|----------------------|---|------------|-------|--------|-----------|------|-----|
| Primary Tab | Secondary Tab | | Gate | Globe | Globe1 | Butterfly | Ball | N/A |
| Disc | Disc | Plug, (Globe Disc) | | x | x | | | |
| | | Solid Wedge | x | | | | | |
| | | Flexible Wedge | x | | | | | |
| | | Split Wedge | x | | | | | |
| | | Flat Plate Wedge | x | | | | | |
| | | Butterfly Disc – Symmetrical | | | | | x | |
| | | Butterfly Disc – Non Symmetrical | | | | | x | |
| | Disc/Stem Connection | Anchor Darling Double Disc | x | | | | | |
| | | Disc / Stem Threaded Connection | x | x | x | | | |
| | | Disc / Stem T-Head Connection | x | | | | | |
| | | Link – Pin Connection | x | | | | | |
| | | Disc Lifter | | x | x | | | |
| | Disc Arm | Disc / Stem Lifter with Retaining Nut | | x | x | | | |
| | | Disc Arm Evaluation | x | | | | | |
| Bonnet | Valve Bonnet Neck | Valve Bonnet Neck Evaluation | x | x | x | | | |
| | | Valve Bonnet Neck (Ellipse) | x | x | x | | | |
| | | Valve Bonnet Neck (Rectangular) | x | x | x | | | |
| | Bonnet/Valve Conn | Bonnet to Body Bolt Evaluation | x | x | x | | | |
| | | Bonnet to Body Bolt (Ellipse) | x | x | x | | | |
| | | Bonnet to Body Bolt (Rectangular) | x | x | x | | | |
| | | Body / Bonnet Retaining Ring Evaluation | x | x | x | | | |
| Stem | Stem | Stem Evaluation | x | x | x | | | |
| | | Shaft / Pin / Keyway Evaluation | | | | x | x | |
| | | Stem w Undercut | x | x | x | | | |
| | | Stem w Keyway | x | x | x | | | |
| | | Stem w Undercut & Keyway | x | x | x | | | |
| | Stem Nut | Stem Nut Eval (SMB-000 to 4) | x | x | x | | | |
| | | Stem Nut Eval (SMB-5) | x | x | x | | | |
| | Torque Arm | Torque Arm Evaluation | x | x | | | | |

Table 1: Listing of MIDASWL Components Versus Valve Type (Cont'd)

| Midas Weak Link | | Component | Valve Type | | | | | |
|---------------------------------------|---------------------|---|------------|-------|--------|-----------|------|-----|
| Primary Tab | Secondary Tab | Sub Type | Gate | Globe | Globe1 | Butterfly | Ball | N/A |
| Actuator | Operator Bolts | Operator Bolt Evaluation | x | x | x | | | |
| | Adapter Plate Bolts | Adapter Plate Bolt Evaluation | x | x | x | x | x | |
| | HBC Bolts | HBC Bolt Evaluation | | | | x | x | |
| Valve Body | Valve Body Neck | Valve Body Neck Evaluation | x | x | x | | | |
| | | Valve Body Neck (Ellipse) | x | x | x | | | |
| | | Valve Body Neck (Rectangular) | x | x | x | | | |
| | Body/Bonnet Flange | Body / Bonnet Flange Evaluation | x | x | x | | | |
| | | Body / Bonnet Flange (Ellipse) | x | x | x | | | |
| | | Body / Bonnet Flange (Rectangular) | x | x | x | | | |
| Yoke | Yoke Leg | Rectangular Yoke Leg | x | x | x | x | x | |
| | | Ribbed Yoke Leg - Inside | x | x | x | | | |
| | | Ribbed Yoke Leg - Outside | x | x | x | | | |
| | | Circular Yoke Leg | x | x | x | x | x | |
| | Yoke / Bonn Conn | Circular Yoke Bolt Evaluation | x | x | x | x | x | |
| | | Yoke Slab Flange Bolts | x | x | x | | | |
| | | Yoke Slab Flange Bolts w/ Stiffening Effect | x | x | x | | | |
| | | Yoke / Bonnet Threaded Connection | x | x | x | | | |
| | | Yoke / Bonnet Circular Weld | x | x | x | x | x | |
| | | Yoke / Bonnet Partial Circular Weld | x | x | x | x | x | |
| | | Yoke / Bonnet Rectangular Weld | x | x | x | x | x | |
| | | Yoke Retainer Clamp | x | x | x | | | |
| | | Yoke Breech Lock | x | x | x | | | |
| | Yoke Flange | Circular Lower Yoke Flange | x | x | x | | | |
| | | Yoke Slab Flange | x | x | x | | | |
| Yoke Slab Flange w/ Stiffening Effect | | x | x | x | | | | |

MidasWL - Input Data Panels

- Design Data – Valve, Actuator & Motor Data
- General Data – Temperatures & Seismic Data
[2D-AbsSum(XY&YZ), 3D-SRSS(XYZ)]
- Disc Configuration Data
- Bonnet Configuration Data
- Actuator Bolting Configuration Data
- Stem Configuration Data
- Valve Body Configuration Data
- Yoke Configuration Data

MidasWL - Calculations Main panel

Midas Weak Link Calculations - Test Valve

File Edits Tables View References Help

Test Valve

Stem Valve Body Yoke Output
Disc Bonnet Actuator

Input Data:

Design Data

General Data

| Parameter | Dir | Value | Ref |
|-----------------------------------|-----|----------|-----|
| Actuator Orientation | | Vertical | N/A |
| Maximum Temperature at the Yoke | | 120 | N/A |
| Maximum Temperature at the Bonnet | | 200 | N/A |
| Maximum Temperature at the Valve | | 300 | N/A |
| Seismic Analysis | | WY & YZ | N/A |

Comments:

General Data

Rich Enos 08/09/2010 11:17 NOT APPROVED 08/09/2010 11:17

MidasWL - Disc panel

Midas Weak Link Calculations - Test Valve

File Edits Tables View References Help

Test Valve GATE

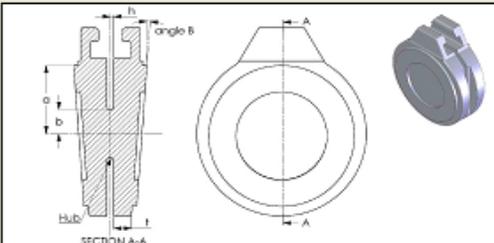
Stem Valve Body Yoke Output
Input Data Disc Bonnet Actuator

Disc Disc/Stem Connection Disc Arm

| Parameter | Dir | Value | Ref |
|---------------------------------------|-----|----------------|-----|
| Disc Configuration | | Flexible Wedge | N/A |
| Disc Material | | A216 WCB | N/A |
| Hub Radius (b) | | 0.9690 | N/A |
| Hub Length (assumed conservative) (h) | | 0.25 | N/A |
| Disc Radius (a) | | 3.1375 | N/A |

Comments:

Disc Comments



Flexible Wedge

Rich Enos 08/09/2010 11:17 NOT APPROVED 08/09/2010 11:17

MidasWL - Disc/Stem Connection panel

Midas Weak Link Calculations for All Plants ALL VALVES

File Edits Tables View References Tools Help

Test Valve 04a GATE

Stem Valve Body Yoke Output
Input Data Disc Bonnet Actuator

Disc Disc/Stem Connection Disc Arm

| Parameter | Dir | Value | Ref |
|------------------------------------|-----|-----------------------|-----|
| Disc/Stem Connection Configuration | | Link - Pin Connection | N/A |
| Stem Material | | A564 630 H900 | N/A |
| Stem Pin Material | | A637 718 | N/A |
| Link Material | | A564 630 H900 | N/A |
| Disc Pin Material | | A637 718 | N/A |
| Bearing Block Material | | A564 630 H900 | N/A |
| Disc Material | | A182 316 | N/A |
| Stem Diameter at Pin (SD_pin) (in) | | 2.250 | N/A |
| Stem Dia at Pin (SD_pin) (in) | | 0.700 | N/A |

Comments:

The Disc/Stem-Link-Pin assembly is evaluated.

Link - Pin Connection

Rich Enos 06/28/2013 11:47 NOT APPROVED N/A

MidasWL - Disc Arm panel

Midas Weak Link Calculations for All Plants ALL VALVES

File Edits Tables View References Tools Help

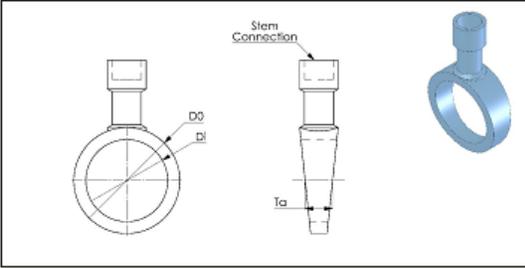
Test Valve 12 GATE

Stem Valve Body Yoke Output
Input Data **Disc** Bonnet Actuator

Disc Disc/Stem Connection **Disc Arm**

| Parameter | Dir | Value | Ref |
|-------------------------------------|-----|---------------------|-----|
| Disc Arm Configuration | | Disc Arm Evaluation | N/A |
| Disc Arm Material | | A216 WCB | N/A |
| Disc Arm Outside Diameter (Do) (in) | | 4.336 | N/A |
| Disc Arm Inside Diameter (Di) (in) | | 3.196 | N/A |
| Disc Arm Ring Depth (Ta) (in) | | 1.372 | N/A |

Comments:



Disc Arm Evaluation

Eric Solla 10/14/2011 13:14 NOT APPROVED N/A

MidasWL - Valve Bonnet Neck panel

Midas Weak Link Calculations for All Plants ALL VALVES

File Edits Tables View References Tools Help

Test Valve 30V GATE

Stem Valve Body Yoke Output
Input Data Disc Bonnet Actuator

Valve Bonnet Neck Bonnet/Valve Conn

| Parameter | Dir | Value | Ref |
|--|-----|-------------------|-----|
| Bonnet Neck Configuration | | Valve Bonnet Neck | N/A |
| Bonnet Material | | A351 CF8 | N/A |
| Packing Gland Diameter (IDneck) (in) | | 1.875 | N/A |
| Stem Diameter (Dstem) (in) | | 1.250 | N/A |
| Wall Thickness (Tneck) (in) | | 0.500 | N/A |
| Local Axis-1 Rib Thickness | | 0.000 | N/A |
| Local Axis-1 Rib Length (Parallel to Pipe) | | 0.000 | N/A |
| Local Axis-3 Rib Thickness | | 0.500 | N/A |
| Local Axis-3 Rib Length (Perp to Pipe) | | 0.220 | N/A |

Comments:
N/A

Valve Bonnet Neck Evaluation

Eric Solla 02/28/2013 19:51 NOT APPROVED N/A

MidasWL - Bonnet/Valve Connection panel

Midas Weak Link Calculations for All Plants ALL VALVES

File Edits Tables View References Tools Help

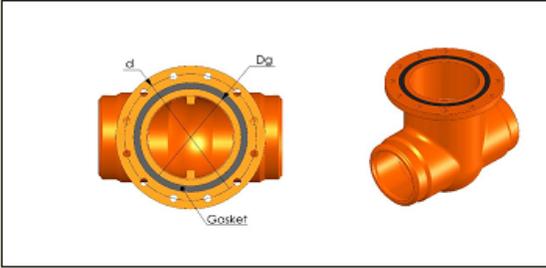
Test Valve 31H GATE

Stem Valve Body Yoke Output
Input Data Disc Bonnet Actuator

Valve Bonnet Neck Bonnet/Valve Conn

| Parameter | Dir | Value | Ref |
|--|-----|---------------------------|-----|
| Bonnet Bolts Configuration | | Bonnet to Body Bolt | N/A |
| Bonnet Bolt Description | | 1 1/8" - 8N | N/A |
| Bonnet Bolt Material | | A193 Gr B7 (2.5" & under) | N/A |
| Gasket Diameter (Dg) (in) | | 6.878 | N/A |
| Number of Bolts (N) | | 12 | N/A |
| Bolt Tensile Area (Aten) (sq in) | | 0.7896 | N/A |
| Bolt Circle Diameter (d) (in) | | 10.630 | N/A |
| Bolt Diameter (Dbolt) (in) | | 1.125 | N/A |
| Least Diameter of Connecting Element (ED) (in) | | 12.620 | N/A |

Comments:
N/A



Bonnet to Body Bolt Evaluation

Eric Solla 03/07/2013 11:26 NOT APPROVED N/A

MidasWL - Operator Bolts panel

Midas Weak Link Calculations for All Plants ALL VALVES

File Edits Tables View References Tools Help

Test Valve 13V GATE

Stem Valve Body Yoke Output
Input Data Disc Bonnet **Actuator**

Operator Bolts Adapter Plate Bolts HBC Bolts

| Parameter | Dir | Value | Ref |
|---|-----|------------------------------|-----|
| Operator Bolts Configuration | | Operator Bolt Evaluation | N/A |
| Operator Bolt Description | | 5/8" - 11 UNC | N/A |
| Operator Bolt Material | | A193 Gr B8 (= < 3/4" S-Hard) | N/A |
| Operator Bolt Material Type | | Austenitic | N/A |
| Number of Bolts (N) | | 4 | N/A |
| Bolt Shear Area (Ash) (sq in) | | 0.2018 | N/A |
| Bolt Tensile Area (Aten) (sq in) | | 0.2256 | N/A |
| Bolt Circle Diameter (d) (in) | | 5.500 | N/A |
| Least Diameter of Connecting Flange or Plate (in) | | 7.000 | N/A |

Comments:



Operator Bolt Evaluation

Rich Enos 06/18/2013 15:07 NOT APPROVED N/A

MidasWL - Adapter Plate Bolts panel

Midas Weak Link Calculations for All Plants ALL VALVES

File Edits Tables View References Tools Help

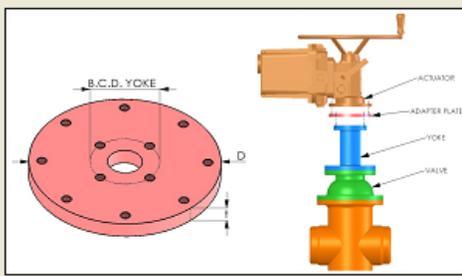
Test Valve 35V GATE

Stem Valve Body Yoke Output
 Input Data Disc Bonnet **Actuator**

Operator Bolts **Adapter Plate Bolts** HBC Bolts

| Parameter | Dir | Value | Ref |
|---|-----|-------------------------------|-----|
| Adapter Plate Bolt Configuration | | Adapter Plate Bolt Evaluation | N/A |
| Adapter Plate Bolt Description | | 5/8" - 11 UNC | N/A |
| Adapter Plate Bolt Material | | A193 Gr B8 (= < 3/4" S-Hard) | N/A |
| Adapter Plate Bolt Material Type | | Austenitic | N/A |
| Number of Bolts | | 4 | N/A |
| Bolt Shear Area (A _{sh}) (sq in) | | 0.2018 | N/A |
| Bolt Tensile Area (A _{ten}) (sq in) | | 0.2256 | N/A |
| Bolt Circle Diameter (d) (in) | | 5.500 | N/A |
| Least Flange / Plate Diameter (D) (in) | | 7.000 | N/A |

Comments:



Adapter Plate Bolt Evaluation

Rich Enos 06/18/2013 19:01 NOT APPROVED N/A

MidasWL - HBC Bolts panel

Midas Weak Link Calculations for All Plants ALL VALVES

File Edits Tables View References Tools Help

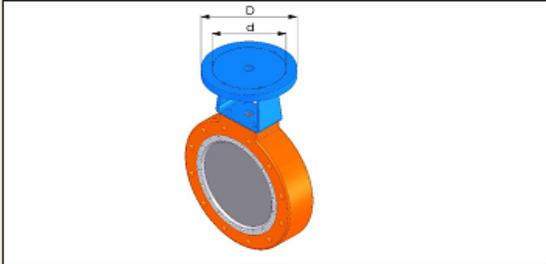
Test Valve 42V BUTTERFLY

Stem Valve Body Yoke Output
Input Data Disc Bonnet **Actuator**

Operator Bolts Adapter Plate Bolts **HBC Bolts**

| Parameter | Dir | Value | Ref |
|----------------------------------|-----|--------------------------|-----|
| HBC Bolts Configuration | | HBC Bolt Evaluation | N/A |
| HBC Bolt Description | | 3/4" - 10 UNC | N/A |
| HBC Bolt Material | | SAE J429 Gr 5 (up to 1") | N/A |
| HBC Bolt Material Type | | Ferritic | N/A |
| Number of Bolts | | 8 | N/A |
| Bolt Shear Area (Ash) (sq in) | | 0.3020 | N/A |
| Bolt Tensile Area (Aten) (sq in) | | 0.3340 | N/A |
| Bolt Circle Diameter (d) (in) | | 11.750 | N/A |
| Flange Diameter (D) (in) | | 12.500 | N/A |

Comments:



HBC Bolt Evaluation

Rich Enos 06/11/2013 15:43 NOT APPROVED N/A

MidasWL - Stem panel

Midas Weak Link Calculations for All Plants ALL VALVES

File Edits Tables View References Tools Help

Test Valve 01c **GLOBE**

Input Data Disc Bonnet Actuator
 Stem Valve Body Yoke Output

Stem Stem Nut Torque Arm

| Parameter | Dir | Value | Ref |
|---|-----|-----------------------|-----|
| Stem Configuration | | Stem with Undercut & | N/A |
| Stem Material | | A182 Gr F6 (min) | N/A |
| Backseat Material | | A182 Gr F6 (min) | N/A |
| Key Material | | AISI/ANSI C1045 | N/A |
| Keyway Location | | Threaded Area of Stem | N/A |
| Stem Thread Type | | ACME | N/A |
| Stem Thread Half Angle | | 14.5 | N/A |
| Smartstem Center Bore Diameter (Dbore) (in) | | 0.250 | N/A |

Comments:

Test Case for Stem with Undercut and Keyway in Threaded Area of Stem

Stem with Undercut_Keyway

Rich Enos 03/05/2013 17:12 NOT APPROVED N/A

MidasWL - Stem Nut panel

Midas Weak Link Calculations for All Plants ALL VALVES

File Edits Tables View References Tools Help

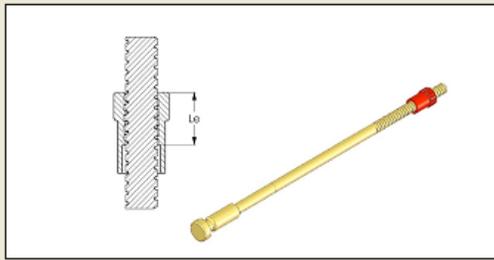
Test Valve 02 GATE

Input Data Disc Bonnet Actuator
Stem Valve Body Yoke Output

Stem Stem Nut Torque Arm

| Parameter | Dir | Value | Ref |
|------------------------------------|-----|---------------------------|-----|
| Stem Nut Configuration | | Stem Nut Eval (SMB-000 to | N/A |
| Stem Nut Material | | B148 | N/A |
| Stem Nut - Stem Material | | A182 Gr F6 (min) | N/A |
| Stem Thread Type | | STUB ACME | N/A |
| Stem Diameter at Stem Nut (D) (in) | | 1.875 | N/A |
| Thread Pitch (p) | | 0.3333 | N/A |
| Stem Thread Half Angle | | 14.5 | N/A |
| Thread Engagement Length (Le) (in) | | 2.875 | N/A |

Comments:



Stem Nut Eval (SMB-000 to 4)

Rich Enos 11/27/2010 12:30 NOT APPROVED N/A

MidasWL - Torque Arm panel

Midas Weak Link Calculations for All Plants ALL VALVES

File Edits Tables View References Tools Help

Test Valve 03 **GLOBE**

Input Data Disc Bonnet Actuator
 Stem Valve Body Yoke Output

Stem Stem Nut **Torque Arm**

| Parameter | Dir | Value | Ref |
|--|-----|-----------------------|-----|
| Torque Arm Configuration | | Torque Arm Evaluation | N/A |
| Torque Arm Material | | A36 | N/A |
| Stem Hole Diameter (Dsh) (in) | | 1.125 | N/A |
| Width at End of Arm (W) (in) | | 0.625 | N/A |
| Moment Arm to Center Stem Hole (L2) (in) | | 3.00 | N/A |
| Thickness Torque Arm (t) (in) | | 1.500 | N/A |
| Max Width of Arm (b) (in) | | 1.65 | N/A |
| Distance Edge of Arm to Stem Hole (e) (in) | | 0.3125 | N/A |

Comments:

Torque Arm Evaluation

Rich Enos 10/03/2011 14:56 NOT APPROVED N/A

MidasWL - Valve Body Neck panel

Midas Weak Link Calculations for All Plants ALL VALVES

File Edits Tables View References Tools Help

Test Valve 34V GATE

Input Data Disc Bonnet Actuator
Stem Valve Body Yoke Output

Valve Body Neck Body/Bonnet Flange

| Parameter | Dir | Value | Ref |
|--|-----|----------------------------|-----|
| Valve Body Configuration | | Valve Body Neck Evaluation | N/A |
| Valve Body Material | | A351 CF8M | N/A |
| Valve Neck to Body Bonnet Flange (x4) (in) | | 2.000 | N/A |
| Gasket Diameter (Dg) (in) | | 1.880 | N/A |
| Valve Neck ID (IDneck) (in) | | 1.250 | N/A |
| Wall Thickness (Tneck) (in) | | 0.750 | N/A |
| Local Axis-1 Rib Thickness | | 0.000 | N/A |
| Local Axis-1 Rib Length (Parallel to Pipe) | | 0.000 | N/A |
| Local Axis-2 Rib Thickness | | 0.000 | N/A |

Comments:

N/A

Valve Body Neck Evaluation

Rich Enos 06/20/2013 12:52 NOT APPROVED N/A

MidasWL - Body/Bonnet Flange panel

Midas Weak Link Calculations for All Plants ALL VALVES

File Edits Tables View References Tools Help

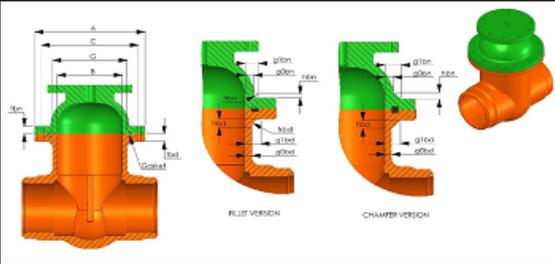
Test Valve 32V GATE

Input Data Disc Bonnet Actuator
Stem Valve Body Yoke Output

Valve Body Neck Body/Bonnet Flange

| Parameter | Dir | Value | Ref |
|--|-----|----------------------|-----|
| Body/Bonnet Flange Configuration | | Body / Bonnet Flange | N/A |
| Valve Body Flange Material | | A182 Gr F6 (min) | N/A |
| Outside Diameter of Flange (A) (in) | | 6.250 | N/A |
| Inside Diameter of Flange (B) (in) | | 2.505 | N/A |
| Bolt Circle Diameter (C) (in) | | 4.750 | N/A |
| Flange Thickness (Body) (tbd) (in) | | 1.375 | N/A |
| Flange Thickness (Bonnet) (tbn) (in) | | 1.250 | N/A |
| Diameter @ Gasket Reaction (X1-3221.1-2, G) (in) | | 3.000 | N/A |
| Gasket Sealing Stress (Table X1-3221.1-11) (psi) | | 10000 | N/A |

Comments:
N/A



Body / Bonnet Flange Evaluation

Eric Solla 03/04/2013 14:52 NOT APPROVED N/A

MidasWL - Yoke Leg panel

Midas Weak Link Calculations for All Plants ALL VALVES

File Edits Tables View References Tools Help

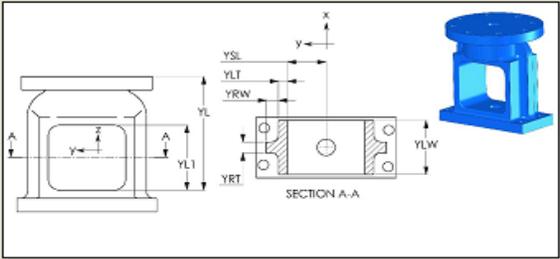
Test Valve 16VA GATE

Input Data Disc Bonnet Actuator
Stem Valve Body **Yoke** Output

Yoke Leg Yoke / Bonnet Conn Yoke Flange

| Parameter | Dir | Value | Ref |
|------------------------|-----|---------------------------|-----|
| Yoke Leg Configuration | | Ribbed Yoke Leg - Outside | N/A |
| Yoke Leg Material | | A216 WCB | N/A |
| YSL (in) | | 2.6110 | N/A |
| YLT (in) | | 0.5000 | N/A |
| YLW (in) | | 4.5000 | N/A |
| YL (in) | | 10.5000 | N/A |
| YL1 (in) | | 8.3125 | N/A |
| YRW (in) | | 2.0000 | N/A |

Comments:



Ribbed Yoke Leg - Outside

Eric Solla 01/30/2013 14:23 NOT APPROVED N/A

MidasWL - Yoke / Bonnet Connection panel

Midas Weak Link Calculations for All Plants ALL VALVES

File Edits Tables View References Tools Help

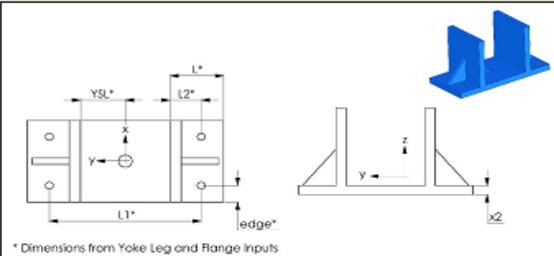
Test Valve 22VA GATE

Input Data Disc Bonnet Actuator
Stem Valve Body **Yoke** Output

Yoke Leg **Yoke / Bonnet Conn** Yoke Flange

| Parameter | Dir | Value | Ref |
|---|-----|---------------------------|-----|
| Yoke / Bonnet Connection Configuration | | Yoke Slab Flange Bolts w/ | N/A |
| Yoke Bolt Description | | 5/8" - 11 UNC | N/A |
| Yoke Bolt Material | | A193 Gr B7 (2.5" & under) | N/A |
| Yoke Bolt Material Type | | Ferritic | N/A |
| Bolt Tensile Area (A _{ten}) (sq in) | | 0.2256 | N/A |
| Bolt Shear Area (A _{sh}) (sq in) | | 0.2018 | N/A |

Comments:



* Dimensions from Yoke Leg and Flange Inputs

Yoke Slab Flange Bolts w/ Stiffening Effect

Rich Enos 01/31/2013 13:44 NOT APPROVED N/A

MidasWL - Yoke Flange panel

Midas Weak Link Calculations for All Plants ALL VALVES

File Edits Tables View References Tools Help

Test Valve 19VA GATE

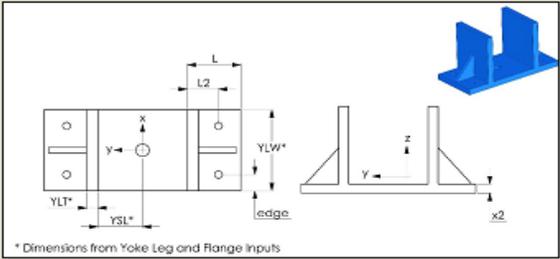
Input Data Disc Bonnet Actuator
Stem Valve Body **Yoke** Output

Yoke Leg Yoke / Bonnet Conn **Yoke Flange**

| Parameter | Dir | Value | Ref |
|---------------------------------------|-----|---------------------|-----|
| Yoke Flange Configuration | | Yoke Slab Flange w/ | N/A |
| Yoke Flange Material | | A216 WCB | N/A |
| Yoke Leg to End of Flange (L) (in) | | 2.750 | N/A |
| Bolt Edge Distance (edge) (in) | | 0.500 | N/A |
| Yoke Leg to Bolt Centerline (L2) (in) | | 1.190 | N/A |
| Lower Yoke Flange Thickness (x2) (in) | | 0.690 | N/A |

Comments:

Remove YLW from drawing
Change L to L2 on drawing



* Dimensions from Yoke Leg and Flange Inputs

Yoke Slab Flange w/ Stiffening Effect

Rich Enos 01/30/2013 13:39 NOT APPROVED N/A

MidasWL - Output panel

Midas Weak Link Calculations for All Plants ALL VALVES

File Edits Tables View References Tools Help

Test Valve 34V GATE

| Input Data | Disc | Bonnet | Actuator |
|--|------------|-----------------|----------|
| Stem | Valve Body | Yoke | Output |
| Parameter | Dir | Value | |
| Max Operating Pressure (psig) | | 2750 | |
| Valve Body Neck - S Allowable (psi) | | 16500 | |
| Valve Body Neck - Sy Allowable (psi) | | 26000 | |
| Valve Body Neck - Su Allowable (psi) | | 60667 | |
| Valve Body Neck - E Allowable (psi) | | 27700000 | |
| Valve Body Neck - S@100 Allowable (psi) | | 17500 | |
| Valve Body Neck - Sy@100 Allowable (psi) | | 30000 | |
| Valve Body Neck - Su@100 Allowable (psi) | | 70000 | |
| Valve Body Neck - E@100 Allowable (psi) | | 28161538 | |
| Valve Body Neck - Allow Stress - Sm - Normal (psi) | | 16500 | |
| Valve Body Neck - Allow Stress - Sm - Upset (psi) | | 18150 | |
| Valve Body Neck - Allow Stress - Sm - Emerg (psi) | | 24750 | |
| Valve Body Neck - Allow Stress - Sm - MDV (psi) | | 30000 | |
| Valve Body Neck - Allow Stress - Sm - Oper (psi) | | 26000 | |
| Valve Body Neck - Allow Stress - Smb - Norm (psi) | | 23400 | |
| Valve Body Neck - Allow Stress - Smb - Upset (psi) | | 23400 | |
| Valve Body Neck - Allow Stress - Smb - Emerg (psi) | | 23400 | |
| Valve Body Neck - Allow Stress - Smb - MDV (psi) | | 30000 | |
| Valve Body Neck - Allow Stress - Smb - Oper (psi) | | 26000 | |
| Valve Body Neck - Normal - Weak Link - Component | (C) | Valve Body Neck | |
| Valve Body Neck - Normal - Weak Link (lbs) | (C) | 74595 | |
| Valve Body Neck - Normal - Weak Link - Component | (D) | Valve Body Neck | |
| Valve Body Neck - Normal - Weak Link (lbs) | (D) | 74595 | |
| Valve Body Neck - Upset - Weak Link - Component | (C) | Valve Body Neck | |
| Valve Body Neck - Upset - Weak Link (lbs) | (C) | 82155 | |
| Valve Body Neck - Upset - Weak Link - Component | (D) | Valve Body Neck | |
| Valve Body Neck - Upset - Weak Link (lbs) | (D) | 82155 | |
| Valve Body Neck - Emergency - WL - Component | (C) | Valve Body Neck | |
| Valve Body Neck - Emergency - Weak Link (lbs) | (C) | 82281 | |
| Valve Body Neck - Emergency - WL - Component | (D) | Valve Body Neck | |
| Valve Body Neck - Emergency - Weak Link (lbs) | (D) | 82281 | |

Rich Enos 06/20/2013 12:52 NOT APPROVED N/A

MidasWL – Electronic Sign-off Capability

The check command is provided to facilitate an electronic review/check of the changes made to the MIDASWL calculations. By clicking on FILE \ CHECK \ CALCULATION, the user may electronically approve the calculation changes made by another user. This command is only available to privileged users other than the Preparer.

MidasWL - Reports

- Reverse References
- History
- Main Report (Full WL Analysis Report)
- Data Sheet
 - Inputs & Results Grouped
 - Inputs & Results Sorted



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Valve Diagnostic Testing and Maintenance

Questions?

