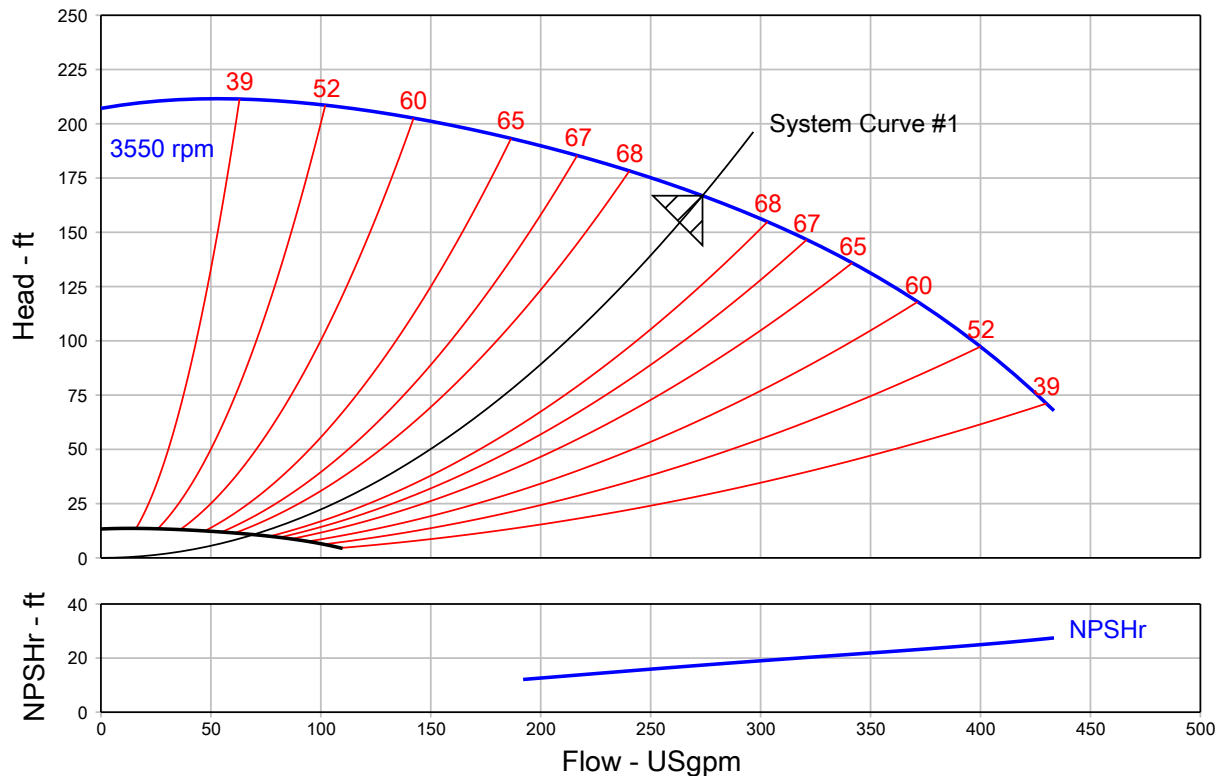


## Pump Performance Datasheet

|                    |                      |                       |                        |
|--------------------|----------------------|-----------------------|------------------------|
| Customer           | :                    | Quote Number / ID     | : 1141840              |
| Customer ref. / PO | :                    | Model                 | : 20953-2P-20HP LCSE   |
| Tag Number         | : Hurley Engineering | Stages                | : 1                    |
| Service            | : HYDONIC            | Based on curve number | : RC2215-SS-7.14 Rev 0 |
| Quantity           | : 1                  | Basic model number    | : -                    |
|                    |                      | Date last saved       | : 03/29/2020 11:52 PM  |

| Operating Conditions                            |                             | Liquid                             |                               |
|-------------------------------------------------|-----------------------------|------------------------------------|-------------------------------|
| Flow, rated                                     | : 273.6 USgpm               | Liquid type                        | : Cold Water                  |
| Differential head / pressure, rated (requested) | : 166.9 ft                  | Additional liquid description      | :                             |
| Differential head / pressure, rated (actual)    | : 166.9 ft                  | Solids diameter, max               | : 0.00 in                     |
| Suction pressure, rated / max                   | : 0.00 / 0.00 psi.g         | Solids concentration, by volume    | : 0.00 %                      |
| NPSH available, rated                           | : Ample                     | Temperature, max                   | : 68.00 deg F                 |
| Frequency                                       | : 60 Hz                     | Fluid density, rated / max         | : 1.000 / 1.000 SG            |
| Performance                                     |                             | Viscosity, rated                   | : 1.00 cP                     |
| Speed, rated                                    | : 3550 rpm                  | Vapor pressure, rated              | : 0.34 psi.a                  |
| Speed, maximum                                  | : 3550 rpm                  | Material                           |                               |
| Speed, minimum                                  | : 900 rpm                   | Material selected                  | : Cast Iron                   |
| Impeller diameter, rated                        | : 7.14 in                   | Pressure Data                      |                               |
| Efficiency                                      | : 68.56 %                   | Maximum working pressure           | : 91.55 psi.g                 |
| NPSH required / margin required                 | : 17.40 / 0.00 ft           | Maximum allowable working pressure | : 175.0 psi.g                 |
| nq (imp. eye flow) / S (imp. eye flow)          | : 24 / 133 Metric units     | Maximum allowable suction pressure | : 175.0 psi.g                 |
| MCSF                                            | : 165.7 USgpm               | Hydrostatic test pressure          | : 263.0 psi.g                 |
| Head maximum, rated speed                       | : 211.6 ft                  | Driver & Power Data (@Max density) |                               |
| Head rise to shutoff                            | : 24.11 %                   | Motor sizing specification         | : Max power (non-overloading) |
| Flow, best eff. point                           | : 273.6 USgpm               | Margin over specification          | : 0.00 %                      |
| Flow ratio, rated / BEP                         | : 100.00 %                  | Service factor                     | : 1.00 (used)                 |
| Speed ratio (rated / max)                       | : 100.00 %                  | Power, hydraulic                   | : 11.52 hp                    |
| Head ratio (rated speed / max speed)            | : 100.00 %                  | Rated power (based on duty point)  | : 16.81 hp                    |
| Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010]                | : 1.00 / 1.00 / 1.00 / 1.00 | Max power (non-overloading)        | : 19.97 hp                    |
| Selection status                                | : Acceptable                | Nameplate motor rating             | : 25.00 hp / 18.64 kW (Fixed) |
| Energy Indexes                                  |                             |                                    |                               |
| PEI (VL)                                        | : 0.49                      |                                    |                               |
| ER (VL)                                         | : 51                        |                                    |                               |



### Grundfos Series LCSE - Split Coupled End Suction Pump with Integrated VFD

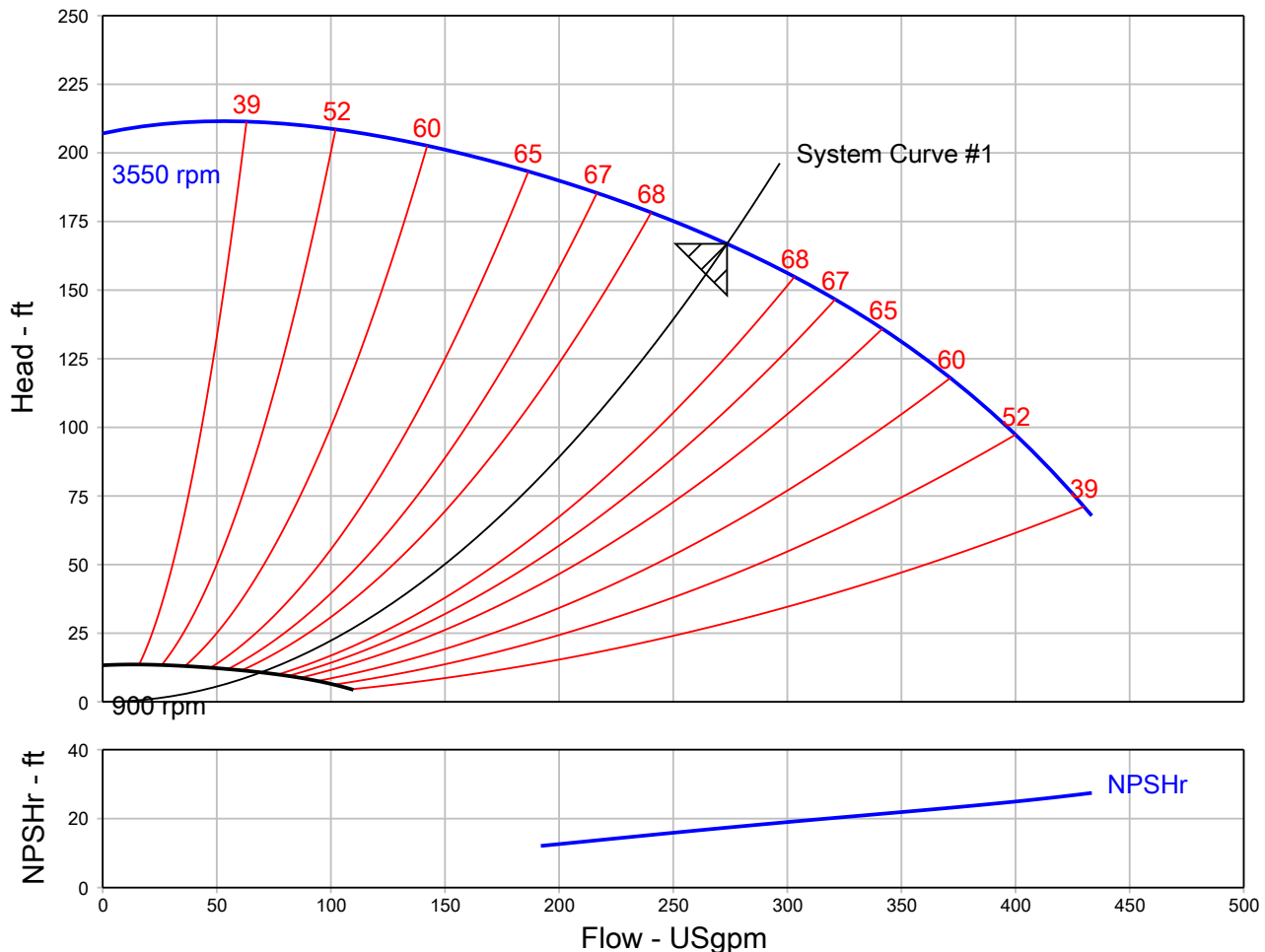
|                           |                             |            |
|---------------------------|-----------------------------|------------|
| QUOTE NUMBER / ID 1141840 | UNIT TAG Hurley Engineering | QUANTITY 1 |
|                           | SERVICE HYDONIC             |            |
| REPRESENTATIVE            | SUBMITTED BY                | DATE       |
| ENGINEER                  | APPROVED BY                 | DATE       |
| CONTRACTOR                | ORDER #                     | DATE       |



**LCSE 20953-2P-20HP**  
**3550 rpm**

Part Number N/A

| Conditions of Service |             | Pump Data         |          | Motor Data |         |
|-----------------------|-------------|-------------------|----------|------------|---------|
| Flow                  | 273.6 USgpm | Impeller Diameter | -1.00 in | Motor HP   | 25 HP   |
| Head                  | 166.9 ft    | Efficiency        | 68.56 %  | BHP        | 16.81   |
| Liquid                | Cold Water  | Suction           | in.      | Enclosure  | TEFC    |
| Temperature           | 68.00 deg F | Discharge         | in.      | Voltage    | 460 V   |
| NPSHr                 | 17.40 ft    | PEI (VL)          | 0.49     | Phase      | 3 Phase |
| Viscosity             | 1.00 cP     | ER (VL)           | 51       | Cycle      | 60      |
| Specific Gravity      | 1.000 SG    |                   |          | Frame Size |         |





QUOTE NUMBER / ID 1141840

UNIT TAG Hurley Engineering

LCSE 20953-2P-20HP

Grundfos Series LCSE - Split Coupled End Suction Pump with Integrated VFD

NOT FOR CONSTRUCTION, unless certified and referenced on order

| Units  | Frame | Suct | Disch | CP    | DD    | HA    | HB    | HD    | HE    | HF    | HG    | HH    | HJ    | HL    | HP    | X     | Y     | Z     |
|--------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| inches |       | 0    | 0     | -1.00 | -1.00 | -1.00 | -1.00 | -1.00 | -1.00 | -1.00 | -1.00 | -1.00 | -1.00 | -1.00 | -1.00 | -1.00 | -1.00 | -1.00 |

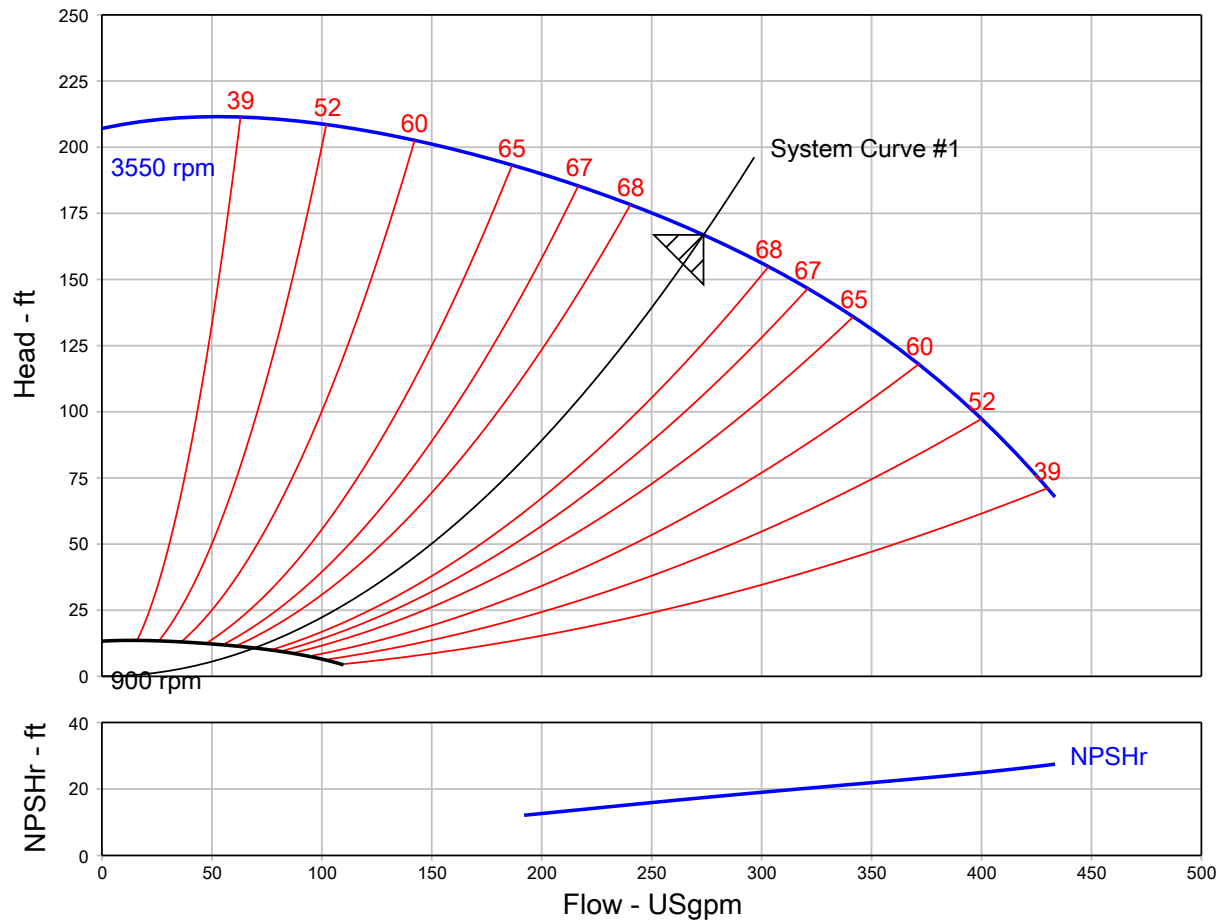
## Grundfos Series LCSE - Split Coupled End Suction Pump with Integrated VFD

|                           |                             |                    |
|---------------------------|-----------------------------|--------------------|
| QUOTE NUMBER / ID 1141840 | UNIT TAG Hurley Engineering | LCSE 20953-2P-20HP |
|---------------------------|-----------------------------|--------------------|

| MATERIALS OF CONSTRUCTION |                            |                    |                                          |
|---------------------------|----------------------------|--------------------|------------------------------------------|
| PART                      | MATERIAL                   | PART               | MATERIAL                                 |
| Rotation Options          | Clockwise                  | Impeller Washer    | S.S., AISI-303                           |
| Base/Stand Type           | Steel Base / Cast Iron     | Impeller Key       | Steel, AISI 1045                         |
| Bushing                   | Vesconite                  | Coupling Options   | Rigid Aluminum<br>Axially Split Coupling |
| Wear Ring Material        | Vesconite                  | Pump Coatings      | Standard Paint                           |
| Seal Type                 | Type 21                    | Seal Material      | Ceramic/Carbon/Buna                      |
| O-Rings                   | Buna N                     | Casing             | Cast Iron, ASTM-A48, CL 30               |
| Backplate/Seal Plate      | Cast Iron, ASTM-A48, CL 30 | Seal Flush Options | External Flush, plastic tubing           |
| Gaskets                   | Vegetable Fiber            | Motor Bracket      | Cast Iron, ASTM-A48, CL 30               |
| Casing Bolts              | Steel, Grade 5             | Impeller           | Stainless Steel, AISI-304                |
| Impeller Cap Screw        | S.S., AISI-303             |                    |                                          |

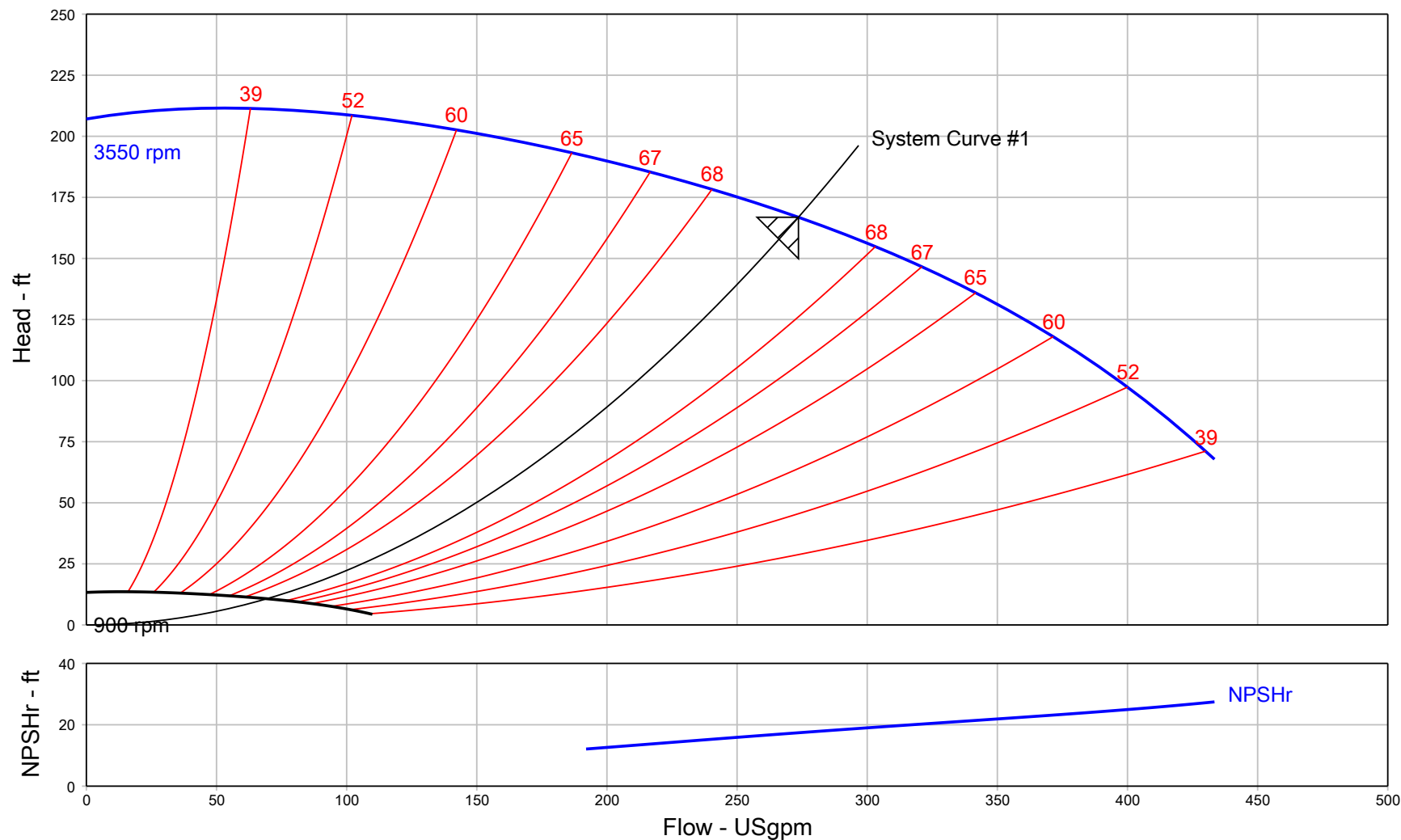
\* All materials based on STANDARD configuration

## Pump Performance Curve



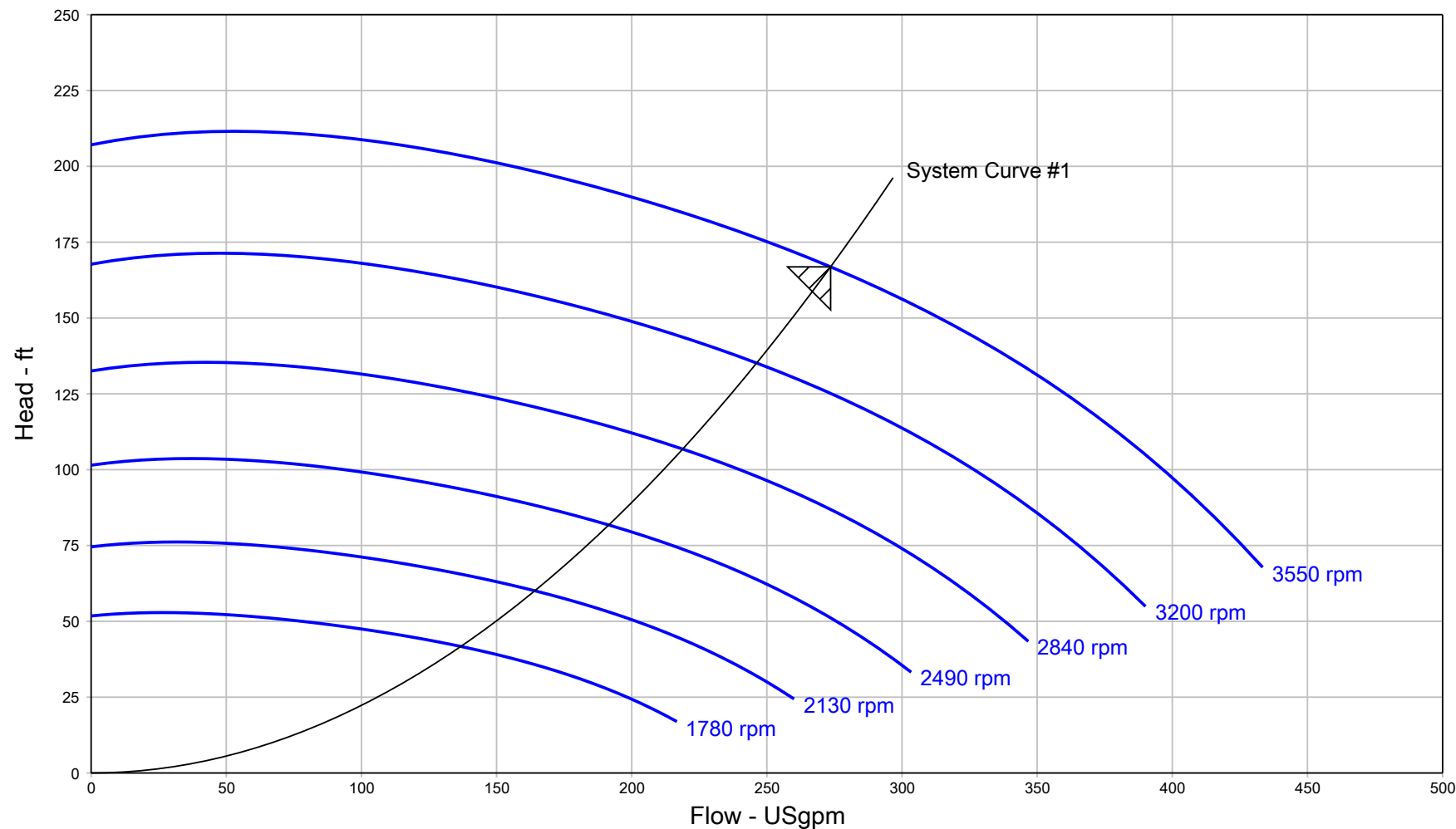
|                                     |                       |                                   |                             |
|-------------------------------------|-----------------------|-----------------------------------|-----------------------------|
| Customer                            | :                     | Model                             | : 20953-2P-20HP LCSE        |
| Customer ref. / PO                  | :                     | Stages                            | : 1                         |
| Tag Number                          | : Hurley Engineering  | Speed, rated                      | : 3550 rpm                  |
| Service                             | : HYDONIC             | Based on curve number             | : RC2215-SS-7.14 Rev 0      |
| Quantity                            | : 1                   | Efficiency                        | : 68.56 %                   |
| Quote Number / ID                   | : 1141840             | Rated power (based on duty point) | : 16.81 hp                  |
| Date last saved                     | : 03/29/2020 11:52 PM | NPSH required                     | : 17.40 ft                  |
| Flow, rated                         | : 273.6 USgpm         | Viscosity                         | : 1.00 cP                   |
| Differential head / pressure, rated | : 166.9 ft            | Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010]  | : 1.00 / 1.00 / 1.00 / 1.00 |
| Fluid density, rated / max          | : 1.000 / 1.000 SG    | Impeller diameter, rated          | : 7.14 in                   |
|                                     |                       | PEI (VL)                          | : 0.49                      |
|                                     |                       | ER (VL)                           | : 51                        |

## Pump Performance Curve



|                       |                        |                            |                              |                                     |               |
|-----------------------|------------------------|----------------------------|------------------------------|-------------------------------------|---------------|
| Project name          | : LCSE Project NC      | Tag Number                 | : Hurley Engineering         | Flow, rated                         | : 273.6 USgpm |
| Consulting engineer   | :                      | Service                    | : HYDONIC                    | Differential head / pressure, rated | : 166.9 ft    |
| Customer              | :                      | Model                      | : 20953-2P-20HP LCSE         | Rated power (based on duty point)   | : 16.81 hp    |
| Customer ref. / PO    | :                      | Quantity                   | : 1                          | Max power (non-overloading)         | : 19.97 hp    |
| Quote Number / ID     | : 1141840              | Quoted By (Sales Office)   | : HURLEY ENGINEERING COMPANY | Efficiency                          | : 68.56 %     |
| Date last saved       | : 03/29/2020 11:52 PM  | Quoted By (Sales Engineer) | : Steven Leingang            | Impeller diameter, rated            | : 7.14 in     |
| Based on curve number | : RC2215-SS-7.14 Rev 0 | Stages                     | : 1                          | PEI (VL)                            | : 0.49        |
|                       |                        | Speed, rated               | : 3550 rpm                   | ER (VL)                             | : 51          |

## Multi-Speed Performance Curve



|                     |                       |                            |                              |                                     |                             |
|---------------------|-----------------------|----------------------------|------------------------------|-------------------------------------|-----------------------------|
| Project name        | : LCSE Project NC     | Tag Number                 | : Hurley Engineering         | Speed, rated                        | : 3550 rpm                  |
| Consulting engineer | :                     | Service                    | : HYDONIC                    | Flow, rated                         | : 273.6 USgpm               |
| Customer            | :                     | Model                      | : 20953-2P-20HP LCSE         | Differential head / pressure, rated | : 166.9 ft                  |
| Customer ref. / PO  | :                     | Quantity                   | : 1                          | Fluid density, rated / max          | : 1.000 / 1.000 SG          |
| Quote Number / ID   | : 1141840             | Quoted By (Sales Office)   | : HURLEY ENGINEERING COMPANY | Viscosity                           | : 1.00 cP                   |
| Date last saved     | : 03/29/2020 11:52 PM | Quoted By (Sales Engineer) | : Steven Leingang            | Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010]    | : 1.00 / 1.00 / 1.00 / 1.00 |
|                     |                       | Stages                     | : 1                          | Based on curve number               | : RC2215-SS-7.14 Rev 0      |

## Construction Datasheet

| Project name : LCSE Project NC                             |            |                      |       | Tag Number : Hurley Engineering                           |  |
|------------------------------------------------------------|------------|----------------------|-------|-----------------------------------------------------------|--|
| Consulting engineer :                                      |            |                      |       | Service : HYDONIC                                         |  |
| Customer : HURLEY ENGINEERING COMPANY                      |            |                      |       | Model : 20953-2P-20HP LCSE                                |  |
| Customer ref. / PO :                                       |            |                      |       | Quantity : 1                                              |  |
| Quote Number / ID : 1141840                                |            |                      |       | Quoted By (Sales Office) : HURLEY ENGINEERING COMPANY     |  |
| Date last saved : 03/29/2020 11:52 PM                      |            |                      |       | Quoted By (Sales Engineer) : Steven Leingang              |  |
| Construction                                               |            |                      |       | Motor Information                                         |  |
| Nozzle                                                     | Size (in.) | Nozzle Configuration | Pos'n | Manufacturer : Grundfos MLE                               |  |
| Suction                                                    | 2.5        | NPS                  | -     | Frame Size : 284TSC                                       |  |
| Discharge                                                  | 2          | NPS                  | -     | Power : 25.00 hp                                          |  |
| Orientation / Configuration : Horizontal                   |            |                      |       | RPM : 3600 rpm                                            |  |
| Rotation : Clockwise                                       |            |                      |       | Enclosure : TEFC                                          |  |
| Wear Ring Configuration : Single - Case                    |            |                      |       | Operating Power Supply : 460/3/60                         |  |
| Discharge Elbow Size : -                                   |            |                      |       | Efficiency : Premium                                      |  |
| Subplate : -                                               |            |                      |       | Service factor : 1.15                                     |  |
| Sump Depth (feet) : -                                      |            |                      |       | Motor Application : Suitable for Variable Speed Drive     |  |
| Bearing Frame : -                                          |            |                      |       | Motor Options/Accessories : -                             |  |
| Bearing Frame Foot : -                                     |            |                      |       | Cord Length (feet) : -                                    |  |
| Bearing Type (Radial/Thrust) : -                           |            |                      |       | Materials                                                 |  |
| Bearing Lubrication : -                                    |            |                      |       | Case : Cast Iron, ASTM A48 - Class 30                     |  |
| Thrust Bearing : -                                         |            |                      |       | Motor Bracket : Cast Iron, ASTM-A48, CL 30                |  |
| Intermediate Bearing : -                                   |            |                      |       | Impeller : Stainless Steel, AISI-304 (H304)               |  |
| Lower Bearing : -                                          |            |                      |       | Impeller Cap Screw and Washer : Stainless Steel, AISI-303 |  |
| Bearing Housing Accessories : -                            |            |                      |       | Impeller Key : Stainless Steel, AISI 316                  |  |
| PACO Construction code : 24-20953-14036A-25J1MS1           |            |                      |       | Case wear ring : Vesconite                                |  |
| Baseplate, Coupling and Guard                              |            |                      |       | Impeller wear ring : -                                    |  |
| Baseplate : Welded Steel Fabrication                       |            |                      |       | Pump Shaft : Stainless Steel, AISI-303                    |  |
| Drip Pan : No drip pan                                     |            |                      |       | Sleeve : -                                                |  |
| Coupling : Rigid, Axial Split Coupling (aluminum) RASC3    |            |                      |       | Line Shaft : -                                            |  |
| Guard : OSHA Approved                                      |            |                      |       | Column : -                                                |  |
| Seal & Packing Construction                                |            |                      |       | Discharge Pipe : -                                        |  |
| Sealing Method : Single Seal, Type 21                      |            |                      |       | Discharge Elbow : -                                       |  |
| Seal Material : Buna Carbon Ceramic SS-Spring and Hardware |            |                      |       | Suction Elbow : -                                         |  |
| Packing Gland : -                                          |            |                      |       | Subplate : -                                              |  |
| Lantern Ring : -                                           |            |                      |       | Hardware : Steel, Grade 5                                 |  |
| Recirculation Lines : Nylon Tubing with Brass Fittings     |            |                      |       | O Rings : Buna N                                          |  |
| Weights (Approx.)                                          |            |                      |       | Pump Coatings : Standard Manufacturer's Paint             |  |
| Pump : 75.00 lb                                            |            |                      |       |                                                           |  |
| Baseplate : 0.00 lb                                        |            |                      |       |                                                           |  |
| Driver : 338.0 lb                                          |            |                      |       |                                                           |  |
| Estimated Shipping gross weight : 413.0 lb                 |            |                      |       |                                                           |  |



## General Arrangement

|                     |                              |                            |                              |
|---------------------|------------------------------|----------------------------|------------------------------|
| Project name        | : LCSE Project NC            | Tag Number                 | : Hurley Engineering         |
| Consulting engineer | :                            | Service                    | : HYDONIC                    |
| Customer            | : HURLEY ENGINEERING COMPANY | Model                      | : 20953-2P-20HP LCSE         |
| Customer ref. / PO  | :                            | Quantity of pumps          | : 1                          |
| Quote Number / ID   | : 1141840                    | Quoted By (Sales Office)   | : HURLEY ENGINEERING COMPANY |
| Date last saved     | : 03/29/2020 11:52 PM        | Quoted By (Sales Engineer) | : Steven Leingang            |

NOT FOR CONSTRUCTION, Unless certified and referenced on order

| Units  | Frame  | Suct(in) | Disch(in) | CP    | DD    | HA    | HB    | HD    | HE    | HF    | HG    | HH    | HJ    | HL    | HP    | X     | Y     | Z     | Weight ea |
|--------|--------|----------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------|
| inches | 284TSC | 2.5      | 2         | -1.00 | -1.00 | -1.00 | -1.00 | -1.00 | -1.00 | -1.00 | -1.00 | -1.00 | -1.00 | -1.00 | -1.00 | -1.00 | -1.00 | -1.00 | 413.0     |

| Conditions of Service |                    |               |            | Motor Data   |                     |  |  |  |  |
|-----------------------|--------------------|---------------|------------|--------------|---------------------|--|--|--|--|
| Flow: 273.6 USgpm     | Fluid: Cold Water  | HP: 25        | Encl: TEFC | Phase: 3     | Efficiency: Premium |  |  |  |  |
| TDH: 166.9 ft         | Temp.: 68.00 deg F | RPM: 3550 rpm | Hz: 60     | Voltage: 460 | S.F.: 1.15          |  |  |  |  |