

MATCH THE TEAL REFERENCE NUMBER TO THE SAME NUMBER ON THE SINGLE-PAGE FILLABLE QUESTIONNAIRE

01	PROJECT, FLUID & DUTY POINT TERMS	
REF	TERM OR QUALIFIER	DESCRIPTION AND/OR EXAMPLES
10	OEM	Original Equipment Manufacturer
12	Process/Project Description	Low concentration sodium chloride mix for waste water treatment Sulfer Springs chill water plant expansion MX packaged chiller cabinet prototype Deionized water pumps for chip production
14	Time Needed:	When delivery of the pumps will be required
15	Due Date:	When the quote or project pricing is required.
17	Liquid & Percentage:	Percentage of key determining fluid in solution (Sulfuric) (35%) (20%)
17	Manufacturer:	Pump manufacturer we are trying to replace. Basis of design.
18	Temp (F):	Design temp with possible variations. (70F) (110F) (35F)
18	Design:	Pump technology. Centrifugal, (end suction close coupled, end suction frame mounted, in-line, split case, etc.) Positive displacement, (metering pump, gear pump, vane pump, piston pump, etc.)
19	Flow (GPM)	Gallons Per Minute. Design with variations. (110 GPM) (135 GPM) (70 GPM)
19	Pump Size:	Other manufacturer's pump size or specified sizing. (2x1.5x6 etc)
20	TDH:	Total Dynamic Head. The total resistance the pump must overcome to move fluid from the source to the destination. It is measured in feet of liquid, not pressure (though they are related). The design point may be (70' TDH) with acceptable variants of (91' TDH) and (60' TDH). Note: the conversion from feet of head to PSI (Pounds per Square Inch): 100' of head divided by 2.31 gives 43.29 PSI. To convert 75 PSI to feet of head, 75 x 2.31 equals 173.25' of TDH.
20	Model Number:	The competitor's model number for the pump or basis of design. (RDP-030M-1171-250-1/2T)
02	HYDRAULIC & CURRENT INSTALLATION TERMS	
REF	TERM OR QUALIFIER	DESCRIPTION AND/OR EXAMPLES
21	Suction Head:	Suction head = the pressure (expressed as head) available at the pump inlet. This may be expressed as either TDH or PSI. (Total Dynamic Head or Pounds per Square Inch) Design (69' TDH) (80' TDH) (65' TDH)
21	Impeller Dia:	A key pump parameter that refers to the outside diameter of the rotating impeller inside a centrifugal pump. The impeller diameter directly affects: 1. Flow Rate: Larger diameter generally produces higher flow. 2. Head (Pressure): Larger diameter produces higher head (TDH); smaller diameter produces lower head. Impeller diameters are changed to hit specific performance criteria.
22	Suction Pressure:	The pressure at the eye of the impeller. The pressure at the eye of the impeller is especially critical in applications without positive suction - such as suction lift systems - compared to flooded suction conditions where the inlet pressure is naturally higher. See NPSH.
22	Material:	Competitor's materials of construction. Most importantly, what materials contact the pumped fluid.
23	Discharge Pressure:	The designed discharge pressure of the pump taking into consideration the compounded pressures of the inlet plus the pump's performance or boost over inlet pressure. This may be expressed as either TDH or PSI. (Total Dynamic Head or Pounds per Square Inch) Design (121' TDH) (140' TDH) (110' TDH)
23	Suction Port Diameter:	The inlet diameter of the pump typically expressed in inches.
24	NPSHa:	Net Positive Suction Head (available). A term referencing the amount of pressure being exerted on the pumped fluid at the inlet of the pump. This takes into account atmospheric pressure related to the elevation over sea level and the positive or negative pressures exerted in a flooded suction or suction lift application. NPSHa must be higher than the NPSHr (required) of the pump to prevent cavitation and the early failure of the pump. Design (35') (45') (29')

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02	HYDRAULIC & CURRENT INSTALLATION TERMS - CONTINUED	
REF	TERM OR QUALIFIER	DESCRIPTION AND/OR EXAMPLES
24	Discharge Port Dia:	The discharge diameter of the pump typically expressed in inches.
25	Specific Gravity:	A fluid's density relative to water. Water has a specific gravity of 1.0. This impacts pressure and motor horsepower and is critical for accurate pump sizing and performance. Water weighs 8.3 pounds per gallon whereas 95% sulfuric acid weighs 15.3 pounds per gallon. Design (1.0) (1.1) (1.0)
25	Motor HP:	(Horsepower) The selected motor size (includes safety margin). Motor HP is typically larger than calculated HP. $(\text{Flow (GPM)} \times \text{Head (FT)} \times \text{Specific Gravity}) / (3960 \times \text{pump efficiency})$. $(100 \text{ GPM} \times 100 \text{ FT} \times 1.0 \text{ sp gr}) / (3960 \times 70\% \text{ or } .70) = 3.61 \text{ HP}$. This requires a 5 HP motor.
03	FLUID PROPERTIES & SUCTION CONDITIONS	
REF	TERM OR QUALIFIER	DESCRIPTION AND/OR EXAMPLES
26	Viscosity	A key property of fluids that describes their resistance to flow. How "thick" or "sticky" a fluid is. High viscosity means fluid flows slowly (like honey). Low viscosity means fluid flows easily (like water). Dynamic viscosity is generally measured in centipoise (cP); water has a characteristic value of approximately 1 cP. Kinematic viscosity may be measured in centistokes (cSt). Higher viscosity means higher torque and more motor power. Some fluids, such as certain oils, may be highly viscous while having a specific gravity lower than water.
26	RPM	Revolutions Per Minute. How many full rotations the pump shaft makes in one minute.
27	Vapor Pressure	The pressure at which a liquid starts to boil (vaporize) at a given temperature. Vapor pressure charts are available for most chemicals or can be supplied by the manufacturer. When the local pressure drops below the vapor pressure, the liquid forms vapor bubbles which can collapse violently inside the pump causing cavitation. Cavitation is essentially liquid locally "boiling" inside the pump due to insufficient pressure.
27	Notes:	Any additional information about the job or application that might be useful in crossing over to a Magnevo Pump or gives particular insight into other aspects of the sale which may prove beneficial.
28	Specific Heat:	The energy needed to raise fluid temperature. High specific heat means fluid resists temperature change. This is critical for thermal management in pump systems. Heating and chill water systems.
29	pH	"Potential of Hydrogen." The measure of how acidic or basic a liquid is. It is a fundamental property in fluid handling, especially for pumps handling chemicals. Measure of acidity/basicity. Scale: 0-14 (acidic below 7, neutral at 7, basic above 7). Critical for pump materials, elastomers, and chemical compatibility.
30	Particles (% by volume)	Refers to the proportion of solid or suspended particles in a fluid, expressed as a percentage of the total fluid volume. This is very important in pumping because particles affect pump wear, efficiency, and material selection. Standard centrifugal pumps are best for clean liquids with minor suspended solids. <0.1%
31	Particle Size:	The physical dimension of solid particles suspended in a fluid, usually expressed in microns (µm) or inches/mm. It is a critical factor for pump selection, wear considerations, and system design. Generally in an enclosed impeller design, we attempt to limit particles to 5-10% of the max spherical capability of the impeller.
32	Liquid Level: (FT)	The height of the fluid in a tank, reservoir, or sump relative to the pump suction. It is a key factor in ensuring proper pump operation, avoiding cavitation, and maintaining system efficiency. Flooded Suction - fluid level is above the pump inlet: positive suction head. Suction Lift - fluid level is below the pump inlet: negative suction head. Higher liquid level means more pressure at pump suction and reduces cavitation risk. Lower liquid level means insufficient suction pressure and cavitation.
33	Suction Lift: (FT)	This occurs when the pump suction is above the liquid surface and must pull liquid up against gravity. This creates a negative suction head, unlike flooded suction where liquid naturally flows into the pump. The lower the suction pressure, the closer it gets to the vapor pressure of the fluid leading to cavitation. Maximum suction lift in centrifugal pumps ranges from 15' to 25'.