

**1/2" MKIV Shuttle Valve Product Line**

| REV   | DATE       | DESCRIPTION                 | ORIGIN<br>(issued by) | APPROVED |
|-------|------------|-----------------------------|-----------------------|----------|
|       |            |                             |                       |          |
|       |            |                             |                       |          |
|       |            |                             |                       |          |
| Rev A | 08-10-2018 | Document No: 120-081018-001 | AP                    | SS       |

**COMPANY PROPRIETARY INFORMATION**

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**For more information:**

Call (800) 469-8786

Info@gilmore.com

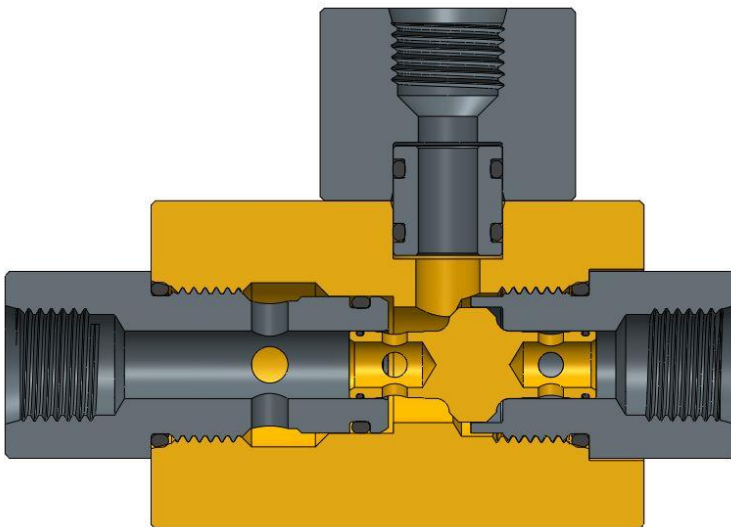
Gilmore  
1231 Lumpkin Road  
Houston, TX 77043

## 1/2" MKIV Shuttle Valve Product Line

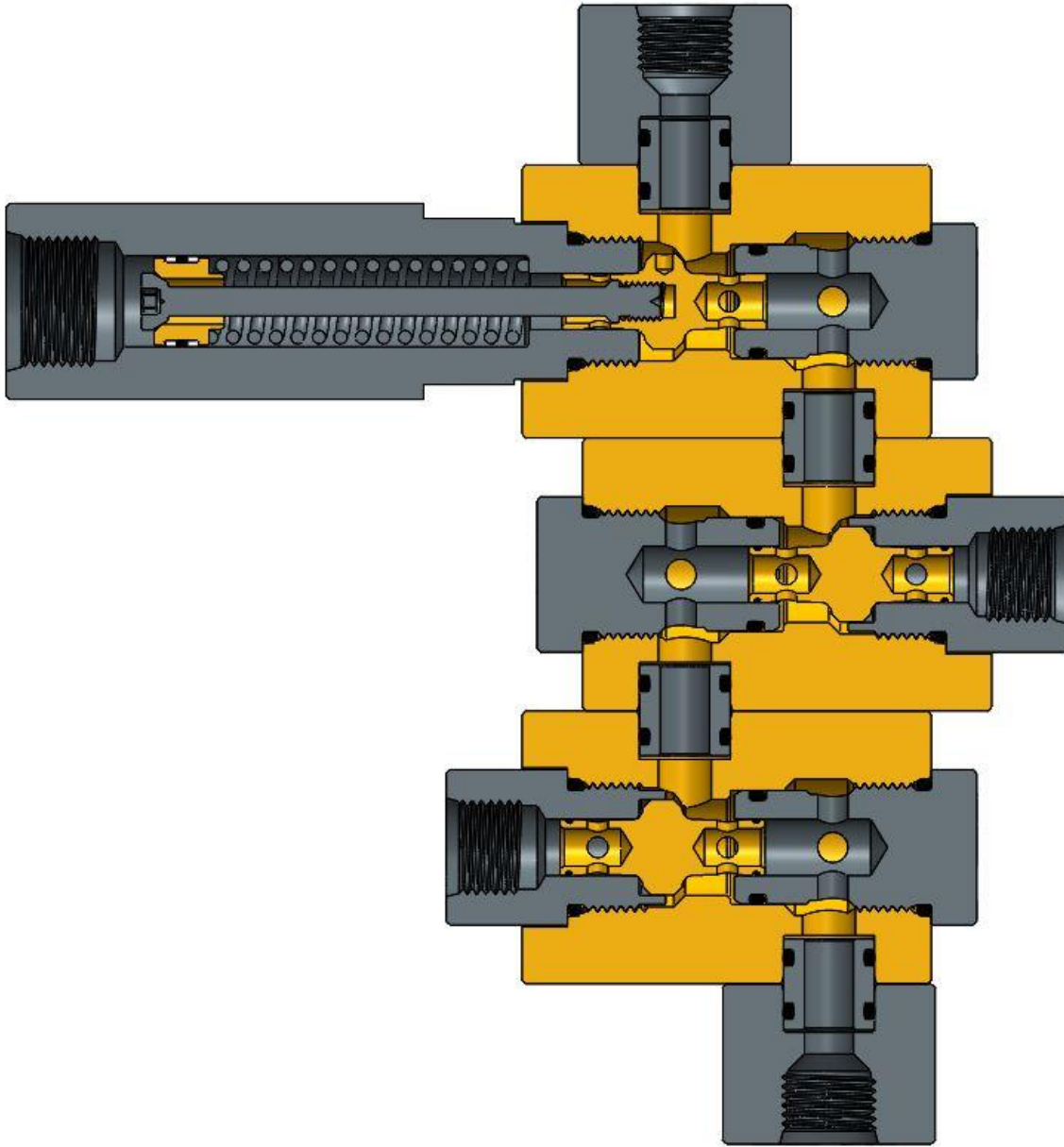
Proserv announces the new Gilmore 1/2" Mark IV Shuttle Valve product line for critical offshore and subsea applications. The 1/2" Mark IV Shuttle Valve product line establishes a new benchmark for reliability and serviceability in drilling control systems where redundant hydraulic pressure supplies are required.

### Features and Benefits:

- Qualification exceeds API 16D requirements
  - Non Biased shuttle valves qualified to 2500 cycles at maximum flow conditions
  - Pressure and Spring Biased shuttle valves qualified to 1000 cycles at maximum flow conditions
- Shuttle metal seat no longer requires coining, simplifying on-site repairs
- All shuttle styles are hydraulically dampened
- Common stacked bodies can be readily reconfigured
- Fully serviceable shuttles and body seats can be completely redressed inline.
- Available configurations include Pressure biased, Spring biased, high interflow, low interflow, high drag, low drag options with customizable end connections and mounting provisions.
- Customizable single valve and stack valve assemblies available to suit application requirements
- Suitable for panel mounting or direct mounting
- U.S. Patent 9,915,275



**Figure 1. PN 29025: 1/2" MKIV Shuttle Valve, Inline, SAE, Low Interflow, High Drag**



**Figure 2. PN 29038: 1/2" MKIV Shuttle Valve, Stack, 4 Inlets, SAE, Pressure Biased, Low Interflow, High Drag**

Proserv has exceeded API 16D requirements by qualifying the new 1/2" MKIV Shuttle Valve non-biased designs to multiple endurance qualification tests to 2500 cycles, at a starting flow rate of 45 gpm – and biased designs to 1000 cycles and 40 gpm – at 5000 psi, with 1% - 4% water glycol test fluid.

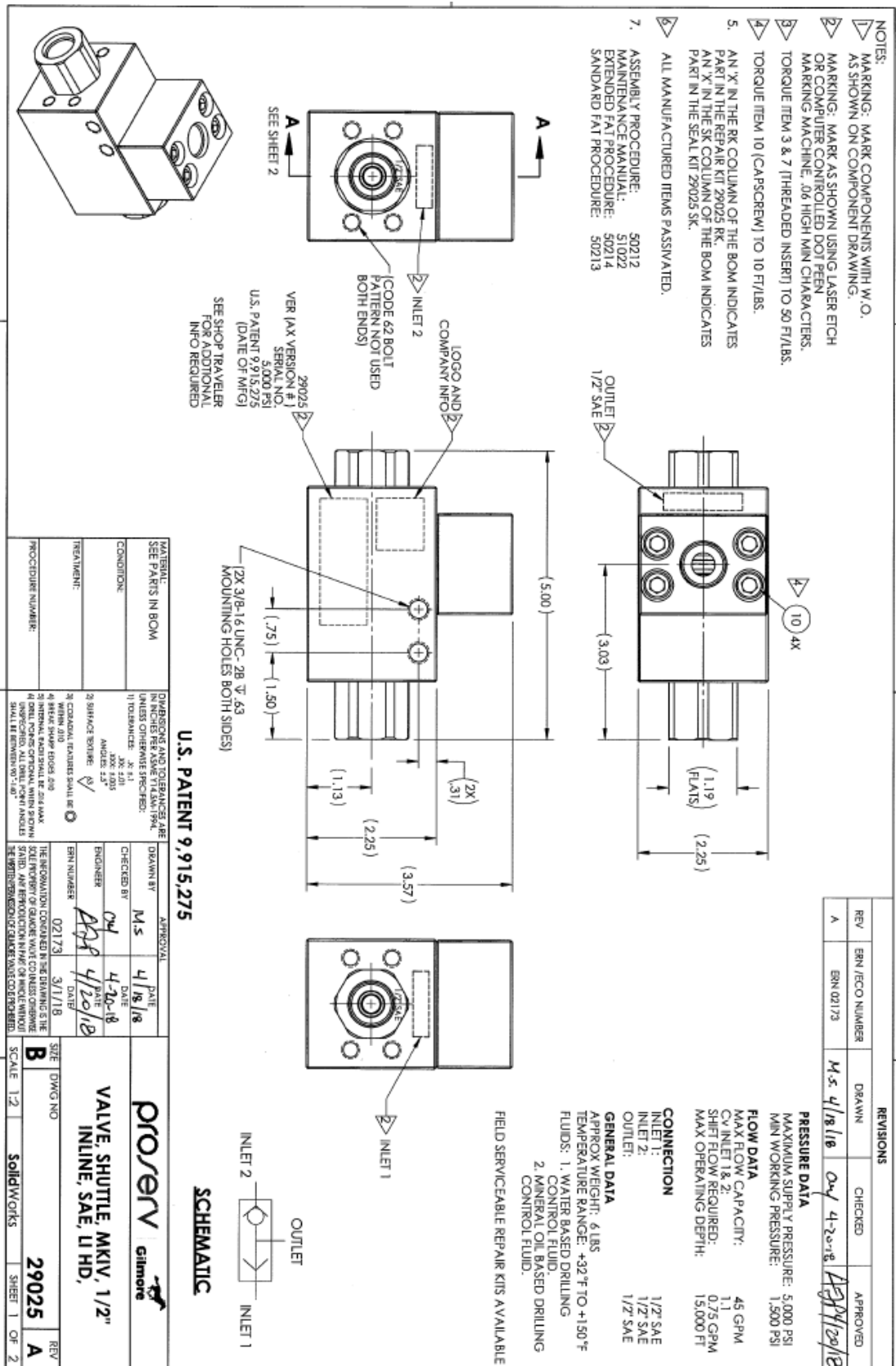
The new Proserv Gilmore 1/2" MKIV Shuttle Valves are now available for purchase. A few examples of typical assembly configurations are listed below for reference. Proserv Gilmore will create other customized 1/2" MKIV Shuttle valve configurations that are required.

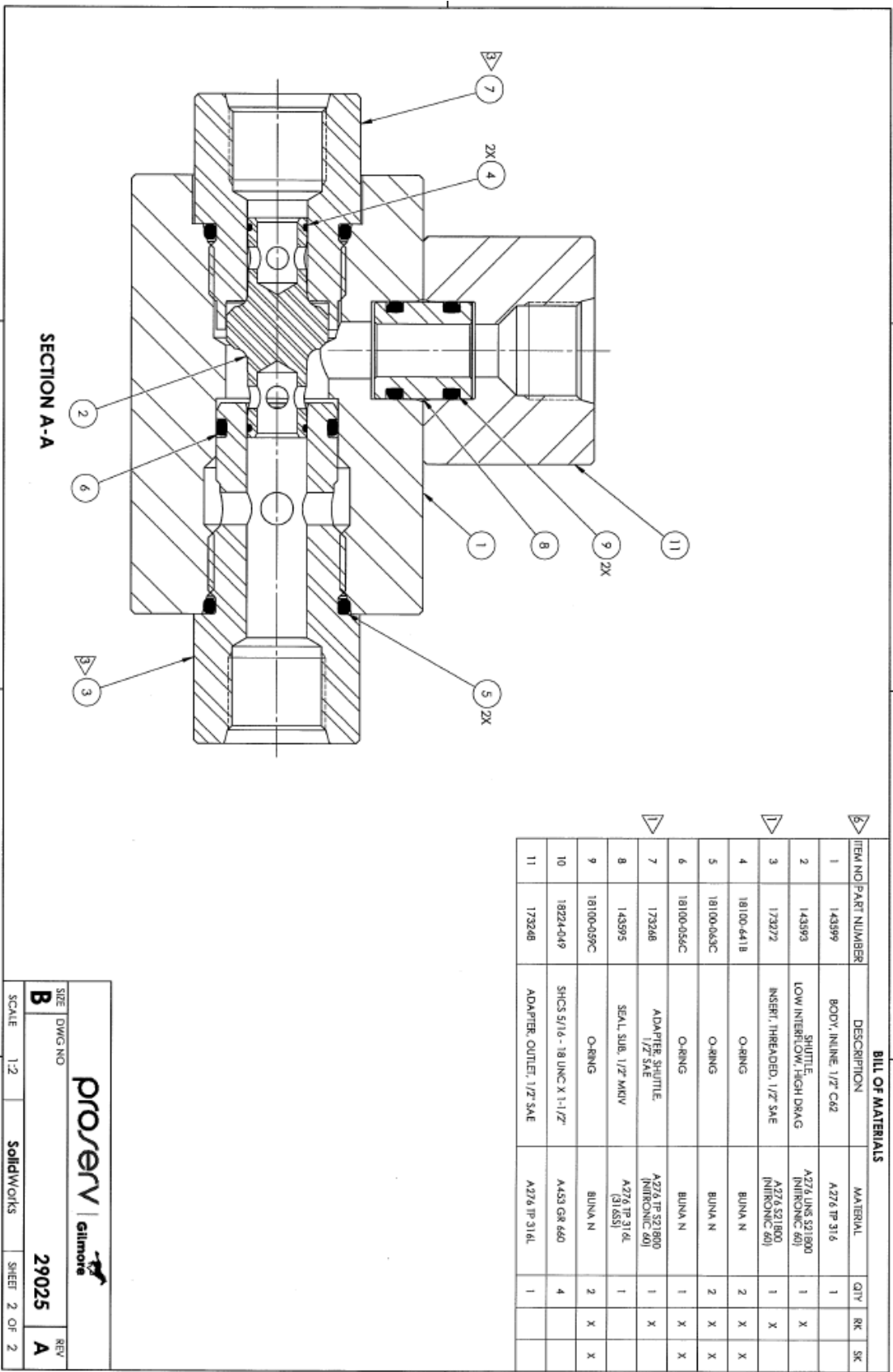
Please contact Proserv Customer Service to request a quotation for the 1/2" MKIV Shuttle Valves listed below, or other configurations as required.

**Table 1. Examples of New 1/2" MKIV Shuttle Valve Part Numbers:**

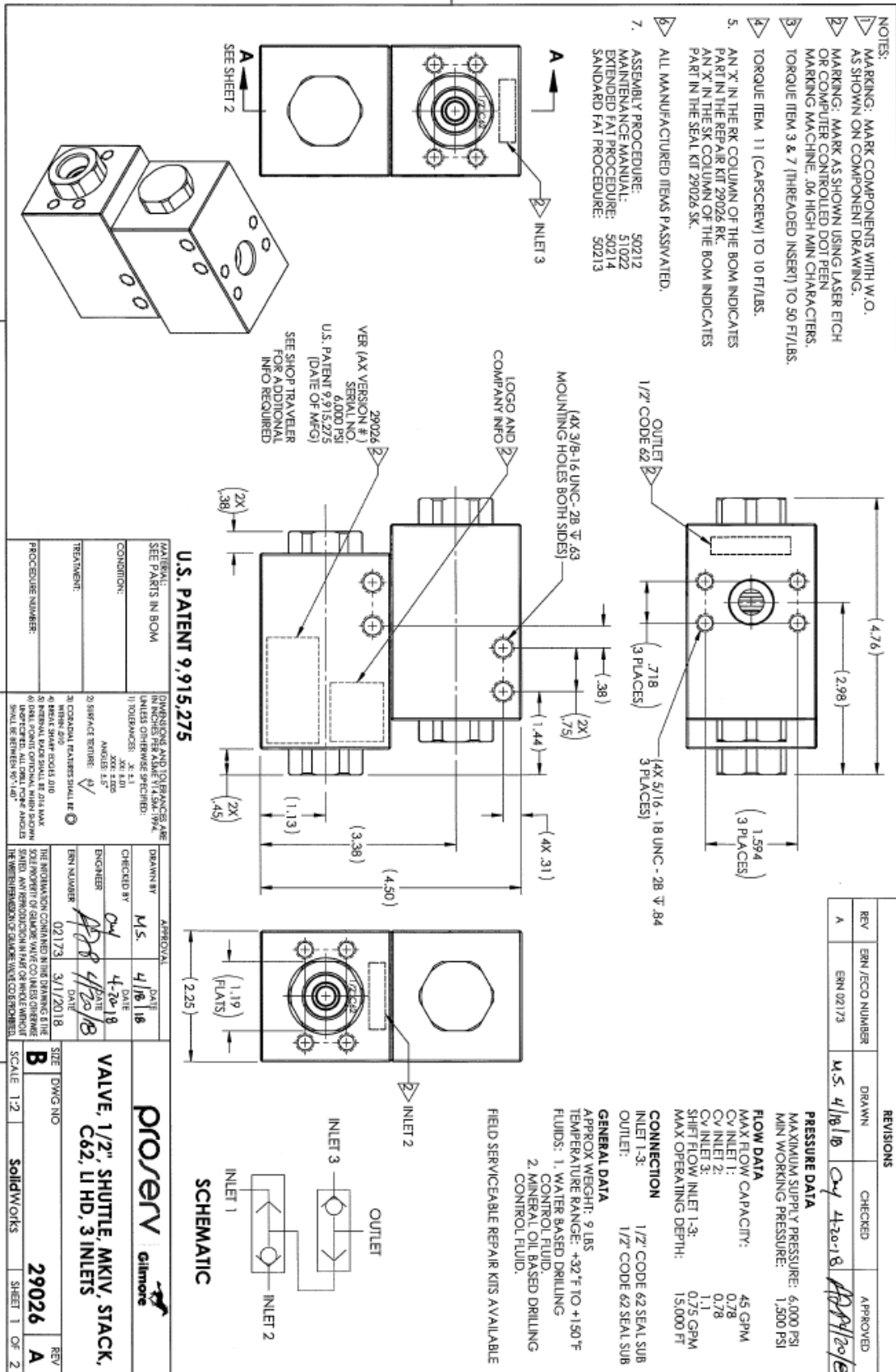
| Item | New Valve Description                                                                                | Legacy PN Reference | New Valve PN | New Repair Kit PN | New Seal Kit PN |
|------|------------------------------------------------------------------------------------------------------|---------------------|--------------|-------------------|-----------------|
| 1    | Valve, MKIV, 1/2" Inline, SAE, Low Interflow, High Drag                                              | 27027-0.3           | 29025        | 29025 RK          | 29025 SK        |
| 2    | Valve, MKIV, 1/2", Stack, 3 Inlets, Code 62, Low Interflow, High Drag                                | 27016-3.3           | 29026        | 29026 RK          | 29026 SK        |
| 3    | Valve, MKIV, 1/2" Inline, SAE, Pressure Biased, 200 psi Shift                                        | 28008-1             | 29027        | 29027 RK          | 29027 SK        |
| 4    | Valve, MKIV, 1/2", Stack, 3 Inlets, SAE, Pressure Biased, 200 psi Shift, Low Interflow, High Drag    | 27551-4             | 29028        | 29028 RK          | 29028 SK        |
| 5    | Valve, MKIV, 1/2", Stack, 4 Inlets, SAE, 2x Pressure Biased, 200 psi Shift, Low Interflow, High Drag | N/A                 | 29029        | 29029 RK          | 29029 SK        |
| 6    | Valve, MKIV, 1/2", Stack, 4 Inlets, SAE, Pressure Biased, 200 psi Shift, Low Interflow, High Drag    | N/A                 | 29038        | 29038 RK          | 29038 SK        |
| 7    | Valve, MKIV, 1/2" Inline, SAE, Spring Biased                                                         | 28141               | 29053        | 29053 RK          | 29053 SK        |
| 8    | Valve, MKIV, 1/2", Inline, NPT, High Interflow, High Drag                                            | N/A                 | 29055        | 29055 RK          | 29055 SK        |
| 9    | Valve, MKIV, 1/2", Inline, Code 62, Pressure Biased, 200 psi Shift                                   | 28055               | 29056        | 29056 RK          | 29056 SK        |

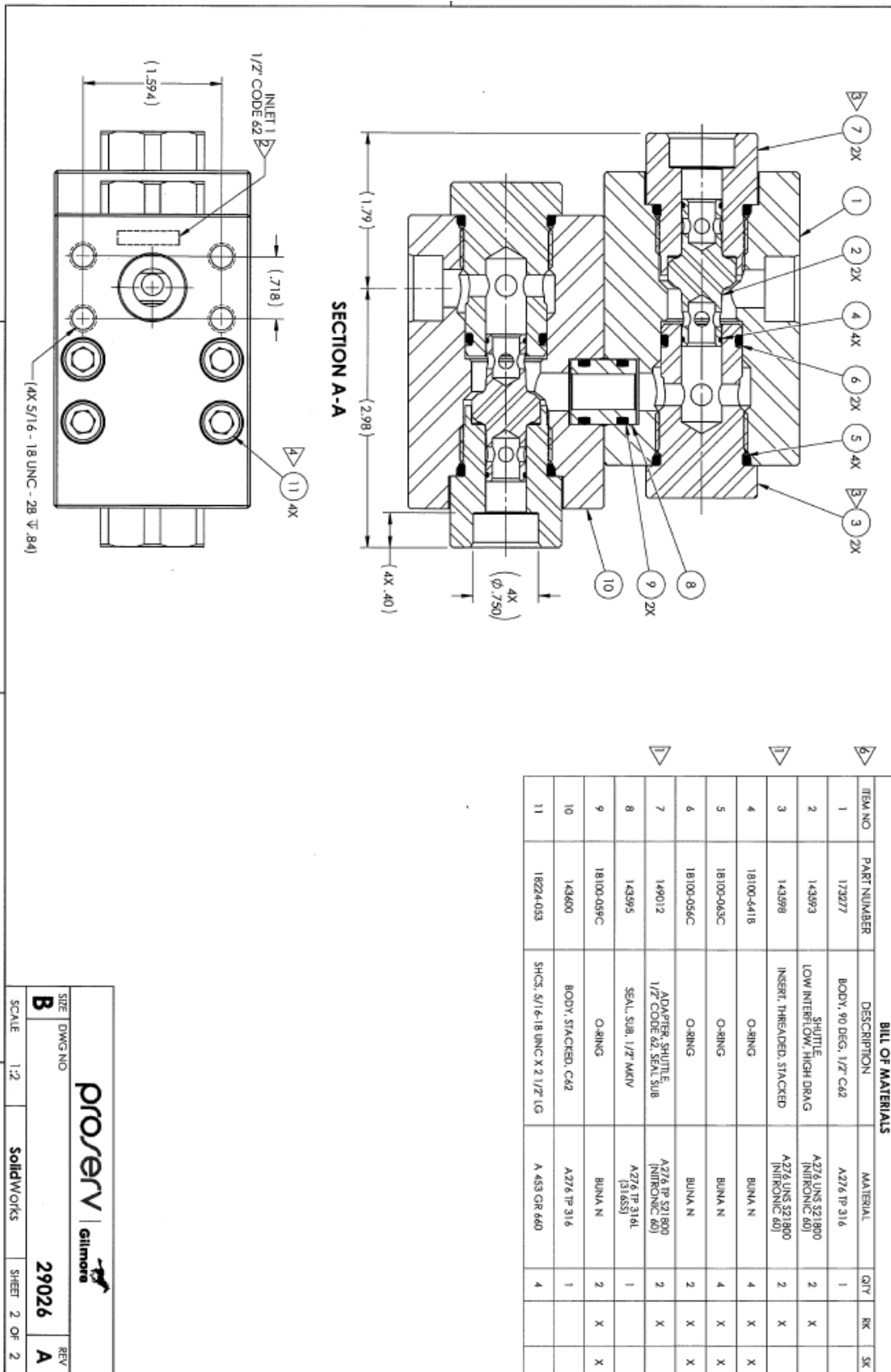
Please note at this time Proserv will continue to support the legacy 1/2" MKIII Shuttle Valves, which have a different footprint than the new 1/2" MKIV Shuttle Valves.





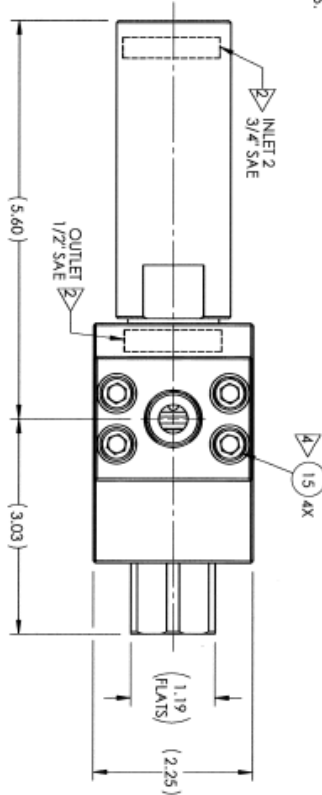








- NOTES:**
1. MARKING: MARK COMPONENTS WITH W.O. AS SHOWN ON COMPONENT DRAWING.
  2. MARKING: MARK AS SHOWN USING LASER ETCH OR COMPUTER CONTROLLED DOT PATTERN MARKING MACHINE. .06 HIGH MIN CHARACTERS.
  3. TORQUE ITEM 2 & 5 (THREADED INSERT) TO 50 FT/LBS.
  4. TORQUE ITEM 15 (CAPSCREW) TO 10 FT/LBS.
  5. REPAIR KIT PN 29027 RK AND SEAL KIT PN 29027 SK.
  6. ALL MANUFACTURED ITEMS PASSIVATED.
  7. ASSEMBLY PROCEDURE: 50212  
MAINTENANCE MANUAL: 51022  
EXTENDED FAT PROCEDURE: 50214  
STANDARD FAT PROCEDURE: 50213
  8. TORQUE ITEM 6 & 7 (SHUTTLE & SPRING ROD) TO 12 FT/LBS. REFER TO ASSEMBLY PROCEDURE OR MAINTENANCE MANUAL FOR SPECIAL STEPS AND TOOLS REQUIRED.



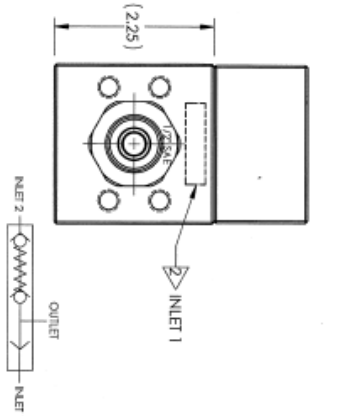
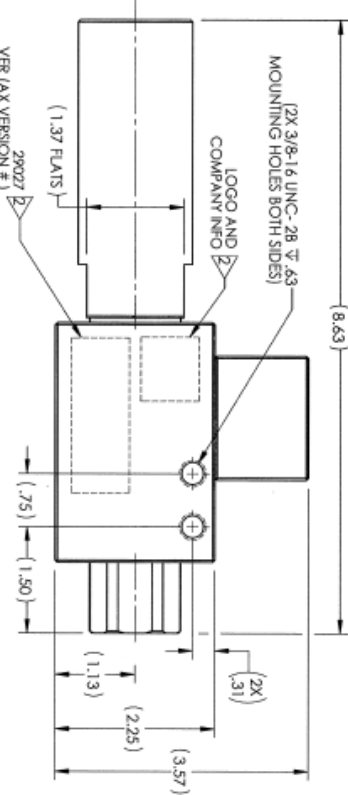
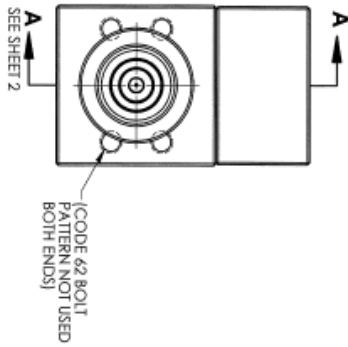
**REVISIONS**

| REV | ENR /ECO NUMBER | DRAWN      | CHECKED     | APPROVED  |
|-----|-----------------|------------|-------------|-----------|
| A   | ENR 02173       | MS 4/18/18 | Day 4/20/18 | APR 26/18 |

**GENERAL DATA**  
 APPROX WEIGHT: 8 LBS  
 TEMPERATURE RANGE: +32°F TO +150°F  
 FLUIDS: 1. WATER BASED DRILLING  
 2. MINERAL OIL BASED DRILLING  
 CONTROL FLUID  
 FIELD SERVICEABLE REPAIR KITS AVAILABLE

**FLOW DATA**  
 MAXIMUM SUPPLY PRESSURE: 5,000 PSI  
 MIN WORKING PRESSURE: 1,500 PSI  
 CV INLET 1: 1.1  
 CV INLET 2: 1.0  
 MAX FLOW CAPACITY INLET 1: 45 GPM  
 MAX FLOW CAPACITY INLET 2: 40 GPM  
 MIN SHUT PRESSURE INLET 2: 200 PSI  
 MAX OPERATING DEPTH: 15,000 FT

**CONNECTION**  
 INLET 1: 1/2\" SAE  
 INLET 2: 3/4\" SAE  
 OUTLET: 1/2\" SAE

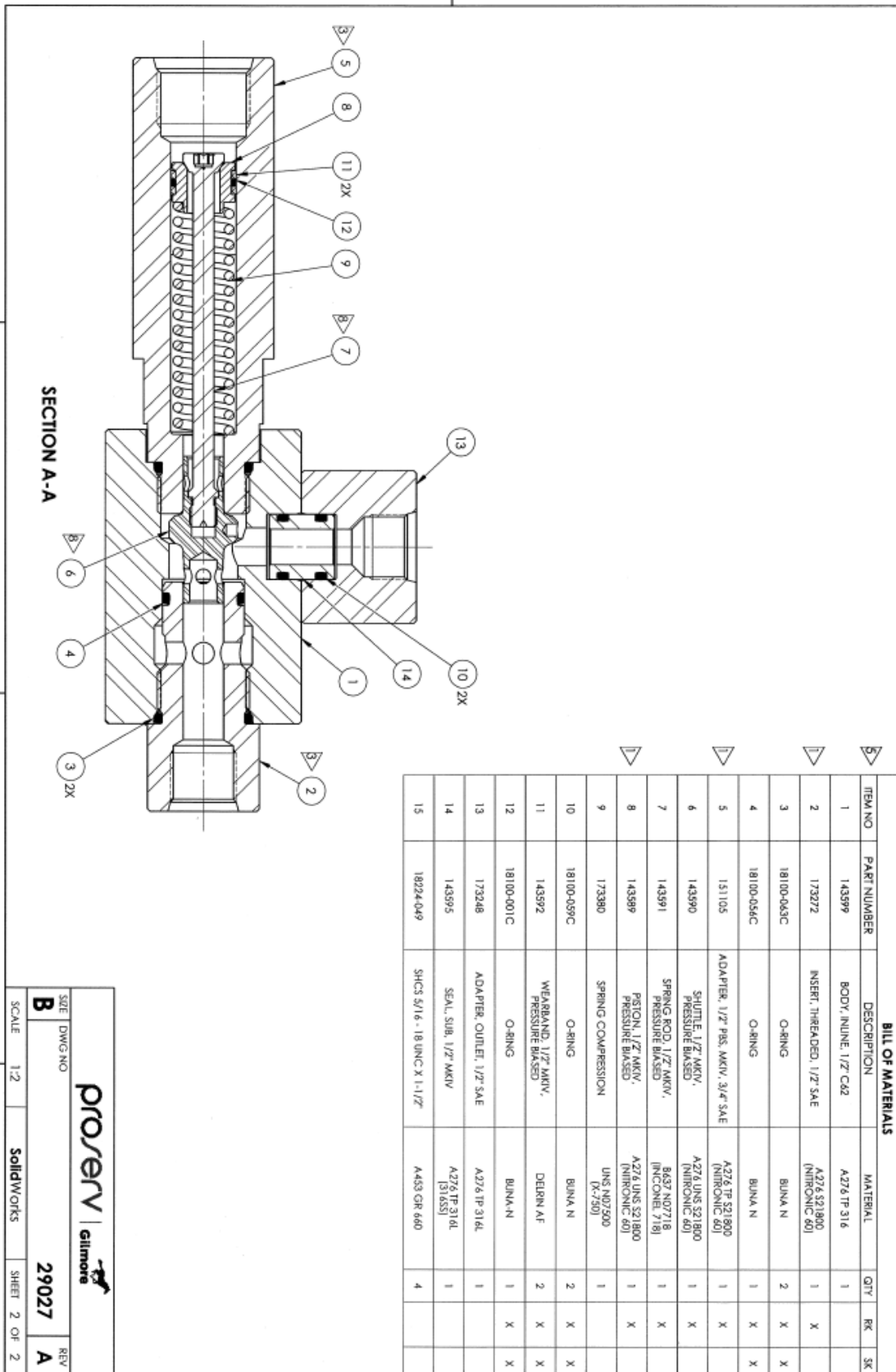


VER (AX VERSION #)  
 SERIAL NO  
 U.S. PATENT 9,915,275  
 (DATE OF MFG)  
 SEE SHOP TRAVELER  
 FOR ADDITIONAL  
 INFO REQUIRED

U.S. PATENT 9,915,275

|                               |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MATERIAL:<br>SEE PARTS IN BOM | DRAWING AND TOLERANCES ARE<br>UNLESS OTHERWISE SPECIFIED |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | CONDENSE:                                                | 2X .005<br>3X .010<br>4X .015<br>5X .020<br>6X .025<br>7X .030<br>8X .035<br>9X .040<br>10X .045<br>11X .050<br>12X .055<br>13X .060<br>14X .065<br>15X .070<br>16X .075<br>17X .080<br>18X .085<br>19X .090<br>20X .095<br>21X .100<br>22X .105<br>23X .110<br>24X .115<br>25X .120<br>26X .125<br>27X .130<br>28X .135<br>29X .140<br>30X .145<br>31X .150<br>32X .155<br>33X .160<br>34X .165<br>35X .170<br>36X .175<br>37X .180<br>38X .185<br>39X .190<br>40X .195<br>41X .200<br>42X .205<br>43X .210<br>44X .215<br>45X .220<br>46X .225<br>47X .230<br>48X .235<br>49X .240<br>50X .245<br>51X .250<br>52X .255<br>53X .260<br>54X .265<br>55X .270<br>56X .275<br>57X .280<br>58X .285<br>59X .290<br>60X .295<br>61X .300<br>62X .305<br>63X .310<br>64X .315<br>65X .320<br>66X .325<br>67X .330<br>68X .335<br>69X .340<br>70X .345<br>71X .350<br>72X .355<br>73X .360<br>74X .365<br>75X .370<br>76X .375<br>77X .380<br>78X .385<br>79X .390<br>80X .395<br>81X .400<br>82X .405<br>83X .410<br>84X .415<br>85X .420<br>86X .425<br>87X .430<br>88X .435<br>89X .440<br>90X .445<br>91X .450<br>92X .455<br>93X .460<br>94X .465<br>95X .470<br>96X .475<br>97X .480<br>98X .485<br>99X .490<br>100X .495 |
| TREATMENT:                    | 31 CONFORMAL TREATMENT SHALL BE                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| PROCEDURE NUMBER:             | 41 INITIAL POINTS CRITICAL WHEN SHOWN                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 51 INITIAL POINTS CRITICAL WHEN SHOWN                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 61 INITIAL POINTS CRITICAL WHEN SHOWN                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 71 INITIAL POINTS CRITICAL WHEN SHOWN                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 81 INITIAL POINTS CRITICAL WHEN SHOWN                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 91 INITIAL POINTS CRITICAL WHEN SHOWN                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 101 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 111 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 121 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 131 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 141 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 151 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 161 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 171 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 181 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 191 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 201 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 211 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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|                               | 241 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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|                               | 261 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 271 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 281 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 291 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 301 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 311 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 321 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 331 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 341 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 351 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 361 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 371 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 381 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 391 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 401 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 411 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 421 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 431 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 441 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 451 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 461 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 471 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 481 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 491 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 501 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 511 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 521 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 531 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 541 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 551 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 561 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 571 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 581 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 591 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 601 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 611 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 621 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 631 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 641 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 651 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 661 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 671 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 681 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 691 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 701 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 711 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 721 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 731 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 741 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 751 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 761 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 771 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 781 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 791 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 801 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 811 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 821 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 831 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 841 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 851 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 861 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 871 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 881 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 891 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 901 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 911 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 921 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 931 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 941 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 951 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 961 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 971 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 981 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 991 INITIAL POINTS CRITICAL WHEN SHOWN                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | 1001 INITIAL POINTS CRITICAL WHEN SHOWN                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

|                                                                                                                                                                                                                          |  |               |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------|--|
| DRAWN BY: M.S.                                                                                                                                                                                                           |  | DATE: 4/18/18 |  |
| CHECKED BY: Day                                                                                                                                                                                                          |  | DATE: 4/20/18 |  |
| ENGINEER: APR                                                                                                                                                                                                            |  | DATE: 4/20/18 |  |
| ENR NUMBER: 02173                                                                                                                                                                                                        |  | DATE: 3/1/18  |  |
| THE INFORMATION CONTAINED IN THIS DRAWING IS THE PROPERTY OF GILMORE VALVE COMPANY. IT IS TO BE USED FOR THE PURPOSES SPECIFIED ONLY. NO OTHER USE IS PERMITTED WITHOUT THE WRITTEN PERMISSION OF GILMORE VALVE COMPANY. |  | SCALE: 1:2    |  |
| SIZE: DWG NO                                                                                                                                                                                                             |  | B             |  |
| VALVE, SHUTTLE, MKIV, 1/2"                                                                                                                                                                                               |  | 29027         |  |
| INLINE, SAE, PRESS BIAS, 200 PSI SHIFT                                                                                                                                                                                   |  | A             |  |
| SHEET 1 OF 2                                                                                                                                                                                                             |  | SHEET 1 OF 2  |  |



proserv | gilmore

SIZE DWG NO **B**

SCALE 1:2

SHEET 2 OF 2

29027

REV **A**

**NOTES:**

- MARKING: MARK COMPONENTS WITH W.O. AS SHOWN ON COMPONENT DRAWING.
- MARKING: MARK AS SHOWN USING LASER ETCH OR COMPUTER CONTROLLED DOT PATTERN MARKING MACHINE. .06 HIGH MIN CHARACTERS.
- TORQUE ITEM 2, 5 & 16 (THREADED INSERT) TO 50 FT.LBS.
- TORQUE ITEM 18 & 20 (CAPSCREW) TO 10 FT.LBS.
- REPAIR KIT PN 29028 RK AND SEAL KIT PN 29028 SK.
- ALL MANUFACTURED ITEMS PASSIVATED.
- ASSEMBLY PROCEDURE: 50212  
MAINTENANCE MANUAL: 51022  
EXTENDED FAT PROCEDURE: 50214  
STANDARD FAT PROCEDURE: 50213
- TORQUE ITEM 6 & 7 (SHUTTLE & SPRING ROD) TO 12 FT.LBS. REFER TO ASSEMBLY PROCEDURE OR MAINTENANCE MANUAL FOR SPECIAL STEPS AND TOOLS REQUIRED.

**U.S. PATENT 9,915,275**

**GENERAL DATA**

APPROX WEIGHT: 13.1BS  
TEMPERATURE RANGE: +32°F TO +150°F  
FLUIDS: 1. WATER BASED DRILLING  
CONTROL FLUID  
2. MINERAL OIL BASED DRILLING  
CONTROL FLUID

**FIELD SERVICEABLE REPAIR KITS AVAILABLE**

**FLOW DATA**

| ITEM                         | VALUE     |
|------------------------------|-----------|
| CV INLET 1:                  | 0.78      |
| CV INLET 2:                  | 1.0       |
| MAX FLOW CAPACITY INLET 1&2: | 45 GPM    |
| MAX FLOW CAPACITY INLET 3:   | 40 GPM    |
| SHIFT FLOW INLET 1&2:        | 0.75 GPM  |
| MIN SHIFT PRESSURE INLET 3:  | 200 PSI   |
| MAX OPERATING DEPTH:         | 15,000 FT |

**CONNECTION**

| ITEM       | SIZE     |
|------------|----------|
| INLET 1-2: | 1/2" SAE |
| INLET 3:   | 3/4" SAE |
| OUTLET:    | 1/2" SAE |

**SCHEMATIC**

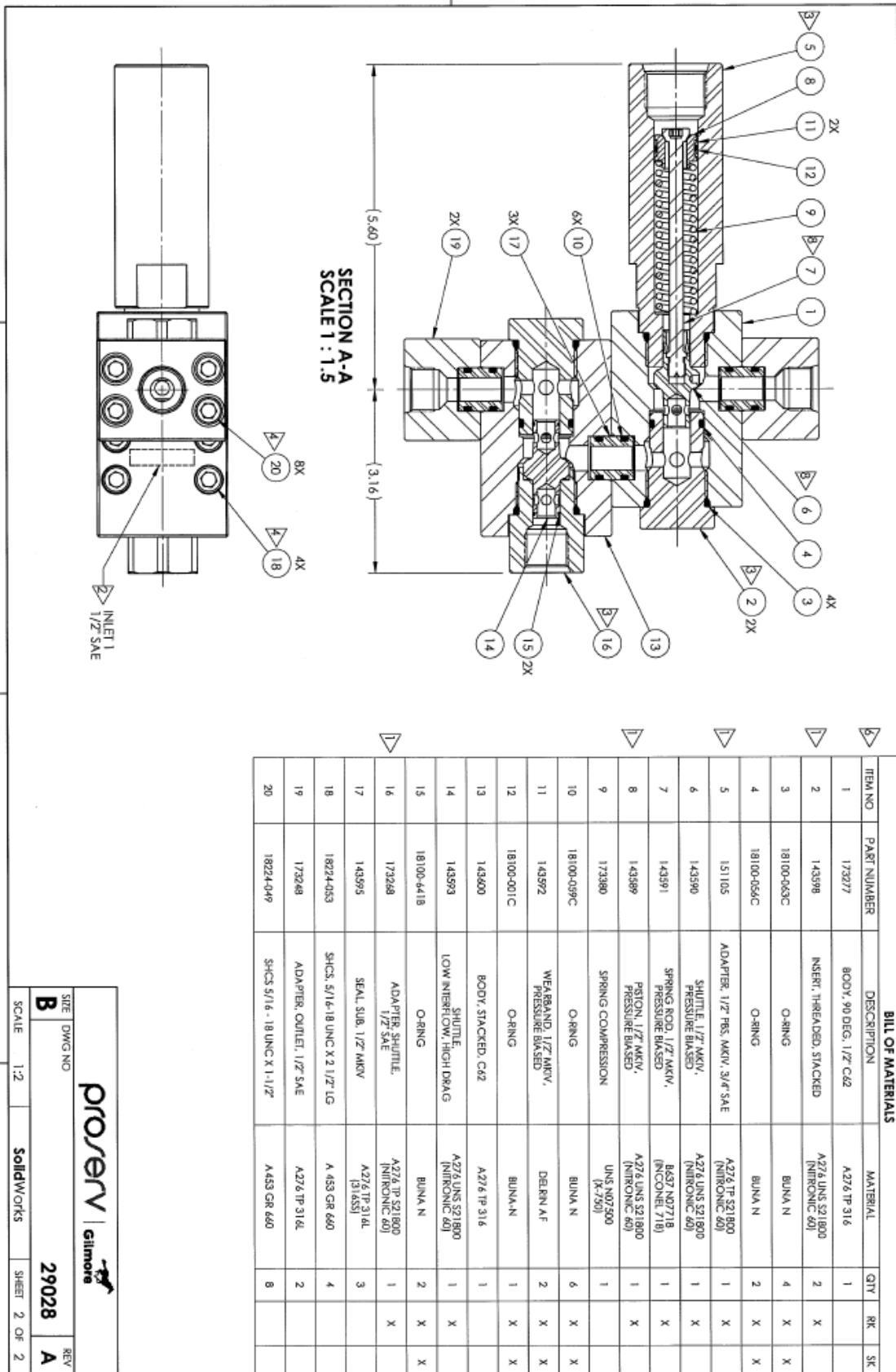
**REVISIONS**

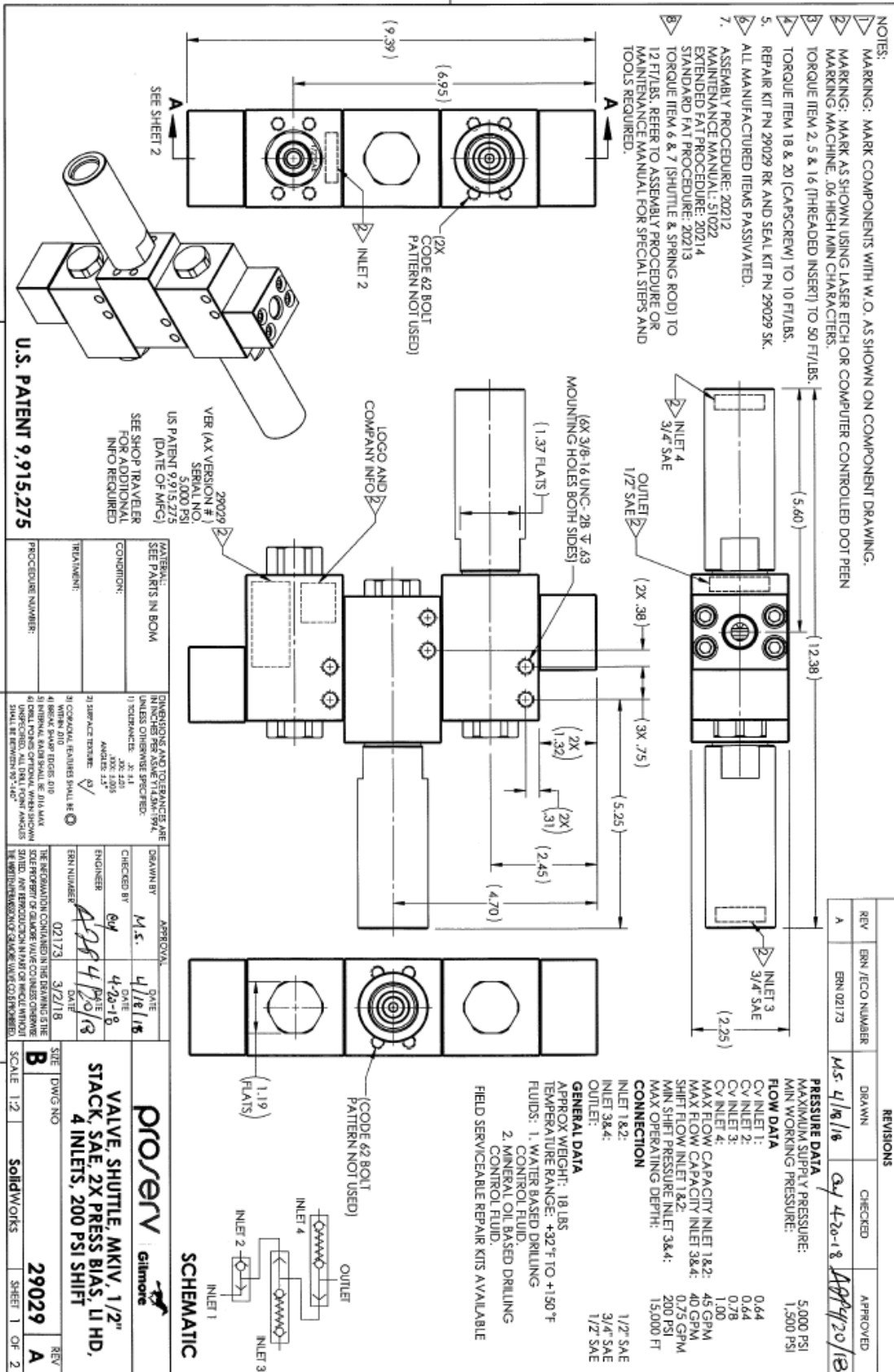
| REV | EN / ECO NUMBER | DATE    | DESCRIPTION     |
|-----|-----------------|---------|-----------------|
| 1   | EN 02173        | 4/18/18 | Initial Release |

**PROSERV** **Gilmore**

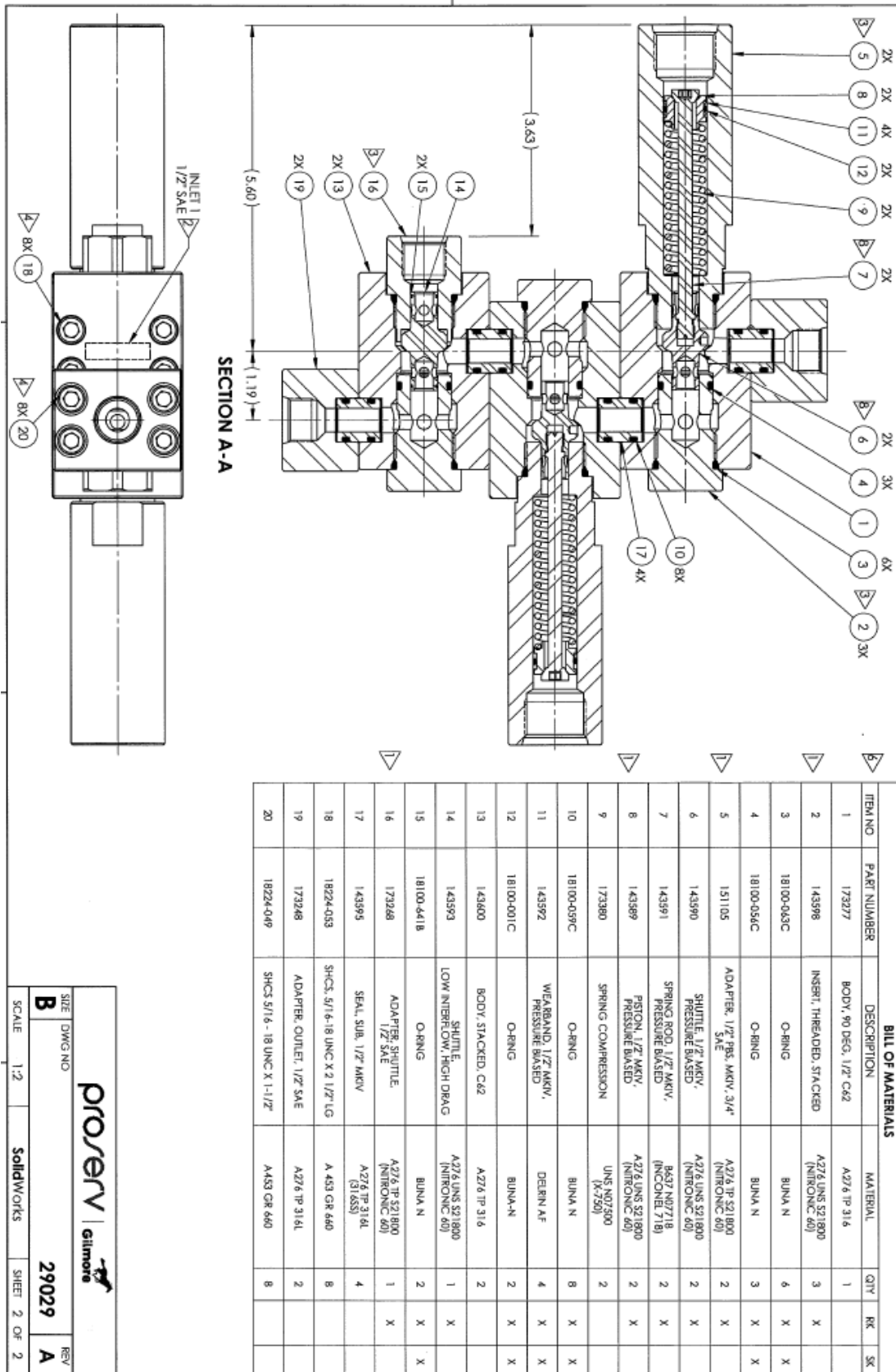
**VALVE, SHUTTLE, MKIV, 1/2" STACK, SAE, PRESS BIAS, U HD, 3 INLETS, 200 PSI SHIFT**

**29028 A**

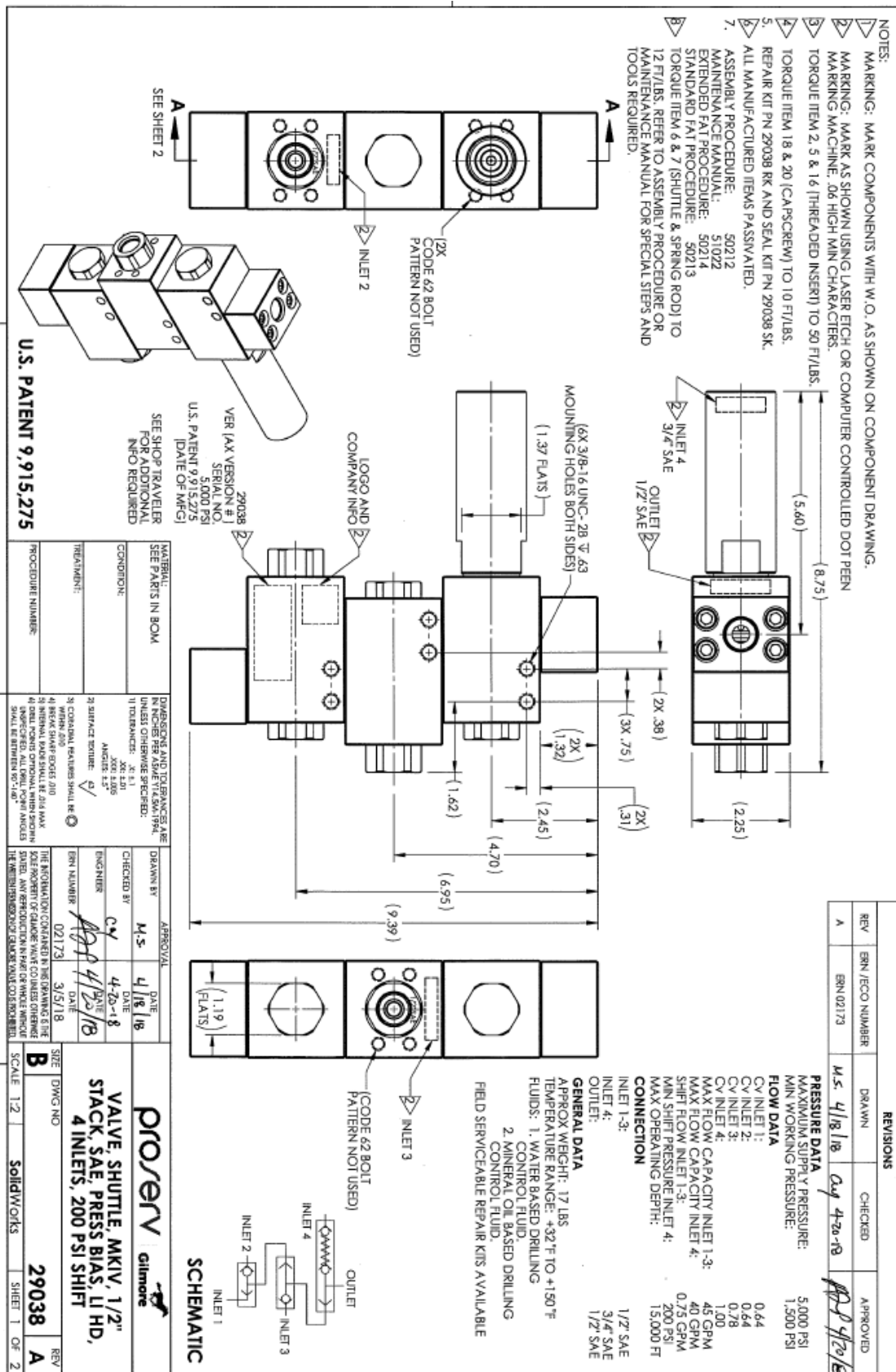


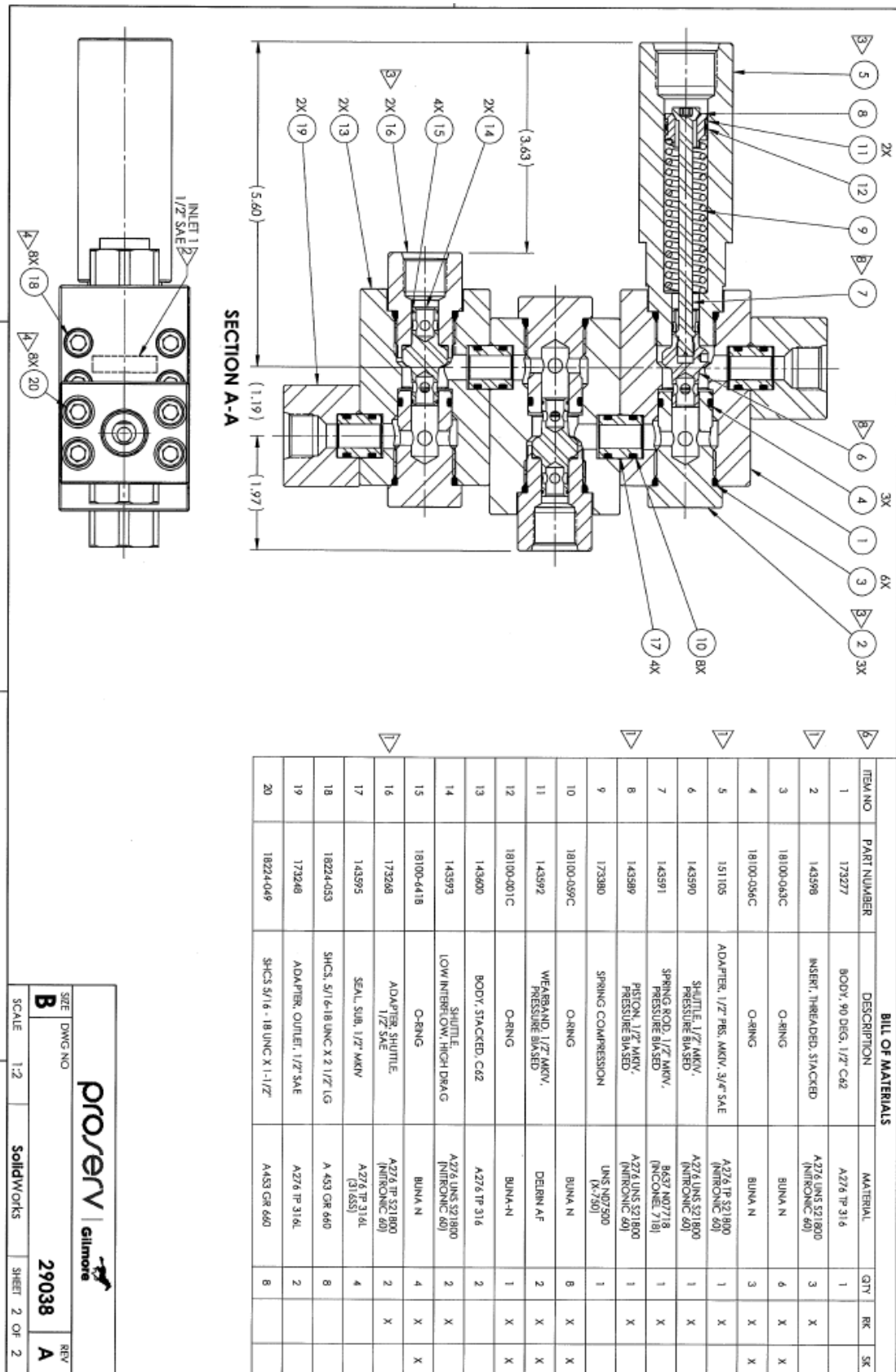


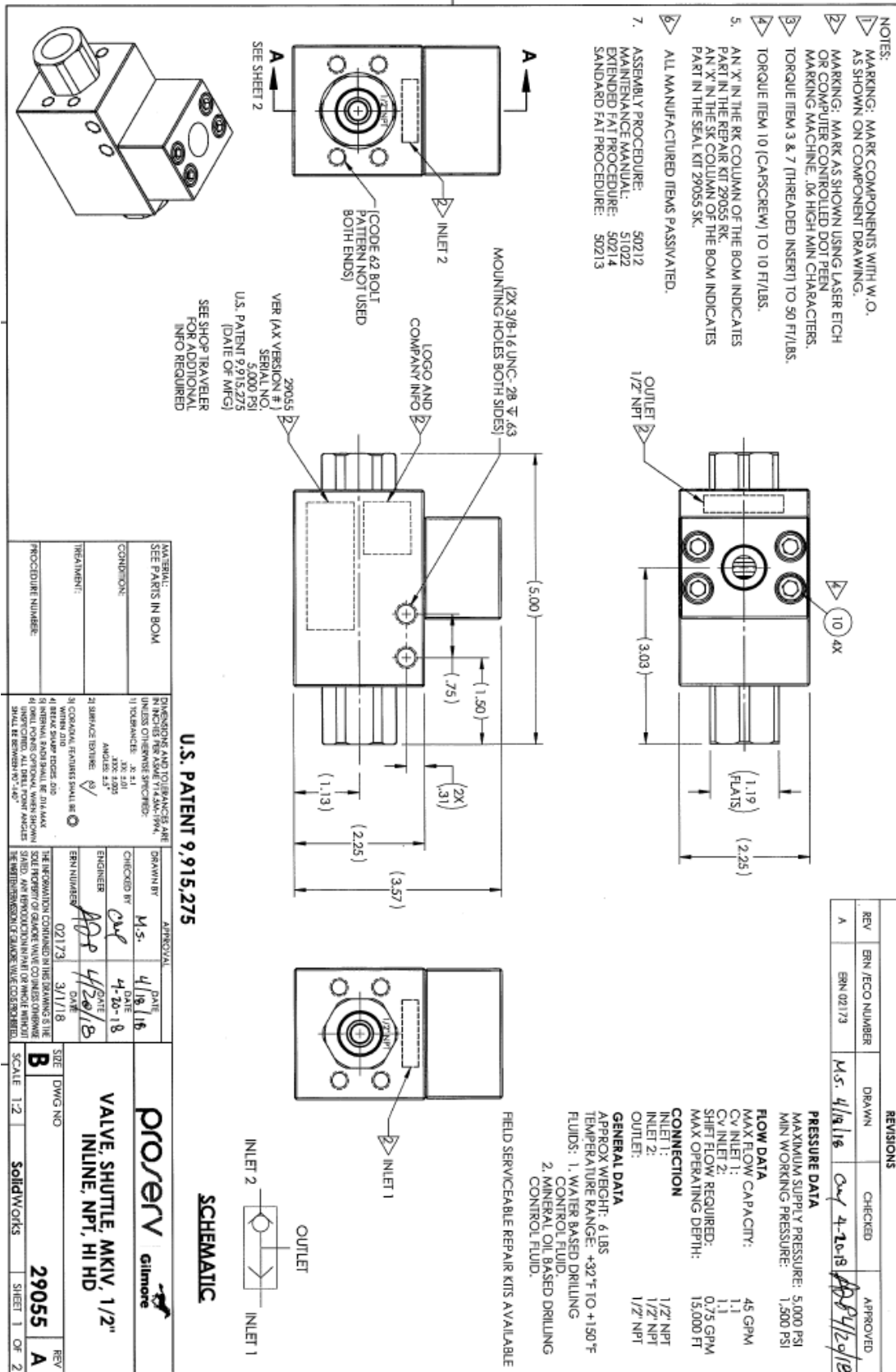


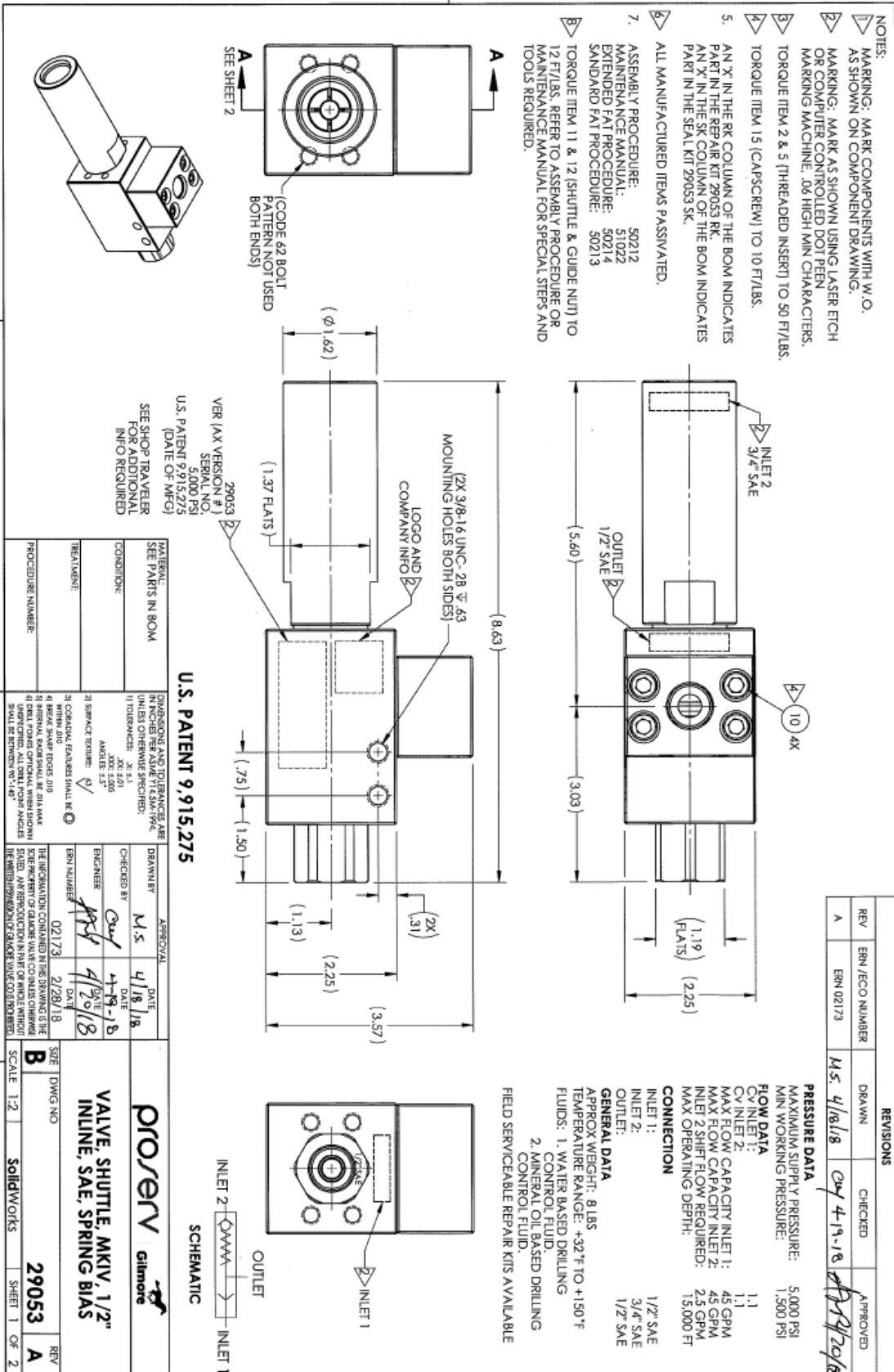


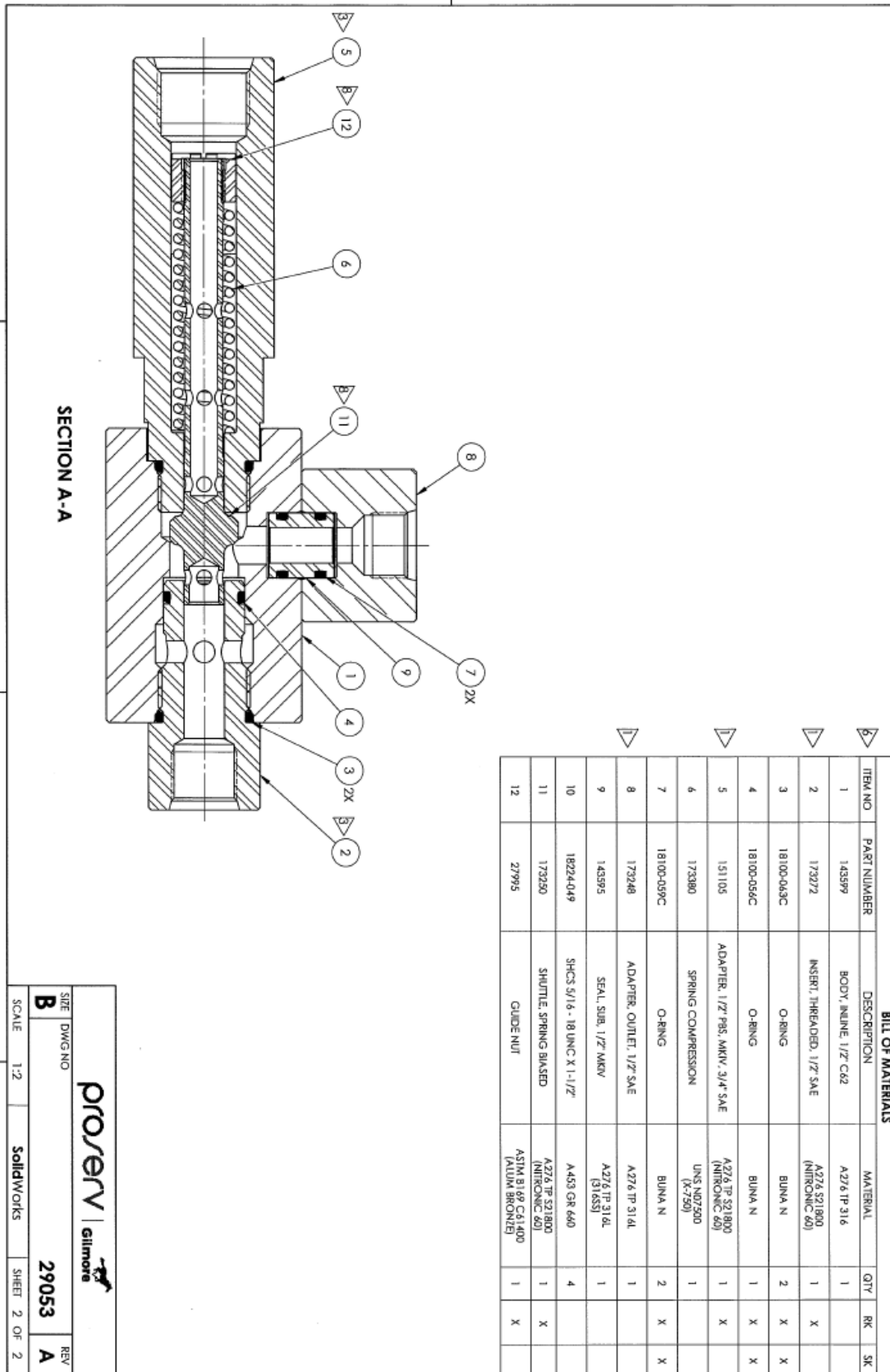




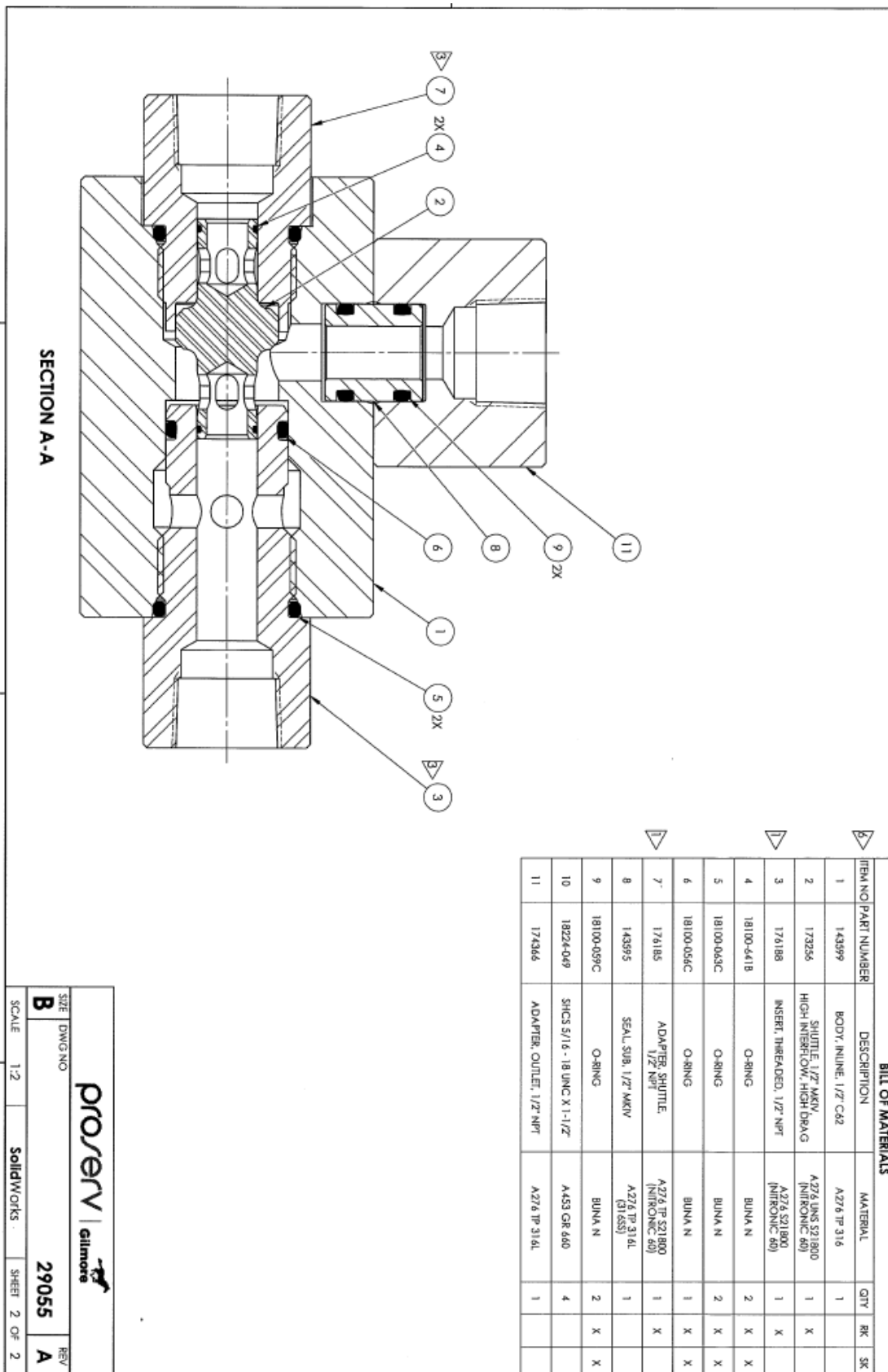


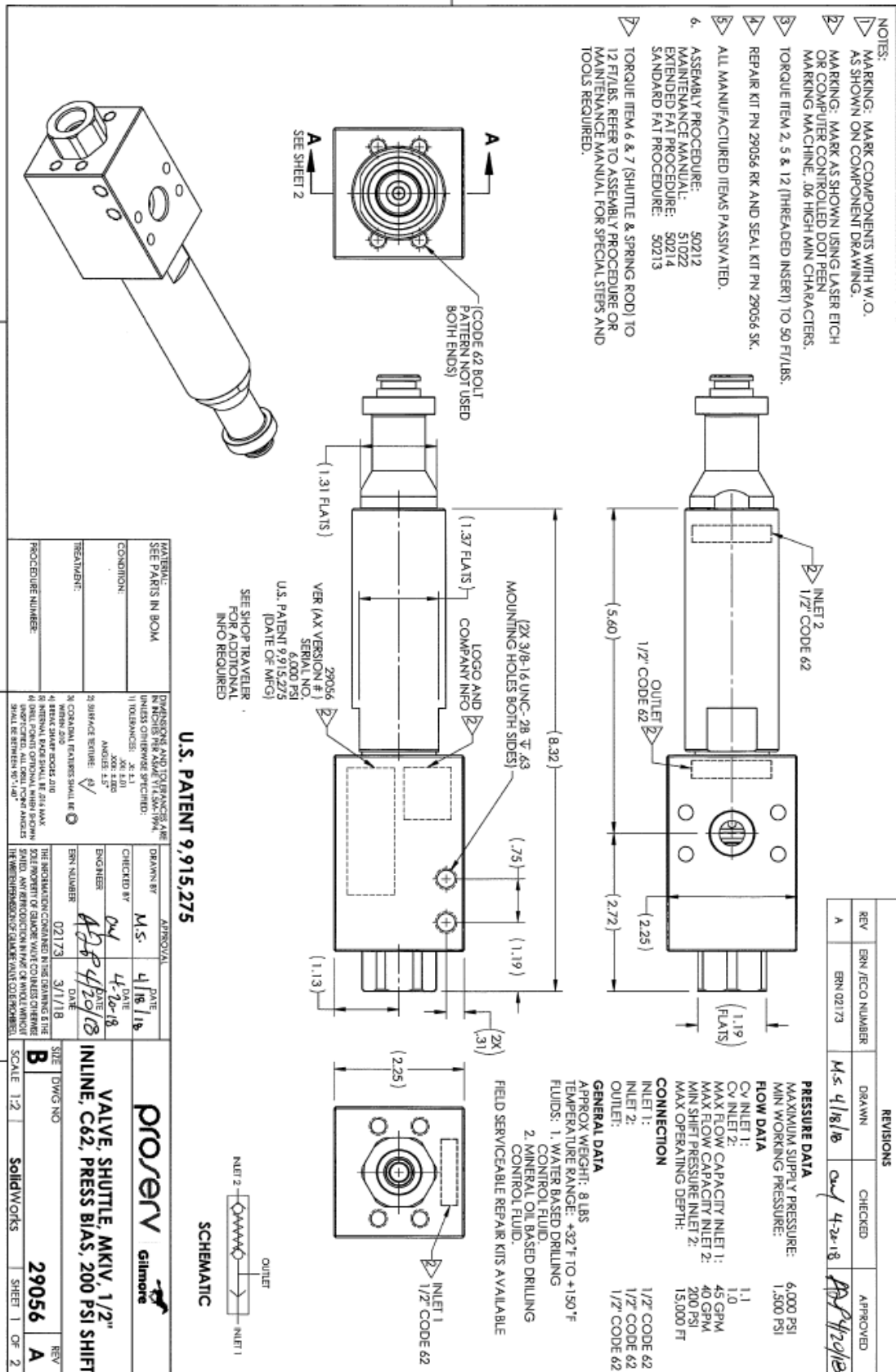


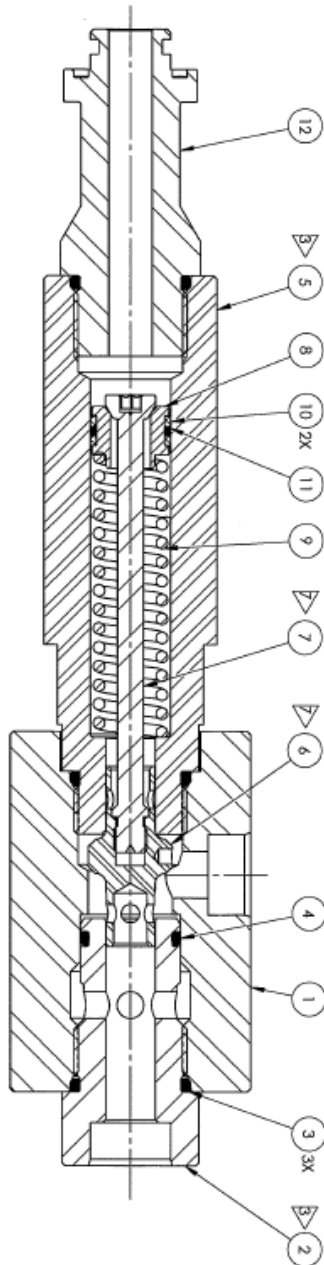












SECTION A-A

| BILL OF MATERIALS |             |                                        |                               |     |        |
|-------------------|-------------|----------------------------------------|-------------------------------|-----|--------|
| ITEM NO.          | PART NUMBER | DESCRIPTION                            | MATERIAL                      | QTY | RE. SK |
| 1                 | 14399       | BODY, INLINE 1/2" C&Z                  | A276 TP 316                   | 1   |        |
| 2                 | 14396       | INSERT, THREADED, C&Z                  | A276 UNS 321800 (NITRONIC 60) | 1   | X      |
| 3                 | 18100-063C  | O-RING                                 | BLUNA-N                       | 3   | X X    |
| 4                 | 18100-066C  | O-RING                                 | BLUNA-N                       | 1   | X X    |
| 5                 | 151105      | ADAPTER, 1/2" PBS, MKIV, 3/4" SAE      | A276 TP 321800 (NITRONIC 60)  | 1   | X      |
| 6                 | 14390       | SHUTTLE, 1/2" MKIV, PRESSURE BIASED    | A276 UNS 321800 (NITRONIC 60) | 1   | X      |
| 7                 | 14391       | SPRING ROD, 1/2" MKIV, PRESSURE BIASED | 9637 N02718 (INCONEL 718)     | 1   | X      |
| 8                 | 14389       | PISTON, 1/2" MKIV, PRESSURE BIASED     | A276 UNS 321800 (NITRONIC 60) | 1   | X      |
| 9                 | 173380      | SPRING COMPRESSOR                      | UNS N07500 (X-750)            | 1   |        |
| 10                | 14392       | WEAR BAND, 1/2" MKIV, PRESSURE BIASED  | DELPHI AF                     | 2   | X X    |
| 11                | 18100-001C  | O-RING                                 | BLUNA-N                       | 1   | X X    |
| 12                | 173254      | ADAPTER, SEAL SUB, 1/2" C&Z            | A276 TP 316                   | 1   |        |

|                   |         |            |              |
|-------------------|---------|------------|--------------|
| proserv   gilmore |         |            |              |
| SIZE              | DWG NO. | REV        |              |
| B                 | 29056   | A          |              |
| SCALE             | 1:2     | SolidWorks | SHEET 2 OF 2 |