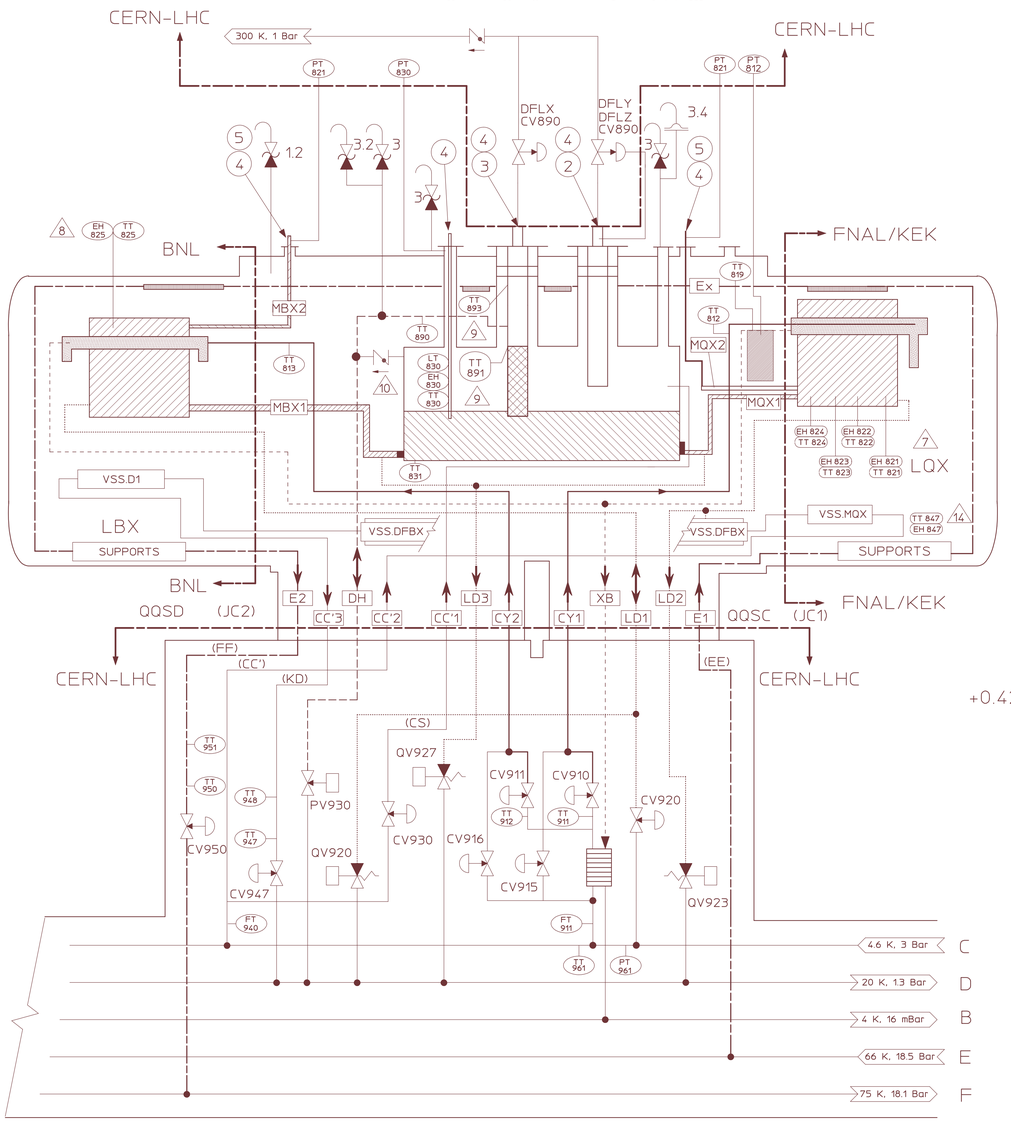
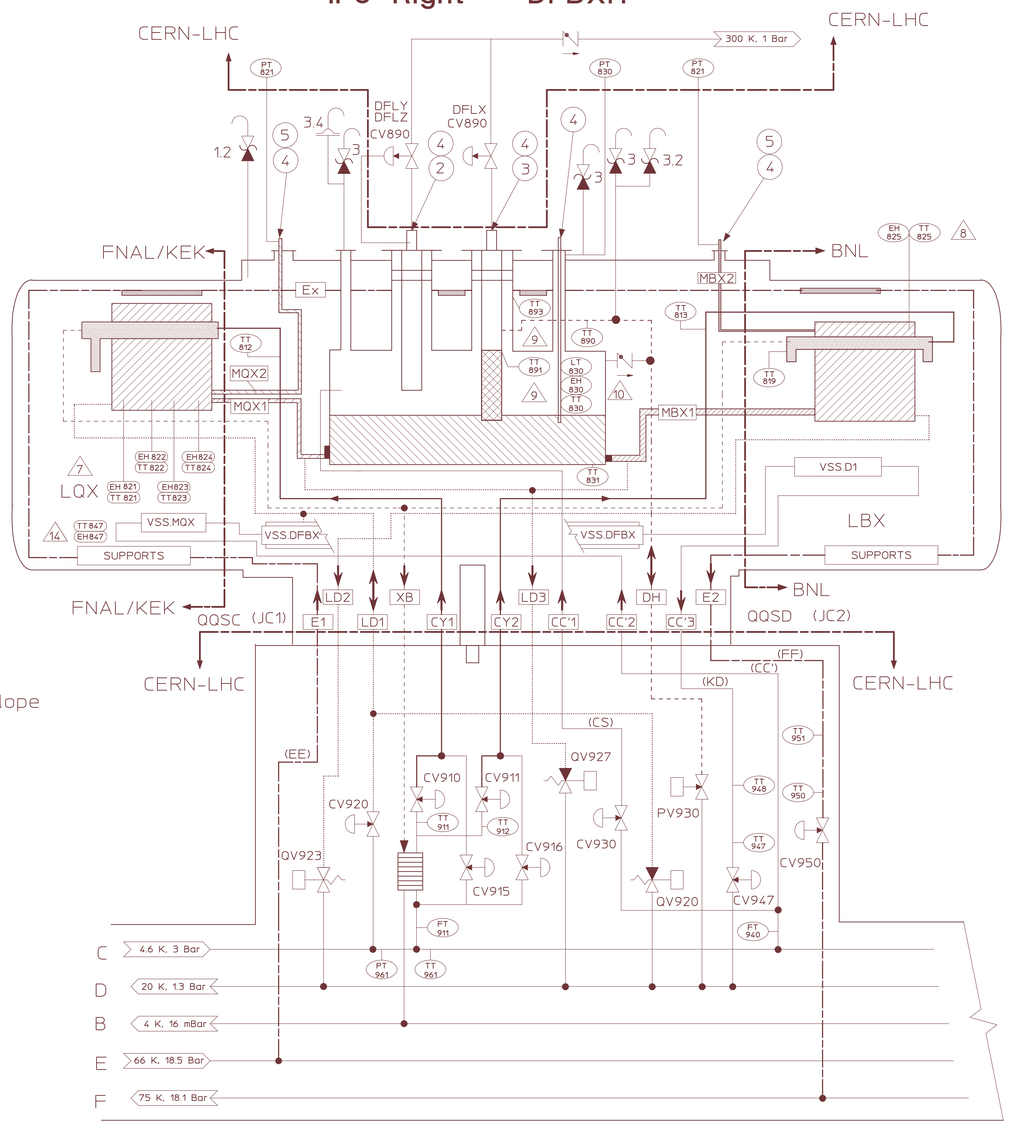
## IP8 Left – DFBXG




+0.42% Slope

## IP8 Right – DFBXH




24C3706K

Shield Cooling
HTS Cooling
Cooldown, Quench
4.5 K Cooling
1.9 K Supply
1.9 K Return
Piping Designation
*SEE NOTE _* Designation
Interface
CERN-LHC

1.9 K, 16 mBar
1.9 K, 1 Bar
4.5 K, 1.3 Bar
Shield
HTS

1 Conduction Cooled
2 Vapor Cooled
3 MQX, MBX Leads
4 Electrical Signals
5 Q.P. HEATERS
LT Level Sensor
EH Heater
TT Temp Sensor
PT Pressure Sensor
FT Flowmeter

Automatic Control Valve (Fail Closed)
Automatic Control Valve (Fail Open)
Automatic On-Off Valve (Fail Closed)
Relief Valve
Rupture Disk
CERN Special Safety Relief Valve
Heat Exchanger
Collection Volume
Check Valve

LEGEND

NOTES:

1. HEADER TEMPERATURES AND PRESSURES ARE APPROXIMATE NOMINAL CONDITIONS.
2. INTERFACE BOUNDARIES ARE INDICATED.
3. ALL SENSORS IN LQX AND LBX NOT SHOWN.
4. QRL SENSORS INCLUDED FOR REFERENCE.
5. PIPING DESIGNATIONS PER LHC-Q-ES-0001.00 rev 1.0 SHOWN IN ( ) AS REQUIRED.
6. SAFETY RELIEF DEVICES PER LBNL ENG. NOTE M8054.
7. INSTRUMENTATION IS 2X REDUNDANT AT EACH LOCATION. WIRES CONNECT TO LQX FEEDTHROUGH VIA MQX2 TUBE.
8. INSTRUMENTATION IS 2X REDUNDANT AT EACH LOCATION. WIRES CONNECT TO LBX FEEDTHOUGH VIA MBX2 TUBE.
9. INSTRUMENTATION WIRES IN HTS LEAD FEEDTHROUGH. ONLY TT891 IS 2X REDUNDANT. 6 HTS LEADS PER BOX.
10. INSTRUMENTATION WIRES IN LHE DIAGNOSTIC FEEDTHROUGH 2X REDUNDANT.
11. UNLESS OTHERWISE NOTED, INSTRUMENTATION WIRES IN VACUUM SPACE.
12. VSS INTERCONNECTION HARDWARE PROVIDED BY CERN.
13. RELIEF DEVICE PRESSURE SETTINGS IN BAR (ABSOLUTE)
14. WIRES EXIT AT Q1.

| REV | DWG | CHK | ZONE | DATE | CHANGES |
|---|---|---|---|---|---|
| K | YK | JZ | ALL | 7/10/02 | MORE NOTES & LEGEND ARE ADDED. SENSOR AND VALVE LABELS ARE CHANGED. FLOW SCHEMATICS ARE CHANGED. FLOW ARROWS ARE ADDED |
| J | YK | JZ | ALL | 6/17/02 | MORE NOTES & LEGEND ARE ADDED. MORE RELIEF VALVES AND RUPTURE DISKS ARE ADDED. LABELING OF THE COMPONENTS CHANGED |
| H | YK | JZ | ALL | 4/20/02 | SEPARATE THE DRAWING TO 4 SHEETS. |
| G | YK | JZ | ALL | 5/9/01 | ADDED SEPARATE TAS RETURN. PT ON OVERFLOW POTS. 2K JACKET ON BORE TUBE, & TEMP SENSOR |
| F | YK | JZ | ALL | 3/7/01 | ADDED VALVES AND SENSORS ID'S |
| E | YK | JZ | ALL | 11/8/00 | ADDED VSS IN DFBX |
| D | YK | JZ | ALL | 7/26/00 | MISC. CHANGES |
| C | YK | JZ | ALL | 6/20/00 | MODIFY FLOW IN QRL,ADDED MAGNET INST., ADDED Q.P. HEATER |
| B | YK | JZ | ALL | 5/17/00 | CHECK VALVES ARE ADDED |
| A | MK | JZ | ALL | 2/17/00 | ADDED DESIGNATIONS TO PREVIOUSLY UNMARKED PIPES |

| PART NO. | DESCRIPTION |
|---|---|
| 24C3706-3 | DFBX FLOW SCHEMATICS: IP8 LEFT - DFBXG, IP8 RIGHT - DFBXH |

UNLESS OTHERWISE SPECIFIED
TOLERANCES
THREADS ARE CLASS 2
CHAMFER ENDS OF ALL SCREW THREADS 30°. CUT 1.5 PITCH THRD RELIEF WITH ROUND NOSE TOOL ON MACHINE CUT THREADS.
BREAK EDGES .016 MAX. ON MACHINED WORK. REMOVE BURRS, WELD SPLATTER & LOOSE SCALE
REFERENCES: ANSI Y14.5 & B46.1.

SHOP ORDERS
ACCT. NO. | SERIAL NO.
DATE ISSD | DATE REQD | NO. REQD
DELIVER TO
SURFACE TREATMENT
IDENT. METH.
DWG. BY: Y. KAJIYAMA DATE 20-MAY-02
CHK. BY: JON ZBASNIK DATE 20-MAY-02

**LAWRENCE BERKELEY LABORATORY**
UNIVERSITY OF CALIFORNIA-BERKELEY
LARGE HADRON COLLIDER, IR FEEDBOX
CRYOGENICS
DFBX FLOW SCHEMATICS

| PATENT CLEAR | DWG. TYPE | SHOWN ON | SCALE | DO NOT SCALE PRINTS |
|---|---|---|---|---|
| | SCHEMATIC | | N/A | |

| MICROFILMED | DESIGN ACCT. NO. | CATEGORY CODE | DWG. NO. | SIZE | REV. |
|---|---|---|---|---|---|
| | 25LCE2 | LH2003 | 24C3706 | | K |

FOR CERN USE

SHEET 3 OF 4