MATERIAL AND EQUIPMENT STANDARD

FOR

POSITIVE DISPLACEMENT PUMPS

CONTROLLED VOLUME

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0. INTRODUCTION

This Specification gives the amendment and supplement to API Standard 675, First Edition, March 1980, "Positive Displacement Pumps-Controlled Volume" it shall be used in conjunction with data/requisition sheets for controlled volume pump.

For ease of reference, the clause and/or section numbering of API Std. 675 has been used throughout of this Specification.

Clauses in API Std. 675 not mentioned remain unaltered. For the purpose of this Specification, the following definitions shall hold:

Sub.(substitution)	:	The API Std. clause is deleted and replaced by a new clause.
Del.(Deletion)	:	The API Std. clause is deleted.
Add.(Addition)	:	A new clause with a new number is added.
Mod.(Modification)	:	Part of the API Std. clause is modified, and/or new description and/or statement is added to that clause.

1. GENERAL

1.1 Scope

This Standard contains minimum requirements for positive displacement pumps-controlled volume for use in refinery services, chemical, gas and petrochemical plants, and where applicable in production and exploration.

Compliance by the pump vendor with the provisions of this Standard does not relieve him of the responsibility of furnishing pump and accessories of proper design, mechanically suited to meet guarantees at the specified service conditions.

No deviations or exceptions from this Standard shall be permitted without the written prior approval of the Company. Intended deviations shall be listed separately by the Vendor and supported by reasons thereof for purchaser's consideration. (Mod.)

1.3 Conflicting Requirements

In case of conflict between documents relating to the inquiry or order, the following priority of documents shall apply:

First priority:

Purchase order and variations thereto.

Second priority:

Data/requisition sheets and drawings.

Third priority:

This Standard Specification.

All conflicting requirements shall be referred to the purchaser in writing. The purchaser will issue confirmation document if needed for clarification. (Sub.)

1.4 Definition of Terms

Simplex metering pump, is a pump having one plunger or diaphragm.

Duplex metering pump, is a pump having two plungers or diaphragms.

Triplex metering pump, is a pump having three plungers or diaphragms.

Single acting pump, is a pump in which the pumping takes place on only one and the same side of each piston.

Double acting pump, is a pump in which pumping takes place alternatively on either side of each piston. (Mod.)

1.5 Reference Publication

1.5.1 The latest editions of the following Standards, and specifications shall, to the extent specified, form a part of this Specification.

IPS (IRANIAN PETROLEUM STANDARDS)

M-EL-132 "Induction Motors"

M-PM-320	"Lubrication, Shaft Sealing and Control Oil Systems for Special Purpose Application."
E-EL-110	"Electrical Area Classification and Extent" (Mod.)

2. BASIC DESIGN

2.1 General

2.1.2 Add to the end of this clause: "Including 10% Accumulation". (Mod.)

2.1.4 All electrical components and installations shall be suitable for the area classification, gas grouping and temperature classes specified by the purchaser on the data sheets, and shall meet requirements of IPS Standard M-EL-132 and E-EL-110. (Sub.)

2.1.5 For packed pumps, provision shall be made to permit packing adjustment and visual observation of packing performance. (Mod.)

2.1.6 Plungers shall be replaceable without disturbing stroke adjustment or removing crosshead. (Mod.)

2.1.9 Unless otherwise specified pumps and accessories shall be suitable for outdoor installation in the climatic zone specified. (Mod.)

2.1.10 Capacity adjustment from rated capacity to as close a no flow as possible is required. (Mod.)

2.1.16 For abrasive fluid services, provisions shall be made to prevent particle sedimentation within the pump head spaces. For this services mechanically operated pump valves are preferred. (Add.)

2.3 Connections

2.3.1 Threaded connections larger than DN40 (1½") require Purchaser's approval. (Mod.)

2.3.3 Plugs shall have low galling tendency. Threaded plugs shall be fixed properly to prevent loosening and leakage from them. Seal welding of threaded plugs is not permitted. (Mod.)

2.3.4.3 Flanges that are thicker or have a larger outside diameter than required by ANSI are acceptable but they shall be faced and drilled as specified in ANSI Standard. Non ANSI flanges may be furnished by prior approval of the Company. In this cases the vendor shall submit the mating flanges. (Sub.)

2.5 Diaphragms

2.5.3 Unless specified otherwise, double diaphragms shall be used for viscous, abrasive and corrosive fluids. (Mod.)

2.5.5 Mechanically actuated replenishing function is preffered for intended seepage. (Add.)

2.5.6 For single diaphragm pumps and for service temperatures above 150°C, the diaphragm between two perforated plate construction is preferred. (Add.)

2.7 Pulsation Suppression Devices

2.7.1 Volume bottles without internals, shall be equipped with a fail-safe device for conditions of product loss.

Unless approved otherwise by purchaser, pump suction accumulators shall be of double-diaphragm type (separator bag) with rupture indicator/monitor. (Mod.)

2.13 Lubrication

2.13.1 In case of conflict between 2.3.1 and 2.9 the provisions of 2.9 shall govern. (Mod.)

2.13.3 All gearing, cams, connecting rods, cranks, etc. required to obtain the reciprocating plunger action from the motor, shall be housed in oil tight drive units. Exposed crank shafts are not acceptable. (Add.)

2.14 Capacity Adjustment

2.14.2 Manual stroke adjustment with the unit in operation must be provided unless automatic capacity controls are called for, on the individual metering pump data sheet. (Mod.)

4. ACCESSORIES

4.1 Drivers

4.1.4 Motor drivers shall be supplied in accordance with IPS Std. M-EL-132 and E-EL-110. (Add.)

4.1.5 Minimum motor kW for any pump application shall be 0.37 kW. (Add.)

4.5 Nameplates

Following information shall also be indicated on nameplates:

- Maximum allowable working pressure and size and type of pump. (Mod.)

6. PREPARATION FOR SHIPMENT

6.1 Type of Shipment and Storage

The preparation shall be suitable for a period of 12 months of outdoor storage from the time of shipment. (Mod.)

8. VENDOR'S DATA

8.1 Proposal

8.1.1.8 Spare parts prices shall be included. (Mod.)

8.2 Contract Data

8.2.3 Data

8.2.3.3 An illustrated part list shall be furnished. (Mod.)

APPENDICES

APPENDIX C (Add.)
PIPE COMPONENTS NOMINAL SIZE

The purpose of this Appendix is to present the equivalent identities for the piping component nominal size in imperial and SI Systems.

NOMINAL SIZE		NOMINAL SIZE		NOMINAL SIZE		NOMINAL SIZE	
DN (1)	NPS (2)	DN	NPS	DN	NPS	DN	NPS
15	½	100	4	500	20	1000	40
20	¾	125	5	600	24	1050	42
25	1	150	6	650	26	1100	44
32	1¼	200	8	700	28	1150	46
40	1½	250	10	750	30	1200	48
50	2	300	12	800	32	1300	52
65	2½	350	14	850	34	1400	56
80	3	400	16	900	36	1500	60
90	3½	450	18	950	38	1800	72

1) Diameter nominal, mm.

2) Nominal pipe size, inch.

APPENDIX D (Add.)
PIPE FLANGE PRESSURE TEMPERATURE RATING

The purpose of this appendix is to present the equivalent identities for the pipe flange nominal pressure temperature ratings in imperial and SI systems.

PN RATING -* Bar	ANSI RATING CLASS
20	150
50	300
65	400
100	600
150	900
250	1500
420	2500

*** The indicated PN ratings are introduced by ISO Standard No. 7268.**