

	<p align="center">Standard</p>	<p align="center">Technology</p>
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Title: **Piping and Instrumentation Diagram (PID) Standard** Unique Identifier: **240-61227631**

Alternative Reference Number: **N/A**

Area of Applicability: **Engineering**

Documentation Type: **Standard**

Revision: **2**

Total Pages: **100**

APPROVED FOR AUTHORISATION

6x ASSET MANAGEMENT
DOCUMENT CENTRE ☎ X4962

Next Review Date: **May 2025**

Disclosure Classification: **CONTROLLED DISCLOSURE**

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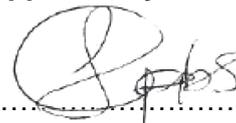


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PCM Reference : **240-44509543**

SCOT Study Committee Number/Name : **Data and Configuration Management**

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1. INTRODUCTION

Piping and Instrumentation Diagram (P&ID) show the technical details representation of the process plant, the associated plant equipment and instruments using graphical symbols. This include plant items like boiler, turbine pipes, ducts, valves, actuators, dampers and other miscellaneous items composed in different system.

This Standard stipulates minimum requirements to be adhered to in terms of layout, graphical symbols and plant coding for the Piping and Instrumentation Diagrams (P&IDs). The standard also describes technical information level of details that must be shown on a P&ID.

ISO 14084 Part 1 defines and elaborates in detail different diagrams used in the power plant industry. It also introduces the Process and Instrumentation Diagram (PID). Process and Instrumentation Diagram deviates from the traditional piping and instrumentation diagram (P&ID) in that it caters for both fluid and solid material processes like conveyancing of coal. However, due to the common usage of the term Piping and Instrumentation Diagram within the organisation, alignment with the ISO 14084 Part 1 will be done whilst keeping the term Piping and Instrumentation Diagram (P&ID).

2. SUPPORTING CLAUSES

2.1 SCOPE

The scope of the standard is intended for P&ID development and implementation by all Engineering disciplines across the organisation. This standard incorporates P&IDs developed and implemented during the plant life stages of all Eskom power stations and the following;

- During asset creation where external Design Authorities develop P&IDs for Eskom.
- During asset creation where Eskom is the Design Authority
- During redrawing of existing P&IDs for establishing the design base
- During operation and maintenance where modification/update of P&ID is required

2.1.1 Purpose

The purpose of this standard is to define the minimum requirements that must be adhered to in order to produce a quality P&ID. The requirements are informed by international standards related to engineering diagrams and best engineering practice.

2.1.2 Applicability

This document shall apply throughout Eskom's Divisions. The intended users of this Standard include Eskom technical personnel as well as contractors or Design Authorities. Where contractors cannot provide P&IDs in accordance with this standard, provision needs to be made for redrafting the PIDs to meet this standard.

2.2 NORMATIVE/INFORMATIVE REFERENCES

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

2.2.1 Normative

- [1] 240-44509543 Process Control Manual (PCM) for Design System
- [2] 240-86973501 Eskom drawing office standard Common requirements
- [3] 0.00/10259 Eskom Standard for Pipe, C&I Diagram and General Mechanical Symbols CADD Cell Library

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- [4] 240-60782552 Eskom Process Flow Diagram (PFD) Standard
- [5] 240-93576498 KKS Coding Standard
- [6] 240-131050633 Eskom Hybrid Key Part Standard
- [7] 240-73143217 Eskom RDS PP Coding Standard
- [8] ISO 14084-1, Process diagrams for power plants – Part 1: Specification for diagrams
- [9] ISO 15519-1, Specification Diagrams of Process Industry – Part 1:General Rules
- [10] ISO 15519-2, Specification Diagrams of Process Industry – Part 2:Measurement and Control
- These documents are indispensable for the application of this document, i.e. documents to be used together with this document.

2.2.2 Informative

- [11] ANSI ISA S5.1, Instrumentation Symbols and Identification Standards, 1984 (rev. 1992)
- [12] ISO 10628-1, Flow diagrams for process plants – General rules, 1997
- [13] ISO 14084-2, Process diagrams for power plants – Part 2: Graphical symbols
- [14] BS EN ISO 81714-1, Design of Graphical symbols for use in the Technical Documentation of Products
- [15] 240 – 54179170 Technical Documentation Classification and Designation Standard
- [16] ISA S5.2, Binary Logic Diagrams for Process Operations
- [17] ISA S5.3, Graphical Symbols for Distributed Control/Shared Display Instrumentation, Logic and Computer Systems
- [18] ISA S5.5, Graphic Symbols for Process Displays
- [19] ISA S51.1, Process Instrumentation Terminology
- [20] ISO 9001 Quality Management Systems.
- [21] 240–53114186 Project/Plant specific technical Document and Records Management Procedure
- [22] 32–6 document and Records Management Procedure

2.3 DEFINITIONS

Definition	Description
Approved by	The accountability of the Approver of the document is equivalent to the specified role of Functional Responsible/Owner as identified in 240-53114186 and 32-6 for Documents and Records Management.
Actuator	Functional unit that generates from the controller output variable the manipulated variable to drive the final controlling element.
Block diagram (BD)	A BD is a form of PFD where individual equipment symbols are not shown but rather complete processes (systems or sub-systems) and these are simply represented by rectangular blocks.
Component	A part or element of a larger whole, especially a part of a machine or equipment.
Control functions	Manipulation via the final controlling element of process media or process objects in order to bring the media or object into a condition or state defined by the process control system on basis of measured

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Definition	Description
	process variables and pre-defined values
Design baseline	A design that has been formally reviewed and agreed upon, that thereafter serves as the basis for use and further development, and that can be changed only by using an approved change control process.
Design basis	Design basis consists of the design inputs, the design constraints, and the design analysis and calculations. It includes topical areas such as seismic qualification, fire protection, and safe shutdown. The design basis encompasses consideration of such factors as facility availability, facility efficiency, costs, and maintainability, and that subset that relates to safety and the authorization basis. The design basis explains why a design requirement has been specified in a particular manner or as a particular value.
Equipment	Generic term used to describe physical hardware and associated firmware / software that may constitute a system or subsystem or component.
Flow schematics	Flow schematics are derived from FDs with the difference that each FD element is represented by a schematic that approximates the physical configuration of the actual equipment rather than a general symbol.
Interface	An interface is a shared boundary between two functional units, defined by functional characteristics, common physical interconnection characteristics, signal characteristics, or other characteristics, as appropriate.
Off page connector	Streams on FDs may link to the same system on other drawings or with interfacing systems. Off page connectors indicate how the drawings are connected to other drawings.
Object	Entity treated in the process of design, engineering, realization, operation, maintenance and demolition
Process/Piping and Instrumentation Diagram (P&ID)	The process/piping and instrument diagram (P&ID) is based on the process flow diagram and represents the technical realisation of a process by means of graphical symbols for equipment and piping together with process measurement and control functions.
Process Control Diagram	Process control diagrams are diagrams representing the configuration of measuring, control, and actuating functions of a complete process system or part of a process system.
Plant process	A plant process is a particular, specific sequence of steps to change the raw materials, intermediates, or sub-assemblies into the finished product or outcome. These process steps may involve conversion of an existing process stream into a new sequence of steps to meet facility requirements.
Process Flow Diagram (PFD)	The PFD represents a process or a process plant with the aid of graphical symbols interconnected by flow lines. The graphical symbols represent equipment and the lines represent mass and energy flows or energy carriers.
Process parameter	A process parameter is one of a set of numerical or other measurable

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Definition	Description
	factors that defines a plant process or sets the conditions of its operation. A process parameter can also indicate a quantity whose value is selected for a particular circumstance and in relation to which other variable quantities may be expressed.
Redundant equipment	Redundant equipment exists when two elements within a system performs an identical function at different times.
Reference designation	Identifier of a specific object with respect to the system of which the object is a constituent, based on one or more aspects of that system
Subsystem	A subsystem is an integrated set of assemblies, components, and parts which performs a cleanly and clearly separated function, involving similar technical skills, or a separate supplier.
System	An organized, purposeful structure that consists of interdependent and interrelated equipment. i.e. pumping system, Boiler system, etc.
Item Tag Code	Unique identification number derived from the catalogue of AKZ or KKS codes to be used to classify power plant structures, systems, equipment and components.

2.3.1 Disclosure Classification

Controlled Disclosure: Controlled Disclosure to external parties (either enforced by law, or discretionary).

2.4 ABBREVIATIONS

In the preceding table, list and describe all abbreviations used in the document, in alphabetical order.

Abbreviation	Description
AKZ	Anlagen Kenn Zeichnungs system (German for Plant Classification System)
ASME	American Society of Mechanical Engineers
BD	Block diagram
C&I	Control and Instrumentation
CoE	Centre of Excellence
DN	Diameter Nominal
EN	European Standard
FD	Flow diagram
HP	High Pressure
ID	Inside Diameter
ISA	The Instrumentation, Systems and Automation Society
ISO	International Organization for Standardization
KKS	Kraftwerk Kenn zeichen system (German for Power Plant Classification System)
M&E	Mass and Energy (balance)

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Abbreviation	Description
LDE	Lead Design Engineer
OPC	Off Page Connector
PCI	Process Control Information
P&ID	Process/Piping and Instrumentation Diagram
SPPID	SmartPlant Piping and Instrumentation Diagram
PFD	Process Flow Diagram

2.5 ROLES AND RESPONSIBILITIES

The responsibility to define the input conditions into the standard P&IDs rests with the appointed Lead Design Engineer (LDE) responsible for the system under consideration.

A competent Technical Designer or Draughtsman will be responsible for compiling the PID in accordance with this standard.

An appointed Professional Technologist (Pr Tech Eng) or Engineer (Pr Eng) for the relevant system will be accountable for the P&ID.

2.6 PROCESS FOR MONITORING

The document is monitored through the Data and Configuration study committee. Changes to the document shall be submitted to the study committee and evaluated for implementation on the next review cycle as contained in the committee's programme of work.

2.7 RELATED/SUPPORTING DOCUMENTS

[23] 240-55864360 – Mechanical Equipment List Template for the Design System

3. STANDARD

3.1 BACKGROUND

Flow Diagrams are used throughout the life cycle of the asset in Eskom. Technical diagrams are intended to provide design information that is legible and unambiguous. P&IDs forms part of the technical product documentation that makes up the design basis of the product or system. The rules and guidelines for creating process diagrams and are defined in [8]. This standard however describes in detail the minimum requirement of the P&ID that must be adhered to in order for the diagram to be acceptable in Eskom. This is presented in the form a diagram using graphical symbols, connections, reference designation and Process Control Instrumentation.

In the Process Control Manual (PCM) Design System document [1], creation of Flow Diagrams evolve from the develop plant process activity. Block Diagrams (BD) are developed to describe the process outcome input conditions and output requirement analyses. Once the operating philosophy and the Mass and Energy Balance (M&E) activity are concluded, Process Flow Diagrams (PFD) are developed to further describe the process systems. Block diagrams and process flow diagrams are described in document [4]. The finalisation of the PFDs triggers definition of control philosophy and the identification of major equipment. Subsequent to baselining of PFDs, P&IDs and equipment lists are developed concurrently. Refer to A. 1 for the process flow of develop plant process according the Design System PCM.

Process & Instrumentation Diagram as described in [9] is a type of a functional diagram and therefore positioning of graphical symbols does not relate to the location of the equipment on the physical plant.

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The main objective of a functional diagram is to provide detail information about the functional configuration of the system or plant and the connections with other systems or objects. It is therefore important that when P&IDs are created, they should provide sufficient information to the technical personnel or reader to understand the process presented without the need to consider other technical documents.

P&IDs also form the specification basis for the electrical and instrumentation requirements of a project or in support of plant modifications or new designs. P&ID also provides coordination platform between mechanical, electrical and instrumentation engineering. It is also the basis for developing all control loops and control logics of a plant.

3.2 P&ID BASIC INFORMATION

This section deals with basic or fundamental information that must be included in the P&ID such that the process presented can be deciphered without ambiguity. The functional configuration of the system and the detail information remains key in defining the basic information of the P&ID.

3.2.1 Graphical Symbols

Specific graphical symbol for process system shall be sufficient to represent an object in a process system. Similar Graphical symbols representing different process functions will be avoided. Where this is not avoidable additional information shall be provided to distinguish the difference.

Graphical symbols are documented on the Eskom Symbol standard [3] and shall be used to represent process equipment. In case where a graphical symbol is missing from the Eskom Standard, new symbol creation process will be followed as described in [9].

3.2.2 Process Control Information

P&IDs will show Process Control Information (PCI) symbols as basic information representing the relationship between control system and the process system. For the purposes of this standard letter codes definitions for measured process variables and control functions shall be obtained primarily from [10] for P&ID created for the Greenfields projects. In case of Brownfields projects an assessment shall be made to determine which standard was used for the P&IDs letter codes. The applicable standard shall be used to update the P&IDs which could be either ISO 15519 – 2 [10] or ANSI_ISA 5.1 [11]. PCI symbols are also referred to as bubbles or balloons according ANSI_ISA 5.1 2009[11].

3.2.3 Flow direction

Connection lines are used to represent pipes or ducts between plant items. Direction of flow in a P&ID is very critical for a complete process. P&IDs will be presented with the main flow from left to right or top to bottom.

3.2.4 Reference Designation

Each graphical symbol representing an object in the plant should have a unique reference designation that should appear in the relevant part list or a database. Reference designation is also referred to as Item Tag Code. Reference designation or coding will be done according to the applicable standards in Eskom [5] and [6], and [7].

3.2.5 Technical Information

Following technical information should form basic information of the P&ID;

- Type of process media
- Design parameter like pressure, temperature
- Piping or ducting dimensions

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- Identification of safety requirements

3.2.6 Diagram information

Denomination of ingoing and outgoing systems

Reference of related drawings or diagrams.

3.3 REPRESENTATION

3.3.1 General

Rules and application of graphical symbols in this standard shall be guided by ISO15519 - 1. General rules of diagram preparation such as grid system, lettering, text orientation, hyperlinks, colours, microcopying and document sheet split up shall be done according to ISO 15519 – 1 in this standard.

For specific presentation topics this standard also seeks to align Eskom P&ID minimum requirements with ISO14084 – 1 which is specific to power plant process systems.

3.3.2 Drawing Sheet and Title Block

The drawing sheet in this standard refers to the document sheet with both the identification content and technical information content. The technical content area of the drawing will show information in the form of graphical symbols, technical data and reference designation. For more details on drawing sheet and title block see drawing Standard [3].

3.3.3 Presentation Form

This standard is compiled for the P&IDs to be presented in paper format. The most important aspect for considered for the paper size for P&ID is inclusion of system in one sheet without the need to split into multiple sheet. However, where it is not possible to fit technical content of a system in a single sheet splitting will be allowed.

The canvas for preparing P&IDs is set up in A0 sheet. Although the P&ID is prepared in an A0 sheet, symbol sizing shall be done such that legibility is maintained in an A3 sheet for all P&IDs.

The grid module adopted for the standard is both horizontal and vertical lines spaced 1 M apart, refer to [14].

3.3.4 Graphical symbol sizing

The size of graphical symbols shall be designed to conform to module $M=2.5$ mm according to ISO 81714-1 [14]. In line pipe components family of graphical symbols shall be non-scalable. Graphical symbols for equipment that are relatively large in size shall allow increase in size to emphasize their relation to other plant items.

3.3.5 P&ID Battery Limit

For the extent of P&ID, information exchange between control system and control function shall be limited to PCI symbol as indicated in Figure 1 below. Process control diagrams will not form part of the P&ID.

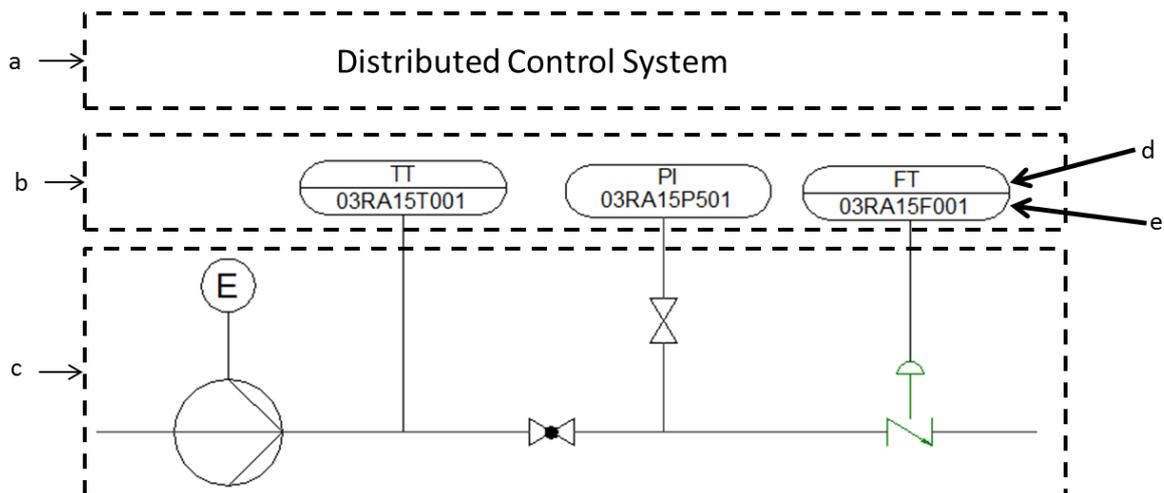


Figure 1: Information exchange between process and control system

Key

- a control system
- b information exchange
- c process
- d letter code of process variables and control functions
- e reference designation/identification number

3.3.6 Technical information

The standard is compiled for a database driven application like SmartPlant Piping and Instrumentation Diagram (SPPID). Technical information associated with plant items will be captured in property attributes for each graphical symbol. Nonetheless basic information as stipulated in the ISO 14084-1[8] shall be displayed. Equipment list shall be used to capture technical information for various plant items, refer to [23]. The equipment list serves as a guideline and properties or attributes can be updated according to the requirement of the designer.

3.4 GRAPHICAL SYMBOLS REPRESENTATION

Graphical symbols for various drawing types are described in Eskom Drawing Symbol standard [3]. A comprehensive list of Flow Diagram (FD) symbols could also be found in collection of ISO 14617. Process Diagrams for Power Plant part 2 ISO 14084-2) [13] provides graphical symbols for process and power plants and the guideline for creating new symbols.

P&ID created for Eskom shall use the Eskom Drawing Symbol standard [3] as the main source of graphical symbols, however collection ISO 14617 and ISO 14084_2 [13] shall be used when required.

For the purposes on this standard, SmartPlant graphical symbols are presented on Appendix A. 1 for the P&IDs developed in SPPID.

Graphical symbols in the P&ID shall show sufficient information in order to interpret the functionality of the object it is representing.

3.4.1 Pipe components

Pipe components refer to basic fittings in a pipe system like valves, orifices, dampers etc. This exclude larger components like pumps, heat exchangers etc. A specific graphical symbol for the ball valve as outlined in the symbol standard will be used to represent a ball valve, see Figure 2 below. Additional

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information about the opening action of the valve could be added to the valve, see Figure 2(b). Additional information is not mandatory on the P&ID.

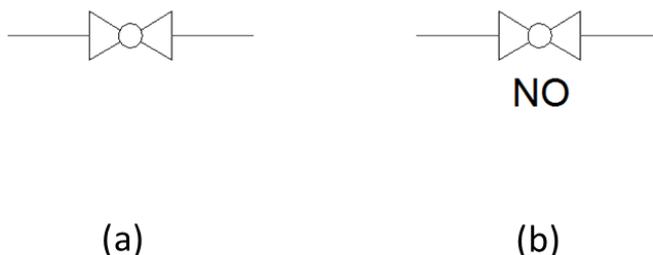


Figure 2: Ball Valve with Basic and Additional Information

3.4.2 Actuators and Motors

Actuated valves shall be represented with specific graphical symbol for the type of actuator used for the concerned valve, see Figure 3 (a). Any valve type represented on a P&IDs without an actuator or spindle shall be assumed to be hand operated/actuated, see Figure 3 (b).

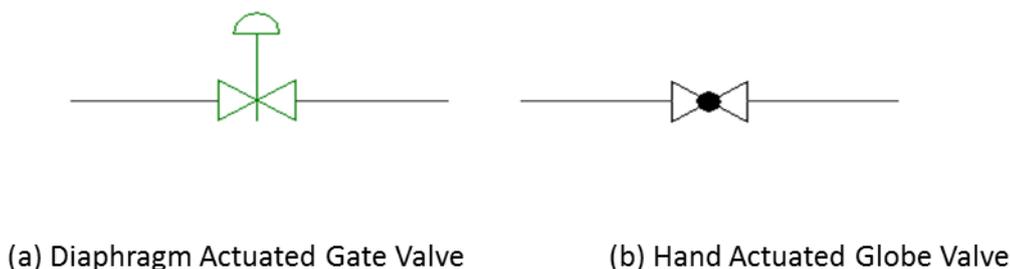


Figure 3: Valve Actuator Illustration

Mechanical or electrical driver motors shall be represented with graphical symbol for the specific motor type. The representation for the driver motor shall be similar to the actuator in Figure 3.

3.4.3 Equipment

Graphical symbols for equipment from Eskom standard symbol must be used to represent larger plant components. Equipment family of graphical symbols covers plant items like, mills, pumps, vessels, burners, turbines, etc. Short description or name should be assigned and placed adjacent to the equipment for easy reading of the P&ID. Equipment graphical symbol size will be adjustable to emphasize relationship with other plant components.

3.4.3.1 Equipment Nozzle

Nozzles shall be represented wherever required in equipment to aid necessary connection. Nozzles shall be numbered logically such that there is no duplication. Example of nozzle placement and numbering is shown in Figure 11.

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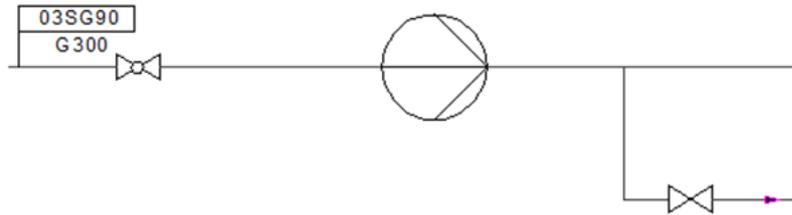


Figure 5: Flow Indication or Direction

3.5.2 Indication of Pipe or Duct Dimension

Indication of pipe diameter shall be done according to the pipe standard used during design. For example, Diameter Nominal (DN) for EN or Nominal Pipe Size (NPS) according ASME standard, refer to Figure 6. For the ducts, inside diameter, outside diameter or length x width (L x W) should be used to represent the duct size depending on the shape.

For the High Pressure pipes which are specially designed and the resulting diameter usually falls outside standard pipe dimensions, Inside Diameter (ID) shall be used to describe the pipe size. Additionally the pipe thickness can be shown as supplementary information next to the ID.

3.5.3 Line interruption

In cases where the connection lines can cross over other process graphical symbols, signal lines or group of graphical symbols using the interruption technique, see Figure 6.

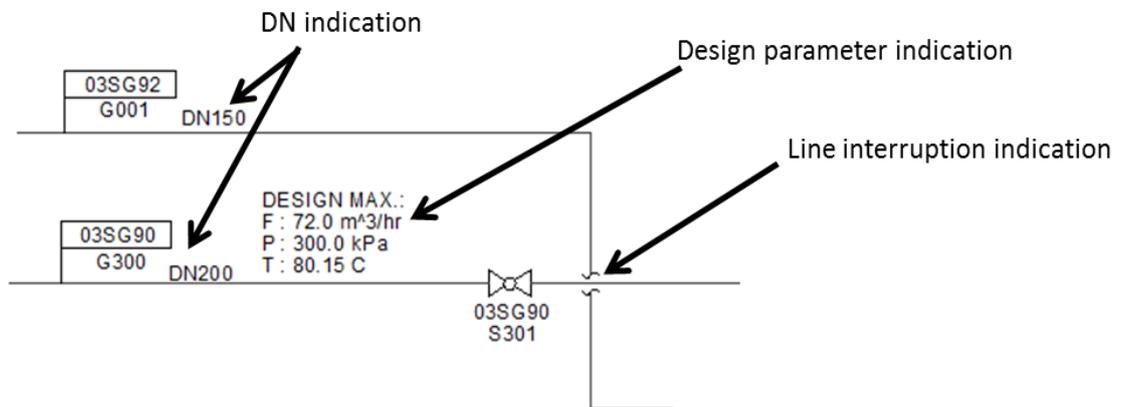


Figure 6: Line interruption indication

3.5.4 Line Segment Breaks

Two different types of graphical symbol for segment breaks are used to define segment limit of pipe or duct in a process system. Segment break with an “empty head” define limit of functions and sub functions as shown in Figure 7 (a). Any change on the combination of alpha numerical code on the circled text will prompt “empty head” segment break.

Pipe or duct branch shall be represented with a segment break symbol with a shaded head, see Figure 7 (b). Note that the example used on the figure is based is based on the AKZ coding standard.

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(a) Segment break for systems and subsystem change

(b) Segment break for pipe branch change

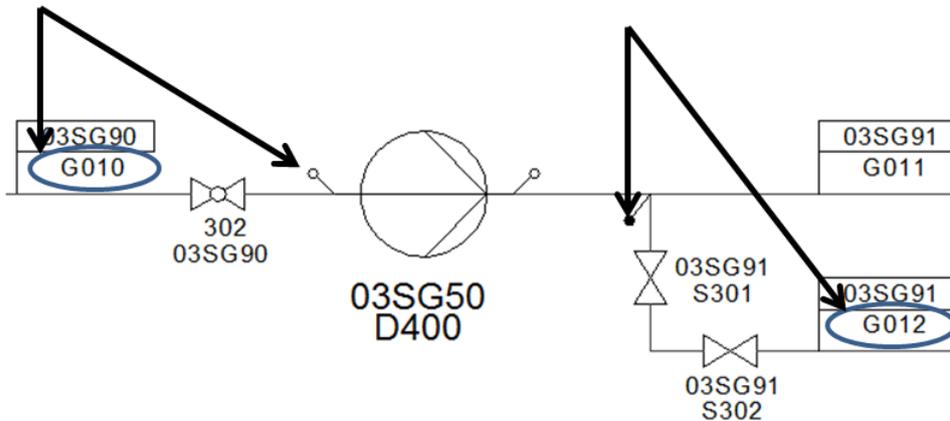


Figure 7: Segment Break Illustration

The connections shall be further represented by specific line styles to further describe the type of fluid in the process system.

3.6 MEASUREMENT AND CONTROL REPRESENTATION

PCI symbols are used for information exchange of the measured process variable from the process system to the control system and exchange of control functions for the actuation from the control system to the process system objects which then execute the control function within the process.

PCI are explained in paragraph 3.2.2 and general rules of application will be done according ISO 15519-2 [10] for newly generated P&IDs. The elongated PCI graphical symbol is the preferred symbol type for the Eskom P&ID.

For the existing P&IDs especially for the old power stations where ANS_ISA 5.1[11] was used to define the letter codes for process variable and control function. The standard shall be maintained during the update of the P&IDs. Any changes on the letter codes for these P&IDs shall follow the Engineering Change Management process.

Letters codes from the ISO 15519 - 2 and ANSI ISA 5.1 standards are not exactly the same. Definitions and descriptions of the letter codes must be read and applied correctly as per the individual standard. Mixing of the standards on a single P&ID is not permitted.

The first letter on the PCI symbol represents the measured process variable and the second letter represents the control function. Control functions could also be a display and registration of process variable.

The top part of the PCI symbol shall be used to populate the letter for codes for process variable and the control function respectively, see Figure 8 (a). Process variables could be supplemented with modifying letter codes as described in ISO 15519 – 2 [10].

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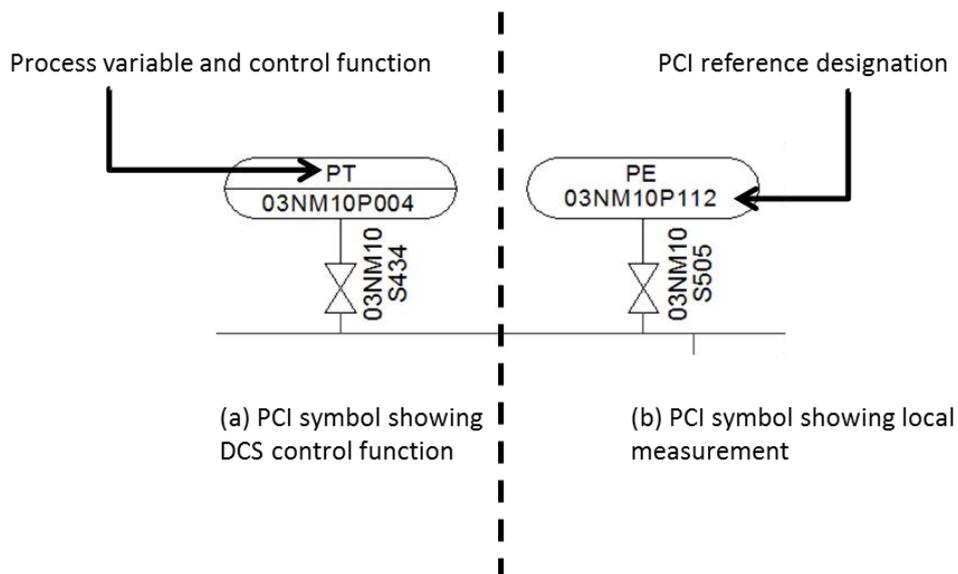


Figure 8: PCI Symbol Illustration

Placement of information outside the PCI symbol to further describe process variables, control functions or information exchange shall be done according to the rules defined in [10]. Figure 9 illustrate the placement of information outside PCI symbol. Legend for the alphabets is described below;

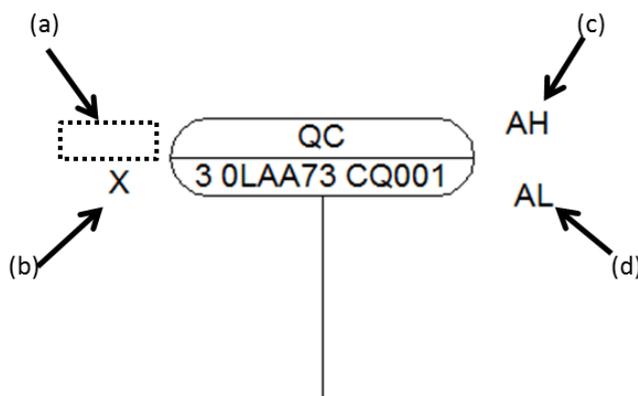


Figure 9: Placement of Information Outside PCI Symbol

Legend for the alphabets in Figure 9;

- (a) Reference to documents
- (b) Specification of type measured variable (e.g ph, viscosity, etc)
- (c) Indication of high output/input functions
- (d) Indication of low output/input functions

3.7 NONE-OBJECT SYMBOLS REPRESENTATION

None objects symbols shall be used to provide supplementary information in P&IDs necessary to further define certain aspects of the process.

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3.7.1 Limit of supply

Graphical symbols for limit of supply are used to define scope, boundary between Contractors/Designer or change of pipe specification.

3.7.2 Off Page Connector

Off Page Connectors (OPC) shall be used to represent continuation of process lines where multiple sheets are used for the same P&ID or continuation of process line on a another P&ID. OPCs shall be placed closer to the edge of the diagram from the left to right or top to bottom wherever possible. Each shall have a unique number which is mutually referenced on the corresponding P&ID.

3.7.3 Boundary frames

A boundary frame shall be used to represent a group of objects where necessary. The grouping could represent object performing same function like pump unit including pump, motor and coupling. Boundary frame shall be represented with horizontal and vertical dashed dotted lines to enclose the group of objects.

3.8 REFERENCE DESIGNATION

This section describes the preferred positioning of reference designation for graphical symbols in a P&ID.

3.8.1 Pipe components Graphical Symbols

Reference designation for graphical symbols representing horizontal pipe components shall be placed directly below concerned graphical symbol such that there is clear relationship, see Figure 10. For vertical pipe components, reference designation will be placed on the right hand side of the graphical symbol whenever possible. The orientation of the text shall be maintained horizontal at all times.

Double line representation shall be applied for all graphical symbols including pipe components and equipment.

3.8.2 PCI Graphical Symbol

Reference designation for PCI shall always be a single line representation on the bottom part of the graphical symbol, refer to Figure 8 9(b).

3.8.3 Pipe or Duct Run

Reference designation for pipelines will be placed on a horizontal plane at the entrance or exit of the diagram as illustrated with Figure 10 below.

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4. AUTHORISATION

This document has been seen and accepted by:

Name & Surname	Designation
Siyabonga Ndlovu	Middle manager: System design
Kapil Sukhnandan	Middle manager : Turbine CoE
Anasen Pillay	Middle Manager: LPS CoE
Andrew Shoki	Middle Manager: Configuration Management
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Lungile Malaza	Middle Manager: Electrical Engineering CoE
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Oloff Nel	Design and Specification Manger: Duvha Power station
Elaine Van Der Westhuizen	Design and Specification Manger: Medupi Power station
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Abdul Gire	Design and Specification Manager: Peaking
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5. REVISIONS

Date	Rev.	Compiler	Remarks
Month 2012	1	C De Beer	First issue of the standard from TDAC
March 2019	1.1	Keoagile Tiro	Document updated to align with the international standard
September 2019	1.2	Keoagile Tiro	Address comments from the work group
April 2020	1.3	Keoagile Tiro	Final Draft complete after all Comments Reviews
May 2020	1.4	Keoagile Tiro	Additional Updates completed, Final Draft
May 2020	2	Keoagile Tiro	Final Rev 2 Document for Authorisation and Publication

6. DEVELOPMENT TEAM

The following people were involved in the development of this document:

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7. ACKNOWLEDGEMENTS

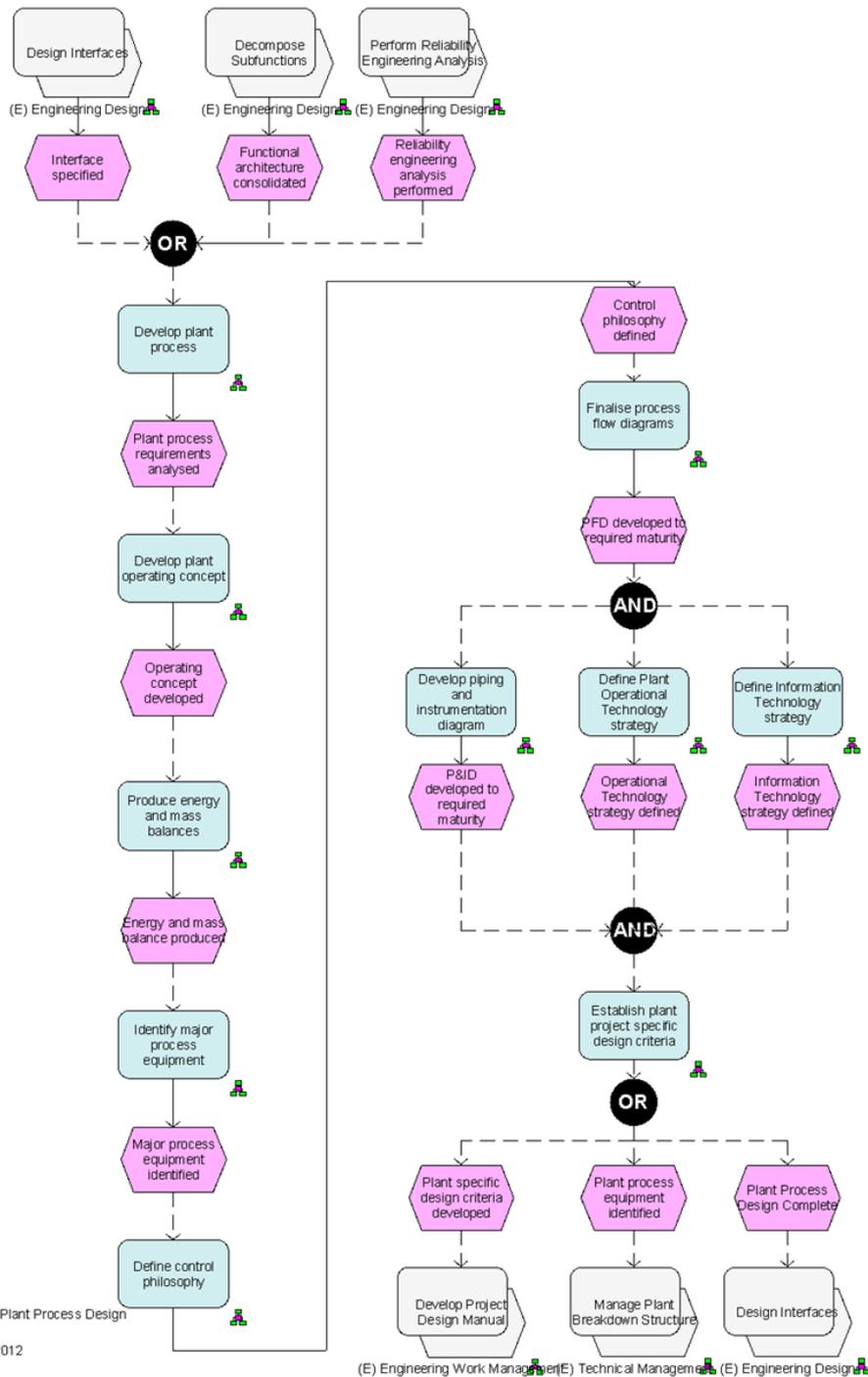
- None

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APPENDIX A:

A. 1: P&ID IN DESIGN SYSTEM PCM



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A. 2: SMARTPLANT SYMBOLS

This section presents graphical symbols for SmartPlant piping and Instrumentation Diagram (SPPID). SPPID symbols are grouped into four categories, namely;

A. 3 Equipment Symbol (EQ)

A. 4 Instruments Symbol (IN)

A. 5 Piping Symbol (PI)

A. 6 Design Symbol (DE)

A. 7 Hydraulic symbols (HS)

A. 8 Label General (LG)

The graphical symbols are further described by following headings; item file name, class, sub-class, and type as per the table below. Note that not all graphical symbols will have information on descriptions for the as per heading on the table.

Any new symbols added to the dictionary will be assigned the next sequential number according to the group that it belongs to.

It must be noted that the primary source for graphical symbols for diagrams can be obtained from a collection of ISO 14617.

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A. 3 EQUIPMENT SYMBOLS

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
Black Box System						
		Parametric Black Box 1 - EQ001.sym	EquipmentOther	General Equipment	Black Box Systems	
		Parametric Black Box 2 - EQ002.sym	EquipmentOther	General Equipment	Black Box Systems	
		Parametric Black Box 3 - EQ002a.sym	EquipmentOther	General Equipment	Black Box Systems	
		Parametric Black Circle.sym	EquipmentOther	General Equipment	Black Box Systems	
		Parametric Black Curve - EQ002.sym	EquipmentOther	General Equipment	Black Box Systems	
Components						
		Sight Glass Long - EQ0285.sym	EquipComponent	Equipment Component	Other vessel equipment components	Vessel equip component
		Sight Glass Mounted on Side of Vessel - EQ0287.sym	EquipComponent	Equipment Component	Other vessel equipment components	Vessel equip component
		Sight Glass Round - EQ0286.sym	EquipComponent	Equipment Component	Other vessel equipment components	Vessel equip component
		Vortex Breaker - EQ0288.sym	EquipComponent	Equipment Component	General equipment components	Vortex breaker
Heating Components						
		External Electrical Jacket - EQ003.sym	Exchanger	Heat Transfer	Heating and Cooling Elements	External electrical heating jacket

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		External Full Pipe Coil - EQ004.sym	Exchanger	Heat Transfer Equipment	Heating Elements and Cooling	External full pipe ht transfer coil
		External Half Pipe Coil - EQ005.sym	Exchanger	Heat Transfer Equipment	Heating Elements and Cooling	External half pipe ht transfer coil
		External Jacket - EQ006.sym	Exchanger	Heat Transfer Equipment	Heating Elements and Cooling	External heat transfer jacket
		Firing System, Burner, General - EQ007.sym	Exchanger	Heat Transfer Equipment	Heaters	Burner
		Igniter - EQ008.sym	Exchanger	Heat Transfer Equipment	Incinerators combustors and	Igniter
		Water Heater Electrically Heated - EQ009.sym	Exchanger	Heat Transfer Equipment	Heating Elements and Cooling	Water heater, electrically heated
Nozzles						
		Buttwelded Nozzle Connections - EQ010.sym	Nozzle			
		Buttwelded Nozzle - EQ011.sym	Nozzle			
		Collection Nozzle - EQ300.sym	Nozzle			
		Detailed Nozzle - EQ012.sym	Nozzle			
		Dip Pipe Nozzle - EQ013.sym	Nozzle			
		Flange Nozzle with Sprays - EQ014.sym	Nozzle			

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Flanged Nozzle - EQ015.sym	Nozzle			
		Flanged Nozzle Vent - EQ289.sym	Nozzle			
		Flanged Nozzle Vent with Bird Screen - EQ290.sym	Nozzle			
		Flanged Nozzle with blind - EQ016.sym	Nozzle			
		Grommet - EQ017.sym	Nozzle			
		Instrument Connector - EQ018.sym	Nozzle			
		Instrument Grommet - EQ019.sym	Nozzle			
		Manway - Internal - EQ020.sym	Nozzle			
		Manway - Large - EQ021.sym	Nozzle			
		Manway - Small - EQ022.sym	Nozzle			
		Nozzle - Internal - EQ023.sym	Nozzle			
		Nozzle - Internal Flanged - EQ024.sym	Nozzle			
		Nozzle - Straight - EQ025.sym	Nozzle			
		Parametric Nozzle Blind Flanged with 2-Taps - EQ026.sym	Nozzle			
		Parametric Nozzle Angled - EQ027.sym	Nozzle			

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Parametric Nozzle Flanged - EQ028.sym	Nozzle			
		Pump Nozzle - Internal - EQ029.sym	Nozzle			
		Test Pocket- EQ31.sym	Nozzle			
		Test Pocket - west- EQ31.sym	Nozzle			
		Pump Nozzle - Tangent - EQ030.sym	Nozzle			
Trays						
Bubble Cap Trays						
		1-Pass Bubl Cap - EQ255.sym	EquipComponent	Equipment Component	Vessel trays	1-p bubl cap tray
		2-Pass Bubl Center - EQ256.sym	EquipComponent	Equipment Component	Vessel trays	2-p bubl cap tray w/center dwncmr
		2-Pass Bubl Side - EQ257.sym	EquipComponent	Equipment Component	Vessel trays	2-p bubl cap tray w/side dwncmrs
		4-Pass Bubl Center - EQ258.sym	EquipComponent	Equipment Component	Vessel trays	4-p bubl cap tray w/center dwncmrs
		4-Pass Bubl Side - EQ259.sym	EquipComponent	Equipment Component	Vessel trays	4-p bubl cap tray w/side dwncmrs
		Bubl cap - EQ260.sym	EquipComponent	Equipment Component	Vessel trays	Bubl cap tray
Generic Trays						
		1-Pass General Tray - EQ261.sym	EquipComponent	Equipment Component	Vessel trays	1-pass tray

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		2-Pass Centre Weir - EQ262.sym	EquipComponent	Equipment Component	Vessel trays	2-pass tray w/center downcomer
		2-Pass Side Weir - EQ263.sym	EquipComponent	Equipment Component	Vessel trays	2-pass tray w/side downcomers
		4-Pass Centre Weir - EQ264.sym	EquipComponent	Equipment Component	Vessel trays	4-pass tray w/center downcomers
		4-Pass Side and Centre Weir - EQ265.sym	EquipComponent	Equipment Component	Vessel trays	4-pass tray w/side downcomers
	-	Cascade Deflector - EQ266.sym	EquipComponent	Equipment Component	Vessel trays	Cascade deflector
	-	Generic Tray - EQ267.sym	EquipComponent	Equipment Component	Vessel trays	Other Tray
Pans						
		Centre Draw-Off Pan - EQ268.sym	EquipComponent	Equipment Component	Vessel trays	Center draw-off pan
		Centre Seal Pan - EQ269.sym	EquipComponent	Equipment Component	Vessel trays	Center seal pan
		Shed - EQ270.sym	EquipComponent	Equipment Component	Vessel trays	Shed
		Side Draw-Off Pan - EQ271.sym	EquipComponent	Equipment Component	Vessel trays	Side draw-off pan
		Side Seal Pan - EQ272.sym	EquipComponent	Equipment Component	Vessel trays	Side seal pan
Sieve & Chimney Trays						
		1-Pass Sieve - EQ273.sym	EquipComponent	Equipment Component	Vessel trays	1-p sieve tray
		Chimney Tray - EQ274.sym	EquipComponent	Equipment Component	Vessel trays	Chimney tray

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Chimney with Draw-Off - EQ275.sym	EquipComponent	Equipment Component	Vessel trays	Chimney tray w/draw off
	-	Sieve Tray - EQ276.sym	EquipComponent	Equipment Component	Vessel trays	Sieve tray
Valve Trays						
		1-Pass Valve - EQ277.sym	EquipComponent	Equipment Component	Vessel trays	1-p vlv tray
		2-Pass Valve Centre - EQ278.sym	EquipComponent	Equipment Component	Vessel trays	2-p vlv tray w/center dwncmr
		2-Pass Valve Side - EQ279.sym	EquipComponent	Equipment Component	Vessel trays	2-p vlv tray w/side dwncmrs
		4-Pass Valve Centre - EQ280.sym	EquipComponent	Equipment Component	Vessel trays	4-p vlv tray w/center dwncmrs
		4-Pass Valve Side - EQ281.sym	EquipComponent	Equipment Component	Vessel trays	4-p vlv tray w/side dwncmrs
		Generic Valve - EQ282.sym	EquipComponent	Equipment Component	Vessel trays	Vlv tray
Electrical consumers						
		Air Conditioner - EQ031.sym	EquipmentOther	General Equipment	Electrical Equipment	Air conditioner
		Air Heat Exchanger Electrically Heated - EQ032.sym	EquipmentOther	General Equipment	Electrical Equipment	Air heat exchanger, electrically heated
Heat exchangers						
		Oil Cooler - EQ048).sym	Exchanger	Heat Exchangers	Heat Transfer Equipment	Oil cooler
		Air Dryer - EQ033.sym	Exchanger	Heat Transfer	Heat Transfer Equipment	Air Dryer

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
				Equipment		
		Condenser Steam General with WaterBox - EQ034(1).sym	Exchanger	Heat Transfer Equipment	Heat Transfer Equipment	Steam condenser
		Condenser Steam General with Hotwell - EQ034.sym	Exchanger	Heat Transfer Equipment	Heat Transfer Equipment	Steam condenser
		Condenser Surfacer - EQ035.sym	Exchanger	Heat Transfer Equipment	Shell & Tube Exchangers	Surface condenser
		Cooler - EQ036.sym	Exchanger	Heat Transfer Equipment	Heat Exchangers	Cooler, heat exchanger
		Generic 1 Shell & Tube Heat Exchanger - 2 Mediums - EQ037.sym	Exchanger	Heat Transfer Equipment	Shell & Tube Exchangers	Generic 1 Shell & Tube heat exchanger
		Generic 2 Shell & Tube Heat Exchanger - 2 Mediums - EQ038.sym	Exchanger	Heat Transfer Equipment	Shell & Tube Exchangers	Generic 2 Shell & Tube heat exchanger
		Generic 3 Shell & Tube Heat Exchanger - 3 Mediums - EQ039.sym	Exchanger	Heat Transfer Equipment	Shell & Tube Exchangers	Generic 2 Shell & Tube heat exchanger
		Heat Exchanger Electric - EQ316.sym	Exchanger	Heat Transfer Equipment	Heat Exchangers	Heat Exchanger Electric
		Heat Exchanger General 2 Mediums - EQ040.sym	Exchanger	Heat Transfer Equipment	Heat Exchangers	Cooler, heat exchanger
		Heat Exchanger General 3 Mediums - EQ041.sym	Exchanger	Heat Transfer Equipment	Heat Exchangers	Cooler, heat exchanger

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Heat Exchanger Plate - EQ042.sym	Exchanger	Heat Transfer Equipment	Shell & Tube Exchangers	Plate heat exchanger
		Heat Exchanger with Cross Flow - EQ043.sym	Exchanger	Heat Transfer Equipment	Heat Transfer Equipment	Other heat transfer equipment
		Heat Exchanger with Spray - EQ044.sym	Exchanger	Heat Transfer Equipment	Heat Exchangers	Spray cooler
		Humidifier - EQ045.sym	Mechanical	Heat Transfer Equipment		
		Water Chilling Evaporator - EQ046.sym	Exchanger	Heat Transfer Equipment	Shell & Tube Exchangers	Water chilling evaporator
Agitators, Mixers						
		Agitator Anchor - EQ047.sym	Mechanical	Mechanical Equipment	Mixing and Blending Equipment	Anchor agitator
		Agitator Double Blade - EQ048.sym	Mechanical	Mechanical Equipment	Mixing and Blending Equipment	Double blade agitator
		Agitator Finger - EQ049.sym	Mechanical	Mechanical Equipment	Mixing and Blending Equipment	Finger agitator
		Agitator Flat Blade - EQ050.sym	Mechanical	Mechanical Equipment	Mixing and Blending Equipment	Flat blade agitator
		Agitator Gauge - EQ051.sym	Mechanical	Mechanical Equipment	Mixing and Blending Equipment	Gauge agitator
		Agitator Grid - EQ052.sym	Mechanical	Mechanical Equipment	Mixing and Blending Equipment	Grid agitator
		Agitator Impeller - EQ053.sym	Mechanical	Mechanical Equipment	Mixing and Blending Equipment	Impeller agitator

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Agitator Paddle - EQ054.sym	Mechanical	Mechanical Equipment	Mixing and Blending Equipment	Paddle agitator
		Agitator Parametric - EQ055.sym	Mechanical	Mechanical Equipment	Mixing and Blending Equipment	Generic agitator
		Agitator Propeller - EQ056.sym	Mechanical	Mechanical Equipment	Mixing and Blending Equipment	Propeller agitator
		Agitator Single Blade - EQ057.sym	Mechanical	Mechanical Equipment	Mixing and Blending Equipment	Single blade agitator
		Blender Double Cone - EQ058.sym	Mechanical	Mechanical Equipment	Mixing and Blending Equipment	Double cone blender
		Blender General - EQ059.sym	Mechanical	Mechanical Equipment	Mixing and Blending Equipment	Blender
		Eductor - EQ353.sym	Mechanical	Mechanical Equipment	Mixing and Blending Equipment	Eductor mixer
		Blender Ribbon - EQ060.sym	Mechanical	Mechanical Equipment	Mixing and Blending Equipment	Ribbon blender
		Mixer Static - EQ061.sym	Mechanical	Mechanical Equipment	Mixing and Blending Equipment	Static mixer
Centrifuges						
		Centrifuge - EQ062.sym	Mechanical	Mechanical Equipment	Solid-Liquid Separation Equipment	Generic centrifuge
		Centrifuge Disc Bowl - EQ063.sym	Mechanical	Mechanical Equipment	Solid-Liquid Separation Equipment	Disc bowl centrifuge
		Centrifuge Horizontal Peeler - EQ064.sym	Mechanical	Mechanical Equipment	Solid-Liquid Separation Equipment	Horizontal peeler centrifuge
		Centrifuge Sieve Basket - EQ065.sym	Mechanical	Mechanical Equipment	Solid-Liquid Separation Equipment	Sieve basket centrifuge
		Centrifuge Sieve Basket Screw - EQ066.sym	Mechanical	Mechanical Equipment	Solid-Liquid Separation Equipment	Sieve basket screw centrifuge

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Centrifuge Solid Basket - EQ067.sym	Mechanical	Mechanical Equipment	Solid-Liquid Separation Equipment	Solid basket centrifuge
		Centrifuge Solid Basket Screw - EQ068.sym	Mechanical	Mechanical Equipment	Solid-Liquid Separation Equipment	Solid basket screw centrifuge
Compressors						
		Compressor Ejector - EQ069.sym	Mechanical	Mechanical Equipment	Compressors	Ejector compressor
		Compressor General - EQ070.sym	Mechanical	Mechanical Equipment	Compressors	Generic compressor
		Compressor Liquid Ring - EQ071.sym	Mechanical	Mechanical Equipment	Compressors	Liquid seal compressor
		Compressor Reciprocating - EQ072.sym	Mechanical	Mechanical Equipment	Compressors	Reciprocating compressor
		Compressor Reciprocating Diaphragm - EQ073.sym	Mechanical	Mechanical Equipment	Compressors	Diaphragm compressor
		Compressor Reciprocating Displacement - EQ074.sym	Mechanical	Mechanical Equipment	Compressors	Reciprocating compressor
		Compressor Rotary - EQ075.sym	Mechanical	Mechanical Equipment	Compressors	Rotary compressor
		Compressor Rotary Piston - EQ076.sym	Mechanical	Mechanical Equipment	Compressors	Rotary compressor
		Compressor Screw - EQ077.sym	Mechanical	Mechanical Equipment	Compressors	Screw compressor
		Compressor Turbo Axial - EQ078.sym	Mechanical	Mechanical Equipment	Compressors	Turbo compressor, axial vacuum pump
		Compressor Turbo General - EQ079.sym	Mechanical	Mechanical Equipment	Compressors	Turbo compressor, turbo vacuum pump
		Compressor Turbo Radial - EQ080.sym	Mechanical	Mechanical Equipment	Compressors	Turbo compressor, radial vacuum pump

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Guide Vane Pitch Adjustment Device - EQ081.sym	Mechanical	Mechanical Equipment	Compressors	Guide vane compressor
		Impeller Vane Pitch Adjustment Device - EQ082.sym	Mechanical	Mechanical Equipment	Compressors	Impeller vane compressor
Drivers						
		Generator - EQ240.sym	Mechanical	Mechanical Equipment	Drivers	Electric generator
		Hydraulic Turbine - EQ293.sym	Mechanical	Mechanical Equipment	Drivers	Hydraulic turbine
		Motor Air Driven - EQ083.sym	Mechanical	Mechanical Equipment	Drivers	Air motor
		Motor Diesel Driven - EQ084.sym	Mechanical	Mechanical Equipment	Drivers	Diesel engine
		Motor Electric Driven - EQ085.sym	Mechanical	Mechanical Equipment	Drivers	Electric motor
		Motor Petrol Driven - EQ086.sym	Mechanical	Mechanical Equipment	Drivers	Gas engine
		Motor Shaft Driven From Secondary Device - EQ087.sym	Mechanical	Mechanical Equipment	Drivers	Shaft Motor
		Turbine Double Flow Gas - EQ088.sym	Mechanical	Mechanical Equipment	Drivers	Double flow gas turbine
		Turbine Double Flow Steam - EQ089.sym	Mechanical	Mechanical Equipment	Drivers	Double flow steam turbine
		Turbine Expander - EQ090.sym	Mechanical	Mechanical Equipment	Drivers	Expander
		Turbine Gas - EQ091.sym	Mechanical	Mechanical Equipment	Drivers	Gas turbine
		Turbine Hydraulic - EQ092.sym	Mechanical	Mechanical Equipment	Drivers	Hydraulic turbine

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Turbine Steam - EQ093.sym	Mechanical	Mechanical Equipment	Drivers	Steam turbine
Fans & Blowers						
		Blower Rootes - EQ094.sym	Mechanical	Mechanical Equipment	Fans and Blowers	Rootes blower
		Fan Axial - EQ095.sym	Mechanical	Mechanical Equipment	Fans and Blowers	Axial fan
		Fan Centrifugal - EQ096.sym	Mechanical	Mechanical Equipment	Fans and Blowers	Centrifugal fan
		Fan or Blower General - EQ097.sym	Mechanical	Mechanical Equipment	Fans and Blowers	Generic fan or blower
		Fan or Blower General - EQ097a.sym	Mechanical	Mechanical Equipment	Fans and Blowers	Generic fan or blower
		Fan or Blower Rotary - EQ098.sym	Mechanical	Mechanical Equipment	Fans and Blowers	Rotary fan or blower
		Fan with Dampers - EQ097b.sym	Mechanical	Mechanical Equipment	Fans and Blowers	Generic fan or blower
		Soot Blower - General - EQ099.sym	Mechanical	Mechanical Equipment	Fans and Blowers	Soot blower
		Soot Blower - Helical - EQ100.sym	Mechanical	Mechanical Equipment	Fans and Blowers	Soot Blower - Helical
		Soot Blower - Retractable - EQ101.sym	Mechanical	Mechanical Equipment	Fans and Blowers	Soot Blower - Retractable
		Soot Blower - Water Canon - EQ102.sym	Mechanical	Mechanical Equipment	Fans and Blowers	Soot Blower - Water Canon
Material Handling						
		Bucket Wheel - EQ333.sym	Mechanical	Mechanical Equipment	Materials Handling Equipment	

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Conveyor Belt - EQ112a.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Belt conveyor
		Conveyor Belt - EQ112.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Belt conveyor
		Conveyor Belt Tripper - EQ113.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Belt tripper conveyor
		Conveyor Belt with Gravity Take-up - EQ114.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Belt Conveyor Gravity Take-up
		Crane Bridge - EQ126.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Bridge crane
		Crane Gantry - EQ127.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Gantry crane
		Gravity Take-up 1 - EQ305.sym	EquipComponent	Mechanical Equipment	Mechanical components equipment	Vertical gravity take-up
		Gravity Take-up 2 - EQ317.sym	EquipComponent	Mechanical Equipment	Mechanical components equipment	Vertical gravity take-up
		Hoist General - EQ136.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Hoist
		Hoist Trolley - EQ137.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Trolley hoist
		Moving Head Drive Sprocket - EQ306.sym	EquipComponent	Mechanical Equipment	Mechanical components equipment	Moving head drive sprocket
		Scraper Plough - EQ297.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Scraper
		Screen Multiple Product - EQ138.sym	Mechanical	Mechanical Equipment	Solid-Solid Equipment Separation	Multiple product screen
		Screen Single Product - EQ139.sym	Mechanical	Mechanical Equipment	Solid-Solid Equipment Separation	Single product screen
		Classifier Mechanical - EQ108.sym	Mechanical	Mechanical Equipment	Solid-Solid Equipment Separation	Mechanical classifier

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Stacker Fixed - EQ140.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Fixed stacker
		Stacker Portable - EQ141.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Portable stacker
		Stacker Portable Reclaimer - EQ142.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Portable stacker/reclaimer
		Stacker Radial - EQ143.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Radial stacker
		Transfer Bin - EQ311.sym	Mechanical	Mechanical Equipment	Solid-Solid Equipment Separation	Single product screen
		Transfer Bin with Moveable Gate - EQ312.sym	Mechanical	Mechanical Equipment	Solid-Solid Equipment Separation	Single product screen
		Winch Take-up - EQ304.sym	EquipComponent	Mechanical Equipment	Mechanical components equipment	Winch take-up
Chutes						
		Chute General - EQ104.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Generic chute
		Chute Gate - EQ314.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Chute Hood
		Chute Cross Way Distribution - EQ314(1).sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Chute with Two Way Distribution
		Chute Hood - EQ310.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Chute Hood
		Chute Inclined - EQ103.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Inclined chute
		Chute Ladder - EQ105.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Ladder chute
		Chute Retractable Spout - EQ106.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Retractable spout

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Chute Spiral - EQ107.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Spiral chute
		Chute Spoon - EQ309.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Chute Spoon
		Chute with Three Way Distribution - EQ314.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Chute with Three Way Distribution
		Chute with Two Way Distribution - EQ313.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Chute with Two Way Distribution
		Spile Bar Double - EQ299.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Double Spile Bar
		Spile Bar Single - EQ298.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Single Spile Bar
		Chute Inclined - EQ103.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Inclined chute
		Triper - EQ315.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Generic chute
Conveyors						
		Conveyor Aerial Way - EQ110.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Aerial way
		Conveyor Bucket - EQ115.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Bucket conveyor
		Conveyor Conditioning - EQ315.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Conditioning Conveyor
		Conveyor Elevator Bucket - EQ335.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Bucket elevator
		Conveyor Bucket Elevator - EQ109.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Bucket elevator
		Conveyor Elevator Chain - EQ336.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Elevator

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Conveyor Elevator General - EQ334.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Elevator
		Conveyor Elevator Screw - EQ337.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Elevator
		Conveyor Elevator - EQ116.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Elevator
		Conveyor General - EQ325.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Conveyor
		Conveyor General flat to incline - EQ318.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Conveyor
		Conveyor General with dual return side drive - EQ319.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Conveyor
		Conveyor General with head end dual drive-1 - EQ320.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Conveyor
		Conveyor General with head end dual drive-2 - EQ321.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Conveyor
		Conveyor General with take-up, and tripper - EQ322.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Conveyor
		Conveyor General with vertical take-up bend - EQ324.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Conveyor
		Conveyor General with vertical take-up bend and tripper - EQ323.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Conveyor
		Conveyor Apron - EQ111.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Apron conveyor
		Conveyor Gravity Roller - EQ117.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Gravity roller conveyor
		Conveyor Incline General-1 - EQ326.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Conveyor

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Conveyor Incline General-2 - EQ327.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Conveyor
		Conveyor Incline with drive horizontal take-up bend arrangement 1 - EQ328.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Conveyor
		Conveyor Incline with drive horizontal take-up bend arrangement 2 - EQ329.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Conveyor
		Conveyor Incline with drive horizontal take-up bend arrangement 3 - EQ330.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Conveyor
		Conveyor Incline with drive horizontal take-up bend arrangement 4 - EQ331.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Conveyor
		Conveyor Overhead - EQ118.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Overhead conveyor
		Conveyor Powered Roller - EQ120.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Powered roller conveyor
		Conveyor Roller Chain - EQ121.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Roller chain conveyor
		Conveyor Scrapper - EQ122.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Scraper conveyor
		Conveyor Scrapper Chain - EQ123.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Scraper chain conveyor
		Conveyor Screw - EQ124.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Screw conveyor
		Conveyor Screw Take-Up - EQ125.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Screw Take-up Conveyor
		Conveyor Submerged Scrapper - EQ289.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Scraper conveyor

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Conveyor Submerged Scrapper - EQ289a.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Scrapper conveyor
		Conveyor Tension - EQ332.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Incline General Conveyor
		Conveyor Portal Scrapper - EQ119.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Portal scrapper conveyor
Feeders						
		Feeder Apron - EQ128 - spyker.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Apron feeder
		Feeder Apron - EQ128.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Apron feeder
		Feeder Belt - EQ129 - spyker2.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Belt feeder
		Feeder Belt - EQ129.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Belt feeder
		Feeder General - EQ130.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Feeder
		Feeder Grizzly - EQ131.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Feeder
		Feeder Rotary Table - EQ132.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Rotary table feeder
		Feeder Rotary Valve - EQ133.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Rotary valve feeder
		Feeder Scrapper - EQ134 - spyker.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Scrapper feeder
		Feeder Scrapper - EQ134.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Scrapper feeder
		Feeder Screw - EQ135 - spyker.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Screw feeder

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Feeder Screw - EQ135.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Screw feeder
		Feeder Vibrating - EQ301 - spyker.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Vibrating conveyor
		Feeder Vibrating - EQ301.sym	Mechanical	Mechanical Equipment	Materials Equipment Handling	Vibrating conveyor
Pumps						
		Pump Centrifugal - EQ145.sym	Mechanical	Mechanical Equipment	Pumps	Centrifugal pump
		Pump Diaphragm - EQ146.sym	Mechanical	Mechanical Equipment	Pumps	Diaphragm pump
		Pump Ejector - EQ147.sym	Mechanical	Mechanical Equipment	Pumps	Ejector pump
		Pump Electromagnetic - EQ148.sym	Mechanical	Mechanical Equipment	Pumps	Electromagnetic pump
		Pump Gear - EQ149.sym	Mechanical	Mechanical Equipment	Pumps	Gear pump
		Pump Hand - EQ150.sym	Mechanical	Mechanical Equipment	Pumps	Hand pump
		Pump Helical Rotor or Screw - EQ151.sym	Mechanical	Mechanical Equipment	Pumps	Helical rotor pump
		Pump Hose or Peristaltic - EQ244.sym	Mechanical	Mechanical Equipment	Pumps	Hose or Peristaltic Pump
		Pump Liquid Ejector or Jet - EQ152.sym	Mechanical	Mechanical Equipment	Pumps	Ejector pump
		Pump Liquid General - EQ153.sym	Mechanical	Mechanical Equipment	Pumps	Generic pump
		Pump Liquid Ring - EQ242.sym	Mechanical	Mechanical Equipment	Pumps	Liquid Ring Pump

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Pump Liquid Ring Vacuum - EQ243.sym	Mechanical	Mechanical Equipment	Pumps	Liquid ring vacuum
		Pump Positive Displacement - EQ241.sym	Mechanical	Mechanical Equipment	Pumps	Positive displacement pump
		Pump Reciprocating or Piston - EQ154.sym	Mechanical	Mechanical Equipment	Pumps	Reciprocating pump
		Pump Rotary Piston - EQ155.sym	Mechanical	Mechanical Equipment	Pumps	Rotary pump
		Pump Sump - EQ157.sym	Mechanical	Mechanical Equipment	Pumps	Sump pump
		Pump Vane - EQ158.sym	Mechanical	Mechanical Equipment	Pumps	Vane pump
		Pump Wet Pit - EQ159.sym	Mechanical	Mechanical Equipment	Pumps	Wet pit pump
		Pump Screw - EQ156.sym	Mechanical	Mechanical Equipment	Pumps	Screw pump
Separators & Filters						
		Air Exhaust - EQ160.sym	Mechanical	Mechanical Equipment	Solid-Gas Equipment Separation	Air filter
		Air Intake - EQ161.sym	Mechanical	Mechanical Equipment	Solid-Gas Equipment Separation	Air filter
		Cyclone General - EQ162.sym	Mechanical	Mechanical Equipment	Solid-Gas Equipment Separation	Single-stage cyclone
		Cyclone General - EQ162a.sym	Mechanical	Mechanical Equipment	Solid-Gas Equipment Separation	Single-stage cyclone
		Demagnetising Coil - EQ163.sym	Mechanical	Mechanical Equipment	Solid-Solid Equipment Separation	Demagnetising Device
		Electrostatic Dust Collector - EQ164.sym	Mechanical	Mechanical Equipment	Solid-Gas Equipment Separation	Electrostatic dustcollector

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Filter Air FIA Absolute - EQ165.sym	Mechanical	Mechanical Equipment	Solid-Solid Equipment Separation	Air filter, absolute filter
		Filter Air PFI Pre - EQ166.sym	Mechanical	Mechanical Equipment	Solid-Solid Equipment Separation	Air filter, prefilter
		Filter Air PIA Iodine - EQ167.sym	Mechanical	Mechanical Equipment	Solid-Gas Equipment Separation	Activated carbon, air, iodine filter
		Filter Bag - EQ168.sym	Mechanical	Mechanical Equipment	Solid-Gas Equipment Separation	Bag filter
		Filter Bank General - EQ169.sym	Mechanical	Mechanical Equipment	Solid-Gas Equipment Separation	Air filter
		Filter Cartridge or Candle - EQ170.sym	Mechanical	Mechanical Equipment	Solid-Liquid Equipment Separation	Cartridge filter
		Filter Fixed Bed or Sand - EQ171.sym	Mechanical	Mechanical Equipment	Solid-Liquid Equipment Separation	Fixed bed, sand filter
		Filter Gas or Air General - EQ172.sym	Mechanical	Mechanical Equipment	Solid-Gas Equipment Separation	Gas, air filter, general
		Filter General - EQ173.sym	Mechanical	Mechanical Equipment	Solid-Liquid Equipment Separation	Liquid filter, general
		Filter Ion Exchange - EQ174.sym	Mechanical	Mechanical Equipment	Solid-Liquid Equipment Separation	Ion exchange filter
		Filter Liquid General - EQ175.sym	Mechanical	Mechanical Equipment	Solid-Liquid Equipment Separation	Liquid filter, general
		Filter Vessel General - EQ176.sym	Mechanical	Mechanical Equipment	Solid-Liquid Equipment Separation	Filter
		Magnetising Block - EQ177.sym	Mechanical	Mechanical Equipment	Solid-Solid Equipment Separation	Magnetising Device
		Pond Settling - EQ178.sym	Mechanical	Mechanical Equipment	Solid-Liquid Equipment Separation	Settling pond
		Pond Spray - EQ179.sym	Mechanical	Mechanical Equipment	Solid-Liquid Equipment Separation	Spray pond

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Separator Electromagnetic - EQ180.sym	Mechanical	Mechanical Equipment	Solid-Gas Equipment Separation	Electromagnetic separator
		Separator General - EQ181.sym	Mechanical	Mechanical Equipment	Solid-Gas Equipment Separation	Separator, general
		Separator Impact - EQ182.sym	Mechanical	Mechanical Equipment	Solid-Gas Equipment Separation	Impact separator
		Separator Rotating drum screen or backtrack - EQ183.sym	Mechanical	Mechanical Equipment	Solid-Liquid Equipment Separation	Rotating drum screen
		Separator Screening General Rakes - EQ184.sym	Mechanical	Mechanical Equipment	Solid-Solid Equipment Separation	Screening device, general rakes
		Separator with Heat Exchanger - EQ185.sym	Mechanical	Mechanical Equipment	Solid-Solid Equipment Separation	Separator with heat exchanger
		Thickener - EQ186.sym	Mechanical	Mechanical Equipment	Solid-Liquid Equipment Separation	Thickener
		Trap Flash - EQ187.sym	Mechanical	Mechanical Equipment	Solid-Gas Equipment Separation	Flash trap
Size Reduction Equipment						
		Crusher Coarse - EQ188.sym	Mechanical	Mechanical Equipment	Size Reduction Equipment	Generic coarse crusher
		Crusher Coarse - EQ188a.sym	Mechanical	Mechanical Equipment	Size Reduction Equipment	Generic coarse crusher
		Crusher Cone - EQ189.sym	Mechanical	Mechanical Equipment	Size Reduction Equipment	Cone crusher
		Crusher Cone - EQ189a.sym	Mechanical	Mechanical Equipment	Size Reduction Equipment	Cone crusher
		Crusher Cone - EQ189b.sym	Mechanical	Mechanical Equipment	Size Reduction Equipment	Cone crusher
		Crusher Delumper - EQ190.sym	Mechanical	Mechanical Equipment	Size Reduction Equipment	Delumper

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Crusher Dicer - EQ191.sym	Mechanical	Mechanical Equipment	Size Reduction Equipment	Dicer
		Crusher Disintegrator - EQ192.sym	Mechanical	Mechanical Equipment	Size Reduction Equipment	Disintegrator
		Crusher General - EQ193.sym	Mechanical	Mechanical Equipment	Size Reduction Equipment	Crushing machine, general
		Crusher Grinder - EQ194.sym	Mechanical	Mechanical Equipment	Size Reduction Equipment	Grinder
		Crusher Medium - EQ195.sym	Mechanical	Mechanical Equipment	Size Reduction Equipment	Generic medium crusher
		Crusher Pulverizer - EQ196.sym	Mechanical	Mechanical Equipment	Size Reduction Equipment	Pulverizer
		Crusher Rod - EQ197.sym	Mechanical	Mechanical Equipment	Size Reduction Equipment	Rod mill
		Crusher Roll - EQ198.sym	Mechanical	Mechanical Equipment	Size Reduction Equipment	Roll crusher
		Crusher Shredding - EQ199.sym	Mechanical	Mechanical Equipment	Size Reduction Equipment	Shredding mill
		Crusher Strand Cutter - EQ200.sym	Mechanical	Mechanical Equipment	Size Reduction Equipment	Strand cutter
		Mill Colloid - EQ283.sym	Mechanical	Mechanical Equipment	Size Reduction Equipment	Colloid Mill
		Mill General - EQ201.sym	Mechanical	Mechanical Equipment	Size Reduction Equipment	Generic mill
		Mill Hammer or Impact - EQ202.sym	Mechanical	Mechanical Equipment	Size Reduction Equipment	Hammer mill
		Mill Horizontal - EQ203.sym	Mechanical	Mechanical Equipment	Size Reduction Equipment	Ball mill
		Mill Perforated Disc - EQ284.sym	Mechanical	Mechanical Equipment	Size Reduction Equipment	Perforated Disc Mill

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Mill Roller - EQ204.sym	Mechanical	Mechanical Equipment	Size Reduction Equipment	Roller mill
		Mill Roller Edge - EQ205.sym	Mechanical	Mechanical Equipment	Size Reduction Equipment	Roller mill
		Mill Stirred ball or Sand - EQ206.sym	Mechanical	Mechanical Equipment	Size Reduction Equipment	Stirred ball mill
		Mill Tube or Drum - EQ207.sym	Mechanical	Mechanical Equipment	Size Reduction Equipment	Tube mill
		Rapping Equipment - 303.sym	Mechanical	Mechanical Equipment	Size Reduction Equipment	Rapping Equipment
Tensioning Devices						
		Hydraulic Piston - EQ292.sym	EquipComponent	Mechanical Equipment	Mechanical equipment components	Hydraulic Piston
		Screw Tensioner - EQ332.sym	EquipComponent	Mechanical Equipment	Mechanical equipment components	
		Spherical Valve Tensioning Device - EQ295.sym	Mechanical	Mechanical Equipment	Other Mechanical Equipment	Spherical Valve Tension Device
		Wicker Gate Tensioning Device - EQ296.sym	Mechanical	Mechanical Equipment	Other Mechanical Equipment	Wicker Gate Tension Device
		Vibrator - EQ144.sym	EquipComponent	Equipment Component	Mechanical equipment components	Vibrator
Transmission Devices						
		Bearing - EQ208.sym	EquipComponent	Equipment Component	Mechanical equipment components	Bearing
		Belt Drive - EQ209.sym	EquipComponent	Equipment Component	Mechanical equipment components	Belt drive
		Bearing, General type.sym	EquipComponent	Equipment Component	Mechanical equipment components	Bearing

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Clutch - EQ210.sym	EquipComponent	Equipment Component	Mechanical equipment components	Clutch
		Coupling Continuously Variable - EQ211.sym	EquipComponent	Equipment Component	Mechanical equipment components	Coupling continuously variable
		Coupling Electromagnetic - EQ212.sym	EquipComponent	Equipment Component	Mechanical equipment components	Coupling electromagnetic
		Coupling General - EQ213.sym	EquipComponent	Equipment Component	Mechanical equipment components	Coupling general
		Coupling Hydraulic - EQ214.sym	EquipComponent	Equipment Component	Mechanical equipment components	Coupling hydraulic
		Gear - EQ291.sym	EquipComponent	Equipment Component	Mechanical equipment components	Gearbox
		Gearbox - EQ215.sym	EquipComponent	Equipment Component	Mechanical equipment components	Gearbox
		Mechanical Brake - EQ216.sym	EquipComponent	Equipment Component	Mechanical equipment components	Mechanical Brake
		Shaft - EQ217.sym	EquipComponent	Equipment Component	Mechanical equipment components	Shaft
		Shaft Type2 - EQ217.sym	EquipComponent	Equipment Component	Mechanical equipment components	Shaft type 2
Cooling towers						
		Cooling Tower General - EQ218.sym	Exchanger	Heat Transfer Equipment	Cooling Towers	Cooling tower
		Dry Cooling Tower with Forced Draught Fan - EQ219.sym	Exchanger	Heat Transfer Equipment	Cooling Towers	Dry cooling tower, forced draught fan
		Dry Cooling Tower with Inducted Draught Fan - EQ220.sym	Exchanger	Heat Transfer Equipment	Cooling Towers	Dry cooling tower, inducted draught fan

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Dry Cooling Tower with Natural Draught - EQ221.sym	Exchanger	Heat Transfer Equipment	Cooling Towers	Dry cooling tower, natural draught
		Wet Cooling Tower with Forced Draught Fan - EQ222.sym	Exchanger	Heat Transfer Equipment	Cooling Towers	Wet cooling tower, forced draught fan
		Wet Cooling Tower with Inducted Draught Fan - EQ223.sym	Exchanger	Heat Transfer Equipment	Cooling Towers	Wet cooling tower, inducted draught fan
		Wet Cooling Tower with Natural Draught - EQ224.sym	Exchanger	Heat Transfer Equipment	Cooling Towers	Wet cooling tower, natural draught
		Wet Cooling Tower with Natural Draught Parametric - EQ225.sym	Exchanger	Heat Transfer Equipment	Cooling Towers	Wet cooling tower, natural draught
		Wet-Dry Cooling Tower with Natural Draught - EQ226.sym	Exchanger	Heat Transfer Equipment	Cooling Towers	Wet-dry cooling tower, natural draught
Horizontal drums						
		Vessel Horizontal Pressurised - EQ227.sym	Vessel	Vessel Equipment	Horizontal Drums	Other horizontal drum
		Vessel Horizontal Top Closed - EQ228.sym	Vessel	Vessel Equipment	Low Pressure and Atmospheric Storage Tanks	Storage Tank
		Vessel Horizontal with Dished Heads - EQ229.sym	Vessel	Vessel Equipment	Horizontal Drums	Vessel with dished heads
Other Vessels						
		Diaphragm Accumulator - EQ230.sym	Vessel	Vessel Equipment	Low Pressure and Atmospheric Storage Tanks	Tank with diaphragm

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Bin - EQ311a.sym	Vessel	Vessel Equipment	Low Pressure and Atmospheric Storage Tanks	Other tank
		Hopper - EQ311b.sym	Vessel	Vessel Equipment	Low Pressure and Atmospheric Storage Tanks	Transfer Bin
		Sump type 1.sym	Vessel	Vessel Equipment	Low Pressure and Atmospheric Storage Tanks	Vessel, Vertical General
		General - EQ231.sym	Vessel	Vessel Equipment	Low Pressure and Atmospheric Storage Tanks	Pool, basin general
		Pulsation Dampener - EQ232.sym	Mechanical	Vessel Equipment	Other Mechanical Equipment	Pulsation dampener
		Transfer Bin - EQ311.sym	Vessel	Vessel Equipment	Low Pressure and Atmospheric Storage Tanks	Transfer Bin
		Transfer Bin with Moveable Gate - EQ312.sym	Vessel	Vessel Equipment	Low Pressure and Atmospheric Storage Tanks	Transfer Bin with Moveable Gate
KB2R10		Tun Dish - EQ233.sym	Vessel	Vessel Equipment	Low Pressure and Atmospheric Storage Tanks	Tun Dish
Towers						
		Long 1D 1to1 Tower - EQ245.sym	Vessel	Vessel Equipment	Towers	Large 1 diameter, 1 chamber, hemispherical head tower
		Long 1D 2C 1to1 Tower - EQ246.sym	Vessel	Vessel Equipment	Towers	Large 1 diameter, 2 chamber, hemispherical head tower
		Long 1D 2C 2to1 Tower - EQ247.sym	Vessel	Vessel Equipment	Towers	Large 1 diameter, 2 chamber, elliptical head tower

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Long 1D 2to1 Tower - EQ248.sym	Vessel	Vessel Equipment	Towers	Large 1 diameter, 1 chamber, elliptical head tower
		Long 1D 3C 1to1 Tower - EQ249.sym	Vessel	Vessel Equipment	Towers	Large 1 diameter, 3 chamber, hemispherical head tower
		Long 1D 3C 2to1 Tower - EQ250.sym	Vessel	Vessel Equipment	Towers	Large 1 diameter, 3 chamber, elliptical head tower
		Long 1D Dual 1to1 Tower - EQ251.sym	Vessel	Vessel Equipment	Towers	Large 1 diameter, dual stacked, hemispherical head tower
		Long 1D Dual 2to1 Tower - EQ252.sym	Vessel	Vessel Equipment	Towers	Large 1 diameter, dual stacked, elliptical head tower
		Medium 1D 1to1 Tower - EQ253.sym	Vessel	Vessel Equipment	Towers	Medium 1 diameter, 1 chamber, hemispherical head tower
		Medium 1D 2to1 Tower - EQ254.sym	Vessel	Vessel Equipment	Towers	Medium 1 diameter, 1 chamber, elliptical head tower
Vertical Drums						
		Vessel Flash - EQ234.sym	Vessel	Vessel Equipment	Vertical Drums	Flash tank
		Vessel Vertical with Conical Heads - EQ235.sym	Vessel	Vessel Equipment	Vertical Drums	Vessel with conical heads
		Vessel Vertical Type 2.sym	Vessel	Vessel Equipment	Vertical Drums	Vessel, Vertical General
		Drain Tank type 2.sym	Vessel	Vessel Equipment	Vertical Drums	Drains tank
		Vessel Vertical type 1.sym	Vessel	Vessel Equipment	Vertical Drums	Vessel, Vertical General
		Vessel Vertical General - EQ236.sym	Vessel	Vessel Equipment	Vertical Drums	Vessel, general atmospheric tank

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Vessel Vertical General with Jacket - EQ237.sym	Vessel	Vessel Equipment	Vertical Drums	Vessel, general with jacket
		Vessel Vertical Pressurised - EQ238.sym	Vessel	Vessel Equipment	Vertical Drums	Other vertical drum
		Vessel Vertical with Dished Heads - EQ239.sym	Vessel	Vessel Equipment	Vertical Drums	Vessel with dished heads

A. 4: SPO INSTRUMENTATION SYMBOLS

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
Actuators						
		Actuator Ball Float - IN001.sym	Instrument	Actuator		Ball Float
		Actuator Capacitance Sensor - IN002.sym	Instrument	Actuator		Capacitance sensor
		Actuator Diaphragm - IN003.sym	Instrument	Actuator		Press-balanced diaphragm
		Actuator Diaphragm FC - IN004.sym	Instrument	Actuator		Diaphragm
		Actuator Diaphragm FO - IN005.sym	Instrument	Actuator		Diaphragm
		Actuator Diaphragm with Man Set and Cont Variable - IN006.sym	Instrument	Actuator		Diaphragm
		Actuator Digital - IN007.sym	Instrument	Actuator		Digital
		Actuator Electric-Hydraulic - IN008.sym	Instrument	Actuator		Electro-hydraulic
		Actuator Main and Auxiliary Motor - IN009.sym	Instrument	Actuator		Main and auxiliary motor actuator
		Actuator Main and Quick-Closing Motor - IN010.sym	Instrument	Actuator		Main and quick-closing motor actuator
		Actuator Motor - IN011.sym	Instrument	Actuator		Motor
		Actuator Pilot - IN012.sym	Instrument	Actuator		Pilot
		Actuator Pilot Operated Cylinder - IN013.sym	Instrument	Actuator		Pilot operated cylinder
		Actuator Piston - IN014.sym	Instrument	Actuator		Piston

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Actuator Piston Double Acting - IN015.sym	Instrument	Actuator		Piston
		Actuator Piston Gravity - IN016.sym	Instrument	Actuator		Piston
		Actuator Piston Motor - IN017.sym	Instrument	Actuator		Piston motor
		Actuator Piston Spring - IN018.sym	Instrument	Actuator		Piston spring
		Actuator Solenoid Act w-Man Reset - IN019.sym	Instrument	Actuator		Single solenoid w/reset
		Actuator Solenoid FC - IN020.sym	Instrument	Actuator		Single solenoid
		Actuator Solenoid FO - IN021.sym	Instrument	Actuator		Single solenoid
		Actuator Solenoid One Coil - IN022.sym	Instrument	Actuator		Single solenoid
		Actuator Solenoid Spring - IN023.sym	Instrument	Actuator		Solenoid loaded spring actuator
		Actuator Solenoid Two Coil - IN024.sym	Instrument	Actuator		Single solenoid
		Actuator Spring - IN025.sym	Instrument	Actuator		Spring
		Actuator Spring with Hydraulic Assist - IN026.sym	Instrument	Actuator		Piston spring
		Actuator Spring with Weight Assist - IN027.sym	Instrument	Actuator		Piston spring
		Actuator Weight - IN028.sym	Instrument	Actuator		Weight
		Actuator Weight Motor - IN029.sym	Instrument	Actuator		Weight motor
Inline Flow Elements						

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Annubar - IN030.sym	Instrument	Other in-line instruments		Annubar
		Flow Element Magnetic - IN031.sym	Instrument	Other in-line instruments		Inline magnetic flow instr
		Flow Element Positive Displacement - IN032.sym	Instrument	Other in-line instruments		Pos displacement flow instr
		Flow Element Propeller - IN033.sym	Instrument	Other in-line instruments		Inline propeller flow instr
		Flow Element Target - IN034.sym	Instrument	Other in-line instruments		Inline target flow instr
		Flow Element Ultrasonic - IN035.sym	Instrument	Other in-line instruments		Inline ultrasonic flow instr
		Flow Element Unspecified - IN036.sym	Instrument	Other in-line instruments		Flow measurement, general
		Flow Element V-Notch Weir - IN037.sym	Instrument	Other in-line instruments		Weir
		Flow Element Vortex - IN038.sym	Instrument	Other in-line instruments		Vortex flow instr
		Flow Element Weir - IN039.sym	Instrument	Other in-line instruments		Weir
		Flow Pressure Recovery Tube - IN040.sym	Instrument	Other in-line instruments		Pressure Recovery Tube
		Orifice Plate Flanges - IN041.sym	Instrument	Other in-line instruments		Orif plate & flanges
		Orifice Plate Flanges and Meter Run - IN042.sym	Instrument	Other in-line instruments		Orif plate & flanges & meter run
		Orifice Restriction Union - IN043.sym	Instrument	Other in-line instruments		Restriction orif union
		Orifice with Quick Change Fitting - IN044.sym	Instrument	Other in-line instruments		Orif plate & qk chnge fitting

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Pressure Trapping Device - IN050.sym	Instrument	Other in-line instruments		Inline propeller flow instr
		Radiation Energy - IN049.sym	Instrument	Other in-line instruments		Ionization radiation measurement
		Pyrometer-IN215.sym	Instrument	Other in-line instruments		Temperature measurement
		Orifice with Quick Chg Fit, Mtr Run - IN045.sym	Instrument	Other in-line instruments		Orif pl, qk chng fittg & met run
		Sight Glass Flow Indicator - IN046.sym	Instrument	Other in-line instruments		Flow glass
		Ultrasonic - IN047.sym	Instrument	Other in-line instruments		Inline ultrasonic flow instr
		Venturi Flow Nozzle - IN048.sym	Instrument	Other in-line instruments		Venturi tube
Control Dampers						
		Damper - 3 Way - IN049.sym	Instrument	Control valves and regulators		Damper Control - Adjustable
		Damper - Adjustable - IN050.sym	Instrument	Control valves and regulators		Damper Control - Safety Function
		Damper - General - IN051.sym	Instrument	Control valves and regulators		Damper Control - General
		Damper - Multi-Leaf - IN052.sym	Instrument	Control valves and regulators		Damper Control - 3 Way
		Damper - Safety Function - IN053.sym	Instrument	Control valves and regulators		Damper Control - Multi-leaf
Control Valves						
		2-Way Filled System - IN054.sym	Instrument	Control valves and regulators		Angle filled system temp reg

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		3-Way Ball Valve Actuated - IN055.sym	Instrument	Control valves and regulators		3-way ball control valve
		3-Way Filled System - IN056.sym	Instrument	Control valves and regulators		3-way filled system temp reg
		3-Way Globe Valve Actuated - IN057.sym	Instrument	Control valves and regulators		3-way globe control valve
		3-Way Plug Valve Actuated - IN058.sym	Instrument	Control valves and regulators		3-way plug control valve
		3-Way Slide Valve Actuated - IN059.sym	Instrument	Control valves and regulators		3-way slide control valve
		3-Way Valve General Actuated - IN060.sym	Instrument	Control valves and regulators		3-way control valve
		4-Way Plug Valve Actuated - IN061.sym	Instrument	Control valves and regulators		4-way plug control valve
		Angle Ball Valve Actuated - IN062.sym	Instrument	Control valves and regulators		Angle Ball Control Valve
		Angle Diaphragm Valve Actuated - IN063.sym	Instrument	Control valves and regulators		Angle Diaphragm Control Valve
		Angle Globe Valve Actuated - IN064.sym	Instrument	Control valves and regulators		Angle globe control valve
		Angle Valve Actuated - IN065.sym	Instrument	Control valves and regulators		Angle control valve
		Back Pressure with External Tap - IN066.sym	Instrument	Control valves and regulators		Backpress reg w/ext tap
		Ball Valve Actuated - IN067.sym	Instrument	Control valves and regulators		Ball control valve
		Control Valve General continuously Adjustability-IN215	Instrument	Control valves and regulators		Control valve
		Basic Valve Actuated - IN068.sym	Instrument	Control valves and regulators		Control valve

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Butterfly Valve Actuated - IN069.sym	Instrument	Control valves and regulators		Butterfly control valve
		Check Valve Actuated - IN070.sym	Instrument	Control valves and regulators		Non return control valve
		Check Valve Actuated with Body Drain - IN071.sym	Instrument	Control valves and regulators		Non return control valve with body drain
		Diaphragm Valve Actuated - IN072.sym	Instrument	Control valves and regulators		Diaphragm control valve
		Diff Pressure Reduced Regulator - IN073.sym	Instrument	Control valves and regulators		Diff press red reg w/int & ext taps
		Dual Change-Over Valve Actuated - IN074.sym	Instrument	Control valves and regulators		Dual change-over control valve
		Filled System Temperature - IN075.sym	Instrument	Control valves and regulators		Filled system temp reg
		Four Way Ball Valve Actuated - IN076.sym	Instrument	Control valves and regulators		4-Way Ball Control Valve
		Four Way Globe Valve Actuated - IN077.sym	Instrument	Control valves and regulators		4-Way Globe Control Valve
		Four Way Valve General Actuated - IN078.sym	Instrument	Control valves and regulators		4-way control valve
		Gate Control Actuated - IN079.sym	Instrument	Control valves and regulators		Gate control valve
		Gate Valve Actuated, connection for sealing media - IN080.sym	Instrument	Control valves and regulators		Gate control valve
		Gate Valve Actuated, connection for suction - IN081.sym	Instrument	Control valves and regulators		Gate control valve
		Gate Valve Actuated, connections on valve body - IN082.sym	Instrument	Control valves and regulators		Gate control valve
		Gate Valve Actuated, with press red valve - IN083.sym	Instrument	Control valves and regulators		Gate control valve

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Globe Valve Actuated - IN084.sym	Instrument	Control valves and regulators		Globe control valve
		Hose Valve Actuated - IN085.sym	Instrument	Control valves and regulators		Hose Control Valve
		Knife Gate Valve Actuated - IN086.sym	Instrument	Control valves and regulators		Knife gate control valve
		Needle Valve Actuated - IN087.sym	Instrument	Control valves and regulators		Needle Control Valve
		Plug Valve Actuated - IN088.sym	Instrument	Control valves and regulators		Plug control valve
		Pressure with External Tap - IN089.sym	Instrument	Control valves and regulators		Press red reg w/ext tap
		Pressure with Internal RV - IN090.sym	Instrument	Control valves and regulators		Press red reg w/int RV
		Pulse Valve - IN068a.sym	Instrument	Control valves and regulators		Pulse Valve
		Relief Valve 2 Way Pressure - IN091.sym	Instrument	Relief devices		ReliefValve2WayPressure
		Relief Valve Pilot Operated - IN092.sym	Instrument	Relief devices		ReliefValveAnglePressurePilotOperated
		Relief Valve Pressure and Vacuum - IN093.sym	Instrument	Relief devices		Press/vac relief valve
		Relief Valve Spring Loaded - IN094.sym	Instrument	Relief devices		Angle press relief valve
		Relief Valve Straight Spring Loaded - IN095.sym	Instrument	Relief devices		Straight-thru press relief valve
		Relief Valve Vacuum - IN096.sym	Instrument	Relief devices		Vac relief valve
		Self Contained Back Pressure - IN097.sym	Instrument	Control valves and regulators		Self contained backpress reg

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Self Contained Pressure - IN098.sym	Instrument	Control valves and regulators		Self contained press red reg
		Slide Valve Actuated - IN099.sym	Instrument	Control valves and regulators		Slide control valve
		Sluice Gate Actuated - IN100.sym	Instrument	Control valves and regulators		Sluice Gate Control Valve
		Spherical Valve Actuated - IN101.sym	Instrument	Control valves and regulators		Spherical Control Valve
		Wedge Gate Valve Actuated - IN102.sym	Instrument	Control valves and regulators		Plug control valve
Signal Line OPC's						
		Instrument OPC - Dual Flow - IN146.sym	OPC			
		Instrument OPC - IN147.sym	OPC			
Off-Line						
		Acoustic Signal or Hooter - IN106.sym	Instrument	Off-line instruments		Acoustic signal
		Alarm Gong - IN107.sym	Instrument	Off-line instruments		Alarm gong
		Light - IN108.sym	Instrument	Off-line instruments		Pilot light
		Panel - IN109.sym	Instrument	Off-line instruments		Panel
		Pyrometer - IN110.sym	Instrument	Off-line instruments		Alarm gong
Control Identification (EMCE)						

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Basic Process Control System - Field Mounted - IN111.sym	Instrument	Off-line instruments		Unclassified
		Basic Process Control System - Front of Central or Main Panel - IN112.sym	Instrument	Off-line instruments		Unclassified
		Basic Process Control System - Front of Secondary or Local Panel - IN113.sym	Instrument	Off-line instruments		Unclassified
		Basic Process Control System - Rear of Central or Main Panel - IN114.sym	Instrument	Off-line instruments		Unclassified
		Basic Process Control System - Rear of Secondary or Local Panel - IN115.sym	Instrument	Off-line instruments		Unclassified
		Clone of Basic Process Control System - Field Mounted - IN111(1).sym	Instrument	Off-line instruments		Unclassified
		Computer System and Software - Field Mounted - IN116.sym	Instrument	Off-line instruments		Unclassified
		Computer System and Software - Front of Central or Main Panel - IN117.sym	Instrument	Off-line instruments		Unclassified
		Computer System and Software - Front of Secondary or Local Panel - IN118.sym	Instrument	Off-line instruments		Unclassified
		Computer System and Software - Rear of Central or Main Panel - IN119.sym	Instrument	Off-line instruments		Unclassified
		Computer System and Software - Rear of Secondary or Local Panel - IN120.sym	Instrument	Off-line instruments		Unclassified
		Discrete Instruments - Field Mounted - IN121.sym	Instrument	Off-line instruments		Unclassified
		Discrete Instruments - Front of Central or Main Panel - IN122.sym	Instrument	Off-line instruments		Unclassified
		Discrete Instruments - Front of Secondary or Local Panel - IN123.sym	Instrument	Off-line instruments		Unclassified
		Discrete Instruments - Rear of Central or Main Panel - IN124.sym	Instrument	Off-line instruments		Unclassified

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Discrete Instruments - Rear of Secondary or Local Panel - IN125.sym	Instrument	Off-line instruments		Unclassified
		Interlock Logic Function - IN131.sym	Instrument	Off-line instruments		Unclassified
		Safety Instrumented System - Field Mounted - IN126.sym	Instrument	Off-line instruments		Unclassified
		Safety Instrumented System - Front of Central or Main Panel - IN127.sym	Instrument	Off-line instruments		Unclassified
		Safety Instrumented System - Front of Secondary or Local Panel - IN128.sym	Instrument	Off-line instruments		Unclassified
		Safety Instrumented System - Rear of Central or Main Panel - IN129.sym	Instrument	Off-line instruments		Unclassified
		Safety Instrumented System - Rear of Secondary or Local Panel - IN130.sym	Instrument	Off-line instruments		Unclassified
Signal Line						
		Capillary - IN134.sym	PipeRun			
		Connect to Process - IN135.sym	PipeRun			
		Electric - IN136.sym	SignalRun			
		Electric Binary - IN137.sym	SignalRun			
		Guided Electromagnetic - IN138.sym	SignalRun			
		Hydraulic - IN139.sym	PipeRun			
		Mechanical Link - IN140.sym	SignalRun			
		Pneumatic - IN141.sym	PipeRun			

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Pneumatic Binary - IN142.sym	PipeRun			
		Software Link - IN143.sym	SignalRun			
		Undefined - IN144.sym	SignalRun			
		Unguided Electromagnetic - IN145.sym	SignalRun			

A. 5: SPO PIPING SYMBOLS

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
Fire & Safety Fittings						
		Detector Heat Frangible Bulb - PI001.sym	PipingComp	In-line component	In-Line Fire & Safety Component	Frangible bulb heat detector
		Eye Wash - PI002.sym	PipingComp	In-line component	In-Line Fire & Safety Component	Eye wash
		Fire Hydrant - PI003.sym	PipingComp	In-line component	In-Line Fire & Safety Component	Fire hydrant
		Fire Hydrant 2-Way - PI004.sym	PipingComp	In-line component	In-Line Fire & Safety Component	Fire hydrant
		Fire Hydrant 3-Way - PI005.sym	PipingComp	In-line component	In-Line Fire & Safety Component	3-way fire hydrant
		Fire Monitor - PI006.sym	PipingComp	In-line component	In-Line Fire & Safety Component	Fire monitor
		Fire Monitor Elevated - PI007.sym	PipingComp	In-line component	In-Line Fire & Safety Component	Elevated fire monitor
		Fire Monitor Remote Oper - PI008.sym	PipingComp	In-line component	In-Line Fire & Safety Component	Remotely operated fire monitor
		Foam Concentrate Inductor - PI009.sym	PipingComp	In-line component	In-Line Fire & Safety Component	Foam induction regulator
		Foam Monitor - PI010.sym	PipingComp	In-line component	In-Line Fire & Safety Component	Foam monitor
		Foam Monitor Elevated - PI011.sym	PipingComp	In-line component	In-Line Fire & Safety Component	Elevated foam monitor

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Foam Monitor Remote Oper - PI012.sym	PipingComp	In-line component	In-Line Fire & Safety Component	Remotely operated foam monitor
		Foam Pourer - PI013.sym	PipingComp	In-line component	In-Line Fire & Safety Component	Foam pourer
		Hose Reel - PI014.sym	PipingComp	In-line component	In-Line Fire & Safety Component	Hose reel
		Multiple Jet Controller - PI015.sym	PipingComp	In-line component	In-Line Fire & Safety Component	Multiple jet controller
		Multiple Jet Controller NO - PI015a.sym	PipingComp	In-line component	In-Line Fire & Safety Component	Multiple jet controller
		Nozzle Detector Heat Frangible Bulb - PI021.sym	PipingComp	In-line component	In-Line Fire & Safety Component	Frangible bulb heat detector
		Nozzle Frangible Bulb Spray - PI016.sym	PipingComp	In-line component	In-Line Fire & Safety Component	Frangible bulb spray nozzle
		Nozzle High Velocity Spray - PI017.sym	PipingComp	In-line component	In-Line Fire & Safety Component	High velocity spray nozzle
		Nozzle Medium Velocity Spray - PI018.sym	PipingComp	In-line component	In-Line Fire & Safety Component	Medium velocity spray nozzle
		Safety Shower - PI019.sym	PipingComp	In-line component	In-Line Fire & Safety Component	Safety shower
		Safety Shower and Eye Wash - PI020.sym	PipingComp	In-line component	In-Line Fire & Safety Component	Safety shower and eye wash
Pipe Fittings						

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Filter In-Line - PI030.sym	PipingComp	In-line component	In-Line Component Speciality	Filter
		Filter Intake- PI030(1).sym	PipingComp	In-line component	In-Line Component Speciality	Filter
		Automatic Vent - PI189.sym	PipingComp	In-line component	In-Line Component Speciality	Vent
		Bellow - PI021.sym	PipingComp	In-line component	In-Line Component Speciality	Compensator, bellows and strap
		Coupling - PI022.sym	PipingComp	In-line component	In-Line Fitting	Coupling/connector
		Coupling General - PI023.sym	PipingComp	In-line component	In-Line Fitting	Coupling/connector
		Coupling Half - PI024.sym	PipingComp	Piping	In-Line Fitting	Coupling half
		Coupling Hose Connection - PI025.sym	PipingComp	In-line component	In-Line Fitting	Coupling/connector
		Coupling Screwed - PI026.sym	PipingComp	In-line component	In-Line Fitting	Plug, connect / disconnect, screwed
		Create Pipe Connection Point - PI303.sym	PipingComp	In-line component	In-Line Fitting	Buttweld
		End of Line Terminator -1 - PI027.sym	PipingComp	In-line component	In-Line Fitting	End
		Exhaust Head - PI028.sym	PipingComp	In-line component	In-Line Component Speciality	Exhaust head

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Filter Inline - PI029.sym	PipingComp	In-line component	In-Line Component Speciality	Filter
		Filter OnLine - PI030.sym	PipingComp	In-line component	In-Line Component Speciality	Filter
		Flange - PI031.sym	PipingComp	In-line component	In-Line Fitting	Flange
		Flange - PI202.sym	PipingComp	In-line component	In-Line Fitting	Flange
		Flange Blank - PI032.sym	PipingComp	In-line component	In-Line Fitting	Blind flange
		Flange Blind - PI033.sym	PipingComp	In-line component	In-Line Fitting	Blind flange
		Flange Blind without Tap - PI034.sym	PipingComp	In-line component	In-Line Fitting	Blind flange
		Flange Dismatling joint - PI035.sym	PipingComp	In-line component	In-Line Fitting	Flange
		Flange Expander - PI036.sym	PipingComp	In-line component	In-Line Fitting	Expander flange
		Flange Reducing - PI037.sym	PipingComp	In-line component	In-Line Fitting	Reducing flange
		Flexible Hose Connection - PI038.sym	PipingComp	In-line component	In-Line Fitting	Hose connection
		Flexible Tubing or Hose - PI039.sym	PipingComp	In-line component	In-Line Fitting	Hose connection

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Floor Washing Hose Reel - PI040.sym	PipingComp	In-line component	In-Line Fitting	Hose connection
		Hydraulic Restrictor - PI190.sym	PipingComp	In-line component	In-Line Fitting	Orifice plate
		In-Line Silencer - PI041.sym	PipingComp	In-line component	In-Line Component Speciality	In-line silencer
		Injector, ejector - PI042.sym	PipingComp	In-line component	In-Line Component Speciality	Injector, ejector
		Jacket Nozzle (Pipe Run) - PI043.sym	PipingComp	Other	Other	Jacket Nozzle
		Jacket Nozzle (Valve) - PI044.sym	PipingComp	Other	Other	Jacket Nozzle
		Mixing T - PI045.sym	PipingComp	In-line component	In-Line Component Speciality	Mixing T
		Nozzle - Air Double - PI201.sym	PipingComp	In-line component	In-Line Component Speciality	Double Air Nozzle
		Nozzle - Air Single - PI200.sym	PipingComp	In-line component	In-Line Component Speciality	Single Air Nozzle
		Orifice Plate - PI046.sym	PipingComp	In-line component	In-Line Fitting	Orifice plate
		Orifice Union - PI047.sym	PipingComp	In-line component	In-Line Fitting	Orifice union
		Pipe End Bellmouth - PI048.sym	PipingComp	In-line component	In-Line Fitting	End

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Pipe End Cap - PI049.sym	PipingComp	In-line component	In-Line Fitting	Cap
		Pipe End Cap with connection- PI180.sym	PipingComp	In-line component	In-Line Fitting	Cap
		Pipe End Capped - PI050.sym	PipingComp	In-line component	In-Line Fitting	Bushing
		Pipe End Closure Flat - PI051.sym	PipingComp	In-line component	In-Line Fitting	Closure, flat
		Pipe End Drain Tundish - PI052.sym	PipingComp	In-line component	In-Line Fitting	End
		Pipe End Overflow Tundish - PI053.sym	PipingComp	In-line component	In-Line Fitting	End
		Pipe End Overflow Tundish with connection - PI054.sym	PipingComp	In-line component	In-Line Fitting	End connection, screwed
		Plug - PI055.sym	PipingComp	In-line component	In-Line Fitting	Plug
		Reducer Concentric - PI056.sym	PipingComp	In-line component	In-Line Fitting	Concentric diameter change
		Reducer Eccentric - PI057.sym	PipingComp	In-line component	In-Line Fitting	Eccentric diameter change
		Removable spool - PI058.sym	PipingComp	In-line component	In-Line Component Speciality	Removable spool
		Rubber Expansion Joint - PI059.sym	PipingComp	In-line component	In-Line Component Speciality	Expansion joint

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Silencer - PI060.sym	PipingComp	In-line component	In-Line Component Speciality	Silencer
		Silencer OnLine - PI061.sym	PipingComp	In-line component	In-Line Component Speciality	Silencer
		Sliding Expansion Joint - PI062.sym	PipingComp	In-line component	In-Line Component Speciality	Expansion joint
		Spectable blind Closed - PI063.sym	PipingComp	In-line component	In-Line Fitting	Spectavle blind, in function
		Spectable Blind Disk - PI064.sym	PipingComp	In-line component	In-Line Fitting	Blind flange, blind disk
		Spectable blind Open - PI065.sym	PipingComp	In-line component	In-Line Fitting	Spectacle blind
		Spray Nozzles End of Line - PI066.sym	PipingComp	In-line component	In-Line Component Speciality	Spray nozzle
		Spray Nozzles In Line - PI067.sym	PipingComp	In-line component	In-Line Component Speciality	Spray nozzle
		Strainer Duplex Basket - PI068.sym	PipingComp	In-line component	In-Line Component Speciality	Duplex basket strainer
		Strainer General - PI069.sym	PipingComp	In-line component	In-Line Component Speciality	Strainer/filter
		Strainer Single Basket - PI070.sym	PipingComp	In-line component	In-Line Component Speciality	Single basket strainer
		Strainer T - PI071.sym	PipingComp	In-line component	In-Line Component Speciality	T strainer

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	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Strainer Y - PI072.sym	PipingComp	In-line component	In-Line Component Speciality	Y strainer
		Swing Elbow - PI073.sym	PipingComp	In-line component	In-Line Component Speciality	Swing elbow
		Swivel Joint - PI074.sym	PipingComp	In-line component	In-Line Component Speciality	Swivel joint
		Trap General - PI075.sym	PipingComp	In-line component	In-Line Component Speciality	Trap - General
		Trap Steam - PI076.sym	PipingComp	In-line component	In-Line Component Speciality	Steam trap
		Vent Breather - PI077.sym	PipingComp	In-line component	In-Line Component Speciality	Breather vent
		Vent Free with Louver - PI192.sym	PipingComp	In-line component	In-Line Component Speciality	Free vent w/louver
		Vent Free with Screen - PI078.sym	PipingComp	In-line component	In-Line Component Speciality	Free vent w/screen
		Vent Free without Screen - PI079.sym	PipingComp	In-line component	In-Line Component Speciality	Free vent w/o screen
		Vent Free without Screen - PI079a.sym	PipingComp	In-line component	In-Line Component Speciality	Free vent w/o screen
		Vent Overflow Pipe - PI080.sym	PipingComp	In-line component	In-Line Component Speciality	Overflow pipe, vent
		Vent Overflow Pipe with End - PI081.sym	PipingComp	In-line component	In-Line Component Speciality	Overflow pipe, vent

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Vent Silencer - PI082.sym	PipingComp	In-line component	In-Line Component Speciality	Vent silencer
		Welded Soldered or Cemented Joint - PI083.sym	PipingComp	In-line component	In-Line Fitting	Buttweld
Pressure Parts						
		Drain Port.sym	PipingComp	In-line component	In-Line Fitting	Tee
		Tee - Piece with Drain Stub.sym	PipingComp	In-line component	In-Line Fitting	Tee
		HP Header type 2.sym	PipingComp	In-line component	In-Line Fitting	Head
		HP Header.sym	PipingComp	In-line component	In-Line Fitting	Cross
		NRV Inlet with Drain Pot.sym	PipingComp	In-line component	In-Line Fitting	Tee
		Saftey Header 2 Connection.sym	PipingComp	In-line component	In-Line Fitting	Head
		Tee - Piece type 2.sym	PipingComp	In-line component	In-Line Fitting	Tee
		Tee - Piece.sym	PipingComp	In-line component	In-Line Fitting	Tee
Gaps						

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
	..	gap-curves - PI084.sym	_Gap			
	⊥ ⊥	gap-lines - PI085.sym	_Gap			
Piping OPC's						
		Gland Seal OPC - PI174.sym	OPC			
		Piping OPC - Dual Flow - PI172.sym	OPC			
		Piping OPC - PI173.sym	OPC			
Ducting						
		Ducting - PI089.sym	PipeRun			
Process Lines						
		Hose - PI090.sym	PipeRun			
		Primary Piping - PI091.sym	PipeRun			

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Secondary Piping - PI092.sym	PipeRun			
Connections with indication of process media						
		Steam Line width 1,0	PipeRun			
		Condensate, cooling water, feed water Line width 0,5	PipeRun			
		Water, oil contaminated Line width 0,25. Circles: line width 0,25 D= 2,0. Spacing 7,5	PipeRun			
		Vapour, oil contaminated Line width 0, 7. Circles: line width 0,25. D=2,0. Spacing 7,5	PipeRun			
		Raw water, untreated water Line width 0,25. Segments: line width 1,0 Length 9 and 3. Spacing 3	PipeRun			
		Sludge water, waste water Line width 0,25. Dots: D = 2,0. Spacing 7,5	PipeRun			
		Air Line width solid 0,5. Dashed line = 422. Line gap 1,0	PipeRun			
		Solvents, chemical Line width 0,25. Segments: line width 1,0, Length 5. Spacing 5	PipeRun			
		Solid fuels, bulk fuels Line width 0,25. Line gap 1,0. Segments/ spacing 4,0	PipeRun			
		Combustible waste Line width 0, 25. Line gap 1,0. Dots D = 2,0. Spacing. 7,5	PipeRun			

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Oil Line width 0,25. Line gap 1,0	PipeRun			
		Combustible gases Line width 0,25 + 0,7. Line gap 1,0	PipeRun			
		Non-combustible gas, flue gas, inert gas Line width centre line 0,7. Outside lines width 0,25. Line gaps 1,0	PipeRun			
		Ash, slag Line width 0,25. Vertical lines: spacing 4,0	PipeRun			
		Fly ash Line width 0,25. Line gap 1,0. Segments/spacing 2,0	PipeRun			
Safety Components						
		Rupture Disk Concave - PI097.sym	PipingComp	In-line component	Safety valve	Rupture disk, concave
		Rupture Disk Convex - PI098.sym	PipingComp	In-line component	Safety valve	Rupture disk, convex
		Rupture Disk Flat - PI099.sym	PipingComp	In-line component	Safety valve	Rupture disk, flat
		Rupture Disk General - PI100.sym	PipingComp	In-line component	Safety valve	Rupture disk, general
Segment Breaks						
		Coating Requirements - PI101.sym	Label			

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Construction Responsibility - PI181.sym	Label			
		Construction Status - PI182.sym	Label			
		Design Responsibility - PI183.sym	Label			
		Fluid Code - PI177.sym	Label			
		Fluid Code and Fluid System - PI178.sym	Label			
		Fluid System - PI179.sym	Label			
		Heat Tracing - PI204.sym	Label			
		Insulation Requirements - PI102.sym	Label			
		Max Design Pressure and Temperature - PI103.sym	Label			
		Max Operating Pressure and Temperature - PI104.sym	Label			
		Nominal Diameter Break - PI184.sym	Label			
		Pipe Section Break KKS LVL02a2b - PI174.sym	Label			

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Piping Materials Class - PI106.sym	Label			
		Slope Break - PI185.sym	Label			
		Supply Responsibility - PI186.sym	Label			
		System Number Break KKS LVL01a1b1c - PI175.sym	Label			
		System Number Break KKS LVL01a1b1c2a2b - PI176.sym	Label			
Specialty Components						
		Flame Arrestor Detonation Proof - PI108.sym	PipingComp	In-line component	In-Line Fire & Safety Component	Detonation-proof flame arrestor
		Flame Arrestor Explosion Proof - PI109.sym	PipingComp	In-line component	In-Line Fire & Safety Component	Explosion-proof flame arrestor
		Flame Arrestor Explosion Proof Fire Resistant - PI110.sym	PipingComp	In-line component	In-Line Fire & Safety Component	Explosion-proof, fire-resistant flame arrestor
		Flame Arrestor Fire Resistant - PI111.sym	PipingComp	In-line component	In-Line Fire & Safety Component	Fire-resistant flame arrestor
		Flame Arrestor Fire Resistant and Detonation Proof - PI112.sym	PipingComp	In-line component	In-Line Fire & Safety Component	Fire-resistant, detonation-proof flame arrestor
		Flame Arrestor General - PI113.sym	PipingComp	In-line component	In-Line Fire & Safety Component	Flame arrestor, general

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
2 Way Valves						
		Air Release Valve Double Orifice - PI114.sym	PipingComp	In-line component	Valve	Air release valve double orifice
		Air Release Valve Large Orifice - PI115.sym	PipingComp	In-line component	Valve	Air release valve large orifice
		Air Release Valve Small Orifice - PI116.sym	PipingComp	In-line component	Valve	Air release valve small orifice
		Ball Valve - PI117.sym	PipingComp	In-line component	Valve	Ball plug valve
		Basic Valve - PI118.sym	PipingComp	In-line component	Valve	2-way valve
		Butterfly Valve - PI119.sym	PipingComp	In-line component	Valve	Butterfly valve
		Check Valve - PI120.sym	PipingComp	In-line component	Valve	Check valve
		Diaphragm Valve - PI121.sym	PipingComp	In-line component	Valve	Diaphragm valve
		Diaphragm valve - Pilot Operated - PI122.sym	PipingComp	In-line component	Valve	Diaphragm Valve - Pilot Operated
		Diaphragm valve - Pilot Operated with Drains - PI123.sym	PipingComp	In-line component	Valve	Diaphragm Valve - Pilot Operated with Drains
		Gate Valve - PI124.sym	PipingComp	In-line component	Valve	Gate valve

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Gate Valve Connection for Sealing Media - PI125.sym	PipingComp	In-line component	Valve	Gate valve, connection for sealing media
		Gate Valve Connection for Suction - PI126.sym	PipingComp	In-line component	Valve	Gate valve, connection for suction
		Gate Valve Connections on Valve Body - PI127.sym	PipingComp	In-line component	Valve	Gate valve, connections on valve body
		Gate Valve with Pressure Reducing Valve - PI128.sym	PipingComp	In-line component	Valve	Gate valve, with press. red. valve
		Globe Valve - PI129.sym	PipingComp	In-line component	Valve	Globe valve
		Hose Valve - PI130.sym	PipingComp	In-line component	Valve	Hose valve
		Knife Gate Valve - PI131.sym	PipingComp	In-line component	Valve	Knife gate valve
		Needle Valve - PI132.sym	PipingComp	In-line component	Valve	Needle valve
		Pinch Valve - PI133.sym	PipingComp	In-line component	Valve	Pinch valve
		Plug Valve - PI134.sym	PipingComp	In-line component	Valve	Plug valve
		Screw Down Non-Return Valve - PI135.sym	PipingComp	In-line component	Valve	Non-Return Valve
		Slide Valve - PI136.sym	PipingComp	In-line component	Valve	Slide valve

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Sluice Gate - PI137.sym	PipingComp	In-line component	Valve	Slide valve
		Spherical Valve - PI138.sym	PipingComp	In-line component	Valve	Spherical Valve
		Valve with Restrict Orif - PI139.sym	Instrument	Other in-line instruments		Valve w/restriction orif
		Wafer Check Valve - PI140.sym	PipingComp	In-line component	Valve	Wafer check valve
		Wedge Gate Valve - PI141.sym	PipingComp	In-line component	Valve	Wedge Gate Valve
3 Way Valves						
		3-Way Ball Valve - PI142.sym	PipingComp	In-line component	Valve	3-way ball valve
		3-Way Dual Change Over Ball Valve - PI191.sym	PipingComp	In-line component	Valve	Dual change-over valve
		3-Way Dual Change Over Valve - PI143.sym	PipingComp	In-line component	Valve	Dual change-over valve
		3-Way Globe Valve - PI144.sym	PipingComp	In-line component	Valve	3-way globe valve
		3-Way Plug Valve - PI145.sym	PipingComp	In-line component	Valve	3-way plug valve
		3-Way Slide Valve - PI146.sym	PipingComp	In-line component	Valve	3-way slide valve

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		3-Way Valve - PI147.sym	PipingComp	In-line component	Valve	3-way gate valve
4 Way Valves						
		4-Way Ball Valve - PI148.sym	PipingComp	In-line component	Valve	4-way ball valve
		4-Way Globe Valve - PI149.sym	PipingComp	In-line component	Valve	4-way globe valve
		4-Way Plug Valve - PI150.sym	PipingComp	In-line component	Valve	4-way plug valve
		4-Way Valve General - PI151.sym	PipingComp	In-line component	Valve	4-way valve
Angle Valves						
		Angle Ball Valve - PI152.sym	PipingComp	In-line component	Valve	Angle ball valve
		Angle Check Valve - PI153.sym	PipingComp	In-line component	Valve	Angle check valve
		Angle Diaphragm Valve - PI154.sym	PipingComp	In-line component	Valve	Angle diaphragm valve
		Angle Globe Valve - PI155.sym	PipingComp	In-line component	Valve	Angle globe valve

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Angle Stop Check Valve - PI156.sym	PipingComp	In-line component	Valve	Angle swing type check valve
		Angle Valve - PI157.sym	PipingComp	In-line component	Valve	Angle gate valve
Dampers						
		Damper - 3-Way - PI158.sym	PipingComp	In-line component	Valve	Damper - 3 Way
		Damper - 3-Way Fire - PI193.sym	PipingComp	In-line component	Valve	Damper - 3 Way Fire
		Damper - Adjustable - PI159.sym	PipingComp	In-line component	Valve	Damper - Adjustable
		Damper - Adjustable Fire - PI194.sym	PipingComp	In-line component	Valve	Damper - Adjustable Fire
		Damper - General - PI160.sym	PipingComp	In-line component	Valve	Damper - General
		Damper - General Fire - PI195.sym	PipingComp	In-line component	Valve	Damper - General Fire
		Damper - Multi-Leaf - PI161.sym	PipingComp	In-line component	Valve	Damper - Multi-leaf
		Damper - Multi-Leaf Fire - PI196.sym	PipingComp	In-line component	Valve	Damper - Multi-leaf Fire

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Damper - Non Return - PI162.sym	PipingComp	In-line component	Valve	Damper - Non Return
		Damper - Non Return Fire - PI197.sym	PipingComp	In-line component	Valve	Damper - Non Return Fire
		Damper - Pre-Set Adjustable - PI163.sym	PipingComp	In-line component	Valve	Damper - Preset Adjustable
		Damper - Pre-Set Adjustable Fire - PI198.sym	PipingComp	In-line component	Valve	Damper - Preset Adjustable Fire
		Damper - Safety Function - PI164.sym	PipingComp	In-line component	Valve	Damper - Safety Function
		Damper - Safety Function Fire - PI199.sym	PipingComp	In-line component	Valve	Damper - Safety Function Fire
Special Valves						
		Drinking Bubbler-PI188.sym	PipingComp	PipingComp	Valve	Valve, general, special defined
		Flow Reset Pilot Valve for Deluge System - PI165.sym	PipingComp	In-line component	Valve	Flow release pilot valve
		Pressure Reducing Valve Angle - PI166.sym	PipingComp	In-line component	Valve	Angle pressure reducing valve
		Pressure Reducing Valve Angle Continually Operated - PI168.sym	PipingComp	In-line component	Special valve	Angle pressure reducing valve, continually operated
		Pressure Reducing Valve Angle Continually Operated with Injection - PI167.sym	PipingComp	In-line component	Valve	Angle pressure reducing valve

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Pressure Reducing Valve Angle with Injection - PI169.sym	PipingComp	In-line component	Valve	Angle pressure reducing valve
		Pressure Reducing Valve Straight - PI170.sym	PipingComp	In-line component	Valve	Straightway pressure reducing valve
		Pressure Reducing Valve Straight with Injection - PI171.sym	PipingComp	In-line component	Valve	Straightway pressure reducing valve
		Winter Kennedy Directional Flow Valve - PI187.sym	PipingComp	In-line component	Valve	4-way valve
		Pressure Reducing Valve Angle Continually Operated with Injection - PI167.sym	PipingComp	In-line component	Valve	Angle pressure reducing valve

A. 6: SPO DESIGN SYMBOLS

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
Graphics						
		Revision Cloud - DE007.sym	AreaBreak			
		Annotation Point - DE010.sym	ItemNote			
		Block - DE011.sym	ItemNote			
		Box Truck - DE012.sym	ItemNote			
		Break - DE013.sym	ItemNote			
		Circle - DE014.sym	ItemNote			
		Directional Arrowhead - DE048.sym	ItemNote			
		Dump Truck - DE015.sym	ItemNote			
		Ellipse - DE016.sym	ItemNote			
		Fill Arrowhead Terminator - DE017.sym	ItemNote			
		Fork Lift Truck - DE018.sym	ItemNote			

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	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Front End Loader - DE019.sym	ItemNote			
		General Purpose Container 1 - DE020.sym	ItemNote			
		Leader with Bend & Term - DE021.sym	ItemNote			
		Line - DE022.sym	ItemNote			
		No Proj Line No Term - DE023.sym	ItemNote			
		No Proj Line One Term - DE024.sym	ItemNote			
		No Proj Line Two Terms - DE025.sym	ItemNote			
		One Proj Line One Term - DE026.sym	ItemNote			
		One Proj Line Two Terms - DE027.sym	ItemNote			
		Stockpile - DE028.sym	ItemNote			
		Tank Rail Car - DE029.sym	ItemNote			
		Tank Truck - DE030.sym	ItemNote			

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Two Equal Proj Lines Two Terms - DE031.sym	ItemNote			
		Two Proj Lines Two Terms with Bend - DE032.sym	ItemNote			
		Two Unequal Proj Lines Two Terms - DE033.sym	ItemNote			
Labels						
		Item Note & Label - DE034.sym	ItemNote			
		Text - DE035.sym	Label			
		Text with Border - DE036.sym	Label			
		Text with Leader & Border - DE037.sym	Label			
		Text with Leader - DE038.sym	Label			
		Underlined Text - DE039.sym	Label			
		Underlined Text with Leader - DE040.sym	Label			
		Black Item Note 3,5 - DE041.sym	ItemNote			

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Black Item Note 3,5 Leader - DE042.sym	Label			
		Terminal point - DE043.sym	ItemNote			
		Green Item Note 3 - DE.5 - DE044.sym	ItemNote			
		Green Item Note 3,5 Leader - DE045.sym	Label			
		Red Item Note 3,5 - DE046.sym	ItemNote			
		Red Item Note 3,5 Leader - DE047.sym	Label			

A. 7: SPO HYDRAULIC SYSTEMS

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
Hydraulic Control Valves						
		Hydraulic Valve, Control, 2-port, 2-position - HS001.sym	Instrument	Control valves and regulators		Hydraulic Valve, Control, 2-port, 2-position
		Hydraulic Valve, Control, 3-port, 2-position - HS002.sym	Instrument	Control valves and regulators		Hydraulic Valve, Control, 3-port, 2-position
		Hydraulic Valve, Control, 4-port, 2-position - HS003.sym	Instrument	Control valves and regulators		Hydraulic Valve, Control, 4-port, 2-position
		Hydraulic Valve, Control, 4-port, 3-position - HS004.sym	Instrument	Control valves and regulators		Hydraulic Valve, Control, 4-port, 3-position
		Hydraulic Valve, Control, 4-port, 3-position, pass-through transient - HS005.sym	Instrument	Control valves and regulators		Hydraulic Valve, Control, 4-port, 3-position, pass-through transient
		Hydraulic Valve, Control, 4-port, 4-position - HS062.sym	Instrument	Control valves and regulators		Hydraulic Valve, Control, 4-port, 4-position
		Hydraulic Valve, Control, 5-port, 2-position - HS072.sym	Instrument	Control valves and regulators		Hydraulic Valve, Control, 5-port, 2-position
		Hydraulic Valve, Control, 5-port, 3-position - HS073.sym	Instrument	Control valves and regulators		Hydraulic Valve, Control, 5-port, 3-position
		Hydraulic Valve, Control, 5-port, 4-position - HS074.sym	Instrument	Control valves and regulators		Hydraulic Valve, Control, 5-port, 4-position
		Hydraulic Valve, Control, 6-port 2x4, 2-position - HS076.sym	Instrument	Control valves and regulators		Hydraulic Valve, Control, 6-port, 2-position
		Hydraulic Valve, Control, 6-port 2x4, 3-position - HS078.sym	Instrument	Control valves and regulators		Hydraulic Valve, Control, 6-port, 3-position

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Hydraulic Valve, Control, 6-port 2x4, 4-position - HS080.sym	Instrument	Control valves and regulators		Hydraulic Valve, Control, 6-port, 4-position
		Hydraulic Valve, Control, 6-port 3x3, 2-position - HS075.sym	Instrument	Control valves and regulators		Hydraulic Valve, Control, 6-port, 2-position
		Hydraulic Valve, Control, 6-port 3x3, 3-position - HS077.sym	Instrument	Control valves and regulators		Hydraulic Valve, Control, 6-port, 3-position
		Hydraulic Valve, Control, 6-port 3x3, 4-position - HS079.sym	Instrument	Control valves and regulators		Hydraulic Valve, Control, 6-port, 4-position
		Hydraulic Valve, Control, 7-port, 2-position - HS081.sym	Instrument	Control valves and regulators		Hydraulic Valve, Control, 7-port, 2-position
		Hydraulic Valve, Control, 7-port, 3-position - HS082.sym	Instrument	Control valves and regulators		Hydraulic Valve, Control, 7-port, 3-position
		Hydraulic Valve, Control, 7-port, 4-position - HS083.sym	Instrument	Control valves and regulators		Hydraulic Valve, Control, 7-port, 4-position
		Hydraulic Valve, Control, 8-port, 2-position - HS063.sym	Instrument	Control valves and regulators		Hydraulic Valve, Control, 8-port, 2-position
		Hydraulic Valve, Control, 8-port, 3-position - HS064.sym	Instrument	Control valves and regulators		Hydraulic Valve, Control, 8-port, 3-position
		Hydraulic Valve, Control, 8-port, 4-position - HS065.sym	Instrument	Control valves and regulators		Hydraulic Valve, Control, 8-port, 4-position
Hydraulic Manual Valves						
		Hydraulic Check Valve - HS006.sym	PipingComp	In-line component	Valve	Hydraulic Check Valve

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Hydraulic Check Valve, Spring Loaded - HS007.sym	PipingComp	In-line component	Valve	Hydraulic Check Valve, spring loaded
		Hydraulic One Way Restrictor Valve, spring loaded check - HS008.sym	PipingComp	In-line component	Valve	Hydraulic One Way Restrictor Valve, spring loaded check
		Hydraulic One Way Restrictor Valve, variable restriction - HS009.sym	PipingComp	In-line component	Valve	Hydraulic One Way Restrictor Valve, variable restriction
		Hydraulic Restrictor Valve - HS010.sym	PipingComp	In-line component	Valve	Hydraulic Restrictor Valve
		Hydraulic Restrictor Valve, Adjustable - HS011.sym	PipingComp	In-line component	Valve	Hydraulic Restrictor Valve, adjustable
		Hydraulic Valve, Actuated, 2-port, 2-position - HS012.sym	PipingComp	In-line component	Valve	Hydraulic Valve, Actuated, 2-port, 2-position
		Hydraulic Valve, Actuated, 3-port, 2-position - HS013.sym	PipingComp	In-line component	Valve	Hydraulic Valve, Actuated, 3-port, 2-position
		Hydraulic Valve, Actuated, 4-port, 2-distinct, 1 neutral - HS014.sym	PipingComp	In-line component	Valve	Hydraulic Valve, Actuated, 4-port, 2-distinct, 1 neutral
		Hydraulic Valve, Actuated, 4-port, 2-position - HS015.sym	PipingComp	In-line component	Valve	Hydraulic Valve, Actuated, 4-port, 2-position
		Hydraulic Valve, Actuated, 4-port, 3-position - HS016.sym	PipingComp	In-line component	Valve	Hydraulic Valve, Actuated, 4-port, 3-position
		Hydraulic Valve, Actuated, 4-port, 3-position, pass-through transient - HS017.sym	PipingComp	In-line component	Valve	Hydraulic Valve, Actuated, 4-port, 3-position, pass-through transient
		Hydraulic Valve, Actuated, 4-port, 4-position - HS066.sym	PipingComp	In-line component	Valve	Hydraulic Valve, Actuated, 5-port, 2-position

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Hydraulic Valve, Actuated, 8-port, 2-position - HS067.sym	PipingComp	In-line component	Valve	Hydraulic Valve, Actuated, 5-port, 3-position
		Hydraulic Valve, Actuated, 8-port, 3-position - HS068.sym	PipingComp	In-line component	Valve	Hydraulic Valve, Actuated, 5-port, 4-position
		Hydraulic Valve, Actuated, 8-port, 4-position - HS069.sym	PipingComp	In-line component	Valve	Hydraulic Valve, Actuated, 6-port, 2-position
		Hydraulic Valve, Manual, 2-port, 2-position - HS018.sym	PipingComp	In-line component	Valve	Hydraulic Valve, Manual, 2-port, 2-position
		Hydraulic Valve, Manual, 3-port, 2-position - HS019.sym	PipingComp	In-line component	Valve	Hydraulic Valve, Manual, 3-port, 2-position
		Hydraulic Valve, Manual, 4-port, 2-distinct, 1 neutral - HS020.sym	PipingComp	In-line component	Valve	Hydraulic Valve, Manual, 4-port, 2-distinct, 1 neutral
		Hydraulic Valve, Manual, 4-port, 2-position - HS021.sym	PipingComp	In-line component	Valve	Hydraulic Valve, Manual, 4-port, 2-position
		Hydraulic Valve, Manual, 4-port, 3-position - HS022.sym	PipingComp	In-line component	Valve	Hydraulic Valve, Manual, 4-port, 3-position
		Hydraulic Valve, Manual, 4-port, 3-position, pass-through transient - HS023.sym	PipingComp	In-line component	Valve	Hydraulic Valve, Manual, 4-port, 3-position, pass-through transient
Hydraulic Pressure and Flow Control Valves						
		Pressure Reducing Valve - HS024.sym	Instrument	Control valves and regulators		Hydraulic Valve, Pressure Reducing
		Pressure Relief Valve - HS025.sym	Instrument	Control valves and regulators		Hydraulic Valve, Pressure Relief

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Pressure Relief Valve - HS070.sym	Instrument	Control valves and regulators		Hydraulic Valve, Pressure Relief
Hydraulic Valve Actuators						
		Operator - Hydraulic - HS026.sym	Instrument	Actuator		Hydraulic
		Operator - Hydraulic release - HS027.sym	Instrument	Actuator		Hydraulic
		Operator - Manual push button - HS030.sym	Instrument	Actuator		Manual
		Operator - Solenoid opposed windings - HS032.sym	Instrument	Actuator		Double solenoid
		Operator - Solenoid opposed windings - Progressive - HS033.sym	Instrument	Actuator		Double solenoid
		Operator - Solenoid single winding - HS034.sym	Instrument	Actuator		Single solenoid
		Operator - Solenoid single winding - Progressive - HS035.sym	Instrument	Actuator		Single solenoid
		Operator - Solenoid single winding with push button- HS071.sym	Instrument	Actuator		Single solenoid
Hydraulic Valve Flow						
		1Port - Closed flow path - HS060.sym	ItemNote			

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		2Ports - Closed flow path - HS036.sym	ItemNote			
		2Ports - Cross flow path - HS061.sym	ItemNote			
		2Ports - Open flow path - HS037.sym	ItemNote			
		3Ports - Connected paths - HS038.sym	ItemNote			
		3Ports - Two positions - HS039.sym	ItemNote			
		4Ports - Closed flow paths - HS040.sym	ItemNote			
		4Ports - Three connected - HS041.sym	ItemNote			
		4Ports - Two directional direct flow paths - HS042.sym	ItemNote			
		4Ports - Two directional Xover flow paths - HS043.sym	ItemNote			
		4Ports - Two flow paths without connection - HS044.sym	ItemNote			
		4Ports - Two open flow paths - HS045.sym	ItemNote			
		4Ports - Underlapping - HS046.sym	ItemNote			

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Clone of Shuttle valve flow - 3Ports - 2-way when actuated - 1-way at rest - HS054(1).sym	ItemNote			
		Flow Restrictor - Adjustable - HS047.sym	ItemNote			
		Flow Restrictor - HS048.sym	ItemNote			
		Non-return valve - HS049.sym	ItemNote			
		Non-return valve spring loaded - HS050.sym	ItemNote			
		Operator - Manual lever - HS028.sym	ItemNote			
		Operator - Manual override - HS029.sym	ItemNote			
		Operator - Manual simple - HS031.sym	ItemNote			
		Shuttle valve flow - 2Ports - Flow at rest - HS051.sym	ItemNote			
		Shuttle valve flow - 2Ports - Flow when actuated - HS052.sym	ItemNote			
		Shuttle valve flow - 3Ports - 1-way when actuated - 2-way at rest - HS053.sym	ItemNote			
Hydraulic Valve Springs and Detainers						

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Detainer - One position - HS055.sym	ItemNote			
		Detainer - Three positions - HS056.sym	ItemNote			
		Detainer - Two positions - HS057.sym	ItemNote			
		Spring return - HS058.sym	ItemNote			
		Spring return preset - HS059.sym	ItemNote			

A. 8: SPO LABELS GENERAL

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
Equipment Labels						
		Eq - Insulation Purpose and Thk - LG001.sym	Label			
	N1	Eq - Nozzle No - LG002.sym	Label			
		Eq - Nozzle Size - LG003.sym	Label			
	KKS 1L DESC	Eq ID - KKS 1 Line and Descr - LG004.sym	Label			
Instrument Labels						
	KKS 2L DESC	Eq ID - KKS 2 Lines and Descr - LG005.sym	Label			
		3-Way Valve Close Path Bottom - LG006.sym	Label			
		3-Way Valve Close Path Top - LG007.sym	Label			
		Control Valve Opening Action - LG008.sym	Label			
		Instrument Bubble KKS 2 Lines for ISA - Control Valves and Components - LG033.sym	Label			
		Instrument Bubble KKS 2 Lines with Leader - LG034.sym	Label			

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Instrument Function Type and ALL Values - LG036.sym	Label			
		Instrument Function Type and Value 1 - LG037.sym	Label			
		Instrument KKS 1 Line - LG009.sym	Label			
		Instrument KKS 2 Lines - LG010.sym	Label			
		Relief Valve Set Pressure - LG035.sym	Label			
Piping and Component Labels						
		3-Way Valve Close Path Bottom - LG011.sym	Label			
		3-Way Valve Close Path Top - LG012.sym	Label			
		Components - KKS 1 Line - LG013.sym	Label			
		Components - KKS 2 Lines - LG014.sym	Label			
		Construction Responsibility - LG038.sym	Label			
		Construction Status - LG039.sym	Label			

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Design Responsibility - LG040.sym	Label			
		Flow Bi-Directional - LG015.sym	Label			
		Flow Direction - LG016.sym	Label			
		Indication of fall to left (percent) - LG017.sym	Label	#VALUE!		
		Indication of fall to left (ratio) - LG018.sym	Label			
		Indication of fall to right (percent) - LG019.sym	Label			
		Indication of fall to right (ratio) - LG020.sym	Label			
		Insulation - LG021.sym	Label			
		Insulation and Heat Tracing - LG022.sym	Label			
		Insulation Purpose - LG045.sym	Label			
		Insulation Thickness - LG046.sym	Label			
		Manual Valve Set Pressure - LG047.sym	Label			

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Nominal Diameter Break - LG041.sym	Label			
		old Piping Materials Class - LG044.sym	Label			
		Orifice or Port Size - LG023.sym	Label			
		PipeRun KKS - LG024.sym	Label			
		PipeRun KKS Dual Flow - LG025.sym	Label			
	DESIGN F-P-T	PipeRun MAX DESIGN Flow-Pressure-Temperature - LG026.sym	Label			
	Operating F-P-T	PipeRun MAX OPERATING Flow-Pressure-Temperature - LG027.sym	Label			
	TECH LABEL	PipeRun Size-Spec-Insul-Thk - LG028.sym	Label			
		Piping Materials Class - LG044.sym	Label			
		Red nominal diameter - LG029.sym	Label			
		Slope Break - LG042.sym	Label			
		Supply Responsibility - LG043.sym	Label			

	SYMBOL	SYM FILE NAME	ITEM TYPE	CLASS	SUB-CLASS	TYPE
		Valve Opening Action - LG031.sym	Label			
Title Block						
	TITLE BLOCK	A0 Eskom Contractor Title Block.sym	Label			
	TITLE BLOCK	A0 Eskom Title Block.sym	Label			
	TITLE BLOCK	Clone of Title Block - LG032(1).sym	Label			
	TITLE BLOCK	Title Block - LG032.sym	Label			