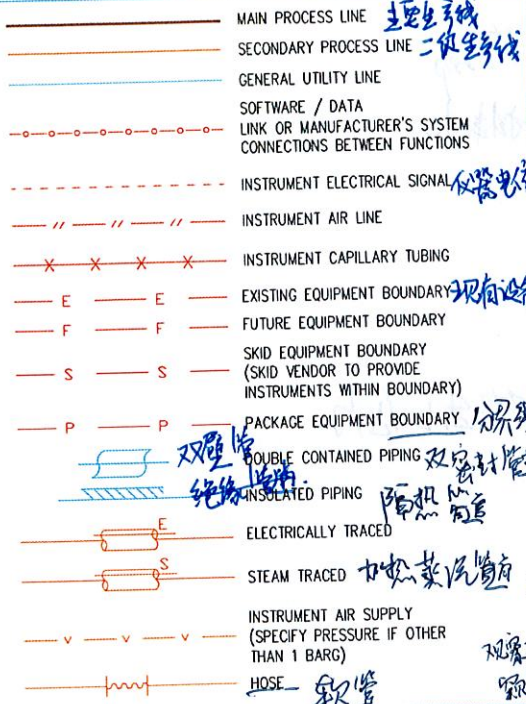
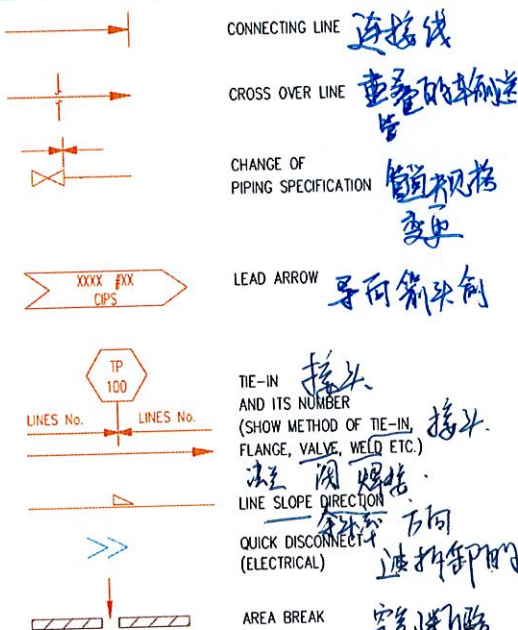


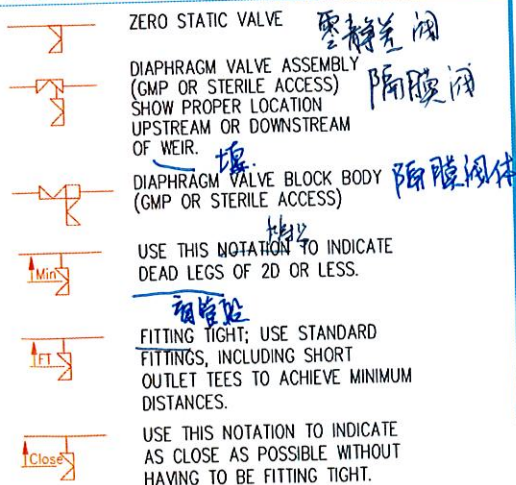
PROCESS LINE



DESCRIPTION OF FLOW



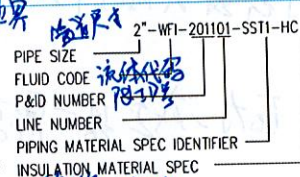
VALVE ASSEMBLY DETAILS



INSULATION & LINE TRACING

SYMBOL	绝热	SERVICE
HC	INSULATION FOR HEAT CONSERVATION	热绝缘
CC	INSULATION FOR COLD CONSERVATION	冷绝缘
PP	INSULATION FOR PERSONNEL PROTECTION	人员保护
PS	INSULATION FOR PROCESS STABILIZATION	过程稳定
ET	ELECTRIC TRACING	电伴热
LT	LIQUID TRACING	液伴热
ST	STEAM TRACING	蒸汽伴热
SJ	STEAM JACKETING	蒸汽夹套

LINE IDENTIFICATION



NOZZLE IDENTIFICATION

Component Code	Component
A	AGITATOR 搅拌器
B	SPRAYBALL 喷嘴球
C	CONDENSER 冷凝器
D	DRAIN/OUTLET 排水/出口
F	FEED/INLET 进料/入口
G	SIGHT GLASS 视镜
H	HANDHOLE 手孔
I	JACKET 夹套
K	L LEVEL 液位
L	LEVEL 液位
M	MANWAY 人孔
N	NOZZLE 喷嘴
O	ORIFICE 孔板
P	PRESSURE 压力
R	RELIEF VALVE 减压阀
S	SPARE 备用
T	TEMPERATURE 温度
U	VENT 排气
V	VENT 排气
W	WELD 焊缝
X	INSTRUMENT PORTS 仪表接口
Y	SAMPLE 取样
Z	Z 未知

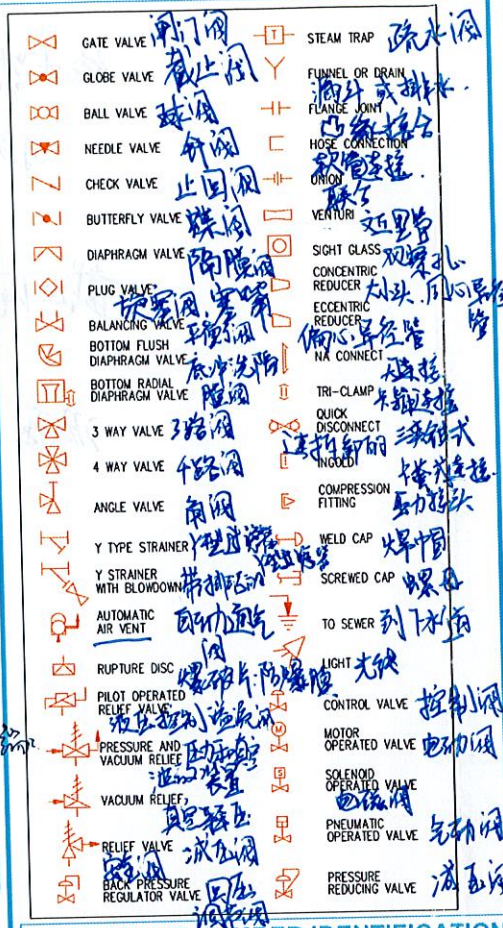
COMPONENT IDENTIFICATION

Component Code	Component
AV	Air Vent 空气阀
ED	Eductor/Venturi 喷射器/文丘里管
OR	Orifice 孔板
PRV	Pressure Regulating Valve 压力调节阀
PSE	Pressure Safety Element (Rupture Disk) 压力安全元件
PSV	Pressure Safety Valve 压力安全阀
SG	Sight Glass 视镜
ST	Safety Trap 安全阀
TW	Thermowell 热电偶套管
V	Valve (Non-actuated, any type) 阀门 (非驱动, 任何类型)
VB	Vacuum Breaker 真空破坏器
XV	Actuated Valve (on/off) 驱动阀门
YS	Strainer 过滤器

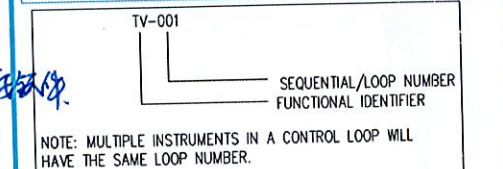
FUNCTION IDENTIFICATION

Function Code	Function
BD	BUBBLE DETECTOR 气泡检测器
pH	pH 值
Σ	SUMMATION 总和
Δ	DIFFERENCE 差值
ORP	OXIDATION REDUCTION POTENTIAL 氧化还原电位
SEL	SELECTOR 选择器
HOA	HAND-OFF-AUTO 手动/自动切换
I/P	CURRENT TO PNEUMATIC TRANSDUCER 电流到气动变送器
DO	DISSOLVED OXYGEN 溶解氧
DO ₂	DISSOLVED OZONE 溶解臭氧
COND	CONDUCTIVITY 电导率
UV	ULTRAVIOLET ABSORBANCE 紫外吸收率
TOC	TOTAL ORGANIC CARBON 总有机碳
RI	REFRACTIVE INDEX 折射率
CALC	CALCULATION 计算
RES	RESISTIVITY 电阻率
R/L	REMOTE/LOCAL SWITCH 远程/本地切换
BIAS	BIAS 偏差
VIS	VISIBLE LIGHT ABSORBANCE 可见光吸收率
CL ₂	CHLORINE 氯气
TMP	TRANSMEMBRANE PRESSURE 跨膜压力
RH	HUMIDITY 湿度
S/S	START/STOP 启动/停止
FBR	FORWARD-BREAK-REVERSE 正向-反向-反向
CD	CELL DENSITY 细胞密度

VALVES & FITTINGS



INSTRUMENT NUMBER IDENTIFICATION



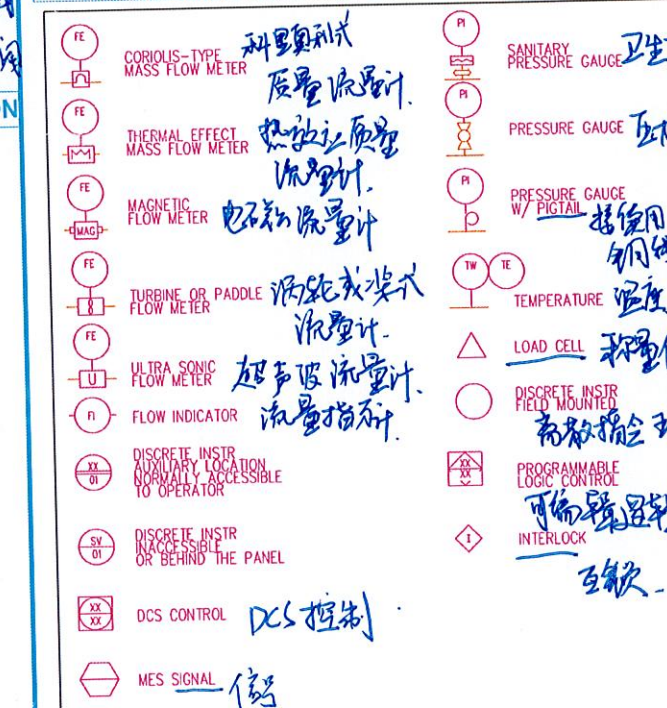
ABBREVIATIONS

S.C.	SAMPLE CONNECTION
H.P.	HIGH POINT
L.P.	LOW POINT
FO	FAIL OPEN
FC	FAIL CLOSED
LO	LOCK OPEN
LC	LOCK CLOSED
°C	DEGREE CENTIGRADE
°F	DEGREE FAHRENHEIT
μm	MICRON
LPM	LITERS PER MINUTE
KG/HR	KILOGRAM PER HOUR
KW	KILOWATT
DIA	DIAMETER
T/T	TANGENT TO TANGENT
L	LITERS
USG	GALLONS
FT	FEET
M	METERS
DES. PRESS.	DESIGN PRESSURE
mm	MILLIMETERS
SCFM	STANDARD CUBIC FEET PER MINUTE
PSIG	POUNDS PER SQUARE INCH (GAUGE)
V	VENDOR SUPPLIED

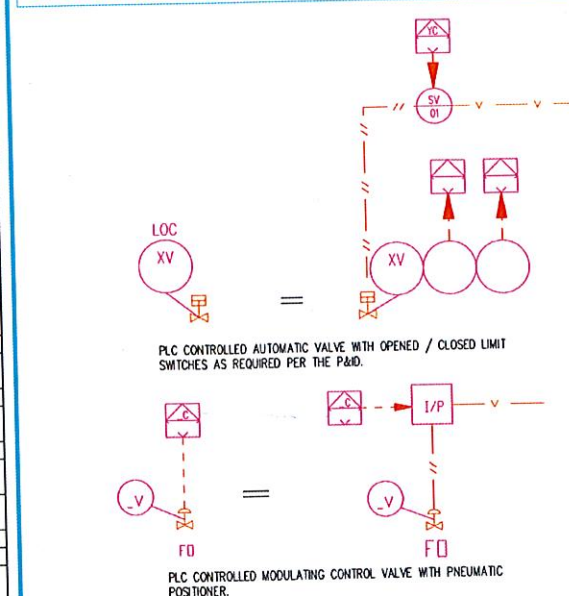
INSTRUMENT & CONTROL LOOP TAGGING

FIRST LETTER	SUCCESSING LETTER
Measured or Initiating Variable	Modifier
A Analysis, Quality	Alarm
B Burner	User's Choice
C Combustion Conductivity	User's Choice
D Density, Specific Gravity	Control
E Voltage	Sensor (Primary Element)
F Flow Rate	Rate (Fraction)
G Dimension	Glass, Gauge
H Hand (Manual) Operated	High
I Current (Electrical)	Indicate
J Power	Scan
K Time, Time Schedule	Time Rate, Change
L Level, Limit Switch	Light (Pilot)
M Moisture or Humidity	Momentary
N User's Choice	Orifice
O Equipment Operation	Open
P Pressure, Vacuum	Differential
Q Quantity	Integrate, Totalize
R Restriction	Regulator
S Speed, Solenoid, Frequency	Safety
T Temperature	Transmit
U Control Equipment	Mnemonic
V Vibration	Mnemonic
W Weight, Force	Well
X Common	X Axis
Y Event, State or Presence	Y Axis
Z Position, Dimension	Z Axis
	Relay, Compute, Convert
	Driver, Actuator, Unclassified Final Control Element

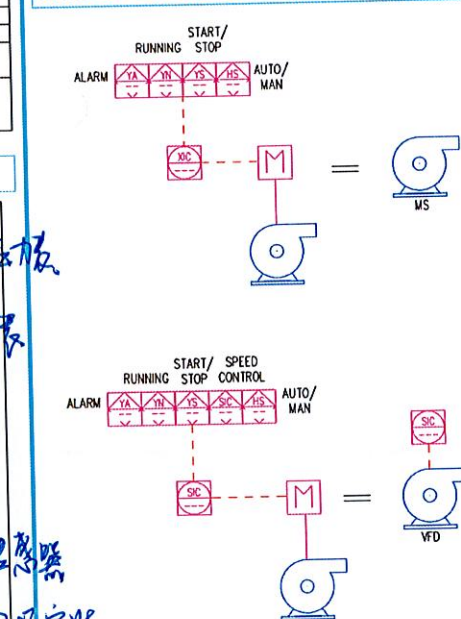
INSTRUMENTATION



SIMPLIFIED VALVE REPRESENTATION



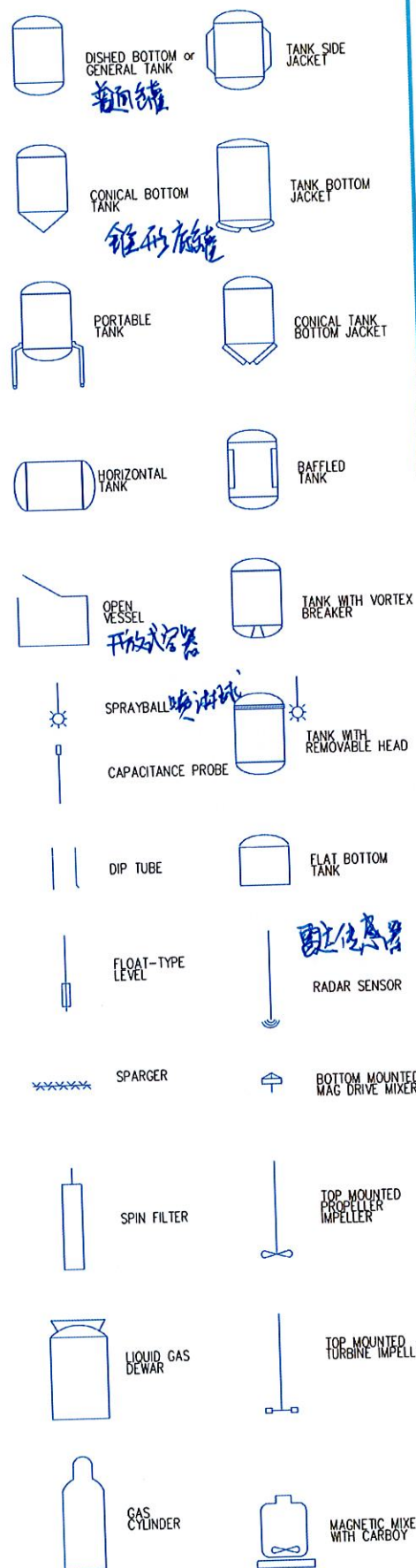
SIMPLIFIED MOTOR REPRESENTATION



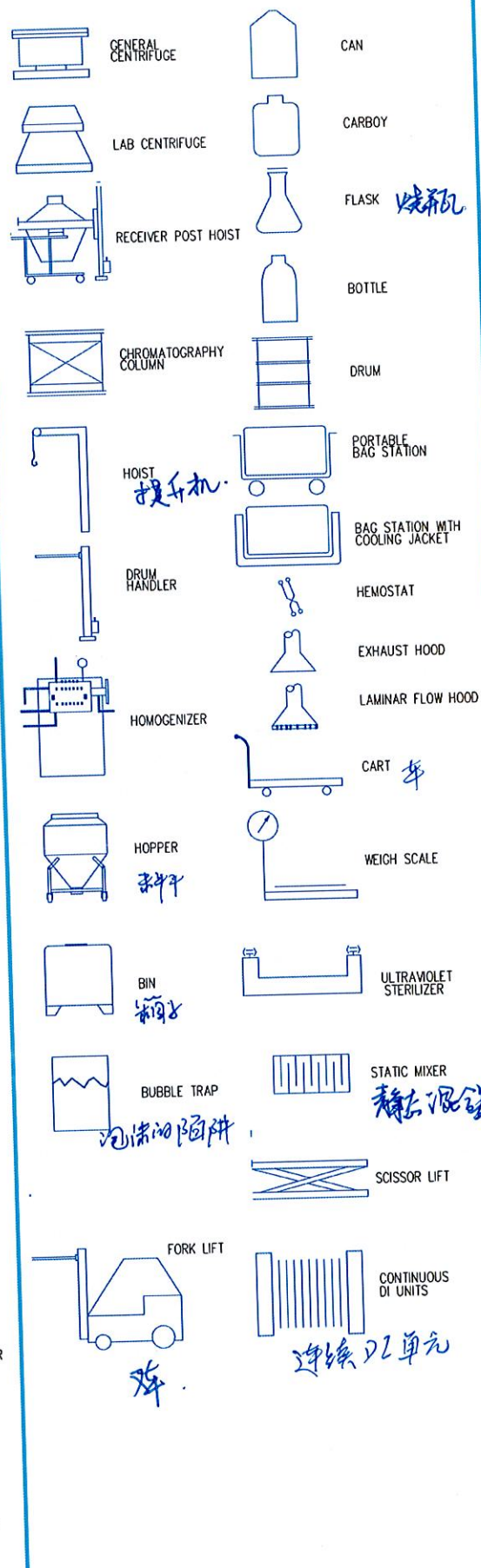
Framework 构架

Venturi: 文丘里管 (一种流体流量测定装置 = venturi tube).

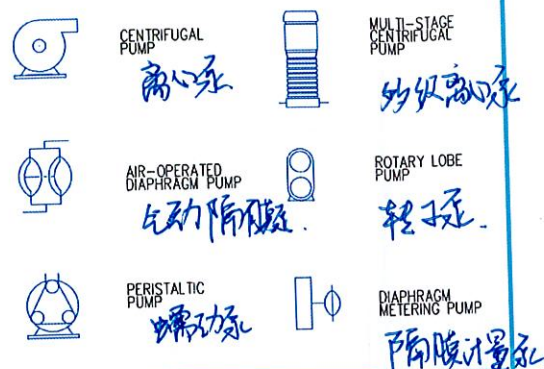
TANKS & ACCESSORIES SYMBOLS



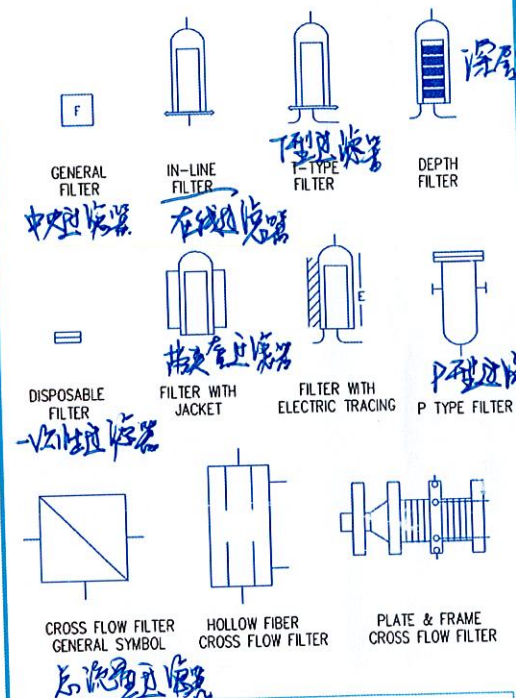
PROCESS EQUIPMENT SYMBOLS



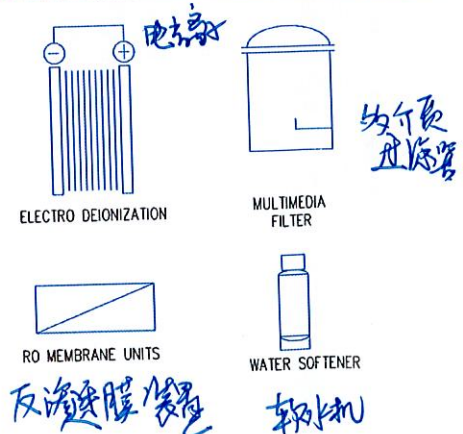
PUMP SYMBOLS



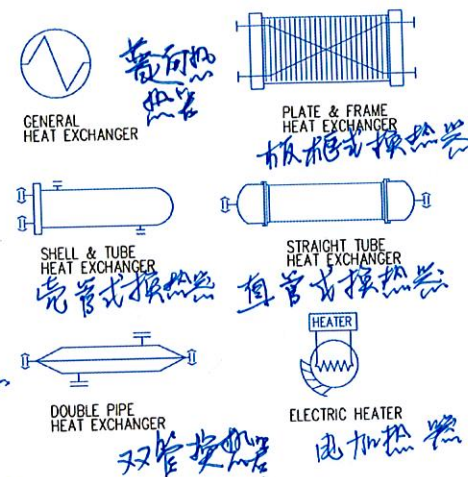
FILTER EQUIPMENT SYMBOLS



MISCELLANEOUS SYMBOLS



HEAT EXCHANGER SYMBOLS



ROOM NAME & NOTE FONT

1. THE ROOM NAME BLOCK AS FOLLOW:

细胞培养间
CELL CULTURE
B27
0.0000 sqm

2. EQUIPMENT TAG AS FOLLOW:

FL-B1102A

SUFFIX 后缀
SEQUENTIAL NUMBER 顺序号
SYSTEM NUMBER 系统编号
EQUIPMENT TYPE CODE 设备型号代码

NOTE: FOR TWO OR MORE IDENTICAL EQUIPMENT FOR THE SAME SERVICE, A SUFFIX WITH A LETTER SHALL BE USED.

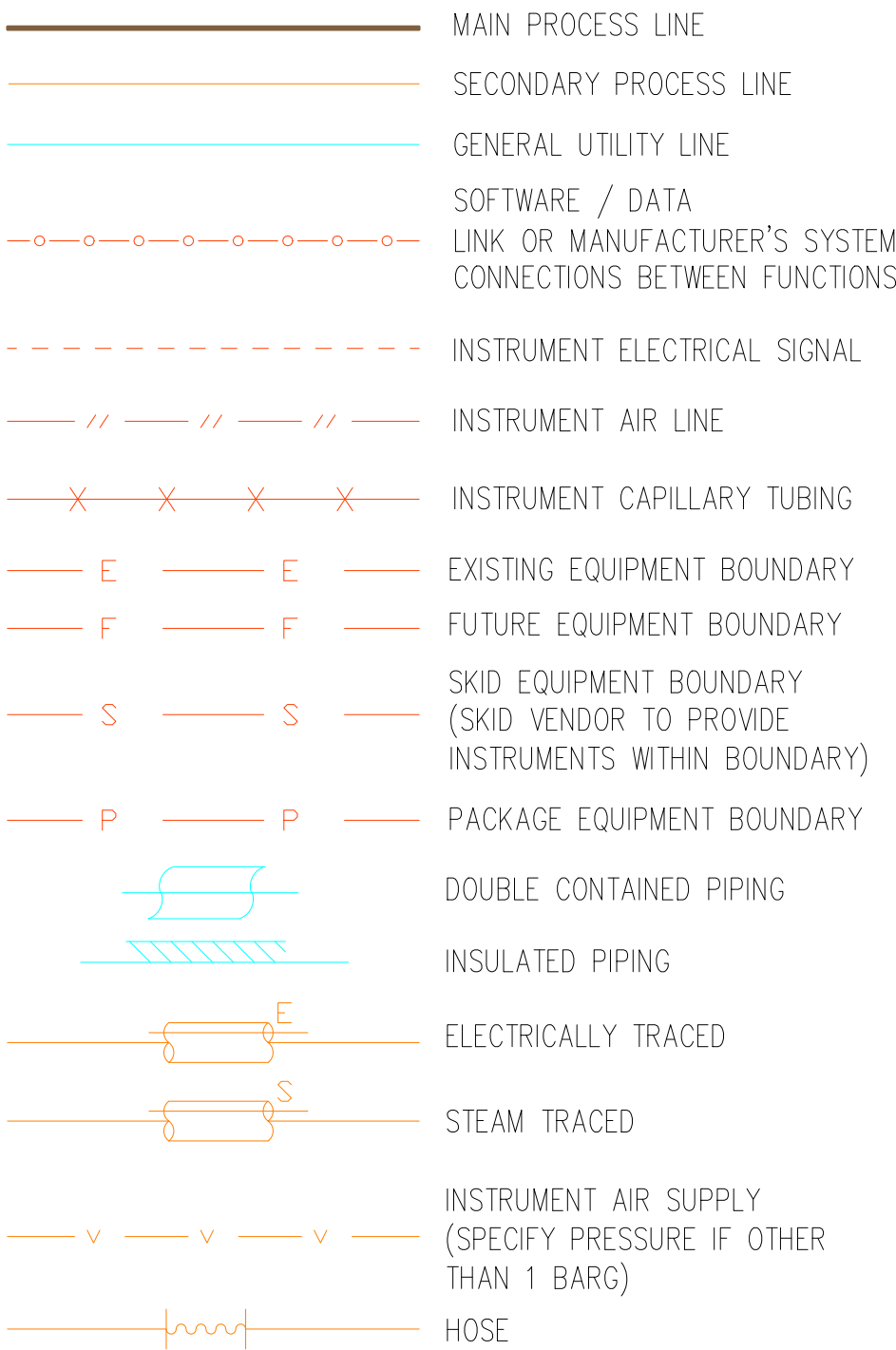
3. HOLD BUBBLE REPRESENTS AN ITEM AWAITING FURTHER INFORMATION.



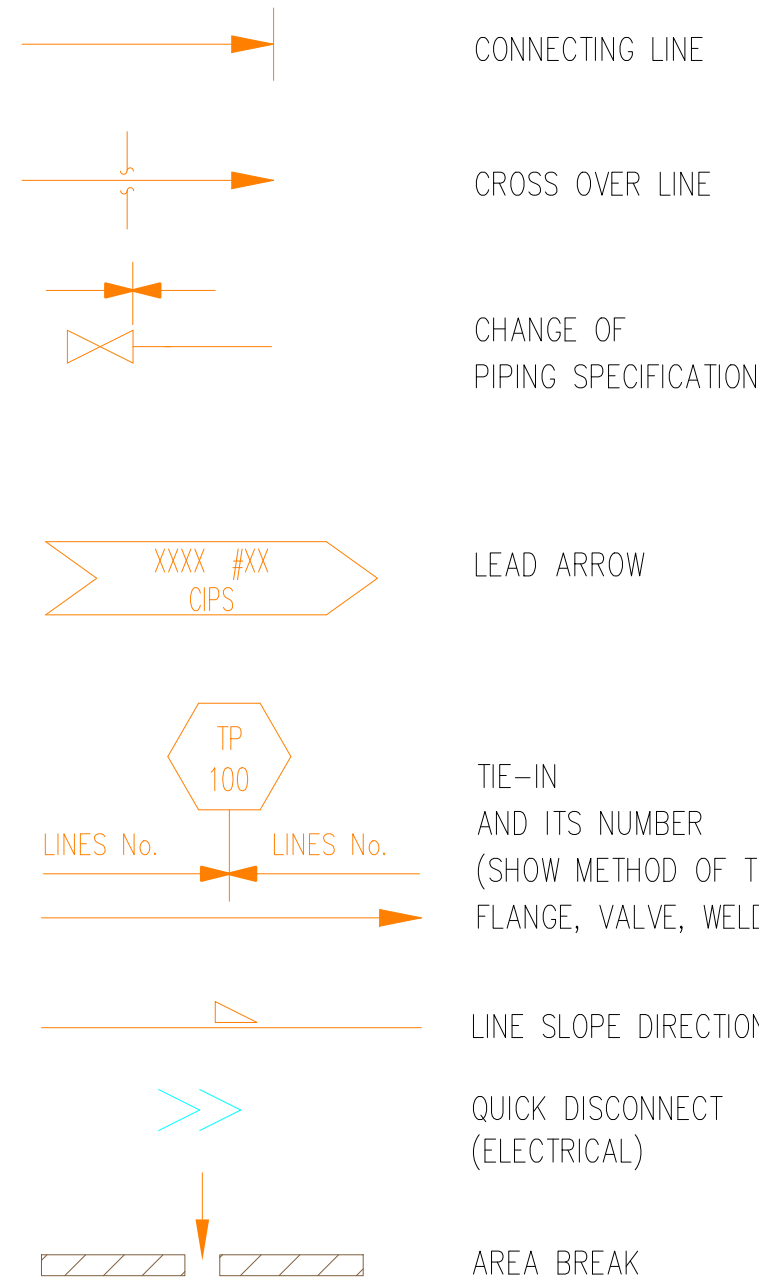
M MOTOR STARTER

VFD VARIABLE FREQUENCY DRIVE

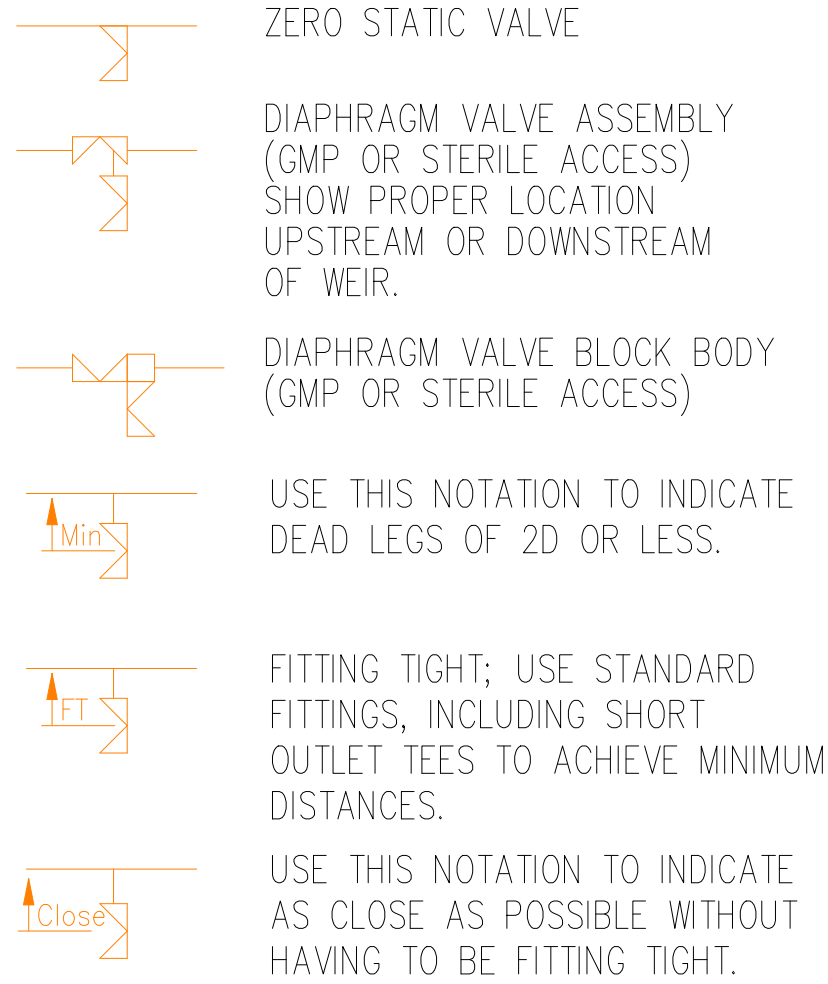
PROCESS LINE



DESCRIPTION OF FLOW



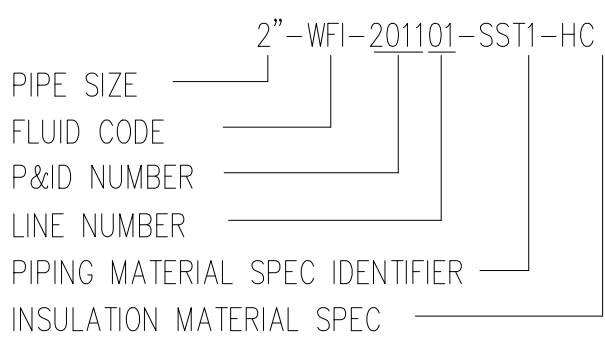
VALVE ASSEMBLY DETAILS



INSULATION & LINE TRACING

SYMBOL	SERVICE
HC	INSULATION FOR HEAT CONSERVATION
CC	INSULATION FOR COLD CONSERVATION
PP	INSULATION FOR PERSONNEL PROTECTION
PS	INSULATION FOR PROCESS STABILIZATION
ET	ELECTRIC TRACING
LT	LIQUID TRACING
ST	STEAM TRACING
SJ	STEAM JACKETING

LINE IDENTIFICATION



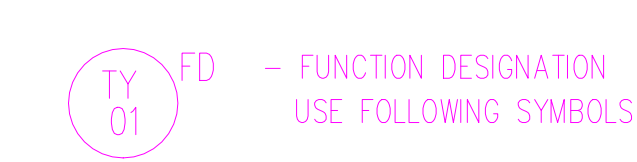
NOZZLE IDENTIFICATION

A AGITATOR	N
B SPRAYBALL	O
C CONDENSER	P PRESSURE
D DRAIN/OUTLET	Q
F FEED/INLET	R RELIEF
G SIGHT GLASS	S SPARE
H HANDHOLE	T TEMPERATURE
I	U
J JACKET	V VENT
K	W
L LEVEL	X INSTRUMENT PORTS
M MANWAY	Y SAMPLE
	Z

COMPONENT IDENTIFICATION

Component Code	Component
AV	Air Vent
ED	Eductor/Venturi
OR	Orifice
PRV	Pressure Regulating Valve
PSE	Pressure Safety Element (Rupture Disk)
PSV	Presure Safety Valve
SG	Sight Glass
ST	Safety Trap
TW	Thermowell
V	Valve (Non-actuated, any type)
VB	Vacuum Breaker
XV	Actuated Valve (on/off)
YS	Strainer

FUNCTION IDENTIFICATION



BD	= BUBBLE DETECTOR
pH	= pH
Σ	= SUMMATION
Δ	= DIFFERENCE
ORP	= OXIDATION REDUCTION POTENTIAL
SEL	= SELECTOR
HOA	= HAND-OFF-AUTO
I/P	= CURRENT TO PNEUMATIC TRANSDUCER
DO	= DISSOLVED OXYGEN
dO ₃	= DISSOLVED OZONE
COND	= CONDUCTIVITY
UV	= ULTRAVIOLET ABSORBANCE
TOC	= TOTAL ORGANIC CARBON
RI	= REFRACTIVE INDEX
CALC	= CALCULATION
RES	= RESISTIVITY
R/L	= REMOTE/LOCAL SWITCH
BIAS	= BIAS
VIS	= VISIBLE LIGHT ABSORBANCE
CL ₂	= CHLORINE
TMP	= TRANSMEMBRANE PRESSURE
RH	= HUMIDITY
S/S	= START/STOP
FBR	= FORWARD-BREAK-REVERSE
CD	= CELL DENSITY

VALVES & FITTINGS



INSTRUMENT NUMBER IDENTIFICATION



NOTE: MULTIPLE INSTRUMENTS IN A CONTROL LOOP WILL HAVE THE SAME LOOP NUMBER.

ABBREVIATIONS

S.C. = SAMPLE CONNECTION
H.P. = HIGH POINT
L.P. = LOW POINT
FO = FAIL OPEN
FC = FAIL CLOSED
LO = LOCK OPEN
LC = LOCK CLOSED
°C = DEGREE CENTIGRADE
°F = DEGREE FAHRENHEIT
μm = MICRON
LPM = LITERS PER MINUTE
KG/HR = KILOGRAM PER HOUR
KW = KILOWATT
DIA = DIAMETER
T/T = TANGENT TO TANGENT
L = LITERS
USG = GALLONS
FT = FEET
M = METERS
DES. PRESS. = DESIGN PRESSURE
mm = MILLIMETERS
SCFM = STANDARD CUBIC FEET PER MINUTE
PSIG = POUNDS PER SQUARE INCH (GAUGE)
V = VENDOR SUPPLIED

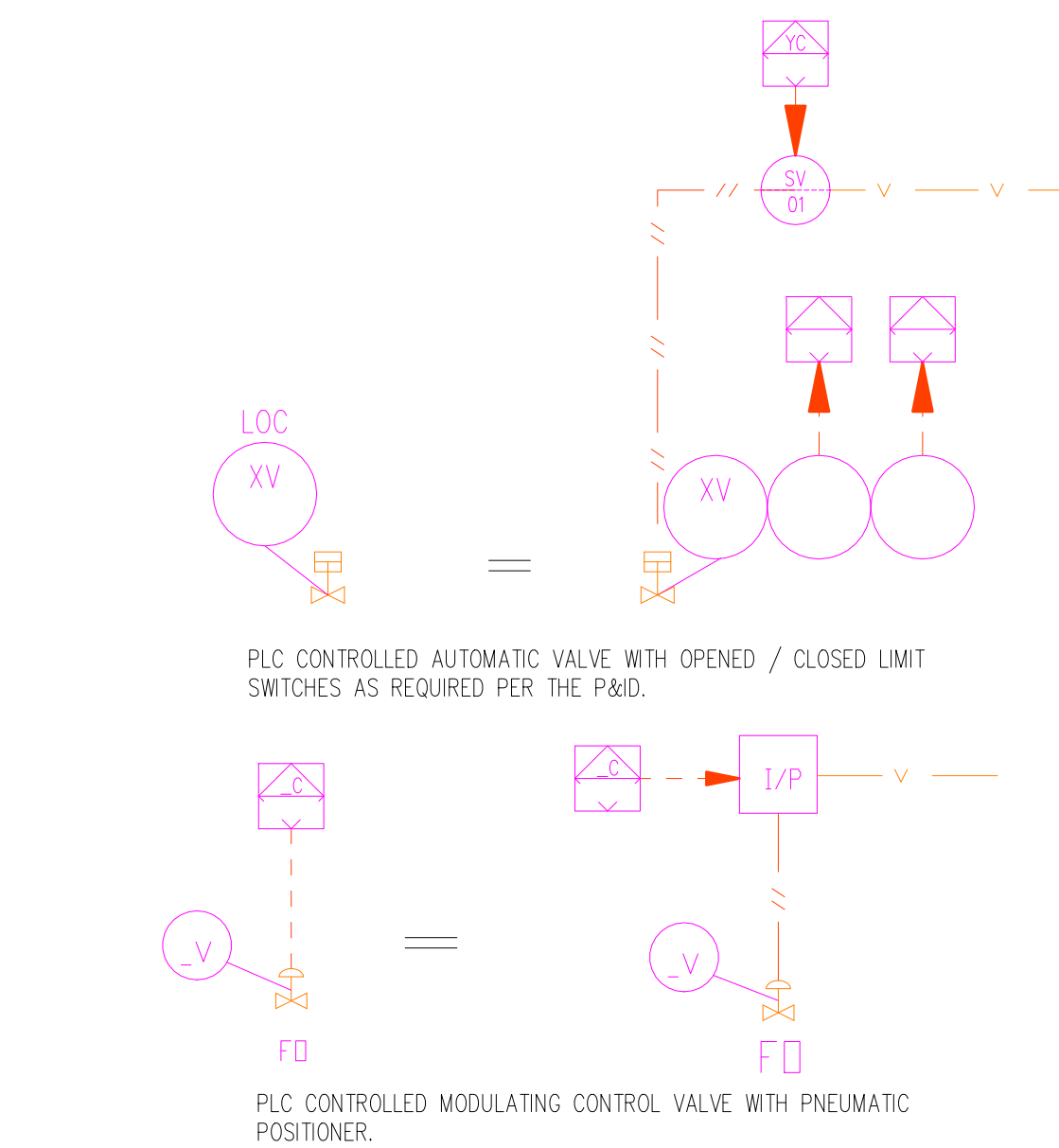
INSTRUMENT & CONTROL LOOP TAGGING

	FIRST LETTER		SUCCEEDING LETTER	
	Measured or Initiating Variable	Modifier	Readout or Passive Function	Output Function
			Alarm	Modifier
A	Analysis, Quality			
B	Burner		User's Choice	User's Choice
C	Combustion Conductivity			Control
D	Density, Specific Gravity	Differential		Closed
E	Voltage		Sensor (Primary Element)	
F	Flow Rate	Rate (Fraction)		
G	Dimension		Glass, Gauge	
H	Hand (Manual Operated)			High
I	Current (Electrical)		Indicate	
J	Power	Scan		
K	Time, Time Schedule	Time Rate, Change		Control Station
L	Level, Limit Switch		Light (Pilot)	Low
M	Moisture or Humidity	Momentary		Middle, Intermediate
N	User's Choice			
O	Equipment Operation		Orifice	Open
P	Pressure, Vacuum	Differential	Point (Test) Connect	Panel
Q	Quantity	Integrate, Totalize		
R	Restriction	Regulator	Record	Regulator
S	Speed, Solenoid, Frequency	Safety		Switch
T	Temperature			Transmit
U	Control Equipment		Mnemonic	Mnemonic
V	Vibration			Mnemonic
W	Weight, Force		Well	Valve
X	Common	X Axis		
Y	Event, State or Presence	Y Axis		relay, Compute, Convert
Z	Position, Dimension	Z Axis		Driver, Actuator, Unclassified Final Control Element

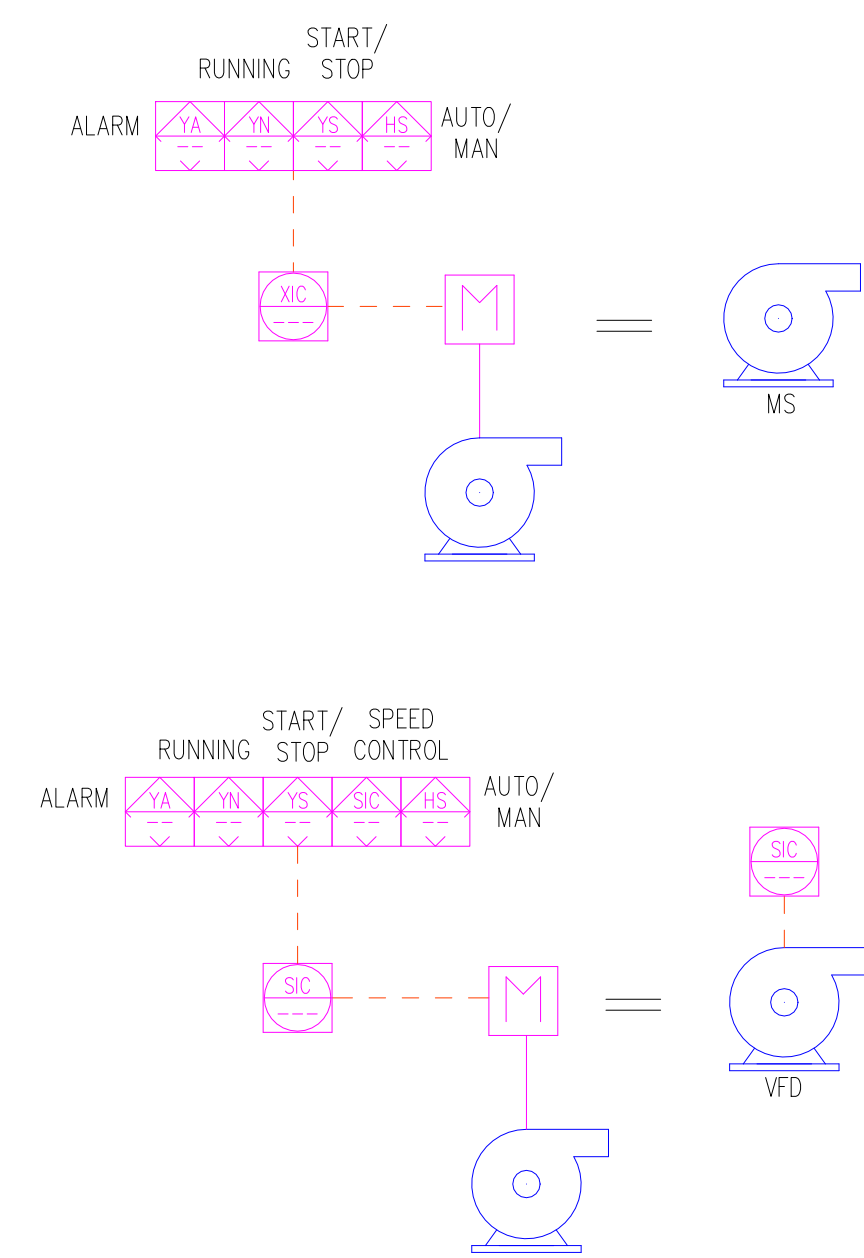
INSTRUMENTATION



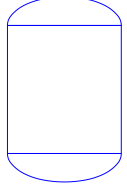
SIMPLIFIED VALVE REPRESENTATION



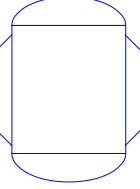
SIMPLIFIED MOTOR REPRESENTATION



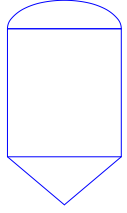
TANKS & ACCESSORIES SYMBOLS



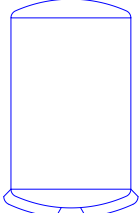
DISHED BOTTOM or
GENERAL TANK



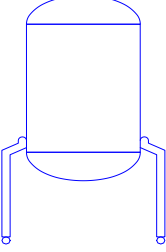
TANK SIDE
JACKET



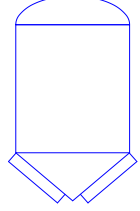
CONICAL BOTTOM
TANK



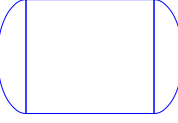
TANK BOTTOM
JACKET



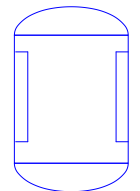
PORTABLE
TANK



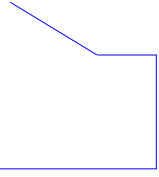
CONICAL TANK
BOTTOM JACKET



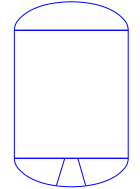
HORIZONTAL
TANK




BAFFLED
TANK




OPEN
VESSEL




TANK WITH VORTEX
BREAKER



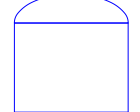
SPRAYBALL



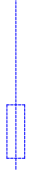
CAPACITANCE PROBE




DIP TUBE




ELAT BOTTOM
TANK




FLOAT-TYPE
LEVEL




RADAR SENSOR



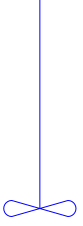
SPARGER



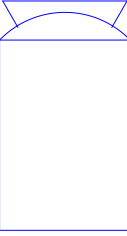
BOTTOM MOUNTED
MAG DRIVE MIXER



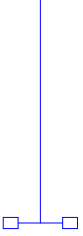
SPIN FILTER




TOP MOUNTED
PROPELLER
IMPELLER



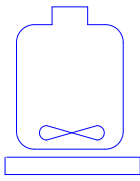
LIQUID GAS
DEWAR




TOP MOUNTED
TURBINE IMPELLER




GAS
CYLINDER



MAGNETIC MIXER
WITH CARBOY

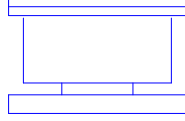


MOTOR STARTER

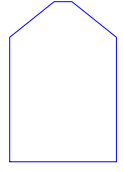


VARIABLE
FREQUENCY DRIVE

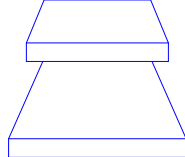
PROCESS EQUIPMENT SYMBOLS



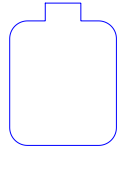
GENERAL
CENTRIFUGE



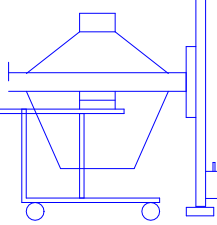
CAN



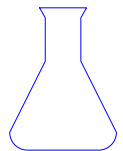
LAB CENTRIFUGE



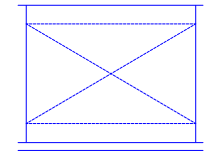
CARBOY



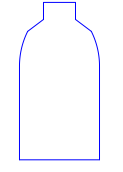
RECEIVER POST HOIST



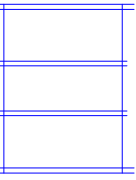
FLASK



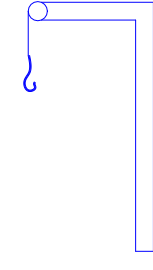
CHROMATOGRAPHY
COLUMN



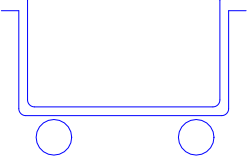
BOTTLE




DRUM



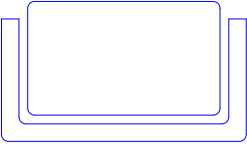
HOIST



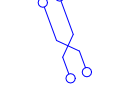
PORTABLE
BAG STATION



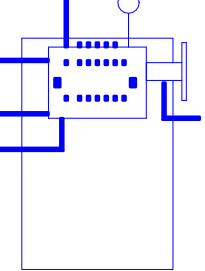
DRUM
HANDLER



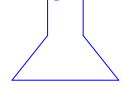
BAG STATION WITH
COOLING JACKET



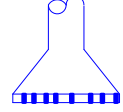
HEMOSTAT



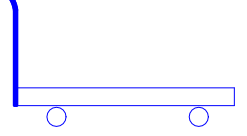
HOMOGENIZER



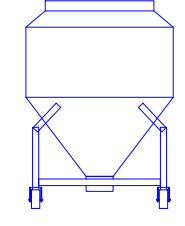
EXHAUST HOOD



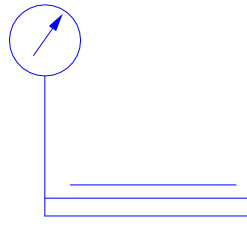
LAMINAR FLOW HOOD



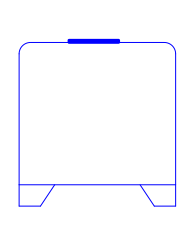
CART



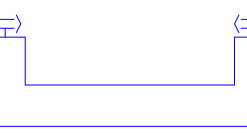
HOPPER



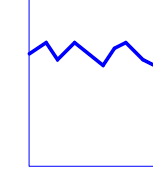
WEIGH SCALE



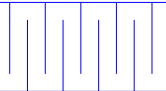
BIN



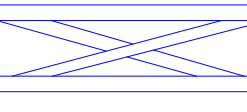
ULTRAVIOLET
STERILIZER



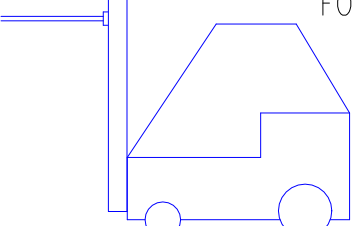
BUBBLE TRAP



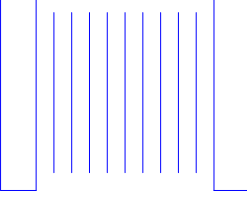
STATIC MIXER



SCISSOR LIFT

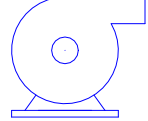


FORK LIFT

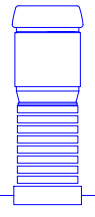


CONTINUOUS
DI UNITS

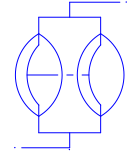
PUMP SYMBOLS



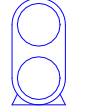
CENTRIFUGAL
PUMP



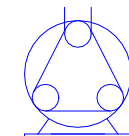
MULTI-STAGE
CENTRIFUGAL
PUMP



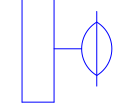
AIR-OPERATED
DIAPHRAGM PUMP



ROTARY LOBE
PUMP




PERISTALTIC
PUMP

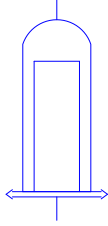


DIAPHRAGM
METERING PUMP

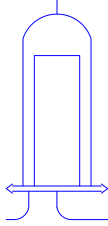
FILTER EQUIPMENT SYMBOLS



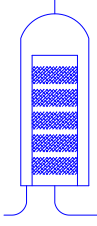
GENERAL
FILTER




IN-LINE
FILTER



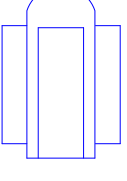
T-TYPE
FILTER



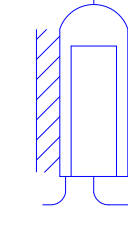
DEPTH
FILTER



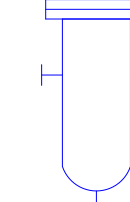
DISPOSABLE
FILTER



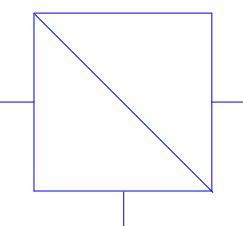
FILTER WITH
JACKET



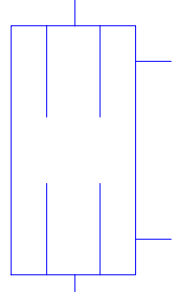
FILTER WITH
ELECTRIC TRACING



P TYPE FILTER



CROSS FLOW FILTER
GENERAL SYMBOL



HOLLOW FIBER
CROSS FLOW FILTER

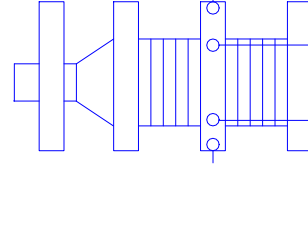
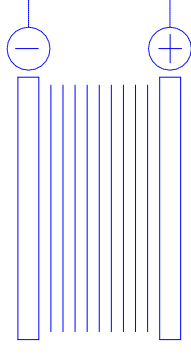
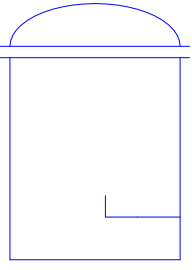


PLATE & FRAME
CROSS FLOW FILTER

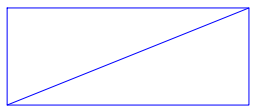
MISCELLANEOUS SYMBOLS



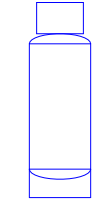
ELECTRO DEIONIZATION



MULTIMEDIA
FILTER

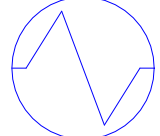


RO MEMBRANE UNITS



WATER SOFTENER

HEAT EXCHANGER SYMBOLS



GENERAL
HEAT EXCHANGER

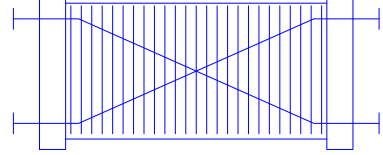
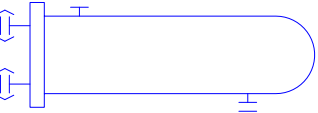
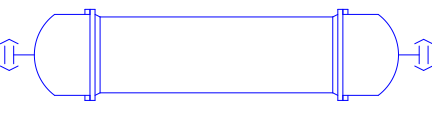


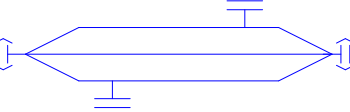
PLATE & FRAME
HEAT EXCHANGER



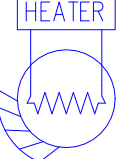
SHELL & TUBE
HEAT EXCHANGER



STRAIGHT TUBE
HEAT EXCHANGER



DOUBLE PIPE
HEAT EXCHANGER



HEATER
ELECTRIC HEATER

ROOM NAME & NOTE FONT

1. THE ROOM NAME BLOCK AS FOLLOW:

细胞培养间
CELL CULTURE
B27
0.0000 sqm

2. EQUIPMENT TAG AS FOLLOW:

FL-B1102A
SUFFIX
SEQUENTIAL NUMBER
SYSTEM NUMBER
EQUIPMENT TYPE CODE

NOTE:FOR TWO OR MORE IDENTICAL EQUIPMENT FOR THE SAME SERVICE,
A SUFFIX WITH A LETTER SHALL BE USED.

3. HOLD BUBBLE REPRESENTS AN ITEM AWAITING FURTHER INFORMATION.

HOLD