

P&ID、CWD、CLD識圖

PWRT教材

學習目標

完成本課程後，新進學員應

- 瞭解P&ID、CWD、CLD各類圖表之意義。
- 正確使用P&ID、CWD、CLD各類圖表，以提升工作和學習之效率。

圖面整體介紹

控 制 晒 件

94 . 05 . 23

核三廠資料室

控制晒件有更新管制，
為正式使用之唯一圖面。

參 考 晒 件

94 . 05 . 23

核三廠資料室

參考晒件無管制，
不一定是最新版本，
僅供參考。

P&ID

P&ID

P&ID

A P&ID should include:

- Instrumentation and designations
- Mechanical equipment with names and numbers
- All valves and their identifications
- Process piping, sizes and identification
- Miscellaneous - vents, drains, special fittings, sampling lines, reducers and increasers
- Permanent start-up and flush lines
- Flow directions
- Interconnections references

P&ID

A P&ID should include:

- Control inputs and outputs, interlocks
- Interfaces for class changes
- Seismic category
- Quality level
- Annunciation inputs
- Computer control system input
- Vendor and contractor interfaces
- Identification of components and subsystems delivered by others
- Intended physical sequence of the equipment

P&ID

What does P&ID stand for?

- P&ID - Piping and Instrumentation Diagram
管線與儀器圖
- a schematic illustration of functional relationship of piping, instrumentation and system equipment components
設備、管線、閥和儀器等元件的圖表
- The P&ID are used to operate the process system.

P&ID

A P&ID should not include:

- Instrument root valves
- control relays
- manual switches
- equipment rating or capacity
- primary instrument tubing and valves
- pressure temperature and flow data
- elbow, tees and similar standard fittings
- extensive explanatory notes

P&ID

圖右下角：顯示名稱、圖號、版次、機組別

3	1/16	依據DCN 6,7 修改	DRN	CHK	DS	ENG	CHK	ENG
4	2/1	依據DCN 5 修訂	DRN	CHK	DS	ENG	CHK	ENG
5	1/16	RELEASED ORIGINAL TO ODE	DRN	CHK	DS	ENG	CHK	ENG
6	1/16	依據DCN 9修改(OCR 98065)	DRN	CHK	DS	ENG	CHK	ENG
7	1/16	依據DCN 8 修改(93006)	DRN	CHK	DS	ENG	CHK	ENG
8	1/16	ISSUED FOR CONSTRUCTION	DRN	CHK	DS	ENG	CHK	ENG

修改記錄

UNIT CODES ARE AS FOLLOWS:
 0 - SHARED COMPONENT (COMMON TO BOTH UNITS)
 1 - APPLICABLE TO UNIT ONE ONLY, UNLESS OTHERWISE NOTED
 2 - APPLICABLE TO UNIT TWO ONLY
 3 - UNIT CODE 3 IS NOT USED IN COMPONENT NUMBERS

UNIT CODES WILL NOT BE SHOWN FOR COMPONENTS ON P & ID'S UNDER EITHER OF THE FOLLOWING CONDITIONS:
 A. WHEN THE UNIT CODE OF THE COMPONENT IS THE SAME AS THAT OF THE P & ID, AS SHOWN IN THE TITLE BLOCK.
 B. WHEN THE UNIT CODE OF THE P & ID IS "3" AND THE COMPONENT IS TO BE FURNISHED IN DUPLICATE FOR EACH UNIT.

BECHTEL
 LOS ANGELES
 TAIWAN POWER COMPANY
 MAANSHAN NUCLEAR POWER STATION

SYMBOLS & LEGEND
 FLOW DIAGRAMS
 AND P & I DIAGRAMS

名稱

FSAR FIGURE UNIT DRAWING NO. REV.
 1.1-1 SH.1 0 M-XX-010 7

機組別 圖號 版次

P&ID

P&ID 圖 目錄

序號	圖號	版次	發行日	不含 DCN 之圖檔	DCN 數量	DCN 清單及圖檔	名稱
129	3-M-GM-001	010	0970313	開啓 本版圖	0	本版圖無新 DCN	DIESEL GENERATOR BUILDING HVAC SYSTEM
130	0-M-GM-002	006	0950227	開啓 本版圖	1	DCN 連結	FIFTH DIESEL GENERATOR BLDG HVAC SYSTEM

同樣是GM系統，機組別為何不同？

P&ID

SYMBOLS & LEGEND FLOW DIAGRAM

M-XX-010.007.tif

M-XX-011.002.tif

M-XX-012.007.tif

P&ID

第三核能發電廠 - Windows Internet Explorer

http://10.143.13.205/

檔案(F) 編輯(E) 檢視(V) 我的最愛(A) 工具(T) 說明(I)

Search Open Viewer Product Info Upgrade Tell a friend Tracker News Options

我的最愛 第三核能發電廠

機組現況

- 12 運轉狀況
- 工作排程
- 機組即時資訊
- 即時歷史及警報查詢
- 設備與警報

核安文化

- 台電公司政策聲明
- 廠安全承諾宣言
- 廠政策聲明
- 核安文化強化方案
- 核安文化強化指標
- 安全文化專欄
- 自我查驗
- 作業疏失防範原則

品質文件

- 技術資訊
- 營運程序書
- 設備資料與圖
- 圖面查詢

08/03 分配100年度營運費用預算 會計組

08/03 8/2中毒名單：機組組共計20個中毒事件。再次宣導隨身義務電算組
 必需要戴線掃毒機掃毒！

08/03 工安宣導：核安處檢核本公司「風力發電機組運轉及維護安全衛生作業要點」，並參考風機維護安全作業標準及依據環境特性訂定適合之作業安全檢查表，納入相關程序書執行，如附。

08/03 工安宣導：工安處檢核本公司100年4至6月份各單位辦理承攬商遠規講習及安全接談之成果概況表（如附），請各部門同仁參閱並加以防範。

08/03 請檢討100年度營運費用預算。 會計組

08/02 100年度短程一日遊樂育活動公告 品質組

08/02 檢核修正後本公司「各單位中文簡稱（工程單位部分）一覽表」，請查照。 人力資源組

公文管理系統
 運轉管理系統
 加班系統
 更多連結

資通安全

- 資通安全
- 資通安全電子報

c點通

- 運轉及維護訓練
- 台電網路學院
- 總公司tp
- 核三廠tp
- 南港交流道

核三首頁→品質文件→圖面查詢

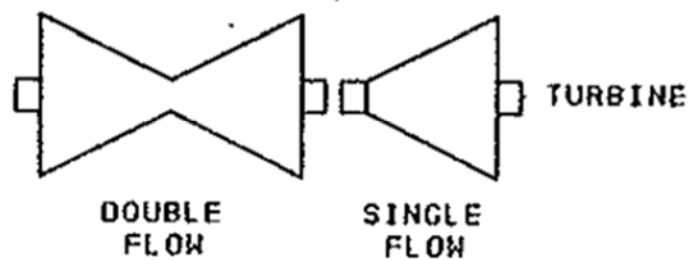


P&ID



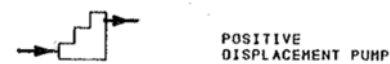
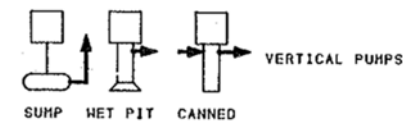
P&ID

Equipment 汽機



P&ID

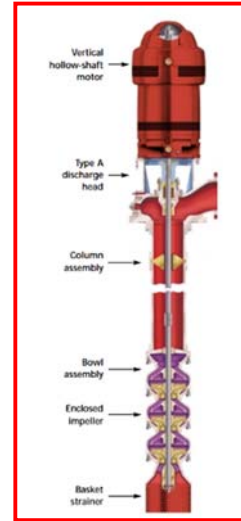
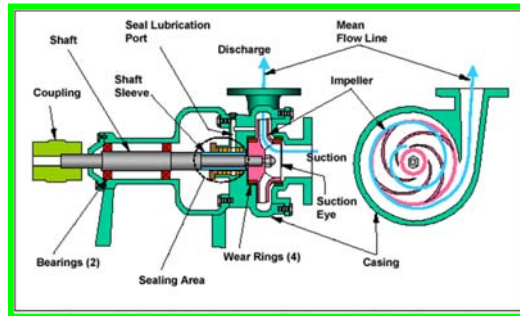
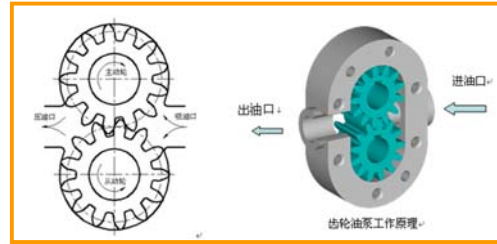
Equipment 泵



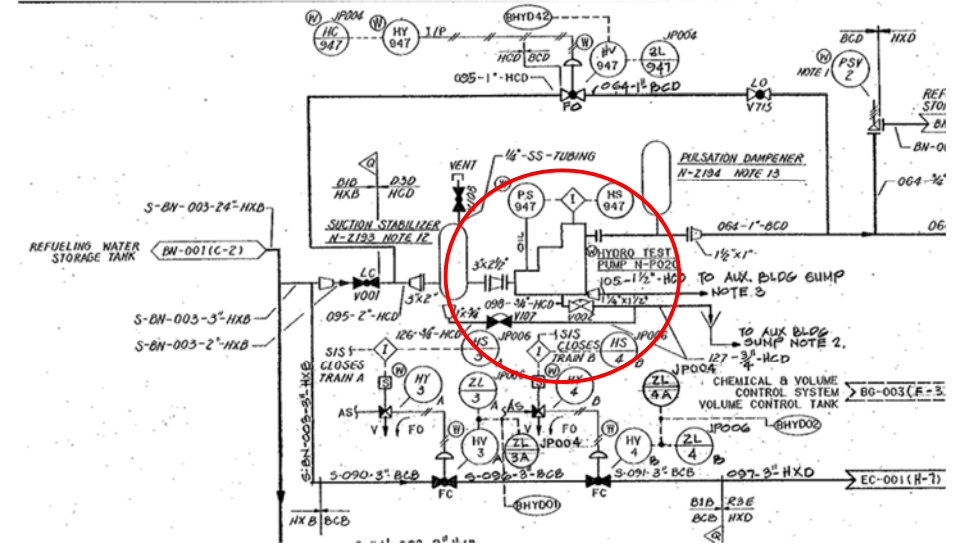
正排量泵



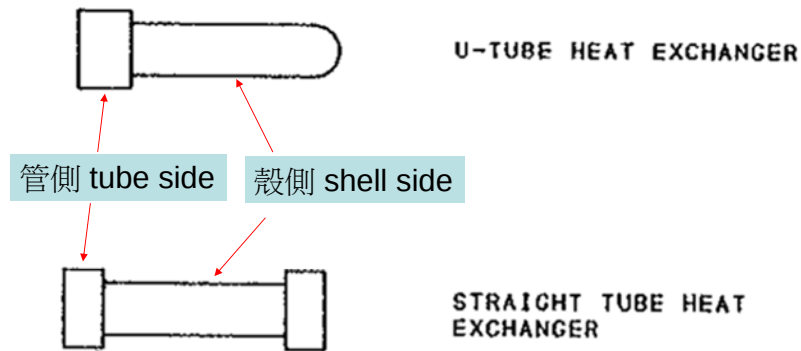
泵浦



BH-P020 Hydro Test Pump

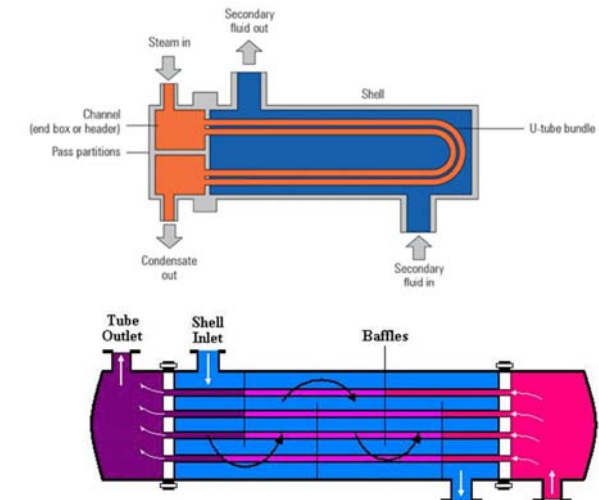


Equipment 熱交換器



P&ID

Equipment 熱交換器



Courtesy: Washington University

Equipment 槽

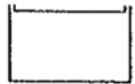


PRESSURE VESSELS
VERTICAL (SHOWN)
OR HORIZONTAL
(TANKS, RECEIVERS, DRYERS,
SEPARATORS, ETC)



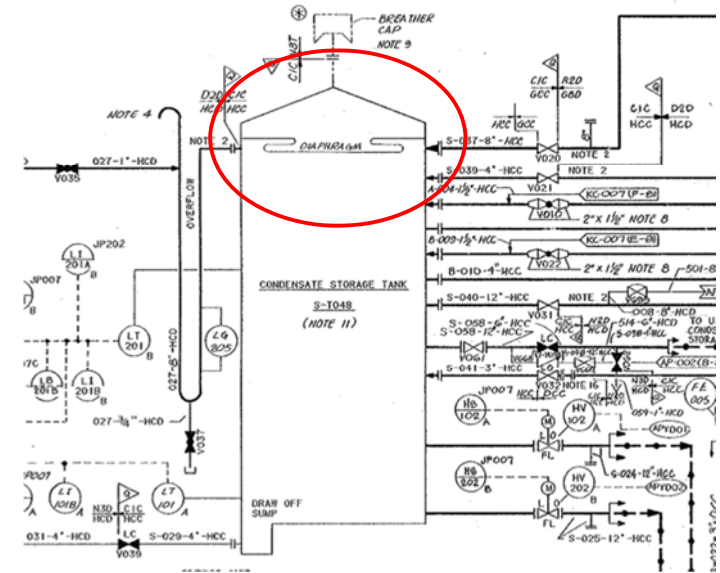
CONE ROOF TANK
(SHOWN WITH OPTIONAL
DIAPHRAGM)

圓錐頂 (有膜片)

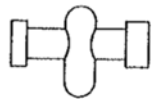


FLOATING TOP TANK

CST - Condensate Storage Tank



Equipment



AFTERCOOLER AND
MOISTURE SEPARATOR



RECIPROCATING
AIR COMPRESSOR
(INSTR AND SERVICE)

往復式空壓機



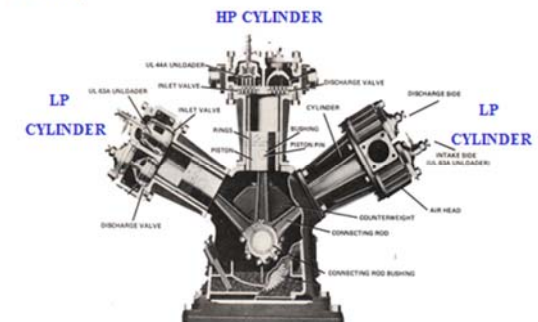
MIXER



PRESSURIZED GAS BOTTLE

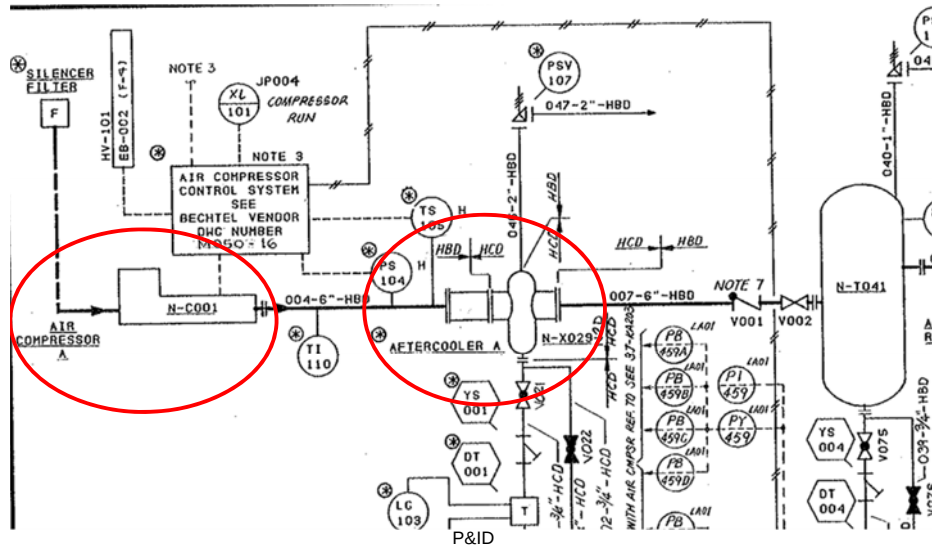
往復式空壓機

空壓機

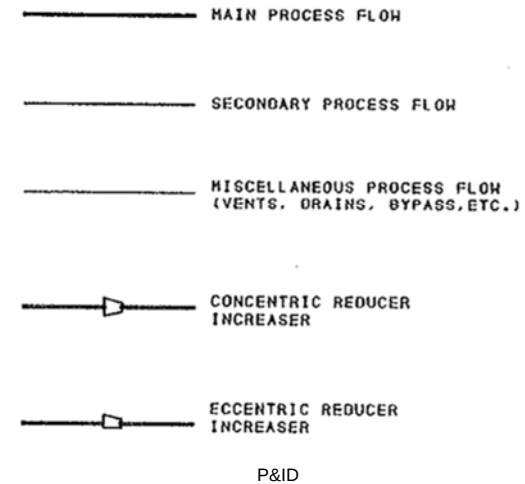


P&ID

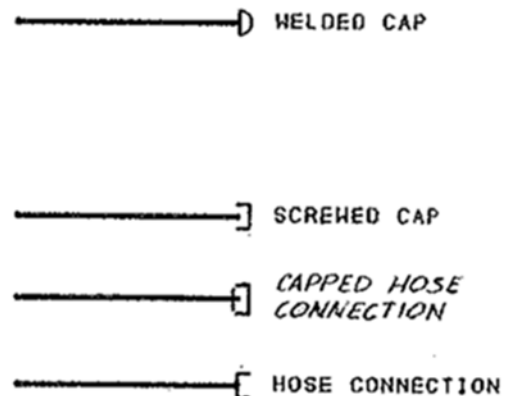
KA - Compressed Air System



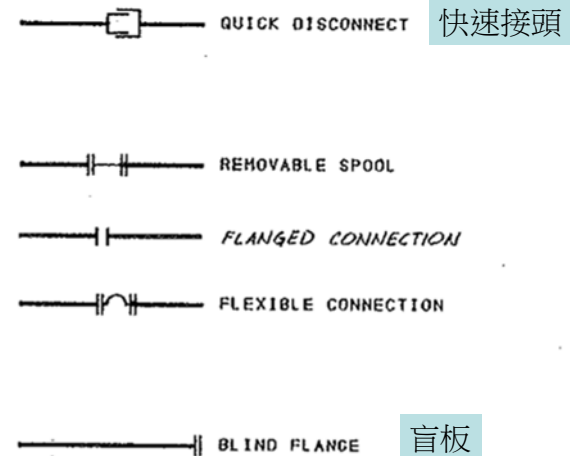
Process Piping



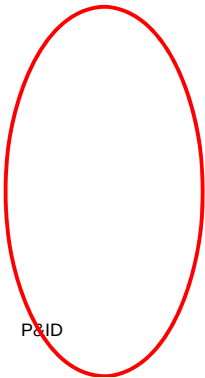
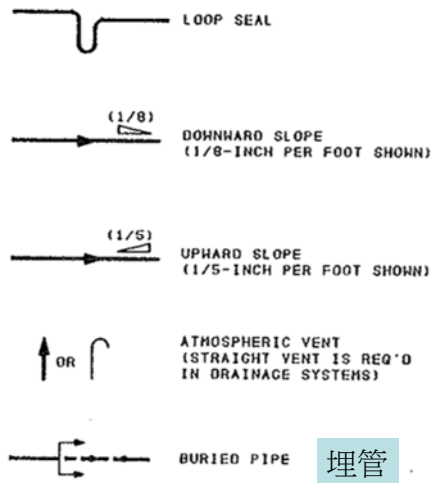
Process Piping



Process Piping

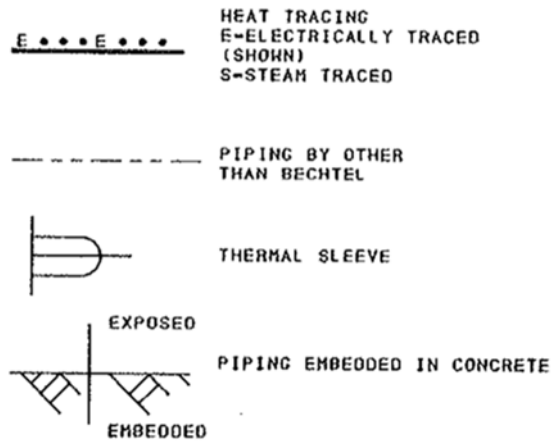


Process Piping



P&ID

Process Piping

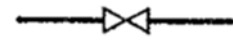


P&ID

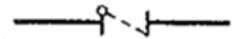
HEAT TRACING

P&ID

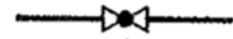
Line Valves



GATE



VALVE DISC REMOVED



GLOBE



Y-PATTERN GLOBE
(WHERE ONLY Y-PATTERN
IS ACCEPTABLE)

Line Valves



ANGLE



THREE-WAY (NOTE 16
DWG 0-M-XX-012)



FOUR-WAY (NOTE 16
DWG 0-M-XX-012)



NEEDLE

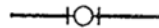
Line Valves



ELASTOMETER
DIAPHRAGM



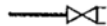
PACKLESS VALVE
B-BELLOWS SEAL (SHOWN)
M-METALLIC DIAPHRAGM



BALL



BUTTERFLY



HOSE



PINCH

PINCH VALVE

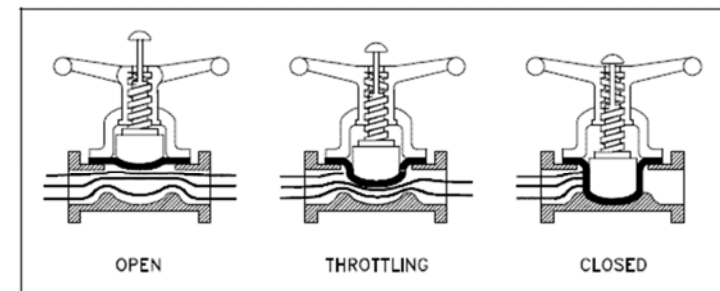
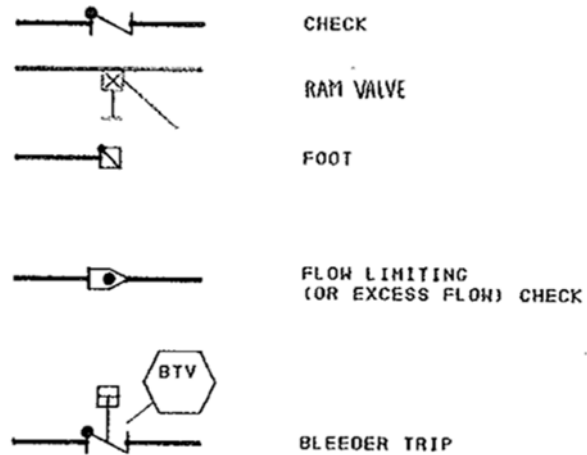
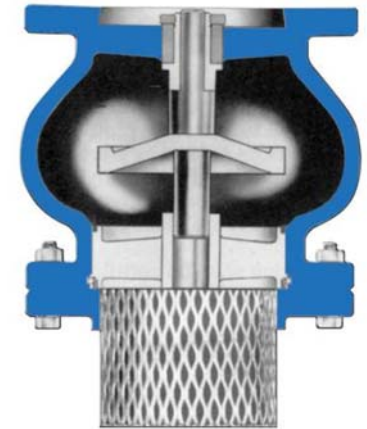


Figure 14 Straight Through Diaphragm Valve

Line Valves



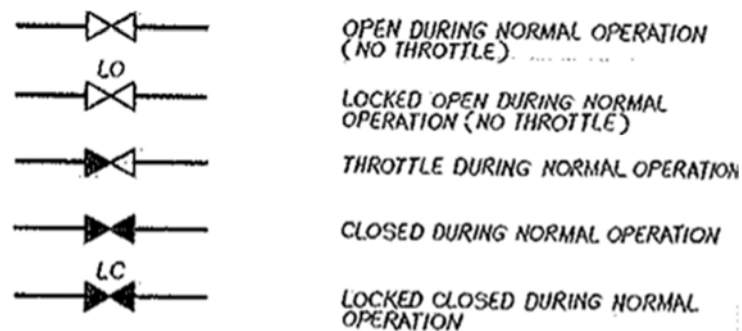
RAM VALVE & FOOT VALVE



P&ID

Valve Status Symbols

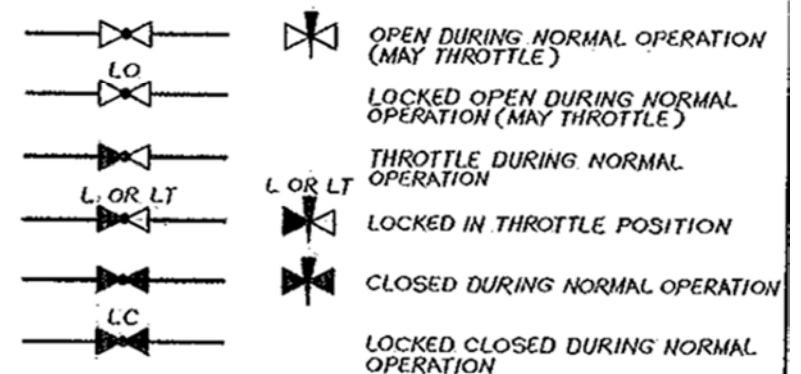
GATE VALVES AND OTHER TYPES NOT SHOWN SPECIFICALLY



P&ID

Valve Status Symbols

GLOBE AND NEEDLE VALVES



P&ID

Valve Status Symbols

BUTTERFLY VALVES

	NO	OPEN DURING NORMAL OPERATION (MAY THROTTLE)
	LO	LOCKED OPEN WITHOUT THROTTLE
	LT	LOCKED IN THROTTLE POSITION
	NC	CLOSED DURING NORMAL OPERATION
	LC	LOCKED CLOSED DURING NORMAL OPERATION

P&ID

Miscellaneous

	SPECTACLE BLIND
	CIRCULAR OR HAMMER BLIND
	SINGLE BASKET STRAINER
	DUPLEX BASKET STRAINER
	Y-TYPE STRAINER (SHOWN WITHOUT BLOWOFF VALVE)

SPECTACLE BLIND

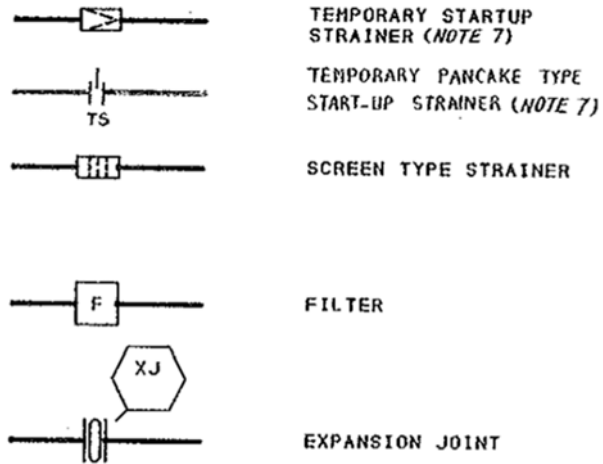


P&ID

	CIRCULAR OR HAMMER BLIND
--	--------------------------

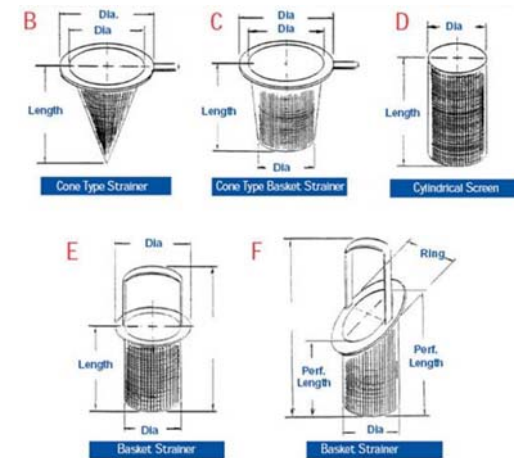


Miscellaneous

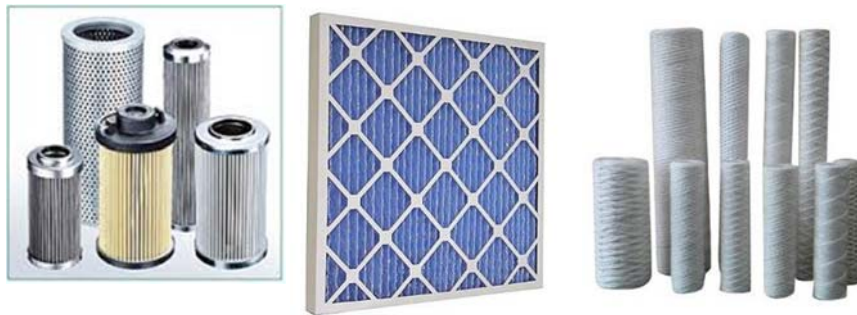


P&ID

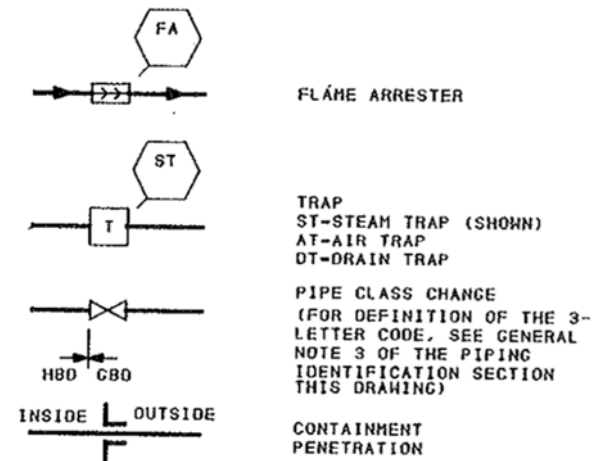
STRAINER



FILTER

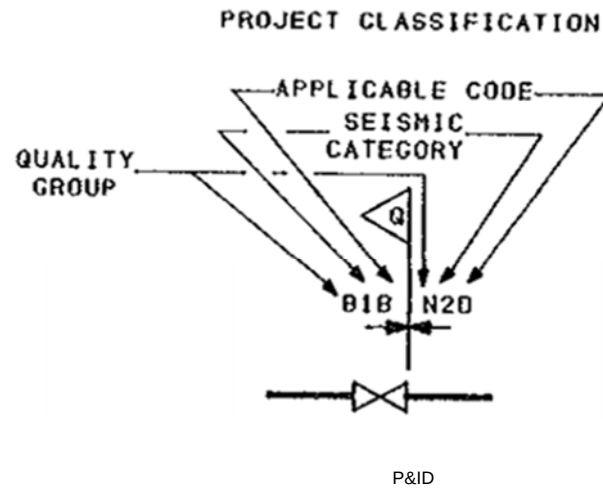


Miscellaneous

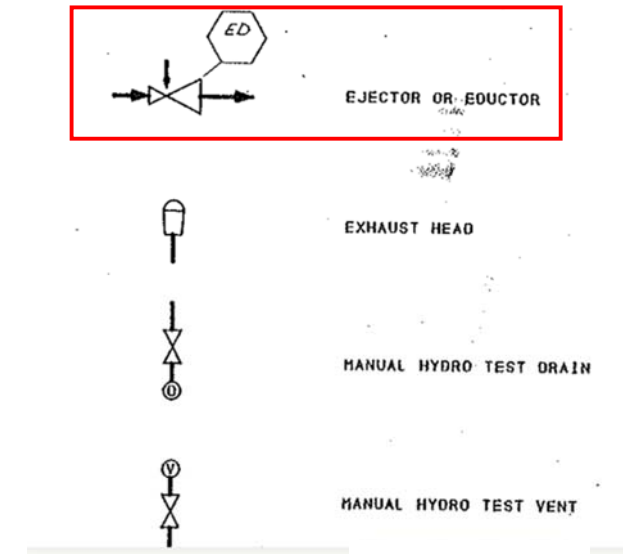


P&ID

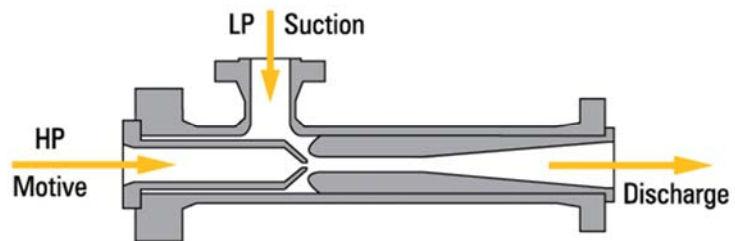
Miscellaneous



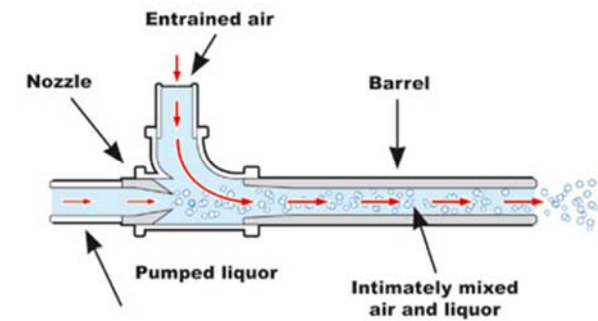
Miscellaneous

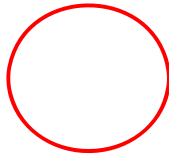


EJECTOR



EJECTOR





圍阻體
噴灑泵

P&ID

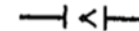
From
NaOH
Tank



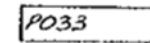
SPRAY NOZZLE OR
SPARGER (SHOWN WITH
UPWARD FLOW)



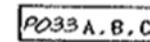
WATER SEAL VALVE



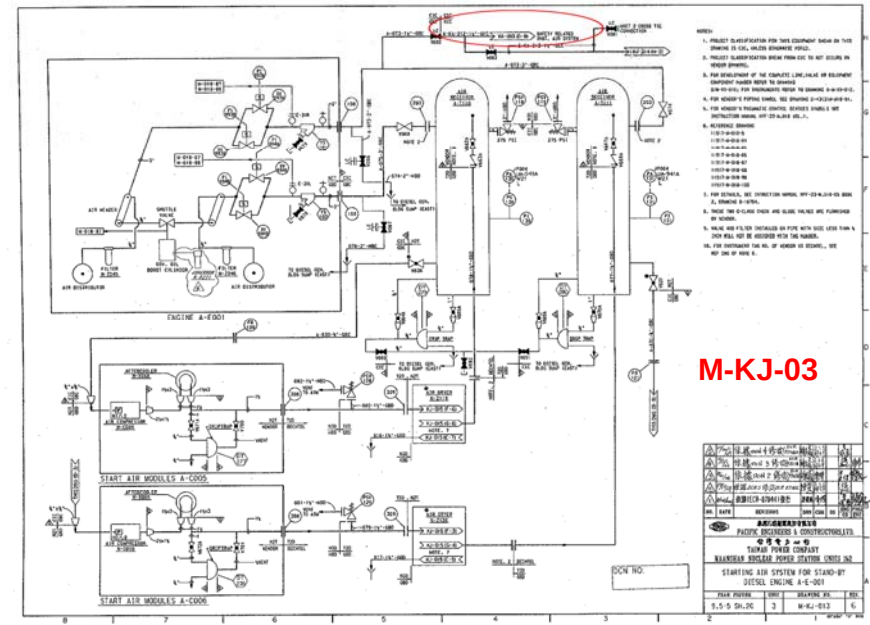
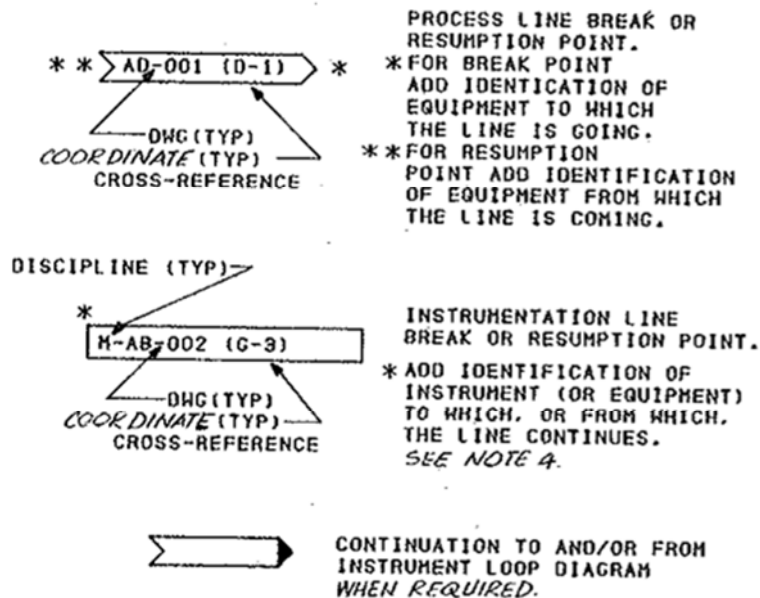
DOUBLE DISC CHECK VALVE

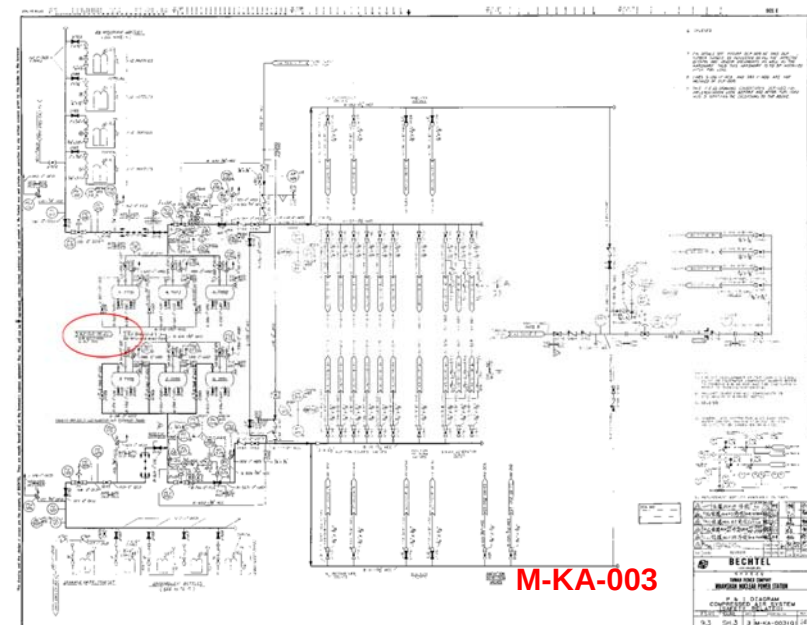


FOR SINGLE PIPE THROUGH
PENETRATION



FOR TWO OR THREE PIPES
THROUGH PENETRATION





M-KA-003

設備編號

[illegible]

■ **N1MKJ-V064**

■ **A1MKJ-E001**

■ B2MKJ-E002

■ SOMKJ-E003

P&ID

PIPING IDENTIFICATION
PIPING LINE LABELS SHOWN ON THESE DRAWINGS
INCLUDE THE LINE COMPONENT NUMBER, THE LINE
SIZE AND THE PIPE CLASS AND ARE IN ACCORDANCE
WITH THE FOLLOWING FORMAT
(SEE NOTE 1 BELOW)

SEE NOTE 1 BELOW)

LINE COMPONENT NUMBER

LINE SIZE

PIPE CLASS (SEE NOTE 3 BELOW)

A - 1 - A0 - L107 - 6" - EDB

SEQUENCE NUMBER

COMMOIDY (SEE NOTE 5 BELOW)

SYSTEM (SEE NOTE 4 BELOW)

UNIT CODE (SEE NOTE 2 BELOW)

SEPARATION GROUP (SEE NOTE 6 BELOW)

N 通 常 省 略

L通常省略

N通常省略，表示None串。

Coils

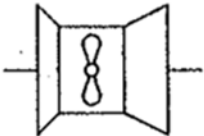
- H - HEATING COIL
- HW - HOT WATER (SHOWN)
- S - STEAM
- E - ELECTRIC
- G - GAS

- C - COOLING COIL
- CH - REFRIG. CHILLED WATER (SHOWN)
- CW - COOLING WATER

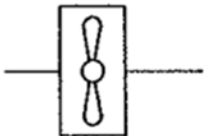


P&ID

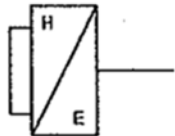
Fans



VANE AXIAL FAN



PROPELLER FAN



UNIT HEATER
ELECTRIC COIL SHOWN
(SEE UNDER COILS
FOR DEFINITION OF
OTHER LETTER SYMBOLS)

P&ID

Air Cleaning Devices



LOW EFFICIENCY ROLL TYPE
FILTER



LOW - LOW EFFICIENCY
ROUGHING FILTER
10% TO 85% EFFICIENCY
BY ASHRAE HEIGHT
TEST (SHOWN)

MOD - MODERATE EFFICIENCY
FILTER.
20% TO 60% EFFICIENCY
BY ASHRAE STAIN TEST

HIGH - HIGH EFFICIENCY FILTER
85% EFFICIENCY BY ASHRAE
STAIN TEST FOR 95%
EFFICIENCY FOR 0.30
MICROMETER OOP

ASHRAE 美國冷凍空調學會

Air Cleaning Devices



HEPA -HIGH EFFICIENCY
PARTICULATE AIR FILTER
99.97% EFFICIENCY FOR
0.30 MICROMETER DOP

CHAR -ACTIVATED CHARCOAL
ABSORBER TRAY OR DEEP
BED TYPE

ELEC -ELECTROSTATIC 靜電除塵器(油氣)
PRECIPITATOR

SU -LOW-EFFICIENCY FILTER
TO BE REMOVED AFTER
START UP

MS -MOISTURE SEPARATOR 水氣分離器

P&ID

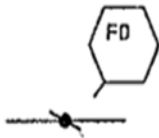
Dampers



SINGLE BLADE
OR BUTTERFLY



HANUAL BALANCE



FUSIBLE LINK
FIRE DAMPER
OR FIRE DOOR

P&ID

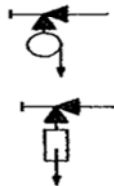
Fire Protection Equipment



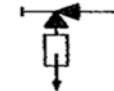
FIRE HYDRANT 消防栓



FIRE HYDRANT
WITH HOSE HOUSE



HOSE REEL STATION



HOSE RACK STATION



DELUGE VALVE

P&ID

消防水帶架站

Fire Protection Equipment



OPEN HEAD
SPRAY NOZZLES



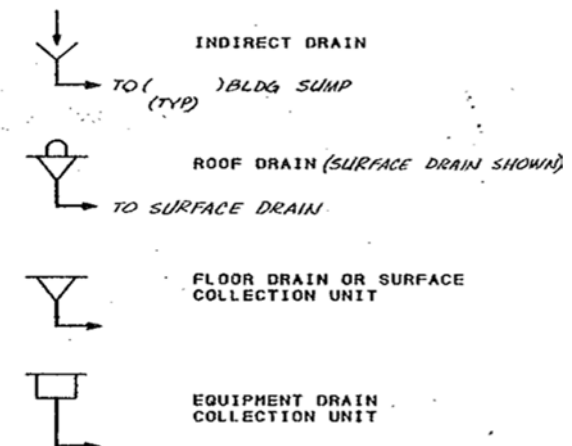
CLOSED HEAD FUSIBLE
LINK NOZZLES

P&ID

Fire Detector

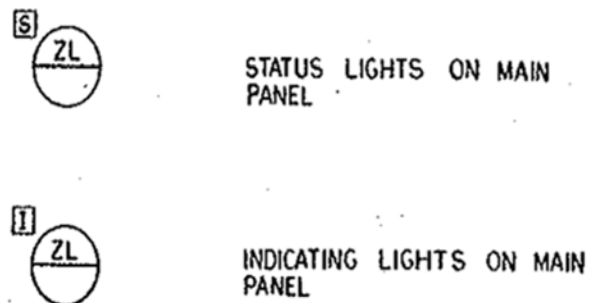
	ID	-IONIZATION DETECTOR (SHOWN)
	PE	-PHOTO ELECTRIC
	XO	-FLAME DETECTOR
	NO	-FIXED TEMPERATURE THERMAL DETECTOR
	RD	-RATE OF RISE THERMAL DETECTOR
	CD	-RATE COMPENSATED THERMAL DETECTOR

Drains



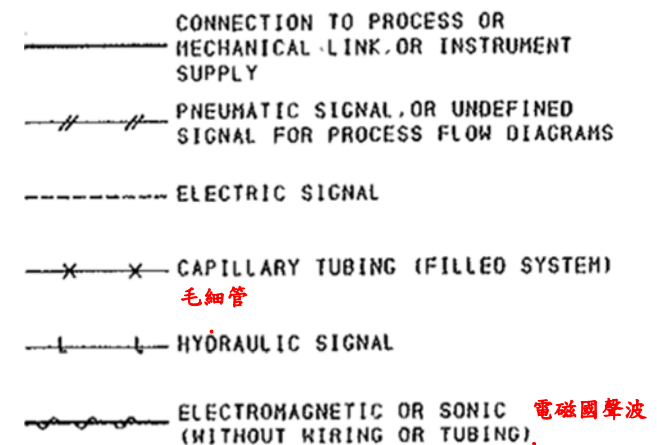
P&ID

Miscellaneous Control System



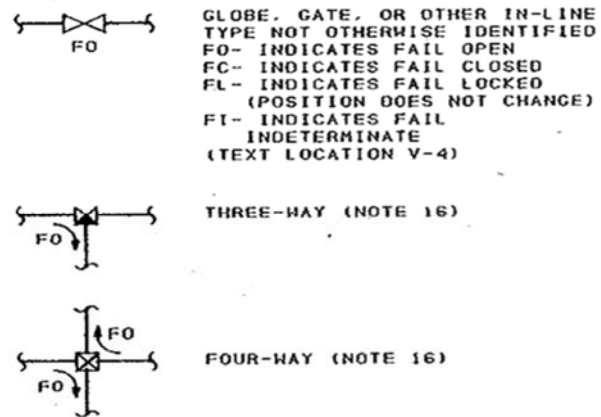
P&ID

Signals and Lines



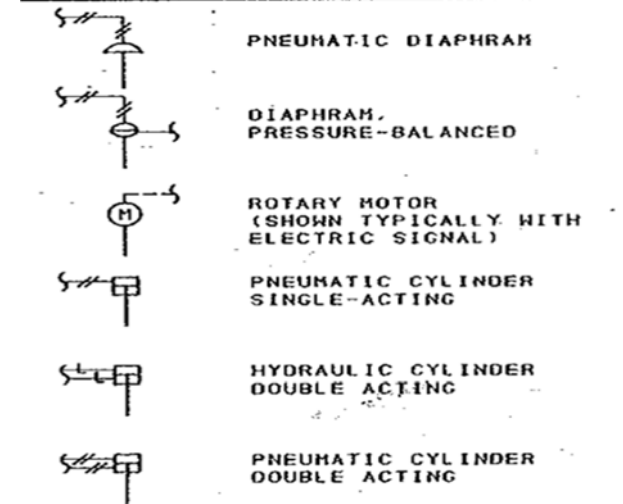
P&ID

Control Valves - Bodies

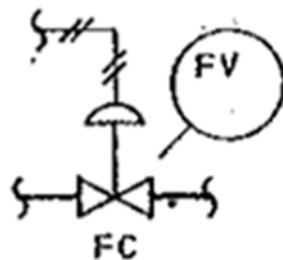


P&ID

Valves - Actuators

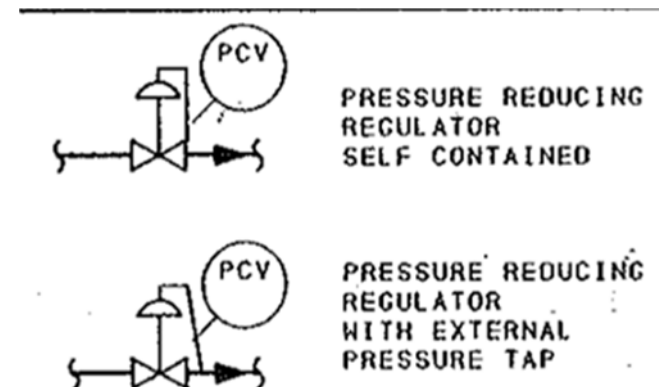


Valve Body with Actuator - typical



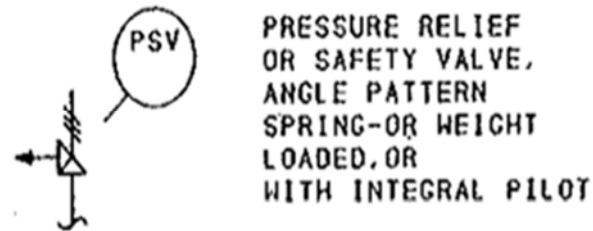
P&ID

Self-actuated Devices - Pressure



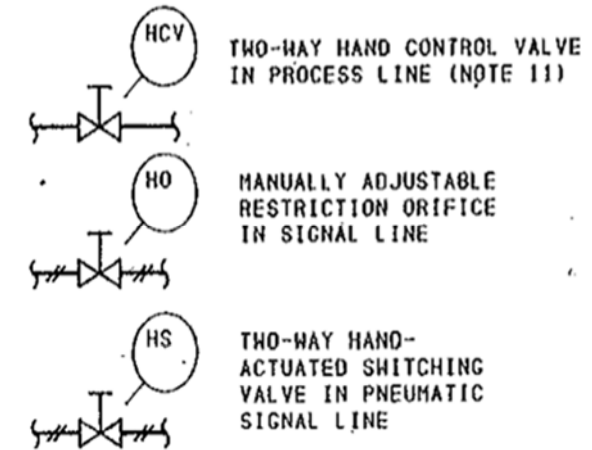
P&ID

Self-actuated Devices - Pressure



P&ID

Hand-actuated Devices



P&ID

P&ID 應用

- 充水閥BG-FV122 (FE, ZT, FK, FA, process signal, pneumatic signal, FO, FI, ZL)
- 汽機帶動輔助飼水泵汽機暖機閥&啟動進氣閥
- 主飼水控制閥AE-FV488 (控制訊號與保護系統之抑制訊號)
- 調壓槽噴灑閥, 動力釋壓閥, 安全閥下游溫度高警報
- RCP 啟動開關與頂舉油泵之連鎖
- 主汽機斷止閥閥位&液壓由壓力與反應器保護系統。

P&ID

