



- Mnemonics:**
- BV = Backing Valve
  - CCP = Cryopump Compressor
  - CG = Conectron Gauge
  - CP = Cryopump
  - EV = Pump Exhaust Valve
  - FC = Flow Gauge
  - IG = Ion Gauge
  - IP = Ion Pump
  - IV = Isolation Valve
  - GV = Gate Valve (For Pump)
  - HOV = Hand-Operated Valve
  - MV = Metering Valve
  - PR = Pressure Regulator
  - RVC = Roughing Valve Cryopump
  - RP = Roughing Pump
  - SV = Solenoid Valve
  - TP = Turbomolecular Pump
  - TSP = Ti Sublimation Pump
  - VV = Vent Valve
  - XO = Cross Over Valve

| Item | Part No.        | Description  | QTY |
|------|-----------------|--|-----|
| 1    | 9699923         | Turbo-V 551 Navigator Pump, 8 in. CF   | 2   |
| 2    | 96999544        | Turbo-V 550 Navigator Controller r 120V220 V - 50/60 Hz                        | 2   |
| 3    | 96999304        | Turbo-V 551 Inlet Screen DN 160  | 2   |
| 4    | 96999366        | Pump, Turbo-V70, 4.5"CF  | 2   |
| 5    | 96999505        | Controller, Turbo-V70, Rack, 120V  | 2   |
| 6    | 96999300        | Inlet Screen, DN 63  | 2   |
| 7    | PTS03001UNIV    | Pump, Tiscroll 300, 1 Phase, US Cord   | 2   |
| 8    | TAR4CS1000F     | Filter, Trap, Copper Wool Filter, 4" Body, QF25 Flanges                        | 2   |
| 9    | 9190180         | Titanium Sublimation Cryopanel, 8" CF  | 2   |
| 10   | 9240730         | TSP Cartridge Cable, Length = 12 (3.0m)  | 2   |
| 11   | 9191641         | VacIon Plus 300 Ion Pump, Starcell Heaters, 120V                               | 1   |
| 12   | 9199030         | Starcell Element, VacIon Plus 150, 300, 500                                    | 1   |
| 13   | 12144P444-AN1   | VAT Series 12 Gate Valve, DN160, Pneumatic, ISO Flange, Pos. Ind, NW25 Ports   | 1   |
| 14   | 48146-CE44      | VAT Series 48 All-metal Gate Valve, DN200, Pneumatic, 10"CF, Pos. Ind          | 1   |
| 15   | 01034-KE41-0001 | VAT Series 10 Gate Valve, DN50, Pneumatic Single Acting, NW50 Flange, Pos. Ind | 1   |
| 16   | MAV-150-V       | MDC All-metal Angle Valve, DN40, 2.75" CF, Manual                              | 1   |
| 17   | LB281332        | Right-Angle Block Valve - Air-operated - 2AVDC - KF25                          | 11  |
| 18   | LB930301        | Multi-gauge Basic Unit, 110/115/220  | 1   |
| 19   | LB324301        | PCB Assembly For Multi-gauge, Remote I/O                                       | 2   |
| 20   | LB321301        | PCB Assembly For Multi-gauge, UHV Ion Gauge                                    | 2   |
| 21   | 275196          | 275 Connection Gauge - KF25 Welded Flange                                      | 7   |
| 22   | 7360            | Connection Gauge Connector Kit   | 7   |
| 23   | KO2000276       | Cross, 4 Way, NW50, 2.76" Clearance, Stainless Steel                           | 1   |
| 24   | KTO2000276      | Tea, NW50, 2.76" Clearance, Stainless Steel                                    | 1   |
| 25   | KE02000277      | Elbow, NW50, 2.76" Clearance, Stainless Steel                                  | 2   |
| 26   | KC505V          | Seal, Centering Ring, NW50, Stainless Steel, Viton O-Ring                      | 11  |
| 27   | KQ50AW          | Clamp, Quick, Wing Nut, NW50, Black  | 11  |
| 28   | KCO1000197      | Cross, 4 Way, NW25, 1.97" Clearance  | 3   |
| 29   | KTO1000197      | Tea, NW25, 1.97" Clearance   | 5   |
| 30   | KLO1003940      | Flexible Coupling, Non-Braided, NW25, 39.4" Long                               | 5   |
| 31   | KE2500005B      | Flange, KF, Blank, NW25, Stainless Steel                                       | 3   |
| 32   | KC25SV          | Seal, Centering Ring, NW25, Stainless Steel, Viton O-Ring                      | 46  |
| 33   | KQ25AW          | Clamp, Quick, Wing Nut, NW25, Black  | 46  |
| 34   | KC16AV          | Seal, Centering Ring, NW16, Aluminum, Buna-N O-Ring                            | 4   |
| 35   | KQ16AV          | Clamp, Quick, Wing Nut, NW16, Black  | 4   |
| 36   | KRC1625A        | Central Reducer, NW25 to NW16, Stainless Steel                                 | 4   |
| 37   | FG0800CI        | 8" CF Copper Gaskets, 10/pkg   | 1   |
| 38   | FG0450CI        | 4.5" CF Copper Gaskets, 10/pkg   | 1   |
| 39   | FG0275CI        | 2.75" CF Copper Gaskets, 10/pkg  | 1   |
| 40   | KRC2550S        | Central Reducer, NW50 to NW25, Stainless Steel                                 | 1   |
| 41   | FA0450NW50L     | Adapter, 4.5" CF to NW50, Length = 2", Stainless Steel                         | 3   |
| 42   | FA04500275      | Adapter, 4.5" CF to 2.75" CF, Length = 2.5", Stainless Steel                   | 1   |
| 43   | FNH0150S        | Half Nipple, 2.75" CF, 1.5" Tube, Length = 2.46", Stainless Steel              | 3   |
| 44   | K5500150BB      | Weld Flange, NW50, Bored for 1.5" Tube, Stainless Steel                        | 5   |
| 45   | QF25-100-SH     | Adapter, QF25 to T-1.D. Tube, Stainless Steel                                  | 2   |

- NOTES:**
- THE ISOLATION VALVES (IV) FOR THE MAIN BEAMLINE ARE TO BE SPECIFIED BY THE TRIUMF DESIGN OFFICE.
  - ALL DRY SCROLL PUMP EXHAUST IS TO BE CONNECTED TO A DRY EXHAUST SYSTEM IF POSSIBLE.
  - V701P TURBO PUMP USED TO BACK BEAMLINE TURBO PUMPS.
  - BACKING VALVE FOR THE V701P TURBO PUMP IS CLOSED TO ISOLATE THE VALVES OF THE BEAMLINE TURBO PUMPS ARE FOR ROUGHING / BACKING.
  - ROUGHING VALVE POSITIONED ON BACKING LINE FOR EVACUATING THE FORELINE AND/OR THE MAIN BEAMLINE.
  - VENT VALVE POSITIONED ON BACKING LINE FOR VENTING THE FORELINE AND/OR THE MAIN BEAMLINE.
  - TWO BACKING VALVES ARE USED. RESTRICTED FLOW THROUGH BV1A USING ORIFICE UNTIL PRESSURE IS IN THE MILLTORR RANGE. SWITCH TO BV1B TO SPEED EVACUATION.

| REV | DATE     | LOC   | REVISION DESCRIPTION        | BR | APP'D |
|-----|----------|-------|-----------------------------|----|-------|
| 1   | 05/12/16 | TITAN | Updated naming for devices. | BR | DY    |
| 0   | 12/16    | TITAN | Original Issue              | BR |       |

**TRUMP**  
 4001 WESBROOK MAIL  
 CANADIAN BRITISH COLUMBIA  
 CANADA'S NATIONAL WESON FACILITY

**VACUUM SYSTEM SCHEMATIC**  
**TITAN BEAMLINE - PENNING TRAP**  
**ISAC EXPERIMENT HALL**

SCALE: N.T.S.  
 DATE: 12/24/2015  
 DWG NO.: ISK5040D  
 REV: 1