MATERIAL AND EQUIPMENT STANDARD

FOR

POSITIVE DISPLACEMENT PUMPS

CONTROLLED VOLUME

FIRST EDITION

NOVMBER 2003

This standard specification is reviewed and updated by the relevant technical committee on Oct. 2013. The approved modifications are included in the present issue of IPS.

FOREWORD

The Iranian Petroleum Standards (IPS) reflect the views of the Iranian Ministry of Petroleum and are intended for use in the oil and gas production facilities, oil refineries, chemical and petrochemical plants, gas handling and processing installations and other such facilities.

IPS is based on internationally acceptable standards and includes selections from the items stipulated in the referenced standards. They are also supplemented by additional requirements and/or modifications based on the experience acquired by the Iranian Petroleum Industry and the local market availability. The options which are not specified in the text of the standards are itemized in data sheet/s, so that, the user can select his appropriate preferences therein

The IPS standards are therefore expected to be sufficiently flexible so that the users can adapt these standards to their requirements. However, they may not cover every requirement of each project. For such cases, an addendum to IPS Standard shall be prepared by the user which elaborates the particular requirements of the user. This addendum together with the relevant IPS shall form the job specification for the specific project or work.

The IPS is reviewed and up-dated approximately every five years. Each standards are subject to amendment or withdrawal, if required, thus the latest edition of IPS shall be applicable

The users of IPS are therefore requested to send their views and comments, including any addendum prepared for particular cases to the following address. These comments and recommendations will be reviewed by the relevant technical committee and in case of approval will be incorporated in the next revision of the standard.

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GENERAL DEFINITIONS:

Throughout this Standard the following definitions shall apply.

COMPANY:

Refers to one of the related and/or affiliated companies of the Iranian Ministry of Petroleum such as National Iranian Oil Company, National Iranian Gas Company, National Petrochemical Company and National Iranian Oil Refinery And Distribution Company.

PURCHASER:

Means the “Company” where this standard is a part of direct purchaser order by the “Company”, and the “Contractor” where this Standard is a part of contract documents.

VENDOR AND SUPPLIER:

Refers to firm or person who will supply and/or fabricate the equipment or material.

CONTRACTOR:

Refers to the persons, firm or company whose tender has been accepted by the company.

EXECUTOR:

Executor is the party which carries out all or part of construction and/or commissioning for the project.

INSPECTOR:

The Inspector referred to in this Standard is a person/persons or a body appointed in writing by the company for the inspection of fabrication and installation work.

SHALL:

Is used where a provision is mandatory.

SHOULD:

Is used where a provision is advisory only.

WILL:

Is normally used in connection with the action by the “Company” rather than by a contractor, supplier or vendor.

MAY:

Is used where a provision is completely discretionary.

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0. INTRODUCTION

This Standard specification gives the amendments and supplements to API Standard 675, Third Edition, Nov. 2012, "Positive Displacement Pumps-Controlled Volume". It shall be used in conjunction with data/requisition sheets for controlled volume pump..

Note 1:

This is a revised version of this standard, which is issued as revision (1)-2003. Revision (0)-1994 of the said standard specification is withdrawn.

Note 2:

This standard specification is reviewed and updated by the relevant technical committee on Oct. 2013. The approved modifications by T.C. were sent to IPS users as amendment No. 1 by circular No 394 on Oct. 2013. These modifications are included in the present issue of IPS.

Guidance for Use of this Standard

The amendments/supplement to API Standard 675 given in this Standard are directly related to the equivalent sections or clauses in API Standard 675. For clarity, the section and paragraph numbering of API Standard 675 has been used as for as possible. Where clauses in API are referenced within this Standard, it shall mean those clauses are amended by this Standard. Clauses in API that are not amended by this Standard shall remain valid as written.

The following annotations, as specified hereunder, have been used at the bottom right hand side of each clause or paragraph to indicate the type of change made to the equivalent clause or paragraph of API.

Sub. (Substitution): The clause in API shall be deleted and replaced by the new clause in this Standard.

Del. (Deletion) : The clause in API shall be deleted without any replacement.

Add. (Addition) : The new clause with the new number shall be added to the relevant section of API.

Mod. (Modification): Part of the clause or paragraph in API shall be modified and/or the new description and/or statement shall be added to that clause or paragraph as given in this Standard

1. SCOPE

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.)**

1.2 Alternative Design

The International System (SI) of Units, dimension and rating in accordance with IPS-E-GN-100 shall be used, Unless otherwise specified. **(Mod.)**

5.2.1 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.)**

2. NORMATIVE REFERENCES

2.1 Throughout this Standard the following dated and undated standards/codes are referred to. These referenced documents shall, to the extent specified herein, form a part of this standard. For dated references, the edition cited applies. The applicability of changes in dated references that occur after the cited date shall be mutually agreed upon by the Company and the Vendor. For undated references, the latest edition of the referenced documents (including any supplements and amendments) applies.

IPS (IRANIAN PETROLEUM STANDARDS)

IPS-E-GN-100 "Engineering Standard for Units"

IPS-M-EL-131 "Material and Equipment Standard for Low Voltage Induction Motors"

IPS-M-EL-132	"Material and Equipment Standard for Medium and High Voltage Induction Motors"
IPS-M-PM-320	"Material and Equipment Standard for Lubrication, Shaft Sealing,Oil-Control System and Auxiliaries "
IPS-E-EL-110	"Engineering Standard for Hazardous Area" **(Mod.)**

3. TERMS AND DEFINITION

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.)**

6. BASIC DESIGN

6.1.6 Add to the end of this clause: vendor shall advise purchaser of increased power operating requirements (at least %10 accumulation) necessary to achieve this. **(Mod.)**

6.1.8 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-131, M-EL-132 and E-EL-110. **(Mod.)**

6.1.10 For pumps that use packing, provision shall be made to permit packing adjustment and visual observation of packing performance. **(Mod.)**

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

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

6.1.22 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.)**

6.1.23 To meet the required rated capacity, vendor may offer at his option, two or tree cylinder arrangement (duplex or triplex) with a common driver in place of simplex arrangement. When manifolds connect such suction and discharge nozzles, shall be supplied by the vendor. Relief valve shall be designed to pass rated capacity when fully open and limiting the accumulation pressure to 110% of setting pressure. **(Add.)**

6.1.24 Pump with spring return on plunger not acceptable **(Add.)**

6.2 Pressure-Containing Parts

6.2.11 Complete liquid end, including suction connection shall be suitable for relief valve setting pressure which is equal to discharge flange rating. **(Add.)**

6.3 Liquid end connections

6.3.3 Threaded connections larger than DN15 (½") require Purchaser's approval. **(Mod.)**

6.3.5 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.)**

6.4.1.3 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. **(Add.)**

6.4 Flanges

6.6 Diaphragms

6.6.2 Unless otherwise specified, double diaphragms shall be used for toxic and flammable, abrasive and corrosive fluids. **(Mod.)**

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

6.12 Lubrication

6.12.3 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.)**

6.13 Capacity Adjustment

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

7. ACCESSORIES

7.1 Drivers

7.1.8 Motor drivers shall be supplied in accordance with IPS Std. M-EL-131, M-EL-132 and E-EL-110. **(Add.)**

7.1.2.6 Chain and belt driven are not acceptable. **(Sub.)**

7.2.1 Pumps shall be direct or gear driver and coupled by flexible coupling. **(Mod.)**

3.1.10 Pumps shall be direct or gear driven and coupled by flexible couplings. Chain and belt driven are not acceptable. **(Add.)**

7.2 Couplings and Guards

7.2.11.c Materials for the guard shall be non sparking. **(Mod.)**

7.8 Pulsation Suppression Devices

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

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

8. INSPECTION, TESTING AND PREPARATION FOR SHIPMENT

8.4 Preparation for shipment

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

9. VENDOR'S DATA

9.1 General

9.1.4 All documents shall be in English language. **(Add.)**

9.2 Proposal

9.2.3.f General

Priced spare parts prices shall be included. **(Mod.)**

Contract Data

Technical Data

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

9.3.4.1 An illustrated part list shall be furnished. **(Mod.)**

10. GUARANTEE AND WARRANTY

10.1 Mechanical

Unless exception is recorded by the Vendor in his proposal, it shall be understood that the Vendor agrees to the following guarantees and warranties:

a) All equipment and component parts shall be warranted by the vendor against defected materials, design and workmanship for 1 years after start-up or 18 months after shipment, whichever is longer.

b) If any mal-performance or defects occur during the guarantee and warranty period, the vendor shall make all necessary alterations, repairs and replacements free of charge, with no field labor charges, on the purchaser's job site. **(Add.)**

10.2 Performance

The pump shall be guaranteed for satisfactory performance at all operating conditions specified on the data sheet. **(Add.)**