

PSS

User Guide

E-PRISM

ORDER STATUS

PARTS PROPOSAL

PUMP PROPOSAL

PARTS ORDER ENTRY

PUMP SELECTION

TECHNICAL MANUAL

GPM



ITT

Engineered for life

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What's on the Pump Selection System (PSS) screens?

When you start PSS, the **Criteria** screen's **Basic** tab appears.

The Criteria screen

The Criteria screen is used to perform criteria searches. The Criteria screen has two tabs:

- **Basic** – This tab allows you to enter your operating criteria in order to begin your search for a pump. You can also correct for viscosity and limit your search to specific pump models and/or speeds.
- **Advanced** – This tab allows you to enter more advanced information relative to your requirements
- **Slurry Correction** – This tab allows you to enter your Slurry information relative to your requirements
- **Spec Questions** – This tab allows you to enter Specification information relative to your requirements and helps narrow your search.
- **Liquid Properties** – This tab allows you to enter Liquid Properties that will be displayed on the Customer Datasheet.

The Selection screen

The Selection screen displays the list of selected pumps based upon the requirements you entered on the Criteria screen. You can also use this screen to manually pick (add) or delete pumps by model, size, speed and/or curve number.

Information is listed in tabular format to simplify pump comparisons. Pumps are highlighted with an explanation of any warning messages that were generated based on your specified limits.

The Curves screen

The Curves screen allows you to preview and print your selected performance curve(s). You can graph pumps individually, in series or in parallel and perform side-by-side comparisons. The Curves screen has two tabs:

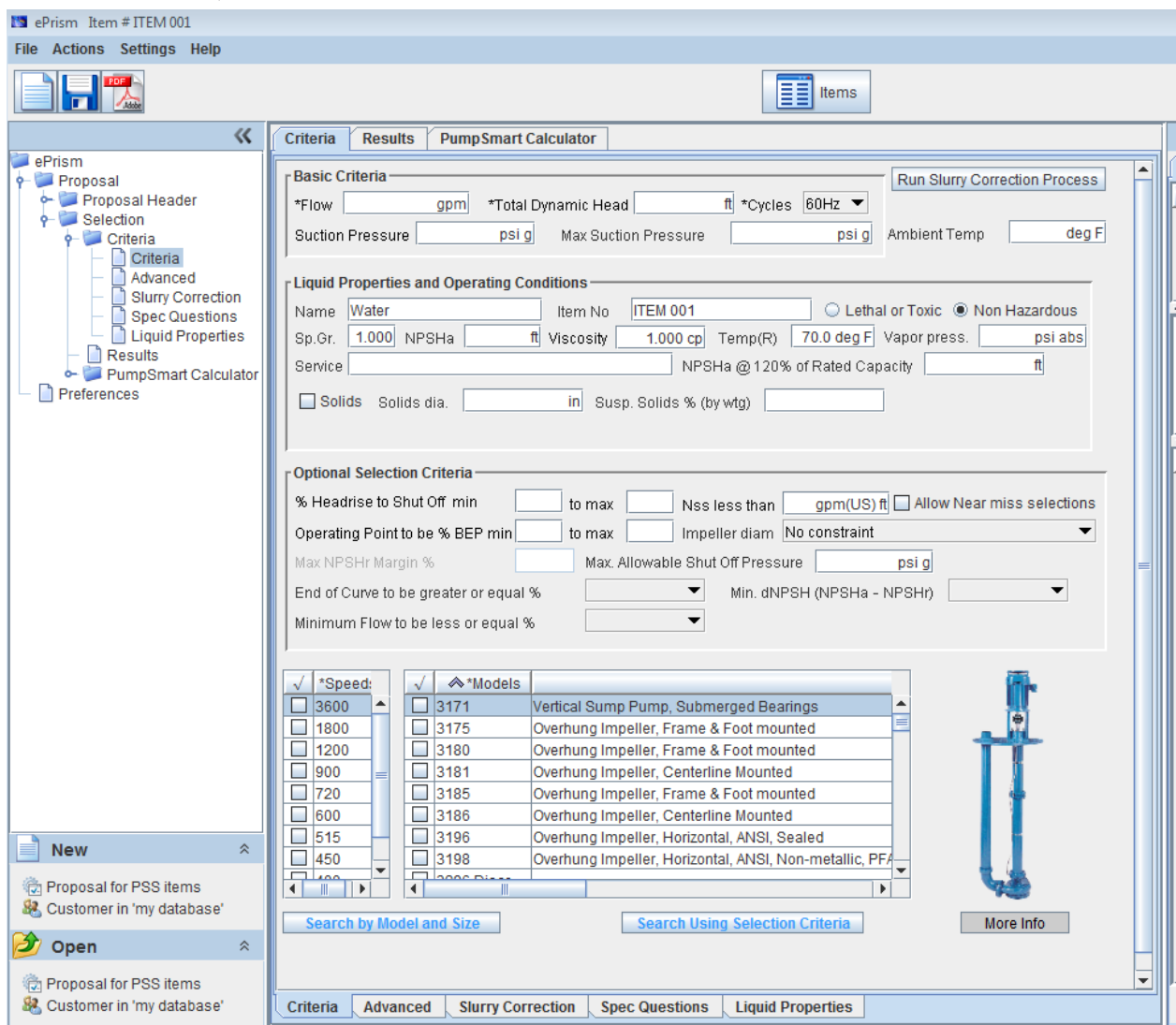
- **CDS** – Shows the Water equivalent *ISO* performance curve. By default, pump performance is based on Water (s.g. 1.0, cp. 1.0) at 70° F.
- **Line** -- Shows the *single-line* and *actual viscous* performance curves. You can evaluate multiple pump operation and make pump adjustments to speed, impeller diameter, flow and head.

The Preferences screen

The Preferences screen allows you to customize the Pump Selection System (PSS). This screen can be accessed using the **Settings – Preferences** menu option. You can change units-of-measure and customize the contents and layout of the Selection screen.

Conducting a Basic Pump Criteria Search

Criteria screen, Basic tab



▶ **To perform a basic criteria pump search**

1. Enter values for **Flow, Total Dynamic Head, Cycles** and (optionally) **NPSHa**.

2. In the **Models** and **Speeds** boxes, select the models and speeds you want to search. You must choose at least one model and speed to perform a criteria search.

Tip For faster searches; limit the number of chosen models & speeds.

3. Click **Search**. The list of matching pumps will be shown on the **Results** screen.

▶ **To correct for viscosity**

By default, pump performance is based on Water at 70° F.

1. In **Liquid Properties**, enter values for **Temperature**, **Specific Gravity** and **Viscosity**.
2. Click **Search**. To view the viscous curve, go to **Curves** and click **Line**.

▶ **Optional selection criteria**

- **% Headrise to Shut-Off** – highlight pumps with a % Headrise to Shut-Off less than **min**, and/or more than to **max**.
- **Suction Specific Speed Less than** – highlight pumps that exceed this NSS value.
- **Operating Point to be % BEP** – highlight pumps with %BEP less than **min**, and/or more than to **max**.
- **Allow near miss**. Check this box to include in the search results pumps that slightly miss the required rated conditions
- **Impeller diameter**. Select any of the available options in order to limit the search results accordingly
- **End of Curve to be greater or equal %** – Allows you to enter the end of curve to be greater or Equal as a % of BEP Flow or % of Rated flow
- **Min. dNPSH (NPSHa -NPSHr)** – Allows you to enter the dNPSH at @ rated flow or @ 120% of rated flow.
- **Minimum Flow to be less or Equal %** – Allows you to enter the Minimum flow to be less or equal as % of BEP Flow or % of Rated Flow.

The optional selection criteria are checked against each pump on the selection list and display a warning message if any of the specified conditions are violated. Completing this section does not limit your search or prevent you from selecting a pump with the exception of the impeller diameter field.

Adding More Advanced Attributes for a Pump Search

Criteria screen, Advanced tab

ePrism Item # ITEM 001

File Actions Settings Help

Items

Criteria Results PumpSmart Calculator

Apply NPSH Margin/Criteria for Life Cycle Cost

Application

Notes

1. The Mechanical seal increased drag effect on power and efficiency is not included, unless the correction is shown in the appropriate field above. 2. Magnetic drive eddy current and viscous effect on power and efficiency is not included. 3. Elevated temperature effects on performance are not included. 4. Non Overloading power does not reflect v-belt/gear losses.

Solids

Solids dia. in Susp. Solids %
(by wtg)

ESLA Products Only

Impeller Material

Bowl Material

Imp. Lock Method

Thrust Balanced Impellers

Pump design

[Search Using Selection Criteria](#)

Criteria Advanced Slurry Correction Spec Questions Liquid Properties

▶ Enter more advanced information relative to your requirements

1. Apply NPSH margin criteria for life cycle cost
Calculates the recommended NPSH margin (per Hydraulic Institute method) based on pump application, geometry and inlet conditions. Please ensure you have entered the NPSHa and added the “Min HI/ANSI NPSHa” and “Suction Energy” columns to the results TAB, see [Setting Preferences](#)
2. Based on your particular application or service, complete the **Solids, Pulp & Paper**, and/or **Vertical Services** sections.
3. Notes entered will be printed only in the single line view datasheets.
4. Click **Search**

Entering Information Needed for Quotations

Proposal Header section

The screenshot displays the ePrism software interface for entering information in the Proposal Header section. The window title is "ePrism Item # ITEM 001". The menu bar includes "File", "Actions", "Settings", and "Help". The toolbar contains icons for file operations. The tree view on the left shows the following structure:

- ePrism
 - Proposal
 - Proposal Header
 - Selection

The main area contains the following form fields:

- Proposal/B.O. No. (text input)
- End User (text input)
- Customer Full Name (text input, value: UNDEFINED)
- Inquiry No. (text input)
- Proposal Created (date input, value: 1/6/16)
- Share with (dropdown menu)
- Read Only Rights (dropdown menu)

At the bottom left, there is a "New" menu with the following options:

- Proposal for PSS items
- Customer in 'my database'

Below the "New" menu is an "Open" menu with the following options:

- Proposal for PSS items
- Customer in 'my database'

Enter the information that is appropriate for your application. Click on **Selection** to go back to the criteria screen

▶ To obtain a Priced Pump Quotation

Contact your nearest Goulds Pumps sales office or representative. To request a priced quotation by e-mail, go to <http://www.gouldspumps.com>, click **Contact Goulds Pumps**, and fill in the request form

Viewing Pump Search Results

Results screen

Model	Type	Group	Size	Stg No	RPM	Feature	%BEP	Power	Eff	NPSHr	Nss	%Shutoff	Dia	Min Dia	Max Dia
3195MT3195	Chemical Process	MTI	3X4-10	1	1770	ALL	34	6.4	40.0	2.0	10.841	2.7	9.5000	6.0000	10.0000
3195	Chemical Process	STI	1X1.5-6	1	3500	IRON	103	4.7	57.5	6.0	8.121	29.6	5.6250	3.5000	6.0625
3195MT3195	Chemical Process	STI	1.5X3-6	1	3500	ALL	64	4.6	59.0	7.1	7.945	7.6	5.0000	4.0000	6.0625
3195	Chemical Process	STI	1X1.5-8	1	3500	IRON	110	4.9	53.5	9.0	6.693	22.4	5.3750	5.0000	8.0000
3195	Chemical Process	STI	1.5X3-8	1	3500	IRON	85	4.7	53.6	4.9	8.195	16.0	5.0000	5.0000	8.0000
3195	Chemical Process	MTI	1X2-10	1	3500	IRON	111	6.5	39.5	10.5	7.982	46.1	5.8750	5.0000	10.0000
3195	Chemical Process	STI	2X3-6	1	3500	IRON	39	5.5	49.0	7.3	8.473	2.2	5.2500	4.0000	6.0625
3195MT3195	Chemical Process	MTI	3X4-7	1	3500	ALL	28	9.3	28.0	9.5	12.059	2.6	5.0000	5.0000	7.1875
3195MT3195	Chemical Process	STI	2X3-6	1	3500	ALLOY	42	4.9	51.5	8.0	8.473	3.8	5.0000	4.0000	6.0625
3195MT3195	Chemical Process	MTI	2X3-13	1	1770	ALL	37	5.9	42.5	2.0	6.330	3.1	9.6250	9.0000	13.0000
3195	Chemical Process	MTI	1.5X3-13	1	1750	IRON	49	6.0	42.5	2.0	8.503	5.1	10.7500	9.0000	13.0000
3195MT3195	Chemical Process	MTI	1.5X3-13	1	1750	ALLOY	46	5.7	45.0	2.0	8.503	3.8	10.5000	9.0000	13.0000
3195MT3195	Chemical Process	STI	1X1.5-8	1	3500	ALLOY	108	4.2	61.0	7.3	8.121	24.6	5.2500	3.5000	6.0625
3195MT3195	Chemical Process	STI	1X1.5-8	1	3500	ALLOY	115	4.8	53.0	8.3	6.693	29.4	5.2500	5.0000	8.0000
3195MT3195	Chemical Process	STI	1.5X3-8	1	3540	ALLOY	85	4.8	55.0	6.0	8.195	17.9	5.0000	5.0000	8.0000
3195MT3195	Chemical Process	MTI	1X2-10	1	3560	ALLOY	117	6.3	43.0	8.7	7.982	42.4	6.0000	5.0000	10.0000
3195MT3195	Chemical Process	MTI	2X3-10	1	1750	ALL	51	5.1	50.5	3.0	8.673	2.8	9.7500	6.0000	10.0000

Tip It takes about five seconds to load each curve (five curves would take 25 seconds).


- ▶ **To view pumps for analysis, printing or side-by-side comparison**
 1. To select a pump on the selection list, click the **check box** to the left of the pump. Click again to clear your selection. Repeat for multiple pumps or click **Select All** to select all pumps on the list. Click **Select None** to clear.
 2. Click **View Selected**. The Curves screen, CDS tab will appear and display each selected curve.
 3. You can simply view one curve by double clicking on the selected curve
- ▶ **To sort the selection list**
 - Click the **column heading** that you want to sort by. To reverse the sort order, click again.
- ▶ **To change the width of columns in the selection list**
 - Drag the **boundary** on the *right side* of the column heading until the column is the width you want.
- ▶ **To change the contents or order of the columns in the selection list.**

- You can temporarily change the order of the columns by dragging and dropping the column to the appropriate location. To permanently change the column sequence, see [Setting Preferences](#).
- ▶ **To remove pumps**
- On the Selection screen, click **Remove Unselected** to remove all pumps that are not selected. Click **Remove Selected** to remove all selected pumps. Alternatively you can right click anywhere in the results table and use the filter options to reduce the number of selections.
- ▶ **To manually add (select) pumps**
- 1. On the Results screen, click **Add...** and in the Add Pump dialog box...
- 2. To **Add by Model** -- Click on a **model** in the Model list. Use the **Cycles** list box to choose *60Hz* or *50Hz* speeds. Select the desired **size/speed** from the list, then click **Add**.
- 3. To **Add by Curve No.** -- Enter the curve number in the **Curve No** box, then click **Add**.
- 4. Click **Done** when finished. Manually added pumps appear at the bottom of the selection list.


File management

PSS allows you save your selections either as individual services, each one under its own project/proposal name, or, in case of a project containing many services, all services can be saved under the same project/proposal name

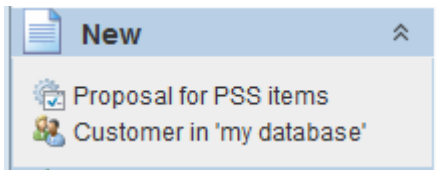
▶ To save your pump selections

1. You can either click on the save  icon in the main tool bar or use the **File – Save** menu option. The selection will be saved under the current proposal file name. One proposal may contain multiple pump selections.

▶ To create new pump selections

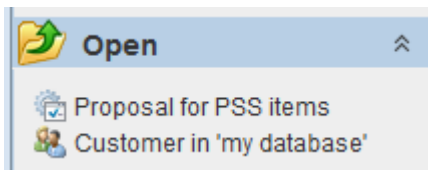
1. You can create a **New** pump selection, within the same proposal, by pressing the  icon or using the **File – New Item** menu option. One proposal may contain multiple pump selections.

- To create a New pump proposals select the **File – New Proposal** menu option or click on **“New Proposal for PSS Item** menu option



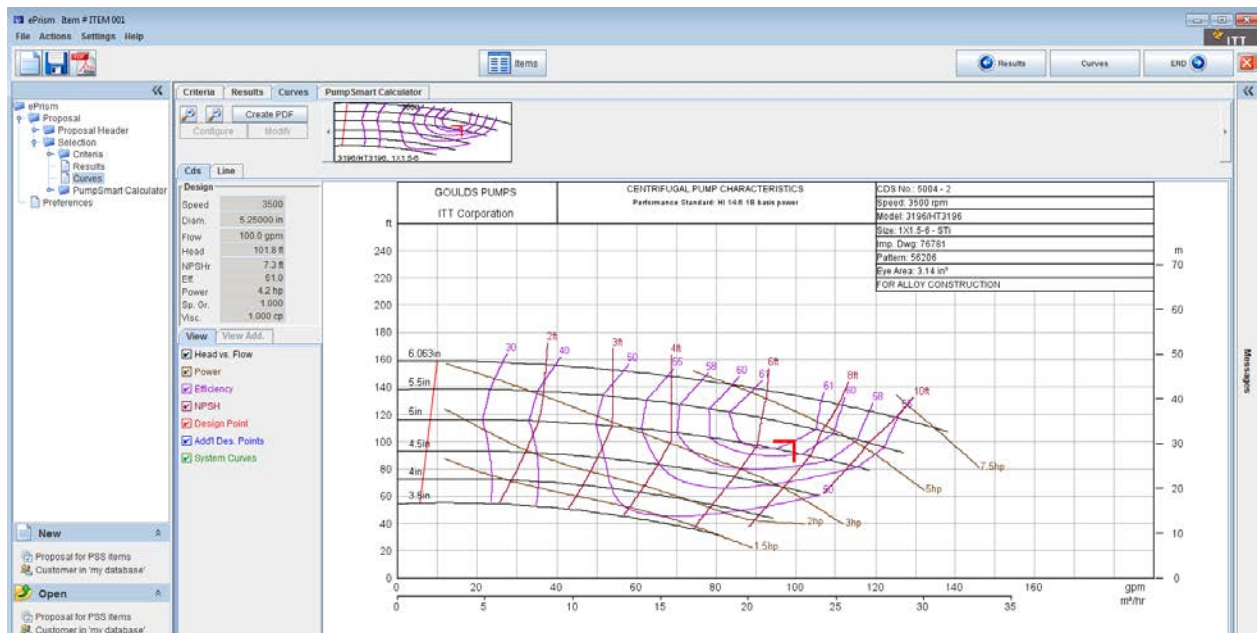
- ▶ **To retrieve your pump selections**

- Select the **File – Open Proposal** option from the main menu. Alternatively you can click on the **“Open Proposal for PSS items”** menu option



Viewing and Printing Pump Performance Curves

Curves screen



The Curves screen allows you to analyze, compare and print the selected performance curve(s). The Curves screen has four tabs:

- **CDS** – Displays the primary and water equivalent performance curves.

- **Line** – Displays the single–line and viscous performance curves. Use the Line tab to adjust pump speed and impeller diameters and to graph pumps individually, in series or in parallel.
- **View** – Controls which curve elements (System Curves, etc.) are displayed. The **View Add.** Tab is activated in case the first stage size is different than the additional stage one and allows the user to view both curves.

▶ **To display the CDS and equivalent water performance curves**

1. Click the **CDS** tab.
2. Click the **pump curve thumbnail** to display the performance curve in the main window.
3. To change the information plotted on the curve, use the check boxes in the **View** tab.

▶ **Additional Design Points**

1. Click on the **Line** Tab
2. Click the **pump curve thumbnail** to select the curve you wish to evaluate.
3. Click on “**System curves/ Des.points**”
4. Click on **Add** in the **Additional Design Points** section of the screen.
5. Double–click **Flow Value**, enter a *flow* value and press [Enter].
6. Double–click **Head Value**, enter a *head* value and press [Enter].
7. To edit or rename a Design Point, double–click on the value in the label field you wish to edit, type the new value, and press [Enter]. To remove a Design Point, select the Design Point, and click **Remove**.

Tip Check the box “I want variable speed curves to go thru above point to have the program generate a set of variables speed curves that will go through the additional design point defined.”

▶ **System Resistance Curves**

1. Below the **System Resistance Curves** list, click **Add**.
2. To edit or rename an existing System Resistance Curve, double–click the curves **label**, type the new value, and press [Enter].
3. Below the Flow / Head list, click **Add**. Double–click on **Flow Value**, enter a flow value and press [Enter]. Double–click on **Head Value**, enter a head value and press [Enter].

Tip At least two (2) Head / Flow points are required to define a System Resistance Curve. Entering just two points will generate a parabolic curve.

4. To remove an entire System Resistance Curve – In the **System Resistance Curves list**, select the curve and click **Remove**.

To remove a Head/Flow point – In the **Flow / Head list**, select the set of points and click **Remove**.

▶ **To display viscosity corrections**

1. Click the **Line** tab.
2. Click the **pump curve thumbnail** to display the actual viscous fluid performance curve in the main window. The viscosity correction factors are shown in the curves title block section. To calculate the water equivalent, divide the viscous value by its viscosity correction factor.
3. To change what is displayed on the curve, use the check boxes in the **View** tab.

▶ **To adjust pump speed, flow, head and impeller diameter**

1. Click the **Line** tab.
2. Select the curve of the pump you wish to adjust by clicking its **curve thumbnail**.
3. Click the **Speed, Diameter, Flow** or **Head** fields and type the new value. Press [Tab] to see how pump performance is affected. You can also use the arrow buttons to increase/decrease the pump speed and/or impeller diameter to the next increment.

Tip When using the arrow buttons, you don't need to press [Tab] after each change but you should *wait* for PSS to update the curve before making another change.

▶ **To evaluate multiple pump operation**

1. Click the **Line** tab.
2. Click the **pump curve thumbnail** to select the curve you wish to evaluate.
3. Click **Multi**, click **Pumps** and select **Parallel** or **Series**.
4. Enter the number of pumps in the **Quantity** field.
5. Click **Update** to view the resulting performance curve.

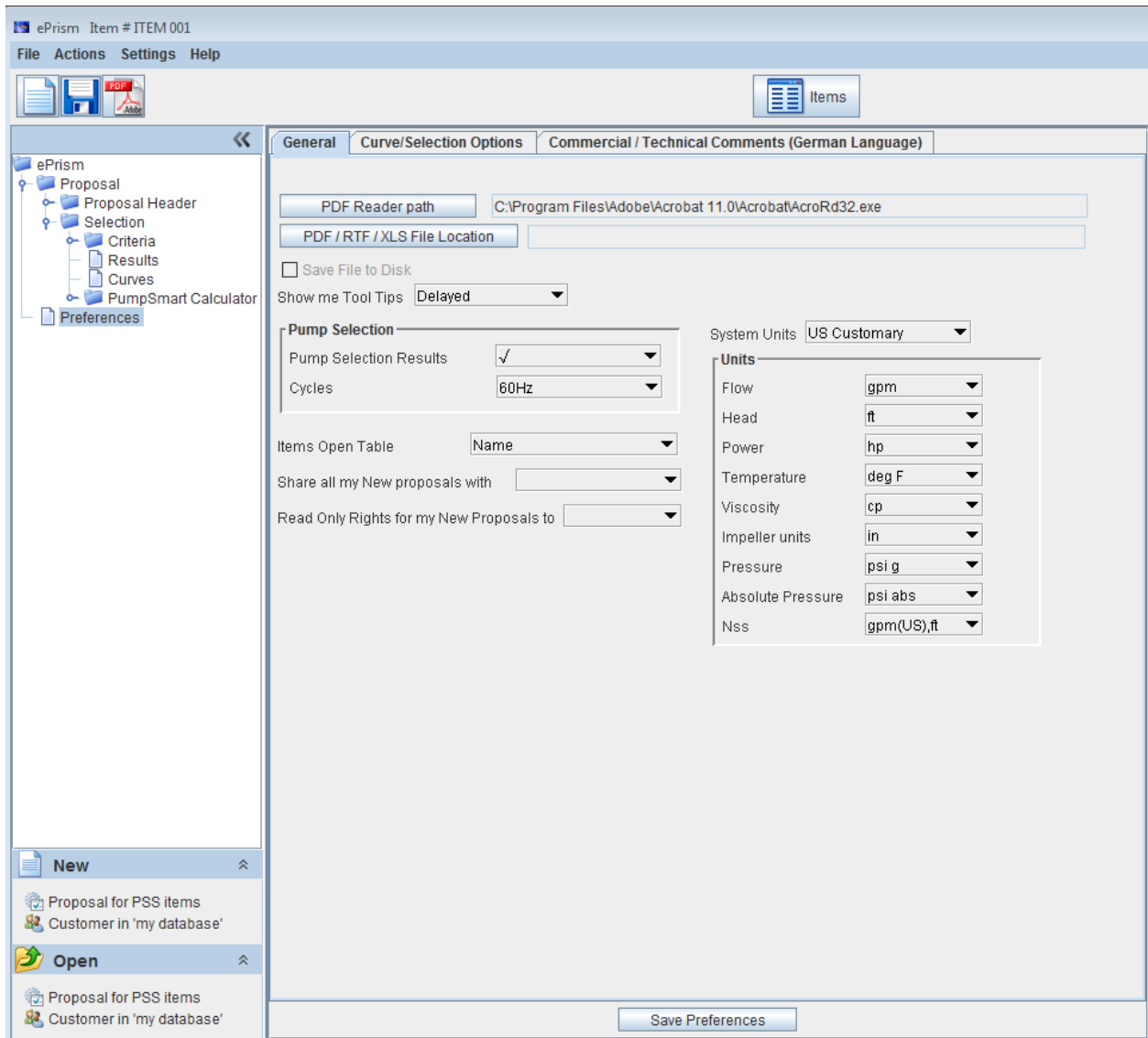
▶ **To evaluate multiple pump speeds**

1. Click the **Line** tab.
2. Click the **pump curve thumbnail** to select the curve you wish to evaluate

3. Click **View variable speed curves**. A set of 3 speeds will be added by default in 300 RPM steps
 4. To add a new speed, click **Add**, double-click the **Speed** field, type a new speed value, and press [Enter]. Repeat to add additional speeds or edit existing speeds.
 5. When finished, click **Draw** to view the multi-speed curve.
 6. To delete a speed, select the speed and click **Remove**.
- ▶ **To print performance curves**
1. Click the **pump curve thumbnail** to select the curve you wish to print
 2. Click on **Create PDF** button and select one or more forms from the available print forms.
 3. Once the Pump performance curve(s) are shown in Acrobat Reader you can use the Print feature to create a hard copy of the curve(s).

Setting Preferences

Preferences screen



The Preferences screen allows you to customize the Pump Selection System (PSS). You can change units-of-measure and customize the contents and layout of the selection list.

- ▶ **Use Browser to view PDF file**

1. This box should be checked only if the operating system is not MS Windows
2. Acrobat Reader Path. The Adobe Acrobat Reader is required in order to create a printable version of the pump performance curve.

- ▶ **To change the default units of measure**

1. To change the units of measure for all fields, click the **System Units:** box and choose the desired unit-of-measure (*US Customary, Metric*).
2. To change the unit of measure for an individual field, click the **Units** box to the field's right (*Capacity*).

▶ **To change the default cycles**

1. This setting control the default setting for cycles when a new selection is created

▶ **To change the contents and display order of items in the Selection List**

1. Click on the **Results Table** drop down
2. Select the columns you would like to see.
3. Change to order the columns are shown using the up / down arrows

▶ **To save your preferences**

1. Click **Save Preferences** to save your preference settings. Saved settings are automatically loaded each time you run PSS.
2. Click **ok** to temporarily (just for the current session) accept the changes made.

Pump Selection Chart

Pump Selection Chart

ITT Goulds Pumps makes the widest range of pumps in the industry — pumps to handle virtually any service. This selection chart is designed to help you find and specify the best pump for your service.

Pump Category	Goulds Model	Pump Type	Chemical	Pulp & Paper	Mining & Minerals	Power	Corrosion & Gas Processing	Primary Metals	Water & Wastewater	Food & Beverage	Nature of Pumpage				Refer to Page
											Corrosive	High Temperature (250°C/500°F)	Abrasive	Solids (Non-Abrasive, Fibrous/Stringy)	
PFO Services	PFO Services	Rotating Equipment Services													19
	3175	Paper Stock/Process													4
Paper Stock/Process	3180/3185	Paper Stock/Process												4	
	3181/3186	High Temperature												4	
Chemical Process	3500XD	Heavy-Duty Paper Stock												4	
	3171	Vertical Sump and Process												5	
	CV3171	Non-Clog Vertical Sump Process												5	
	NM3171	PPF Vert. Sump/Process												5	
	3196	ANGI Chemical Process												6	
	LF3196	Low Flow ANGI Process												6	
	HT3196	ANGI High-Temperature Process												6	
	CV3196	Non-Clog Process												6	
	3796	Self-Priming Process												7	
	3996	ANGI In-Line Process												7	
	3296	ANGI Metallic Sealless Process												7	
	NM3196	ANGI PPF Process												8	
	3296	ANGI Tefzel® Lined Sealless												8	
	SP3296	ANGI Tefzel® Lined Sealless												8	
	3196	ANGI PFA Tefzel® Lined Process												8	
	V3296	Tefzel® Lined Sealless												8	
	3296	ANGI PFA Tefzel® Lined Sealless												7	
	IC	ISO Chemical Process													9
	ICB	Close-Coupled ISO Process													9
	ICP	High-Temperature ISO Magnetic Drive													10
ICM	ISO Metallic Magnetic Drive													9	
ICMB	Close-Coupled ISO Sealless													9	
ICMP	High-Temperature ISO Magnetic Drive													10	
API 610 ISO 13709	API 3171	Industrial Duty Vertical Sump												11	
	3700/3710	1-Stage, Overhung (OH2)												11	
	3910	Vertical In-Line (OH2)												11	
	3610	Radially Split, 1-Stage (RS1)												10	
	3620	Radially Split, 1-Stage (RS2)												10	
	3640	Radially Split, 2-Stage (RS2)												10	
Sump/Abrasive/Solids Handling	3800	Radially Split, Multistage (RS3)												11	
	7200CB	Samal Multistage (RS3)												11	
	Trash Hog	Solids Handling, Self-Priming												12	
	VHS	Vertical Cantilever												12	
	VAC	Vertical Cantilever												12	
	HGU	Submersible												12	
	HSUL	Submersible												12	
	HCU	Submersible												12	
	VRS	Abrasive Slurry R.L. Cantilever												14	
	JC	Medium-Duty Abrasive Slurry												13	
Abrasive Slurry/Solids Handling	SR	Rubber-Lined Abrasive Slurry												14	
	SR-LC	Rubber-Lined Abrasive Slurry												14	
	SR-LC	Rubber-Lined Abrasive Slurry												14	
	SR-LC	Rubber-Lined Abrasive Slurry												14	
	SR-LC	Rubber-Lined Abrasive Slurry												14	
	SR-LC	Rubber-Lined Abrasive Slurry												14	
Multistage/Axial Flow/Double Suction	3500	Severe Duty Abrasive Slurry												13	
	HS	Non-Clog Solids Handling												13	
	VRS	Abrasive Slurry R.L. Cantilever												15	
	XHD	Severe Duty Slurry												13	
	AF	Axial Flow												16	
	3311	High-Pressure Multistage												16	
Vertical Mixed and Axial Flow	3325	High-Pressure Multistage												14	
	3035	Diffuser-Type Multistage												15	
	3400 Series	Single Stage, Double Suction												15/16	
	3355	Multistage												15	
	3310	Two-Stage												14	
	WCAX-GP	Wet Pit Pumps												17	
VDD-GP	Wet Pit Pumps												17		
WCA-GP	Wet Pit Pumps												17		
WCB-GP	Wet Pit Pumps												17		
WCC-GP	Wet Pit Pumps												17		
WCE-GP	Wet Pit Pumps												17		
WCF-GP	Wet Pit Pumps												17		
WMCC-GP	Wet Pit Pumps												17		
WCAG-GP	Wet Pit Pumps												17		
VTC	Vertical Turbine/Can Type													17	
VIT	Vertical Industrial Turbine													17	
VIS	Vertical Submersible													18	
VMP	Vertical Marine													18	

* TERZEL® and TEFLON® are registered trademarks for fluoropolymer resins, films and fibers made by DuPont.

Yellow box: Ideally Suited for Service Indicated

Figure 1. Pump Selection Chart

Please check our website (<http://www.gouldspumps.com>) for the latest copy of the Pump Selection Chart.