

Lecture 3

Chapter 3 Documentation and Drawing Symbols

By Hung Nguyen
Maritime Engineering and Hydrodynamics

Chapter 3

AS Standard Drawing Symbols: a brief introduction to Australian Standard graphic drawing symbols used in instrumentation and control engineering

Further information:

Australia: Australian Standards (AS) – obsolete

America: ANSI/ISA (American National Standard Institute/Instrument Society of America): ANSI Y32.20 (ISA)

ISO: ISO 3511/1, 2 and 4

Europe: German: DIN 28004, UK: BS 1553 and BS 974

Learning Outcomes

- Explain meaning of drawing symbols in the sketch of a measuring or control system
- Apply AD standard drawing symbols in documentation of instrumentation and control systems.

Readings:

Chapter 3 *Documentation and Drawing Symbols*
Johnson, CD (2006). *Process Control Instrumentation Technology*. PE. Chapter 1 *Introduction to PC*

AS Standard Drawing Symbols

- Standards Australia's Website:
<http://www.standards.com.au>
- Australian Standard Graphical Symbols for General Engineering
- Part 6 (AS 1101.6 - 1989):** Process measurement control functions and instrumentation
- Part 5 (AS 1101.5 – 1989): Piping, ducting and mechanical services for buildings

Application (Quoted - Part 6)

- The symbols given in this standard are intended for adoption by draft-persons and instrument specialists in the preparation and interpretation of technical drawings and diagrams for the purpose of conveying technical information.
- The symbols are intentionally limited to identification on process flow diagrams, piping and instrument diagrams, etc., and do not provide means of illustrating specific instruments or parts thereof.

(Source: AS 1101.6 – 1989, Standards Australia)

Contents of AS 1101.6 - 1989

- Section 1 Scope and General
- Section 2 Codes and Abbreviations
- Section 3 Symbols
- Section 4 Examples of use

AutoCAD/P&ID (Piping & Instrument Diagram, Process & Instrument Diagram) Software

Standard Drawing Symbols

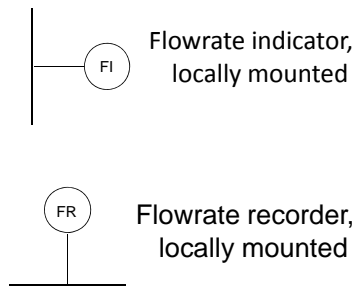
- Identifying Code Letters (pp.3.4-5) – **Example 1**
- Instrument Line Symbols (pp.3.5-6)
- Identifying Signal Connecting Points (pp.3.6)
- Correcting Elements (pp.3-6)
- Actuating Elements (pp.3-7-3-8)
- Flow Elements (pp.3-8)
- Level Instrument Connections (pp.3-9)
- Pressure Regulators (pp.3-10)
- Signal Modifiers (pp.3-10)

Chapter 3

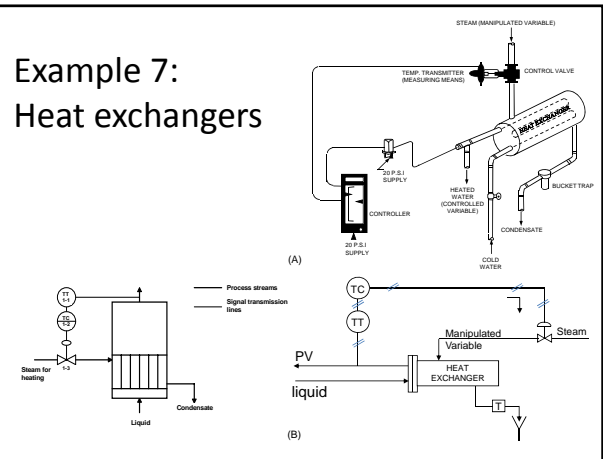
- Examples
 - Example 2
 - Example 3
 - Example 4
 - Example 5

More examples

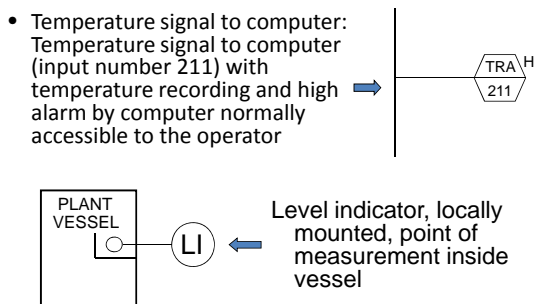
Example 6



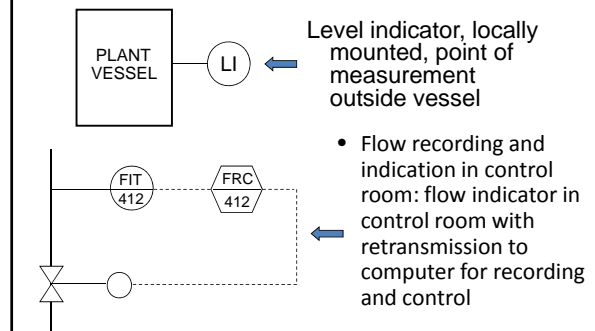
Example 7:
Heat exchangers



Example 8

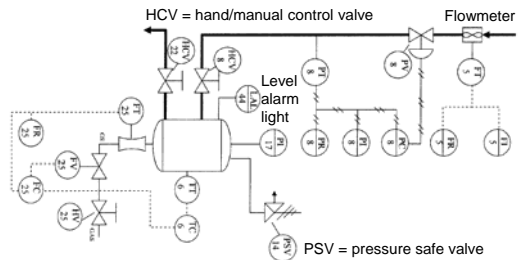


Example 9



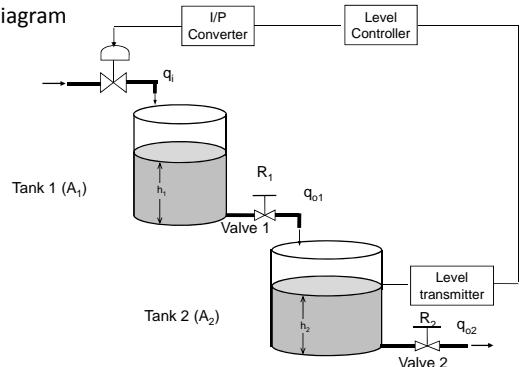
Example 10 Illustration of a P and ID for a mixing station.

MATERIALS				NOTES				REVISIONS				DRAWING TYPE PROCESSING			
TAG	QUANTITY	UNIT	PART #	REV	DATE	DESCRIPTION	BY	CHK	DATE	REV	DATE	DESCRIPTION	BY	CHK	DATE
TV-101	4000000.00	1270W	92240-101												



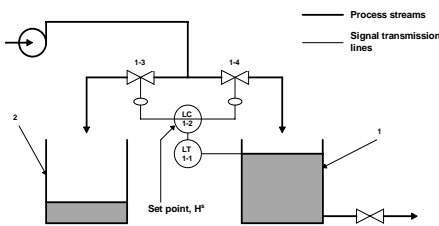
Activity 1

- Draw a flow diagram



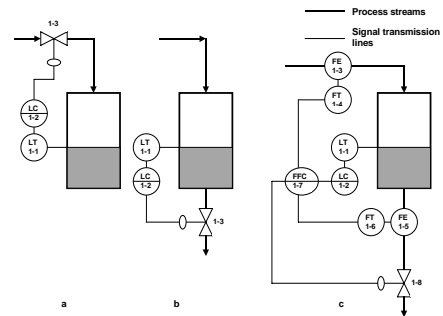
Activity 2

- Describe the following control system



Activity 3

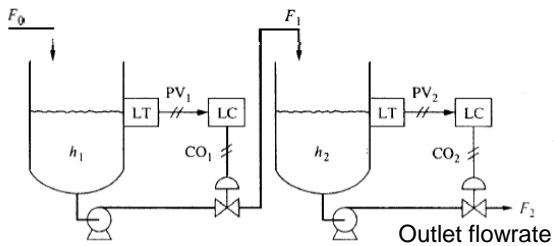
- Describe the following systems (a, b, c)



Activity 4

- Using the AS symbols draw a flow diagram for the following control system

Inlet flowrate



Summary of AS Drawing Symbols

- Identifying Code Letters
- Instrument Line Symbols
- Identifying Signal Connecting Points
- Correcting Elements
- Actuating Elements
- Flow Elements
- Level Instrument Connections
- Pressure Regulators
- Signal Modifiers

References

- [http://controlsforyou.com/images/PDF%20Files/ISA/ISA-5.1-1984\(R1992\).pdf](http://controlsforyou.com/images/PDF%20Files/ISA/ISA-5.1-1984(R1992).pdf)
- http://www.roymech.co.uk/Useful_Tables/Drawing/Drawing.html
- <http://wcours.gel.ulaval.ca/2007/a/65214/default/5notes/P&IDs.pdf>

Any Questions?

