

Actuator and Control Valve Reports

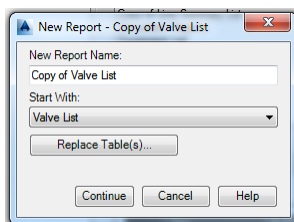
AutoCAD P&ID 2014

The default configuration of Autodesk AutoCAD P&ID includes the Project Report Control Valve List that enables you to generate a list of Control Valves in a project, but does not include a report that lists the actuators in the project.

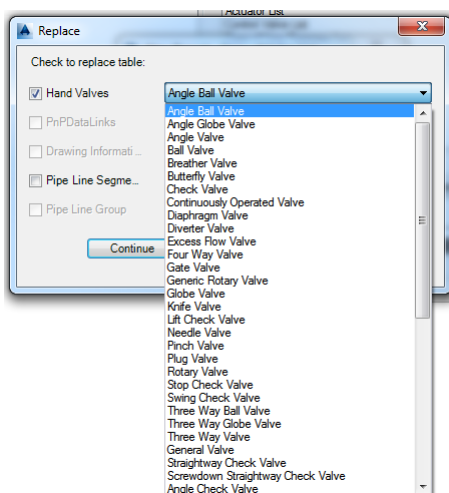
This White Paper details the creation of a custom Actuators List report that may be added to a project and also describes how to modify the Control Valve List report to include the properties of the associated actuators.

Project Report Templates

The definitions of AutoCAD P&ID project reports are stored in XML formatted text files in the ReportTemplates folder of a project. The names of the XML files exactly match the names of the project reports as they are defined in Project Setup. Existing reports may be modified outside of project setup by editing the XML files with a standard text editor.



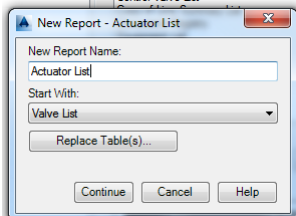
When we add a new report to a project, the user-interface only allows us to create a copy of an existing report with the option to specialise the report by specifying more exactly the table from which data are extracted.



Unfortunately, the user-interface does not enable us to create a report for actuators directly, as there is no existing report that includes data from non-engineering objects. We must create a new report and then edit its XML file manually.

Create an Actuator List Report

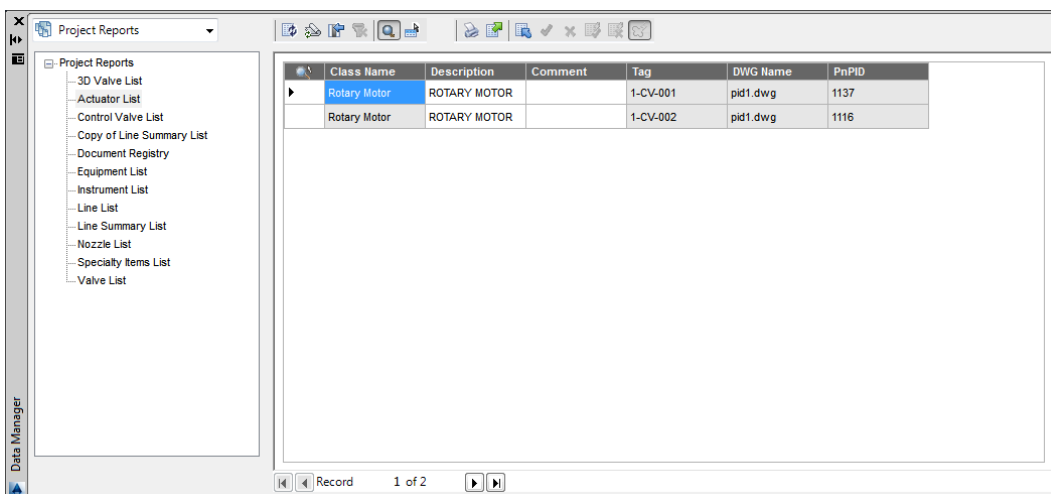
To create our new report, we must use the Reports page in the Project Setup window. We can base our report on any existing report as we are going to edit the XML file directly, in our example we will use the Valve List as our starting point.



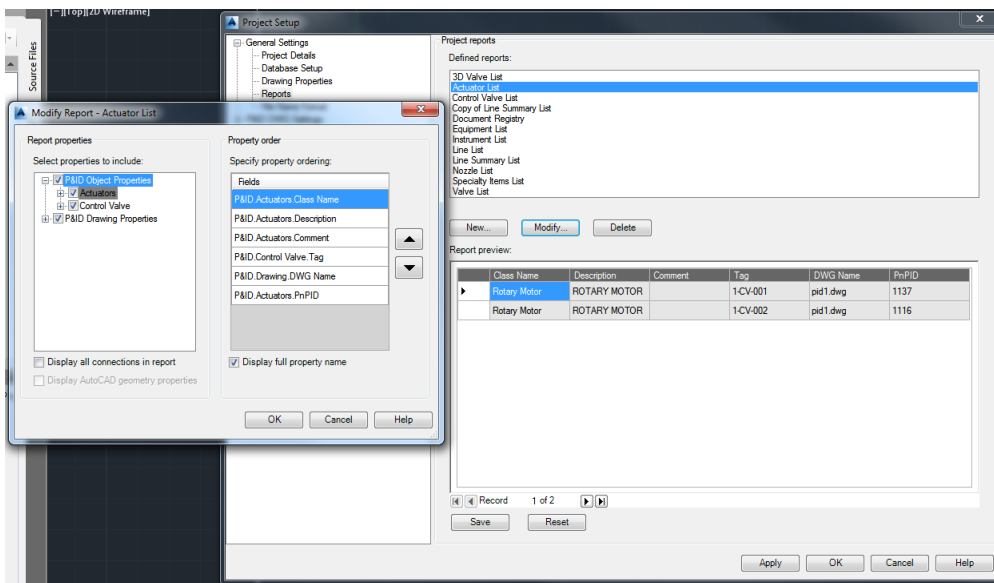
We will simply follow through the user-interface and choose all of the default options to create and save our new report. We will then exit Project Setup.

When we navigate to the ReportTemplates folder of our project we will see that it now contains the file 'Actuator List.XML'. We will now open this file in a text editor and replace the entire contents of the file with the Actuator List Report Template that is included in full in the Appendix A. We can now save and close the file.

If we return to AutoCAD P&ID and launch the Data Manager window, our new Actuator List report will be available.

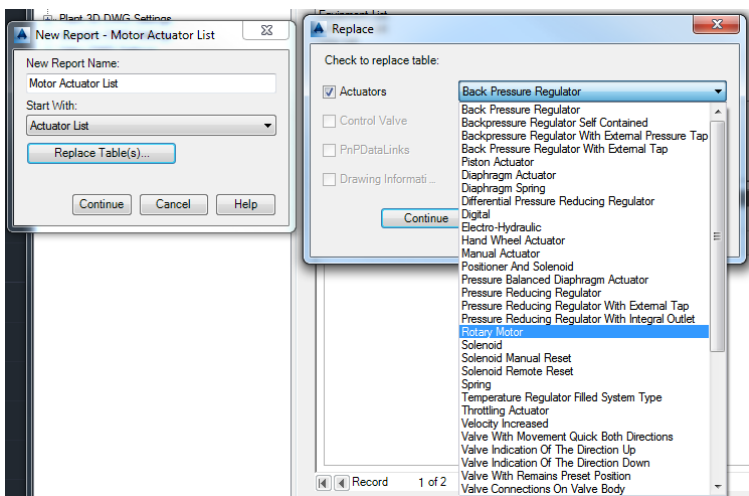


Now that we have a working report, we are able to manage it through Project Setup.



Notice that our new report enables us to combine the properties of the Actuators with the Control Valves that they operate within the same report.

Further, if we wish to create a more specialised report, to show only a specific type of actuator then we can now do so by using our Actuators List report as the basis for the new one.



Modify the ControlValveList Report

The default ControlValveList report does not combine the properties of the associated actuators in the same report. To add the actuators in to the report we need to edit the ControlValveList.XML file manually.

We will navigate to the ReportTemplates folder of our project and open the file 'ControlValveList.XML' in a text editor. We need to locate and replace the following section in the file with that show below:

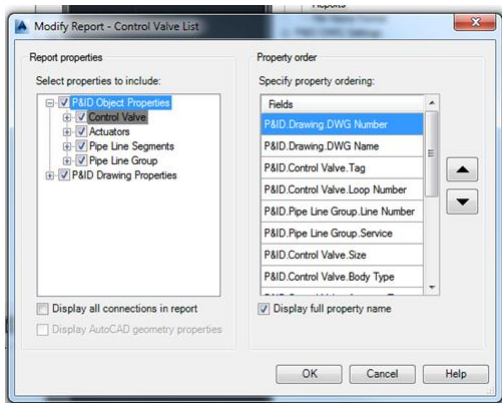
```
<LeftQuerySpecification xsi:type="PnPTableQuerySpecification">
  <Filter />
  <TableName>ControlValve</TableName>
</LeftQuerySpecification>
<RightJoinColumns>
  <string>RowId</string>
</RightJoinColumns>
<LeftJoinColumns>
  <string>PnPID</string>
</LeftJoinColumns>
<JoinOperation>LeftOuter</JoinOperation>
</LeftQuerySpecification>
```

Replace exactly the section above with the section below:

```
<LeftQuerySpecification xsi:type="PnPRelationshipQuerySpecification">
  <RightQuerySpecification xsi:type="PnPTableQuerySpecification">
    <CorrelationName />
    <Filter />
    <TableQualifier />
    <TableName>Actuators</TableName>
  </RightQuerySpecification>
  <LeftQuerySpecification xsi:type="PnPTableQuerySpecification">
    <CorrelationName />
    <Filter />
    <TableQualifier />
    <TableName>ControlValve</TableName>
  </LeftQuerySpecification>
  <RightRole>NonEngineering</RightRole>
  <LeftRole>Asset</LeftRole>
  <RelationshipTypes>
    <string>AssetNonEngineeringRelationship</string>
  </RelationshipTypes>
</LeftQuerySpecification>
<RightJoinColumns>
  <string>RowId</string>
</RightJoinColumns>
<LeftJoinColumns>
  <string>ControlValve.PnPID</string>
</LeftJoinColumns>
<JoinOperation>LeftOuter</JoinOperation>
</LeftQuerySpecification>
```

We can now save and close the file.

Our modified ControlValveList report now combines the properties of Control Valves and their Actuators.



Appendix A

Actuator List Report Template

```
<?xml version="1.0" encoding="utf-8"?>
<PnPQueryDefinition xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <OrderBy>
    <PnPSortItem>
      <SortDirection>Ascending</SortDirection>
      <SortColumn>ControlValve.Tag</SortColumn>
    </PnPSortItem>
  </OrderBy>
  <GroupBy>
    <string>PnPID</string>
  </GroupBy>
  <QuerySpecification xsi:type="PnPEqualJoinQuerySpecification">
    <RightQuerySpecification xsi:type="PnPEqualJoinQuerySpecification">
      <RightQuerySpecification xsi:type="PnPTableQuerySpecification">
        <CorrelationName />
        <Filter />
        <TableQualifier />
        <TableName>PnPDrawings</TableName>
      </RightQuerySpecification>
      <LeftQuerySpecification xsi:type="PnPTableQuerySpecification">
        <CorrelationName />
        <Filter />
        <TableQualifier />
        <TableName>PnPDataLinks</TableName>
      </LeftQuerySpecification>
      <RightJoinColumns>
        <string>PnPID</string>
      </RightJoinColumns>
      <LeftJoinColumns>
        <string>DwgId</string>
      </LeftJoinColumns>
      <JoinOperation>LeftOuter</JoinOperation>
    </RightQuerySpecification>
    <LeftQuerySpecification xsi:type="PnPRelationshipQuerySpecification">
      <RightQuerySpecification xsi:type="PnPTableQuerySpecification">
        <CorrelationName />
        <Filter />
        <TableQualifier />
        <TableName>ControlValve</TableName>
      </RightQuerySpecification>
      <LeftQuerySpecification xsi:type="PnPTableQuerySpecification">
        <CorrelationName />
        <Filter />
        <TableQualifier />
        <TableName>Actuators</TableName>
      </LeftQuerySpecification>
      <RightRole>Asset</RightRole>
      <LeftRole>NonEngineering</LeftRole>
      <RelationshipTypes>
        <string>AssetNonEngineeringRelationship</string>
      </RelationshipTypes>
    </LeftQuerySpecification>
  </QuerySpecification>
</PnPQueryDefinition>
```

```
</RelationshipTypes>
</LeftQuerySpecification>
<RightJoinColumns>
  <string>RowId</string>
</RightJoinColumns>
<LeftJoinColumns>
  <string>Actuators.PnPID</string>
</LeftJoinColumns>
<JoinOperation>LeftOuter</JoinOperation>
</QuerySpecification>
<DerivedProperties />
<SelectList>
  <string>Actuators.ClassName</string>
  <string>Actuators.Description</string>
  <string>Actuators.Comment</string>
  <string>ControlValve.Tag</string>
  <string>Dwg Name</string>
  <string>PnPID</string>
</SelectList>
</PnPQueryDefinition>
```

