PIPELINE SYMBOLS

- MAIN PROCESS LINE
- PROCESS LINE — DIRECTION OF FLOW
- UTILITY LINE
- UNIT BATTERY LIMIT
- JACKETED LINE
- WH — HOT WATER TRACED LINE
- VB — STEAM TRACED LINE
- ELECTRICAL TRACING

VALVES AND FITTINGS

XXXX G ZZZ	GATE VALVE	XXXX D ZZZ	DIAPHRAGM VALVE
XXXX D ZZZ	GLOBE VALVE	XXXX M ZZZ	PLUG VALVE
XXXX R ZZZ	CHECK VALVE	XXXX FG ZZZ	FLOW INDICATOR
XXXX S ZZZ	BALL VALVE	XXXX F ZZZ	FILTER
XXXX B ZZZ	BUTTERFLY VALVE		

XX Y ZZZ
- SPECIFICATION CODE
- VALVE FITTING TYPE (G-D-R-S-B-M-FG-F)
- VALVE SIZE

PIPE CONNECTIONS AND ADDITIONAL SYMBOLS

- FLANGE
- BLIND FLANGE
- WELDED CAP
- CAP (S.W. OR THREADED)
- HOSE CONNECTION WITH CAP
- HOSE CONNECTION WITHOUT CAP
- REDUCER
- FLEXIBLE HOSE
- "Y" STRAINER WITH DRAIN VALVE
- "Y" STRAINER WITH PLUG BLANK OFF NOZZLE
- REVERSIBLE BLIND
- BLANK DISK
- ST — STEAM CONDENSATE DISCHARGE GROUP
- STEAM TRAP
- DRIP RING
- D — DRAIN CONNECTION
- P — MANOMETRIC CONNECTION
- Q — CALIBRATION NOZZLE
- S — SAMPLING POINT
- T — TEMPERATURE CONNECTION
- V — VENT
- TO/FROM EQUIPMENT OR LINE N° P. & I. DWG. N°
- % XX — SLOPE
- PIPING SPECIFICATION CHANGE

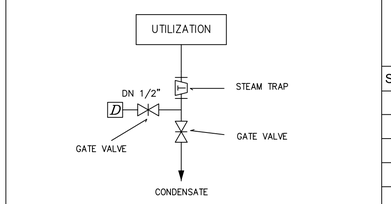
LINE LIST SYMBOLS

TRACING DESCRIPTION	ST	STEAM TRACED
	WT	WATER TRACED
	ET	ELECTRICAL TRACED
	SJ	STEAM JACKETED
	WJ	WATER JACKETED
	AJ	AIR JACKETED
TEST	A	AIR
	S	STEAM
	W	WATER
INSULATION	HC	INSULATED FOR HEAT CONSERVATION
	CC	INSULATED FOR COLD CONSERVATION
	PP	INSULATED FOR PERSONNEL PROTECTION
	WZ	WINTERIZING

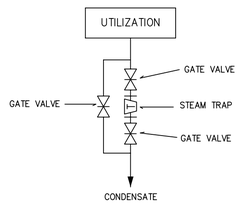
NOMENCLATURE

N°	Description	
11	COOLING WATER SUPPLY	
12	COOLING WATER RETURN	
13	CHILLED WATER SUPPLY	3 Bar – T: 15°C
14	CHILLED WATER RETURN	1 Bar – T: 22°C
15	COOLING TOWER WATER SUPPLY	
16	COOLING TOWER WATER RETURN	
17	HOT WATER SUPPLY	
18	HOT WATER RETURN	
19	PROCESS WATER	
20	DRINKING WATER	
21	HIGH PRESSURE STEAM	
22	HIGH PRESSURE STEAM CONDENSATE	
23	MEDIUM PRESSURE STEAM	
24	MEDIUM PRESSURE STEAM CONDENSATE	
25	MEDIUM PRESSURE STEAM	6 Bar – T: 164°C
26	MEDIUM PRESSURE STEAM CONDENSATE AT	6 Bar – T: 164°C
27	LOW PRESSURE STEAM AT	4 Bar – T: 151°C
28	LOW PRESSURE STEAM CONDENSATE AT	4 Bar – T: 151°C
29	FUEL OIL	
30	FUEL GAS	
31	INSTRUMENT AIR	
32	SERVICE AIR	
33	LUBRICATED AIR	
34	CLEAN WATER SEWER	
35	WASTE WATER SEWER	
36	ATMOSPHERE	
37	NITROGEN	

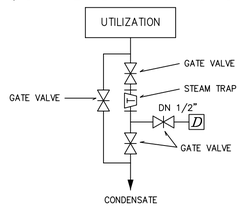
STEAM CONDENSATE DISCHARGE GROUP



(FOR SULFUR JACKET ONLY)

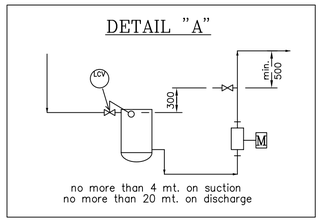


(FOR WIPE FILM EVAPORATOR ONLY)

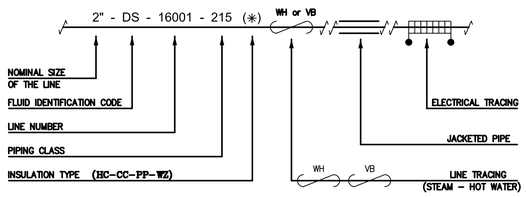


REMARKS

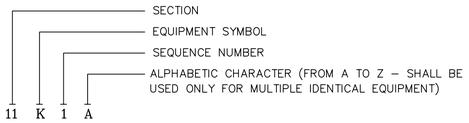
1) – FOR PIPING CLASSES SEE: 1E35.15.1090
2) – FOR PIPING INSULATION SPECIFICATION SEE: NI 80.1
3) – FOR THE SPECIFICATION OF THE STEAM TRACING SEE: TA 50.44
FOR HOT WATER SEE: TA 50.69 FOR ELECTRICAL SEE: .....
4) – FOR PROPORTIONING PUMP CALIBRATION SYSTEM SEE: (DETAIL "A")
5) – FOR LINES LIST SEE: 1E35.10.1132
6) – THE ARRANGEMENT OF PIPING DN ≤ 15 (1/2") FOR HEATING,COOLING TRACING FROM/TO HEATER AND EQUIPMENTS OR JACKET SHALL BE ESTABLISHED ON SITE.
7) – PROVIDE VENTS AT HIGHEST POINT AND DRAINS AT LOWEST POINTS OF LINES.
8) – INSTALL AT THE PIPING INLET A FILTERING NET.



LINE IDENTIFCATION



EQUIPMENT IDENTIFICATION



SYMB.	Description	SYMB.	Description
A	STIRRED EQUIPMENT	M	MOTOR
AB	PULSATION DAMPENER	MX	MIXER
AT	SPRAY–DRYING TOWER	N	BELT
C	COLUMN	P	PUMP
CL	SCREW FEEDER	R	REACTOR
CT	COOLING TOWER	RG	CHILLING GROUP
D	DEAREATOR	S	CYCLONE
DG	AIR DRYIER	SR	VIBRATING SIEVE
E	HEAT EXCHANGER	SS	STEEL STRUCTURE
EV	CONCENTRATOR	T	BUCKET ELEVATOR
F	FILTER	U	PACKAGE UNIT
FE	FILTER	V	VESSEL / STATIC AUTOCLAVE
H	BURNER	W	NOZZLE / CLEANING RING / HOIST
HC	HAMMERING CYLINDER	WG	PROPORTIONING GROUP
J	EJECTOR	X	BUGGY
K	BLOWER / FAN / COMPRESSOR	Y	SPECIAL PIECE
L	LOADING ARM	Z	SPECIAL EQUIPMENT

INSTRUMENT FUNCTIONS

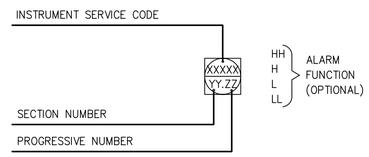
	1st LETTER	2nd LETTER	3d LETTER	4th LETTER	5th LETTER
A	ANALYZER	ALARM	ALARM	–	–
B	FLAME	–	–	–	–
C	CONDUCTIVITY	CONTROL	CONTROL	–	–
D	DENSITY	DIFFERENTIAL	–	–	–
E	–	SENSOR	–	–	–
F	FLOW	FAILURE	–	–	–
G	–	GLASS	–	–	–
H	HAND CONTROL	HIGH	HIGH	HIGH	HIGH
I	CURRENT	INDICATOR	INDICATOR	–	–
K	CONTROL	LOCAL PANEL	–	–	–
L	LEVEL	LOW	LOW	LOW	LOW
M	MOISTURE	–	–	–	–
O	–	ORIFICE	–	–	–
P	PRESSURE	–	–	–	–
Q	–	TOTALIZER	–	–	–
R	–	RECORDER	RECORDER	–	–
S	SPEED	SWITCH	SOLENOID	SOLENOID	–
T	TEMPERATURE	TRANSMITTER	TRANSMITTER	TRANSMITTER	–
U	–	PANEL	–	–	–
V	VIBRATION	VALVE	VALVE	VALVE	–
Y	MOTOR STATUS	CONVERTER OR RELAY	–	–	–
Z	POSITION	SPEED VARIATOR	–	–	–
W	WEIGHT	–	–	–	–

I/P = CURRENT TO PRESSURE CONVERTER

INSTRUMENT SYMBOLS

- FLOW ELEMENT (ORIFICE)
- FT I.O. — FLOW TRASMITTER INTEGRAL ORIFICE
- FI — ROTAMETER
- FQI — POSITIVE DISPLACEMENT TYPE FLOW TOTALIZING INDICATOR
- MASS FLOW METER
- PRESSURE INSTRUMENT WITH DIAPHRAGM (CHEMICAL) SEAL
- PRESSURE INSTRUMENT WITH DIAPHRAGM (CHEMICAL) SEAL DIRECTLY FACED TO THE LINE
- LOCALLY MOUNTED INSTRUMENT
- PANEL MOUNTED INSTRUMENT (CONTROL ROOM PANEL)
- PANEL MOUNTED INSTRUMENT (AUXILLARY LOCAL PANEL)
- REAR PANEL MOUNTED
- REAR PANEL MOUNTED (LOCAL)
- SHARED DISPLAY/SHARED CONTROL (DCS)
- PANEL MOUNTED STATUS LAMP
- HARDWIRED CONNECTION / SOFTWARE CONNECTION
- PNEUMATIC CONNECTION
- CAPILLARY EXTENSION
- ZSHL — FO/FC/FL — ON/OFF VALVE WITH SINGLE OR DOUBLE EFFECT ACTUATOR AND LIMIT (OR PROXIMITY) SWITCHES (OPEN=O/CLOSE=C) FOR SINGLE EFFECT ACTUATOR FAIL POSITION WILL BE INDICATED BY FO (FAIL OPEN) OR FC (FAIL CLOSE) FL (FAIL LOCK)
- PRESSURE REDUCING REGULATOR WITH INTERNAL CONNECTION
- FO/FC/FL — CONTROL VALVE WITH ACTUATOR FAIL POSITION WILL BE INDICATED BY FO (FAIL OPEN) OR FC (FAIL CLOSE) FL (FAIL LOCK)
- S — TWO WAY/THREE WAY SOLENOID VALVE FAIL POSITION WILL BE INDICATED BY THE ARROW
- S — FOUR WAY SOLENOID VALVE
- THREE WAY CONTROL VALVE FAIL POSITION WILL BE INDICATED BY THE ARROW
- I — INTERLOCK LOGIC VIA RELAY

INSTRUMENT NUMBERING SYSTEM



THE INSTRUMENTS WILL BE IDENTIFIED BY MEANS OF A CODE WITH THREE SEPARATE FIELDS AS FOLLOWS: XXXXX.YY.ZZ

WHERE:
XXXXX: INSTRUMENT SERVICE CODE (2 TO 5 LETTERS) AS INDICATED ON TABLE ABOVE
YY: SECTION NUMBER
ZZ: PROGRESSIVE NUMBER

FLUID LIST

SIMB.	DESCRIPTION	PIPING CLASS N°	BASE MATERIAL	RATING	REV.
AH	HOT AIR	109	CARBON STEEL	PN 16	
AK	ADDITIVES (Pneumatic transport line)	129	CARBON STEEL	–	
AK	ADDITIVES (Downfall)	124	CARBON STEEL	–	
AP	PROCESS AIR	206	CARBON STEEL	ANSI 150#	
AS	INSTRUMENT AIR	202	CARBON STEEL GALVAN.	ANSI 150#	
AT	ATMOSPHERIC AIR	(Same class of the line or the unit)			
AV	DISCHARGE TO THE AIR	(Same class of the line or the unit)			
CB	LOW PRESSURE CONDENSATE	205	CARBON STEEL	ANSI 150#	
CN	SODIUM CARBONATE (Pneumatic transport line)	129	CARBON STEEL	–	
CN	SODIUM CARBONATE (Downfall)	124	CARBON STEEL	–	
CX–PL	POLYMERS	216	AISI 316	ANSI 150#	
DA	DEDUSTING AIR	–	C.S. LIGHT TYPE	–	
EY	ENZYME	–	AISI 304 LIGHT TYPE	–	
GN	NATURAL GAS	212	CARBON STEEL	ANSI 150#	
GO	GAS–OIL	212	CARBON STEEL	ANSI 150#	
ML	LIQUID RAW MATERIAL MIXSTURE	215	AISI 304	ANSI 150#	
MT	ACTIVE MATTER	216	AISI 316	ANSI 150#	
NB	SODIUM SULPHATE (Pneumatic transport line)	129	CARBON STEEL	–	
NB	SODIUM SULPHATE (Downfall)	124	CARBON STEEL	–	
NS	SODIUM SILICATE	212	CARBON STEEL	ANSI 150#	
PD	DETERGENT POWDER	124	CARBON STEEL	–	
PF	PERFUME	216	AISI 316	ANSI 150#	
PN	SODIUM PERBORATE (Pneumatic transport line)	129	CARBON STEEL	–	
QI	POLLUTED WATERS	203	CARBON STEEL	ANSI 150#	
SA	HIGH PRESSION SLURRY	126	CARBON STEEL	600#	
SB	LOW PRESSION SLURRY	212	CARBON STEEL	ANSI 150#	
SB	LOW PRESSION SLURRY	215	AISI 304	ANSI 150#	
SD	DRAINAGE	(Same class of the line or the unit)			
SK	SPECLES	124	CARBON STEEL	–	
TD	TAED	124	CARBON STEEL	–	
TF	SODIUM TRIPOLYPHOSPHATE (Pneumatic transport line)	129	CARBON STEEL	–	
TF	SODIUM TRIPOLYPHOSPHATE (Downfall)	124	CARBON STEEL	–	
VB	LOW PRESSURE STEAM	205	CARBON STEEL	ANSI 150#	
WH	HOT WATER	203	CARBON STEEL	ANSI 150#	
WP	PROCESS WATER	203	CARBON STEEL	ANSI 150#	
WQ	RECOVERY WATER	203	CARBON STEEL	ANSI 150#	
WR	COOLING WATER	203	CARBON STEEL	ANSI 150#	
ZL	ZEOLITE (Pneumatic transport line)	129	CARBON STEEL	–	
ZL	ZEOLITE (Downfall)	124	CARBON STEEL	–	

REVISION Revisione	REVISION HISTORY Storia delle revisioni	DRAWN Autore	DATE Data
4	REVISED FOR JOB 1E35Z (FOR BASIC ENGINEERING)	Giacalone	14/06/10

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desmet ballestra

Desmet Ballestra s.p.a.
MILANO - Italy

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JOB Commessa	2A09 / 1E35Z	SHEET Foglio	1 / 1
PLANT Impianto	SABIZ	SHEET REVISION Revisione Foglio	4
TITLE Titolo	GENERAL NOTES SYMBOLS AND FLUID LIST	SCALE Scala	-
		SECTION Sezione	-

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