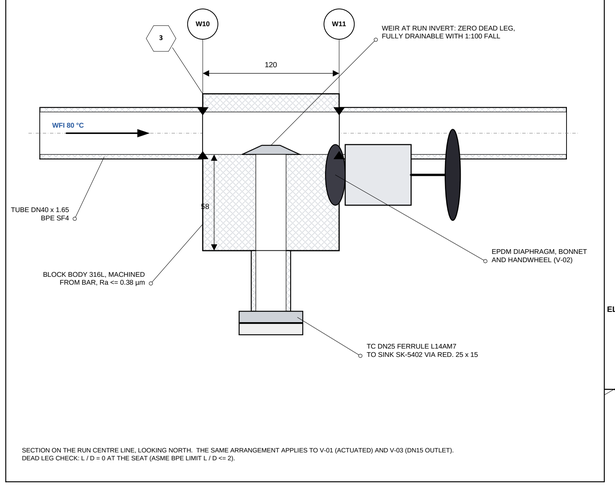


DETAIL A - ZDL VALVE V-02 WELDED IN LOW RUN (SECTION, NTS)



SECTION ON THE RUN CENTRE LINE, LOOKING NORTH. THE SAME ARRANGEMENT APPLIES TO V-01 (ACTUATED) AND V-03 (DN15 OUTLET).
DEAD LEG CHECK: L / D = 0 AT THE SEAT (ASME BPE LIMIT L / D <= 2).

BILL OF MATERIALS - OB-A7-ISO-5801-02

PT	QTY	DESCRIPTION	SIZE	MATERIAL / STANDARD	CERT / HEAT
1	21.4 m	TUBE, ORBITAL WELD, 1.65 WALL, SF4 ID FINISH	DN40	316L EP, ASME BPE	EN 10204 3.1 / H-44821
2	6	ELBOW 90° LONG TANGENT, BUTT WELD	DN40	316L EP, BPE 2CL	3.1 / H-44907
3	3	ZDL VALVE BODY, BLOCK, EPDM DIAPHRAGM	40 x 25	316L EP, BPE	3.1 / VB-2291
4	1	DIAPHRAGM VALVE, MANUAL, BW x TC	DN15	316L EP, BPE	3.1 / VB-2310
5	1	ACTUATOR, PNEUMATIC, FC, PROXIMITY FEEDBACK	DN25	SS / PPS	CoC
6	1	REDUCER CONCENTRIC, BUTT WELD	25 x 15	316L EP, BPE	3.1 / H-44930
7	3	INSTRUMENT TEE, SHORT OUTLET, TRI-CLAMP	40 x 1/2 in	316L EP, BPE	3.1 / H-44952
8	12	FERRULE, TRI-CLAMP, L14AM7	DN40/25/15	316L EP	3.1 / H-44960
9	6	GASKET, TRI-CLAMP, PLATINUM-CURED SILICONE	VARIOUS	USP CLASS VI	CoC / LOT 7731
10	6	CLAMP, 2-PIECE, WING NUT	VARIOUS	304	CoC
11	4	PIPE GUIDE, CLAMP-ON, PTFE LINED	DN40	316 / PTFE	CoC
12	1	ANCHOR, WELDED LUG + BASE PLATE	DN40	316L	3.1 / P-1182
13	1	HANGER, ROD M10 + CLEVIS	DN40	316	CoC
14	18 m	INSULATION 25 mm + SS CLADDING (IH)	DN40	MINERAL WOOL / 316	CoC
15	8	LINE ID LABEL / FLOW ARROW	-	PVC FREE	-

CUT LIST (TUBE ONLY, INCLUDES 3 mm WELD GAP, SAW CUT + FACE)

SPOOL	PC	FROM - TO	CUT LENGTH mm	END PREP	WELDS
SP-01	1	MATCH LINE ISO-5801-01 - ELBOW 1 (A1)	2 447	FERRULE / SQ	W1
SP-02	2	ELBOW 1 - FIELD CLOSURE (CEILING)	241	SQ / SQ	W2, W3 (F)
SP-02	3	FIELD CLOSURE - PT-5811 TEE	552	SQ / SQ	W3 (F), W4
SP-02	4	PT-5811 TEE - ELBOW 2 (B1)	722	SQ / SQ	W5, W6
SP-03	5	ELBOW 2 - ZDL V-01 (POU-5813)	322	SQ / SQ	W7, W8
SP-03	6	ZDL V-01 - ZDL V-02 (POU-5811)	297	SQ / SQ	W9, W10
SP-03	7	ZDL V-02 - ZDL V-03 (SV-5812)	222	SQ / SQ	W11, W12
SP-03	8	ZDL V-03 - DRAIN TEE (C1)	222	SQ / SQ	W13, W14
SP-03	9	DRAIN TEE - DRAIN VALVE V-04 (DN15)	215	SQ / TC	W15
SP-04	10	DRAIN TEE - FIELD CLOSURE (CEILING)	1 522	SQ / SQ	W16, W17 (F)
SP-04	11	FIELD CLOSURE - ELBOW 3 (D1)	67	SQ / SQ	W17 (F), W18
SP-04	12	ELBOW 3 - ELBOW 4 (E1)	1 497	SQ / SQ	W19, W20
SP-05	13	ELBOW 4 - TE-5812 TEE	1 187	SQ / SQ	W21, W22
SP-05	14	CE-5813 TEE - ELBOW 5 (F1)	485	SQ / SQ	W23, W24
SP-05	15	ELBOW 5 - MATCH LINE ISO-5801-03	1 047	SQ / FERRULE	W25

WELD LOG (ORBITAL GTAW, ASME BPE MJ; FIELD WELDS FLAGGED ON THE ISOMETRIC)

WELD	TYPE	SPOOL	SIZE	JOINT	WPS	WELDER	COUPON	BORESCOPE	RT	STATUS
W1	SHOP	SP-01	DN40	TUBE - ELBOW 1	WPS-OB-07	W-11	C-01	ACC 100 %	ACC	RELEASED
W2	SHOP	SP-02	DN40	ELBOW 1 - TUBE	WPS-OB-07	W-13	C-01	ACC 100 %	-	RELEASED
W3	FIELD	SP-02	DN40	CLOSURE AT CEILING	WPS-OB-09	W-15	C-02	ACC 100 %	ACC	PENDING
W4	SHOP	SP-02	DN40	TUBE - PT TEE	WPS-OB-07	W-12	C-02	ACC 100 %	-	RELEASED
W5	SHOP	SP-02	DN40	PT TEE - TUBE	WPS-OB-07	W-14	C-03	ACC 100 %	-	RELEASED
W6	SHOP	SP-02	DN40	TUBE - ELBOW 2	WPS-OB-07	W-11	C-03	ACC 100 %	ACC	RELEASED
W7	SHOP	SP-03	DN40	ELBOW 2 - TUBE	WPS-OB-07	W-13	C-04	ACC 100 %	-	RELEASED
W8	SHOP	SP-03	DN40	TUBE - ZDL V-01	WPS-OB-07	W-15	C-04	ACC 100 %	-	RELEASED
W9	SHOP	SP-03	DN40	ZDL V-01 - TUBE	WPS-OB-07	W-12	C-05	ACC 100 %	-	RELEASED
W10	SHOP	SP-03	DN40	TUBE - ZDL V-02	WPS-OB-07	W-14	C-05	ACC 100 %	-	RELEASED
W11	SHOP	SP-03	DN40	ZDL V-02 - TUBE	WPS-OB-07	W-11	C-06	ACC 100 %	ACC	RELEASED
W12	SHOP	SP-03	DN40	TUBE - ZDL V-03	WPS-OB-07	W-13	C-06	ACC 100 %	-	RELEASED
W13	SHOP	SP-03	DN40	ZDL V-03 - TUBE	WPS-OB-07	W-15	C-07	ACC 100 %	-	RELEASED
W14	SHOP	SP-03	DN40	TUBE - DRAIN TEE	WPS-OB-07	W-12	C-07	ACC 100 %	-	RELEASED
W15	SHOP	SP-03	DN15	TEE - DRAIN	WPS-OB-07	W-14	C-08	ACC 100 %	-	RELEASED
W16	SHOP	SP-04	DN40	TEE - RISER	WPS-OB-07	W-11	C-08	ACC 100 %	ACC	RELEASED
W17	FIELD	SP-04	DN40	CLOSURE AT CEILING	WPS-OB-09	W-13	C-09	ACC 100 %	ACC	PENDING
W18	SHOP	SP-04	DN40	TUBE - ELBOW 3	WPS-OB-07	W-15	C-09	ACC 100 %	-	RELEASED
W19	SHOP	SP-04	DN40	ELBOW 3 - TUBE	WPS-OB-07	W-12	C-10	ACC 100 %	-	RELEASED
W20	SHOP	SP-04	DN40	TUBE - ELBOW 4	WPS-OB-07	W-14	C-10	ACC 100 %	-	RELEASED
W21	SHOP	SP-05	DN40	ELBOW 4 - TUBE	WPS-OB-07	W-11	C-11	ACC 100 %	ACC	RELEASED
W22	SHOP	SP-05	DN40	TUBE - TE TEE	WPS-OB-07	W-13	C-11	ACC 100 %	-	RELEASED
W23	SHOP	SP-05	DN40	CE TEE - TUBE	WPS-OB-07	W-15	C-12	ACC 100 %	-	RELEASED
W24	SHOP	SP-05	DN40	TUBE - ELBOW 5	WPS-OB-07	W-12	C-12	ACC 100 %	-	RELEASED
W25	SHOP	SP-05	DN40	ELBOW 5 - TUBE	WPS-OB-07	W-14	C-13	ACC 100 %	-	RELEASED

LINE DATA

LINE	DN40-WFI-5802-S3A-IH
SERVICE	WFI HOT LOOP 2, 80 °C, TURBULENT > 1 m/s
PIPING CLASS	S3A - 316L EP, ORBITAL WELD, BPE SF4
DESIGN	6 barg / 150 °C (SIP)
OPERATING	4 barg / 80 °C
TEST	HYDROSTATIC 9 barg WITH WFI, 30 min
INSULATION	IH - 25 mm MINERAL WOOL, 316 CLADDING
SLOPE	1:100 MIN TO LOW POINT DRAIN V-04
PASSIVATION	CITRIC ACID, ASTM A967, AFTER HYDROTEST
P&ID	OB-A7-PID-5102 (DROP), UTL-5001 (LOOP)
INSPECTION	100 % BORESCOPE, 20 % RT + ALL FIELD WELDS

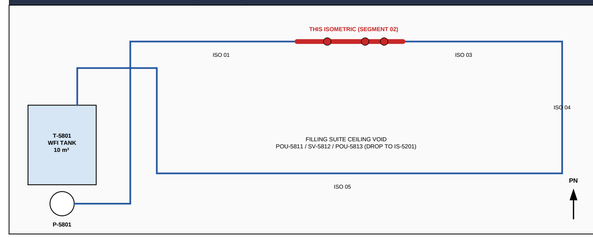
NOTES

1. DIMENSIONS IN mm TO PIPE CENTRE LINES; ELEVATIONS ABOVE FFL +0.000.
2. ORBITAL GTAW TO WPS-OB-07 (SHOP) / WPS-OB-09 (FIELD). FIELD CLOSURES W3 AND W17 AT THE CEILING (FLAGGED).
3. LOOP DRAINS TO LOW POINT C1 (DRAIN V-04); 1:100 FALL ON THE CEILING RUNS AND THE LOW RUN.
4. ZERO DEAD-LEG (ZDL) BLOCK VALVES V-01 TO V-03 WELDED IN THE LOW RUN; NO BRANCH > 2D BEFORE A SEAT.
5. WELD NUMBERS IN CIRCLES; BOM PIECE MARKS IN HEXAGONS; SPOOL NUMBERS IN OVALS.
6. THE LOOP DROPS THROUGH THE CEILING TO THE FILLER; POU-5813 FEEDS IS-5201 (VENDOR DRAWING VP-5201-104).
7. ILLUSTRATIVE SPECIMEN: ALL TAGS, NUMBERS AND DATA ARE FICTIONAL.

ISOMETRIC SYMBOLS

- SHOP WELD
- TRI-CLAMP JOINT
- FIELD WELD (FLAG)
- PIPE GUIDE / ANCHOR / HANGER
- W7 — WELD NUMBER
- FLOW ARROW
- 3 — BOM PIECE MARK
- SLOPE 1:100 (FALL)
- ZDL DIAPHRAGM VALVE, MANUAL
- SP-03 — SPOOL NUMBER
- DIAPHRAGM VALVE, PNEUMATIC
- CEILING PENETRATION SLEEVE
- CONCENTRIC REDUCER
- MATCH — MATCH LINE

KEY PLAN - WFI LOOP 2 IN CEILING VOID (PLAN, NTS)



REV	DATE	DESCRIPTION	BY	CHK	APPR
0	2026-07-14	ISSUED FOR DESIGN	RD	MIB	TV
B	2026-05-22	ISSUED FOR HAZOP	RD	MIB	TV
A	2026-03-06	ISSUED FOR INTERNAL REVIEW	RD	MIB	TV

ORYVIA BIOLOGICS SA
STERILE DRUG PRODUCT MANUFACTURING

AURELIA SITE - BUILDING 7
FILL / FINISH LINE 5 - PROJECT 24-0317

DATE: **2026-09-24**

DRAWING TITLE

PIPING ISOMETRIC - WFI DISTRIBUTION LOOP

LOOP 2, SEGMENT 02 AND DROP TO FILLER IS-5201 - FILLING SUITE CEILING VOID

LINE DN40-WFI-5802-S3A-IH

DRAWN	CHECKED	PROCESS APPROVAL	QA APPROVAL	ENGINEERING CONTRACTOR
R. DELACOUR 2026-09-24	M. ISHIKAWA-BRENT 2026-09-24	T. VANHOUTE 2026-09-24	S. ABERKANE 2026-09-24	**VELDRAN ENGINEERING PARTNERS** ILLUSTRATIVE DOCUMENT - NOT FOR CONSTRUCTION

DRAWING NUMBER	REV	SHEET	SCALE	SIZE
OB-A7-ISO-5801-02	**0**	**2 OF 5**	**NTS**	**ANSI D**