

**PREPARATION OF
LC AND LG ARRANGEMENT****JGS 210-120-1-56E**

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1. SCOPE

This Procedure shall be applied for process engineers' preparation of basic requirements to enable the Piping Department to finalize LC-LG Arrangements. Unless specified, a procedure specific to each job shall be prepared based on this Procedure.

2. WORK PROCEDURES

2.1 Work Steps

LC-LG Arrangements should be prepared through process, instrumentation and piping design engineers' close collaboration. Each department's work details and procedures should be according to the following.

STEP	DESCRIPTION	PROCESS	INSTRUMENTATION	PIPING
1.	Prepare data sheet with numbering (Form No. 2311 "LC & LG Arrangements") based on the skeleton drawings. Then, the data sheet shall be sent to process department.			○
2.	Fluid name, conditions, Specific Gravity and fluid level shall be filled in the data sheet Then, the data sheet shall be send to the instrument department.	○		
3.	Select LC and LG type according to the Detailed Engineering Design Data of Instrumentation, and fill in the type, length and connection in the data sheet. Then, the data sheet shall be sent to piping department.		○	
4.	Decide the installation height and valve assembly. Such information shall be indicated on the data sheet. Then, the data sheet shall be distributed to the deciplines concerned.			○
5.	Follow P&I Diagram		○	

Note : Total coordination should be executed by piping engineer.

2.2 Client's Confirmation

Client's confirmation on the basic data for the preparation of the LC-LG Arrangements shall be obtained and later informed to each department.

2.3 Dimension of Level Instrument

The dimension of level instrument should be determined as the earliest stage of the basic design as possible. However, if in order to select the low cost and good quality level instrument, the timing of the selection might be delayed. Even in such case, instrument engineer should keep the selection schedule not to affect the project master schedule.

3. DESIGN

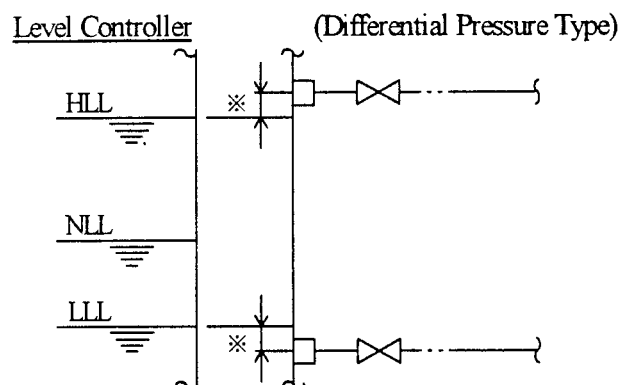
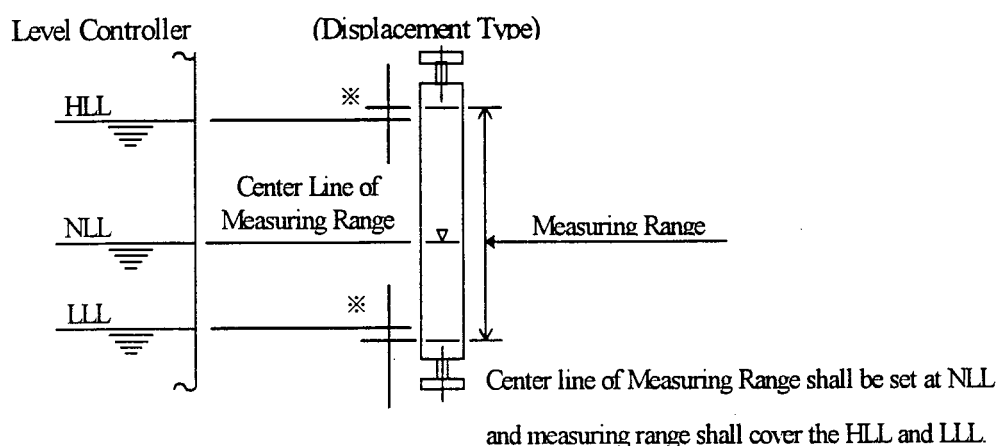
3.1 Design Criteria

3.1.1 Fluid conditions

- (1) Fluid name shall be specified.
- (2) Polymerization, fouling, slurry, and other data required for the selection of LCs and LGs which are not indicated on P&IDs shall be entered in the process data sheets.
In the case of multi-phase fluid, the specific gravity of the individual fluid shall be entered.

3.1.2 Level Control (LC)

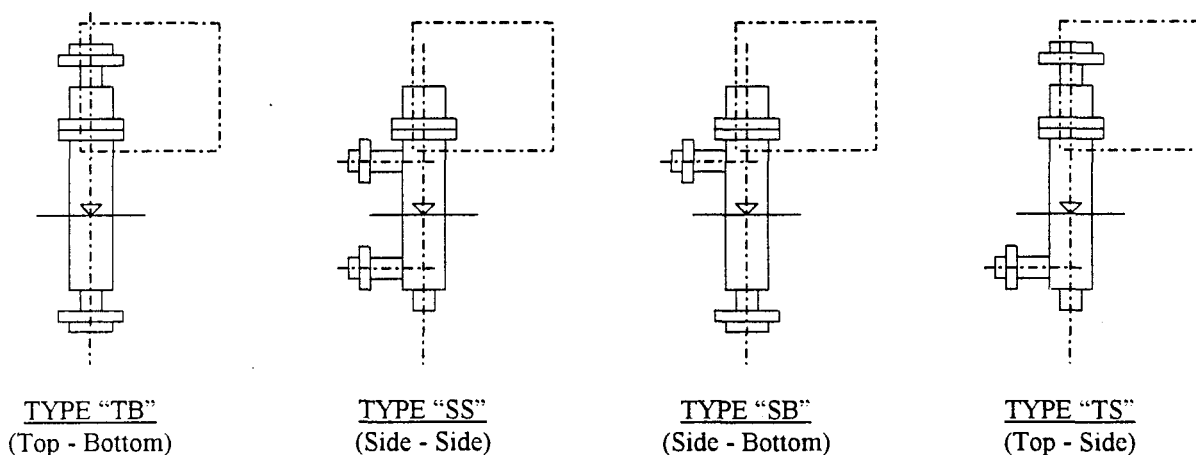
- (1) The level control range (HLL - LLL) shall be determined based on JGS 210-120-1-21E and 22E.
The typical arrangement of level instruments are indicated below.



※ marked dimension should be over 0 mm.

- (2) The external covered displacement type or differential pressure type level instrument should be selected by the following basis:
- (a) Visible length over 1200mm (4FT) : Differential Pressure Type
 - (b) Differential pressure of differential pressure type level instrument should be recommended over 500mm H₂O. (Measuring range $\geq 500/\text{SpGr}$)
 - (c) Diaphragm seal type is recommended for corrosive fluid.
 - (d) The external displacement type shall not be used for flashing services or averted external radiation services.
 - (e) For the other services, reference is made to JGS 210-121-1-36E (Preparation of Instrument Data).
- (3) If displacement types are to be used, their installation types shall be entered according to the fluid properties and the client's instructions, etc.. Normally, side-side ("SS") LCs shall be used.

CONNECTION TYPE OF DISPLACEMENT LEVEL INSTRUMENTS



NOTE : Vent and drain connection on pipings to equipment shall be provided for TB, SB and TS types.

3.1.3 Level Switch (LS)

- (1) LS and LC should be installed on the same standpipe.
However, LS and LC shall be installed separately for cloggy services.
- (2) Type of LS should basically be external ball float or displacement type.

