



PTT Exploration and Production Public Company Limited

PTTEP Engineering General Specification

PEGS

Piping Spring Hangers and Supports

Document No: PEGS-0710-PIP-009

Revision No: 0-0

Revision Date: May 2013



PTT Exploration and Production Public Company Limited

PEGS DOCUMENT REGISTER	
Document Title:	Piping Spring Hangers and Supports
Document Reference No:	PEGS-0710-PIP-009
Prepared By:	Sompong T
Division/Department/Asset/Company:	Piping Department/Technip Engineering (Thailand) Ltd.

Document Custodian (To be signed on acceptance of Rev. Pre D1)			
Name	Dept. Code	Signature	Date
Chatri K.	0710		27-08-13

Document Approvals (To be signed before release of Rev.0-0)			
		Signature:	Date:
Name: DAR Initiator:	Peerapong C.		30 Aug 13
	Dept/Div/Group code EET (0710)		
Name: Division SVP (If different from above)	Thuan J.		9 Sep 13
	Dept/Div/Group code ENC (0700)		
Name: Group EVP Document Owner	Phongsthorn T		12/09/13
	Dept/Div/Group code EDE (0011)		

This page shall be retained in the master archived copy

THIS DOCUMENT WILL BE REVIEWED 3 YEARS FROM DATE OF APPROVAL
OR REVISED EARLIER IF NECESSARY



PTT Exploration and Production Public Company Limited

Revision History			
Rev	Description of Revision	Authorised by	Date
0-0	New Document		



TABLE OF CONTENTS

1.0	Purpose.....	1
2.0	Scope	1
3.0	Definitions	2
3.1	Language	2
3.2	Terminology	2
3.3	Common Acronyms.....	3
4.0	References.....	4
4.1	PTTEP Internal References.....	5
4.2	International Standards	5
4.3	Industry Codes and Standards	5
5.0	Piping Spring Hangers and Supports	6
5.1	Design of Spring Supports.....	6
5.2	Fabrication of Spring Supports	7
5.3	Inspection and Testing	8
6.0	Appendices.....	11
Appendix 1.	The illustration shows the example of spring supports.....	11
Appendix 2.	The sample data sheet of spring support.	12



1.0 PURPOSE

The purpose of the PTTEP Engineering General Specification, PEGS-0710-PIP-009, Piping Spring Hangers and Supports defines the minimum requirements for the supply of variable and constant spring support assemblies to the piping systems.

2.0 SCOPE

This specification cover the minimum requirements described herein and are supplementary to the data indicated in the Data Sheets (SP) for Spring Supports. Together they constitute the specification for the design, material selection, inspection, testing, packaging and delivery of the spring supports and their accessories to the project site.



3.0 DEFINITIONS

A number of different terms are commonly used to describe the work stages, processes, and approvals which take place during the early stages of a development. This can often be a source of confusion so the following section is intended to show the PTTEP preferred terminology as used in this document.

3.1 LANGUAGE

In this document, the words 'should' and 'shall' have the following meanings:

Should	Indicates a preferred course of action. Should is a non-mandatory word and is not forbidden, but use in the body of the text should be the exception. Where none mandatory terms are used, each paragraph within these clauses shall also have an associated commentary paragraph that provides the rationale for why the stated choices and modifications are appropriate and circumstance under which the stated choices and modifications might be different.
Shall	Indicates a course of action with a mandatory status. The term "shall" shall be used if a requirement is considered to be necessary to claim compliance with a PEGS document.

3.2 TERMINOLOGY

Terminology	Description
Approval	The authorization in writing given by the COMPANY to the Contractor on a procedure or to proceed with the performance of a specific part of the work without releasing in any way the Contractor from any of his obligations to conform with the technical specifications, requisitions, etc. The words "Approve", "Approved" and "Approval" shall be construed accordingly
Cold position	The installed position of spring supports.
COMPANY	PTT Exploration and Production Public Company Limited
Contractor	Per contract: Contractor – 'The contractor who is a PARTY to this CONTRACT and where the context so requires, any and all SUBCONTRACTORS utilised by CONTRACTOR for the performance of the WORK'
Hot position	The position whereby operating loads.
Manufacturer	The company or its sub-contractors selected by the COMPANY or the Contractor or the Supplier (as applicable) as the Manufacturer of the said material
Purchaser	The COMPANY or the Contractor or the Supplier (as applicable) which have placed the Purchase Order to the Manufacturer
Strain Sensitive Equipment	The rotating equipments such as compressors, pumps etc.
Supplier/Vendor	The company designated on the Purchase Order form or Contract as being the selected supplier of the said materials.



3.3 COMMON ACRONYMS

Set out below in alphabetical order are common acronyms as found within this document:

ASME	The American Society of Mechanical Engineers
ASTM	The American Society of Testing Materials
kgf	Kilogram Force
mm	Millimetre
MR	Material Requisition
PTFE	Polytetrafluoroethylene
SP	Specialty Items



4.0 REFERENCES

The reference documents listed below, including Industry Codes and Standards and COMPANY specifications, form an integral part of this Engineering General Specification. Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published on the effective date of a contract.

The overall order of precedence of the applicable documents shall be:

1. Applicable Laws, Rules and Regulations of the country in which the system/equipment will be operated (if any);
2. Purchase Order/ Service Order/ Contract Documents (Only applicable for direct purchase by COMPANY);
3. Project Particular Specification (PPS), and relevant data sheet(s) if any;
4. COMPANY General Specification;
5. Codes and Standards in reference.

Any conflict between any of the Contract Documents, or between this specification and any other Contract Document, shall be reported to COMPANY for decision. In such a case, and unless otherwise agreed or decided by COMPANY, it is understood that the more stringent requirement shall apply. Exceptions to, or deviations from this specification are not permitted unless previously accepted in writing by COMPANY. For this purpose, requests for substitutions or changes of any kind shall be complete with all pertinent information required for COMPANY assessment. COMPANY's approval, nevertheless, will not, in any way, relieve the responsibility of the Contractor to meet the requirements of the industry Codes and Standards referred to and amended herein, in the event of conflict.



4.1 PTTEP INTERNAL REFERENCES

Internal documents applicable to this document are indicated in the table below.

Document Number	Document Title
PEGS-0250-ADM-002	Minimum Requirements for Vendor's Documentation
PEGS-0710-ADM-006	QA/QC Requirement for Vendor
PEGS-0710-PIP-001	Piping Design, Fabrication and Installation
PEGS-0710-PIP-002	Piping Stress Analysis
PEGS-0842-INT-001	QA/QC Inspection and Testing
PEGS-0842-COR-010	Painting of Offshore and Coastal Structures and Facilities
PEGS-0842-COR-011	Painting of Onshore Structures and Facilities

4.2 INTERNATIONAL STANDARDS

International standards applicable to this document are indicated in the table below i.e. ISO, IEC or ITU.

Document Number	Document Title
-	-

4.3 INDUSTRY CODES AND STANDARDS

Industry codes, standards and regional legislation applicable to this document are indicated in the table below.

Document Number	Document Title
ASME B31.1	Power Piping
ASME B31.3	Process Piping
ASME B46.1	Surface Texture (Surface, Roughness, Waviness, and Lay)
EN 10204	Metallic Products – Type of inspection documents
MSS-SP-58:2009	Piping Hangers and Supports-Materials, Design, Manufacture, Selection and Application



5.0 PIPING SPRING HANGERS AND SUPPORTS

5.1 DESIGN OF SPRING SUPPORTS

All spring support assemblies shall be designed for a plant life of 20 years.

The design of spring supports refers to the specification of relevant data or information necessary for the selection of required spring support in Vendor's Catalogue.

Spring Support Data Sheets (SP) in Appendix 2 issued to Vendor with the Requisition (MR) will have the following design data specified:

- Spring support tag number
- Line number
- Line size
- Operating load
- Hydro test load
- Pipe Travel and Direction
- Construction type (Base or Hanger type)
- Required Spring Rate
- Maximum allowed load variation (for variable spring supports only)
- Quantity required
- Dimensions defining the geometry of the spring support assembly
- Material of construction of the pipe
- Material of construction of the pipe clamp
- Requirement of PTFE pad, internal guide etc. for base type spring supports

Based on the data provided in the data sheets (SP), Vendor shall fill in the selected model number together with the actual spring rates of the model selected. Spring supports shall be selected such that sufficient margins (The limitation of spring travel) are available both on upper and lower sides of the operating load. Spring support sizes selected at the extreme ends of the working range of the model are not acceptable.

In case vendor is not able to supply the required dimensions then the minimum possible dimensions shall be proposed for Contractor's review and approval. However, for base type spring supports shorter dimensions proposed by the vendor will be acceptable.

Detailed mechanical design, including sizing of all parts of the spring support assembly, shall be performed and developed by Vendor according to the Standard MSS-SP-58.



All parts of the spring support assembly shall be designed to withstand 2 times the operating load or hydro test load or maximum load capacity of the selected vendor model, whichever is higher.

Heavy spring supports (with a dead weight of 50kg or more) shall be provided with lifting lugs for ease of installation.

For variable spring supports the maximum allowable load variation between erection position and service position shall not exceed 20% for general piping. For piping connected to strain sensitive equipment the load variation shall be limited to 10%.

When the displacement of the piping, between the erection and service position, at its point of support, is greater than 40 mm, constant spring hangers and supports shall be given preference over variable spring hangers and supports. For constant spring supports the total operating travel, used for the determination of spring support size, shall be calculated by adding a travel reserve of 20% or at least 25 mm to the operating travel.

All hanger type spring support assemblies must allow for a $\pm 4^\circ$ swing with respect to the vertical axis.

All spring supports shall be provided with a locking device which must be designed to re-lock the spring support at any load position within the range of the model. The locking device should be attached to the spring support by chain or a similar device such that it is accessible whenever necessary during the working life of the assembly. The erection and service positions and the corresponding load values shall be indelibly marked (stamped) on the housing of the spring hanger and support. Spring hangers and support shall be provided with position indicator.

5.2 FABRICATION OF SPRING SUPPORTS

5.2.1 Material

The material used in the manufacture of spring supports must be as per ASTM or equivalent standards specified in the Standard MSS-SP-58.

Spring support assemblies shall be fabricated from corrosion resistant materials. All materials shall be new and free from defects that could impair strength, durability or appearance.

Spring coil shall be manufactured from a material such that it is suitable for a continuous operation of the plant for 20 years.

Vendor shall ensure that spring coils are free from residual stresses resulting from the coiling operation.

5.2.2 Marking

Each spring support assembly shall have an aluminium or stainless steel nameplate firmly attached to the spring casing.

The following data shall be clearly punched on the nameplate:



- Project name
- Project number
- Requisition number
- Spring support tag number
- Vendor's model number
- Load scale (kgf)
- Travel scale (mm)
- Hot (operating) load position (Red Indicator)
- Cold (erection) load position (Green Indicator)
- Hydrotest load
- Spring rate (kgf/mm)

For constant spring supports the locking pin shall be painted red and provided with a tag providing clear instructions for removal before plant operation.

The tag number shall be painted on all accessories of the spring support so that all elements forming part of an assembly are easily identifiable.

5.2.3 Painting and Coating

Painting and Coating of the spring support assemblies shall be done according to the painting specification provided by the COMPANY. Painting for onshore structures and facilities shall be in accordance with PEGS-0842-COR-011 and PEGS-0842-COR-010 for painting of Offshore and Coastal Structures and Facilities.

5.3 INSPECTION AND TESTING

5.3.1 General Requirements

Inspection and Testing shall be in Vendor's scope and at Vendor's cost.

For QA/QC requirements for vendors shall be in accordance with PEGS-0710-ADM-006: Specification of "QA/QC Requirement for Vendor".

Inspection & Tests shall be carried out based on the latest issue of Data Sheets (SP) & Vendor Drawings approved by the Contractor. The inspection and Testing shall be following PEGS-0842-INT-001: Specification for "QA/QC Inspection and Testing".

Inspection and Tests shall be carried out as per the stipulations provided in the standard MSS-SP-58.

5.3.2 Material Certificates

All certificates shall comply with EN 10204 as follows:

- Material Certificates:



- o EN 10204-3.1 for spring coils.
- o EN 10204-2.2 for intermediary components (stud bolts, forged pieces, etc.) and spring housing.

The corresponding traceable stamping is necessary for all cases.

- Test Certificates:
 - o EN 10204-3.1 for spring coils and press calibration.

5.3.3 Acceptance Tests

The acceptance tests shall be carried out as per the stipulations provided in the standard MSS-SP-58. For the additional requirements shall be followed as the lists below.

5.3.3.1 Variable spring Supports

For variable spring supports following tests must be carried out as a minimum:

- Application of operating load and checking the position of load indicator.
- Application of the pre set load and checking the position of load indicator.
- Verification of the travel value between operating load and pre-set load.
- Verification of the actual spring rate.
- Load testing:
 - o Application of maximum load as per the range of the model with spring support in unlocked condition.
 - o Application of the hydro test load with spring support in locked condition.
- The conditions for rejection shall be as follows:
 - o Lack of compliance of measurements with the MSS-SP-58 standard.
 - o Any variation of more than $\pm 6\%$ of the measured spring rate compared to the spring rate indicated in the Vendor's catalogue.

For every rejection two further items shall be tested coming from a different lot.

5.3.3.2 Constant spring Supports

For constant spring supports following acceptance tests must be carried out as a minimum.

- Verification of the total operating travel and maximum travel value.
- Verification of the minimum and maximum load value.
- Checking the position of the lock pins.
- Load testing:
 - o Application of maximum load as per the range of the model with spring support in unlocked condition.



- o Application of the hydro test load with spring support in locked condition.
- Maximum deviation from the specified load calculated as per Para 7.7.1.3 of the Standard MSS-SP-58 shall be within $\pm 6\%$. Readings obtained from the load test machine shall be graphically plotted for calculating the deviation value.
- The conditions for rejection shall be as follows:
 - o Lack of compliance of measurements with the MSS-SP-58 standard.
 - o Calculated maximum deviation value of more than $\pm 6\%$.

For every rejection two further items shall be tested coming from a different lot.

- Spring supports may also be rejected for the following reasons:
 - o Visible manufacturing or welding defects, in which case the inspecting authority may request further non-destructive testing at no extra cost.
 - o Lack of compliance with the sizes stated in Vendor's catalogue or as requested in the Spring Supports Data Sheets (SP).

5.3.4 Packing and Shipment

Each spring support shall be packed together with all accessories required for completing the particular assembly.

All spring supports in a delivery lot shall be packed together in sea worthy shipping crates. The Project name, Project number, MR number and other relevant information shall be clearly marked on the outside of crates for easy identification.

Suitable packing shall be provided to guarantee safe shipment and storage at job-site for a period of at least six months. Vendor shall prepare and submit a packing list prior to the dispatch of items to site.

5.3.5 Documentation

As regard the Type, Content and Delivery Schedule of all the documents and drawings requested in the Material Requisition (MR).

Documentation shall be provided in accordance with PEGS-0250-ADM-002: Specification for "Minimum Requirements for Vendor's Documentation".

In general, the Vendor shall furnish schematic spring support assembly drawings together with the quotation for technical review by the Contractor. After the placement of Purchase Order vendor shall submit detailed drawings together with drawing index and Bill of Material for approval by the Contractor.

Drawings for Base Type Spring Supports shall show Bolt Hole dia. as well as locating dimensions for ease in installation.

Vendor shall furnish 'Installation Procedure', 'Storage and Maintenance Procedure' and 'Procedure for Unlocking the Spring Supports' for Contractor's review and approval.



6.0 APPENDICES

Appendix 1. The illustration shows the example of spring supports.

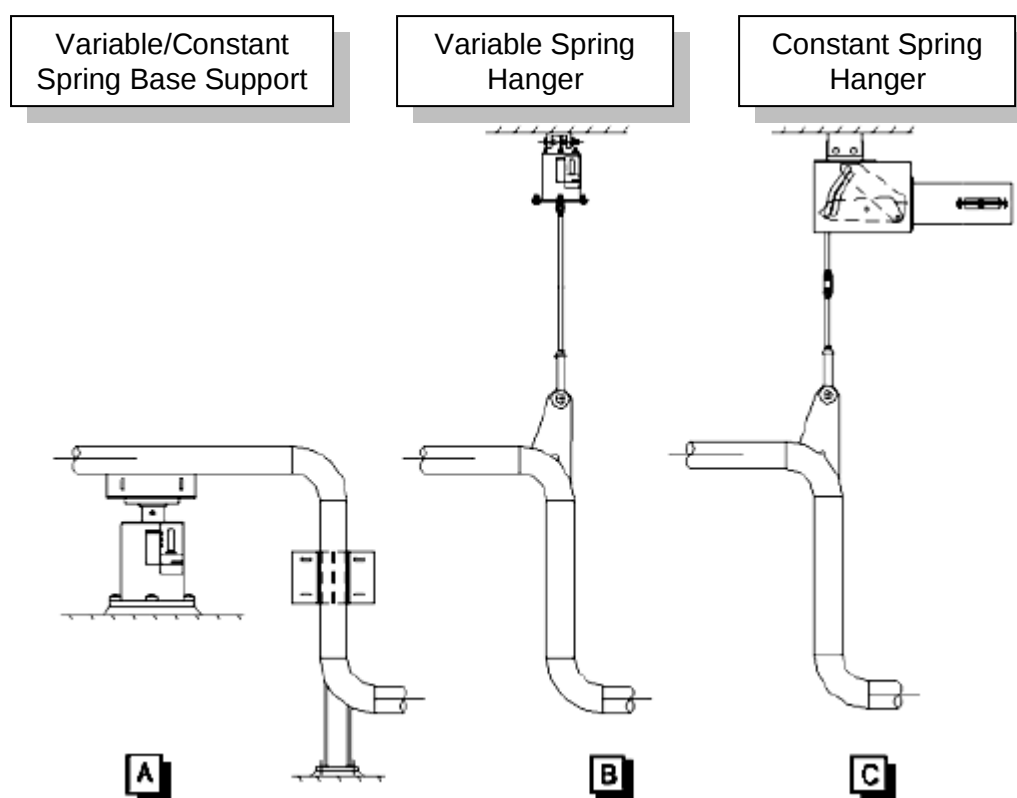
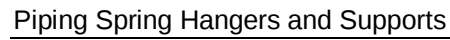


Figure A, A variable/constant spring base support is placed under the pipe.

Figure B, A variable spring hanger is placed suspended from above.

Figure C, A constant spring hanger is placed suspended from above.

May 2013 Rev.0-0



PEGS User Feedback Form

This section for feedback provider input only

Details of feedback provider

Name: [Click here to enter text.](#)

Division/Dept: [Click here to enter text.](#)

Location: [Click here to enter text.](#)

Telephone: [Click here to enter text.](#)

E-mail: [Click here to enter text.](#)

Area of Concern: ☐ **PEGS Content** ☐ **PEGS Relevance** ☐ **ISO standard** ☐ **Other standards**

☐ **Others:** *(please specify)* [Click here to enter text.](#)

Document Title: [Click here to enter text.](#)

Document I/D: [Click here](#)

Feedback details *(when referring to documents, please state chapter and page number where appropriate.)*

[Click here to enter text.](#)

(Please add attachments if required)

**PEGS User Feedback Form***This section for PEGS Administrator use only***Date received:** Enter a date.**Feedback register updated:** Enter date.**Received by:** Enter text**Feedback register updated by:** Click here**Form receipt sent:** Enter date**Feedback Reference #** PEGS-FB-00?**Action taken**

Click here to enter text.

Date**By Whom**

Click date

name

Click here to enter text.

Click date

name

Further Action**Recommended Action****Deadline****By Whom**

Click here to enter text.

Click

name

Verification of closure of Feedback

Click here to enter text.

By: Click here**Title:** Click here**Dept.:** Click**Date:** Click*Please send this form to PEGS Administrator: pegs@pttep.com*



LAST PAGE – INTENTIONALLY BLANK