INTERPLANT STANDARD - STEEL INDUSTRY		
IPSS	**SPECIFICATION FOR CONTROL VALVES AND ACTUATORS** ***(Third Revision)***	**IPSS:** 2-07-004-11
	NO CORRESPONDING IS	Formerly : IPSS: 2-07-020-95

0. FOREWORD

0.1 This Interplant Standard (Third revision) was prepared by the Standards Committee on Computerization and Automation, IPSS 2:7 with the active participation of the representatives of the steel plants, reputed consulting organizations and established manufacturers in this field and was adopted on April 2011.

0.2 Interplant Standards on design parameters primarily aim at achieving rationalization and unification of parts and assemblies of process and auxiliary equipment used in steel plants and these are intended to provide guidance to the steel plant engineers, consultants and manufacturers in their design activities.

0.3 This standard was first published in 1988. The first revision was carried out in 1993. The Third revision has been done to update the standard in general.

1. SCOPE

1.1 This Interplant Standard covers the requirements of various types of control valves and actuators.

2. REQUIREMENTS OF SINGLE SEATED LOW FLOW CONTROL VALVES

2.1 Body

Type : Single seated, straight through type, cast globe valve

Material : Carbon steel, stainless steel, For Special Application

End connection : Flanged end (FF, RFF and RJ), (3/4 in) and (1 in).

Pressure rating : ANSI, 150, 300 and 600

Gland Type : Bolted gland

Packing : V-Teflon, Asbestos yarn.

2.2 I. Actuator Type : a) Pneumatic

i) diaphragm actuated
ii) power cylinder actuated
b) Electrical
c) Hydraulic

II. Actuator mode of operation : a) Direct b) Reverse
with hand wheel and lever arrangement.

2.3 Plug Contour - Equal percentage, linear, quick shut-off.
Seat : Teflon or Stellite
Trim material : SS 316

3. **HIGH PRESSURE SINGLE SEATED CONTROL VALVE (TOP & BOTTOM GUIDED)**

Application	Pressure Control/ Flow Control
Size (inch)	As per application
Pressure rating	As per ANSI rating.
End Connection	Welded
Rated CV value:	To be calculated on the basis of allowed pressure drop.
Process Medium :	To be specified by the customer.
Flow Rate :	Maximum & Minimum normal flow to be specified by the purchaser.

3.1 Actuator Type – As per 2.2 (I & II both).

3.2 Valve Characteristics - Linear, equal percentage and quick shut-off.

NOTE: Gland type packing to be mentioned.

4. **CAGE TYPE DOUBLE SEATED CONTROL VALVES**

4.1 Body

Type : Double seated, straight through type cast globe valve

Material : Carbon steel, stainless steel for special application materials to be specified by the purchaser.

End connection : Flanged / welded.

Pressure rating : As per ANSI rating

Temperature : As per process requirement.

Trim materials : a) Plug - Stainless steel BS, 416, 316, stellite
b) Seat ring - Stainless steel SS 415,SS 315, Stellite

Process Medium : To be specified by customer

Flow Rate : Maximum, Minimum & Normal flow to be specified by the purchaser.

NOTE: Selection to be made with respect to medium to be handled.

4.2 Actuator Type – As per 2.2 (I & II).

4.3 Flow Co-efficient CV

Rated CV value: To be calculated on the basis of allowed pressure drop.

4.4 Valve Characteristics - Linear, equal percentage, quick shut-off.

NOTE: Gland type packing to be mentioned.

5. BUTTERFLY CONTROL VALVES

Model : Light duty, medium duty and heavy duty

Body : Wafer type / Flange type.

Body Material : Cast iron, carbon steel, stainless steel

Size : To be specified by the purchaser

End connection : Flanged end (RF)

Material : a) Vane - Cast iron, carbon steel, stainless steel
b) Valve stem - Stainless steel SS 304/316

Temperature : As per requirement

Pressure : As per requirement

Leakage class : To be specified as per requirement.

5.1 Actuator Type – As per 2.2 (I & II).

6. ANGLE TYPE CONTROL VALVE

6.1 Body

Type	:	As per application.
Size (inch)	:	As per requirement
Temperature range	:	As per requirement
Pressure rating	:	As per ANSI
Body material	:	Stainless steel, carbon steel
Trim materials	:	a) Plug : Stainless steel (SS 316) b) Stem : SS 316 c) Seat ring : SS 316

6.2 Actuator Type – As per 2.2 (I & II).

6.3 End Connection - Flanged end (EF and RJ)

Flow Rate : Maximum, Minimum & Normal flow to be specified by the purchaser.

Process Medium: To be specified by the purchaser.

7. THREE WAY CONTROL VALVES

7.1 Body

Type	:	a) Mixing service three way b) Diverting service three way
Material	:	Carbon steel, stainless steel SS 316, cast iron
Size (inch)	:	As per requirement
Temp. range	:	As per requirement
ANSI class rating	:	150-600

Trim materials	:	a) Plug	: SS 316
		b) Stem	: SS 316
		c) Seat ring	: SS 316

7.2 Actuator Type – As per 2.2 (I & II).

Flow Rate : Maximum, Minimum & Normal flow to be specified by the purchaser.

Process Medium : To be specified by the purchaser.

8. ACTUATORS FOR CONTROL VALVES

8.1 Pneumatic Actuators

8.1.1 Spring type diaphragm actuators/springless double acting diaphragm actuator.

Body Material:		Carbon steel or Stainless steel or other alloy steel
Diaphragm	:	i) Neoprene with fabric insert iii) Viton with fabric insert for high temperature application
Actuator stem yoke	:	Stainless steel (SS 304), cast iron
Spring range:		0.2 to 1 kg/cm2 or As per purchaser's specification
Air pressure	:	To be specified by the purchaser
Ambient temp limit	:	0oC to 70oC
Pneumatic tubing connection	:	NPT 1/4 Female, or as specified by purchaser.
Performance	:	a) Hysteresis error : + 0.5 FS b) With positioner : within 1% FS
Linearity	:	With positioner : within + 1% FS

POSITIONER
Direct acting/Reverse acting, Field selectable
Mechanical type/Smart type.

Provision (accessories)	:	Additional Volume booster, limit switch, valve position transmitters, solenoid valves, I / P Converter, Airlock device, AFR, Manual Hand Wheel Assembly etc as optional.

8.1.2 Power cylinders - Piston cylinder type actuator:

Material (Body)	:	Honed hard chrome plated, seamless carbon steel tube, SS (Stainless Steel)
Piston rod	:	ASTM 420 or C-30 hard chrome plated,SS
Seals	:	Viton, Teflon, Nitrile Rubber
Supply Pressure	:	To be specified by the purchaser
Pneumatic tubing	:	Fittings 1/4 in NPT (F) (or as specified by purchaser
Performance	:	a) Hysteresis : + 0.5% b) Linearity : + 1% c) Sensitivity : + 0.1%
SIZE	:	Bore Dia and Stroke Length to be specified by purchaser
Provision (accessories)	:	Additional Volume booster, limit switch, with valve Position transmitters, solenoid valves, I / P Converter, Airlock device, AFR, Manual Hand Wheel Assembly, positioner (Mechanical/ Smart Type) etc as optional.

8.1.3 Quality of instrument air - Shall be as per IPSS:2-07-018-87 `Specification for air for pneumatic instruments'.

8.2 Electric Actuators for Control Valves - The actuator is used for positioning of final control elements. It is suitable to connect two position controllers or continuous controllers. Actuator has the following:

a) Travel Time : To be specified by purchaser.

	Casing	:	IP 54 or better
	Limit switches	:	Two built in torque and four travel dependent limit switches with ratings of 5A at 230V ac
b)	Accessories	:	Position Transmitter, Space Heater, Torque Switch and Manual Hand Wheel Assembly
c)	Type	:	On/ OFF, Continious Control
d)	Operating Voltage	:	i) 230 V(+10% to -15%); 1 phase ii) 415V, 3 Phase A.C.
e)	Movement	:	a) Linear b) Rotational

8.3 Compact Hydraulic Actuators
Type – Self contained