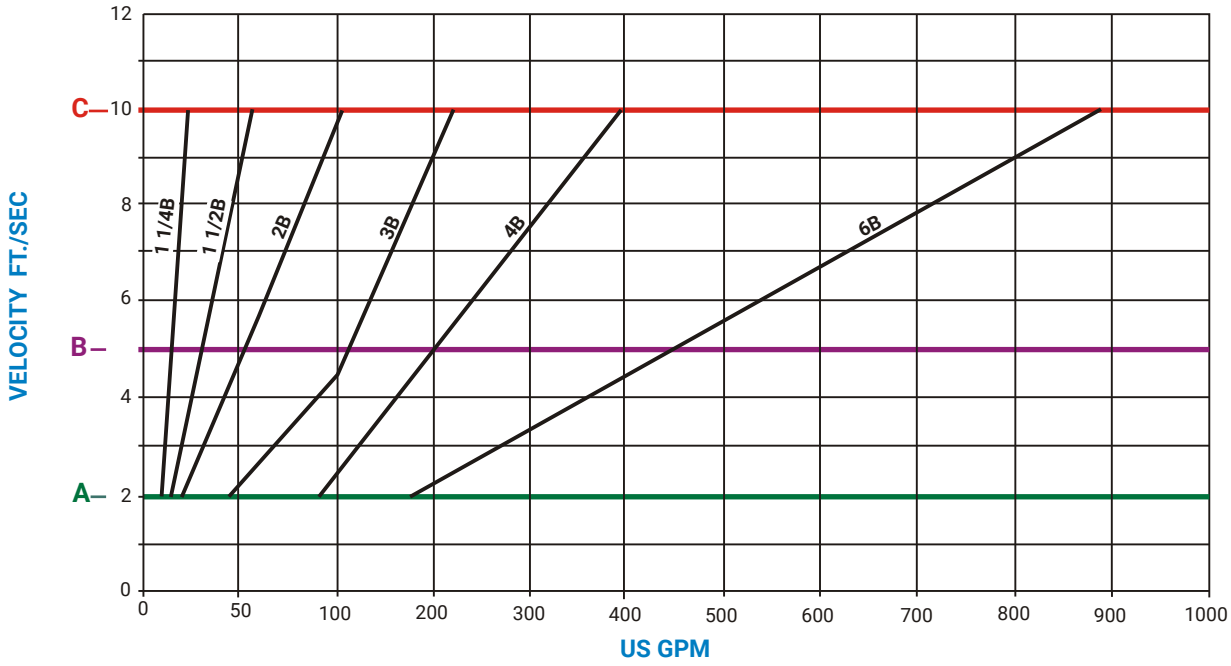
# ENGINEERING DATA

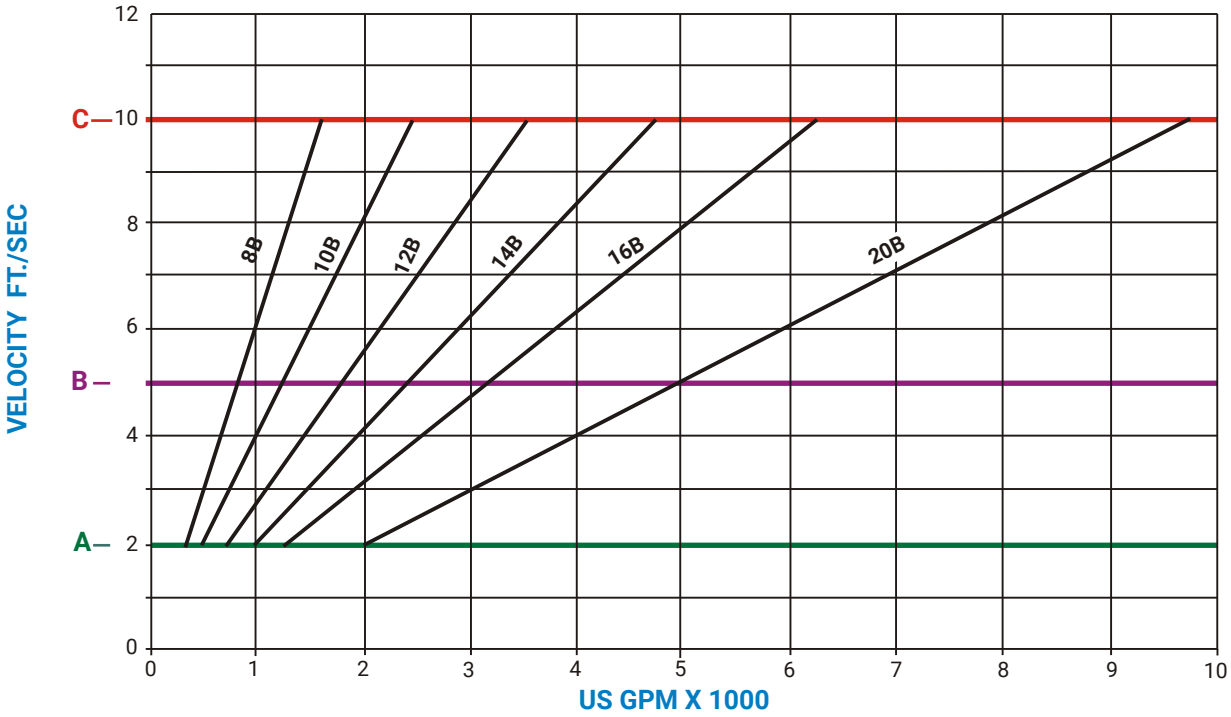
# DISCHARGE BORE VS. CAPACITY - DESIGN STANDARDS

TSURUMI PUMP®

## PUMP DISCHARGE BORE SIZE 1 1/4" THRU 6"




## PUMP DISCHARGE BORE SIZE 8" THRU 20"




**A = Minimum velocity required to transport sand.**

**B = Velocity required to scour grease.**

**C = Maximum velocity to prevent erosion by scouring.**

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## Explanations For Tsurumi Discharge Bore Standards :

### ABRASION RATIO BASED ON DISCHARGE VELOCITY - PERFORMANCE @ BEP*

| TSURUMI DISCHARGE GPM | TSURUMI DISCHARGE SIZE/INCH | TSURUMI DISCHARGE VEL/FPS |
|---|---|---|
| 1200 | 8 | 7.7 |

| COMPETITOR DISCHARGE GPM | COMPETITOR DISCHARGE SIZE/INCH | COMPETITOR DISCHARGE VEL/FPS |
|---|---|---|
| 1200 | 4 | 30.6 |

**ABRASION RATIO**

**Tsurumi Vs. Competitor:** $(VC/VT)^{1.5} = 8.00$

**The Tsurumi unit will wear 8 times longer!**

***BEP = Best Efficiency Point**

### DISCHARGE BORE - HEAD LOSS

| | SYSTEM GPM | PUMP DISCHARGE SIZE | PUMP DISCHARGE VELOCITY FPS. | SYSTEM PIPE SIZE | SYSTEM VELOCITY | INCREASER LOSS FT./ HD | HP REQUIRED @ 60% EFF |
|---|---|---|---|---|---|---|---|
| COMPETITOR | 120 | 2 | 14.34 | 3 | 6.51 | 1.87 | 0.09 |
| TSURUMI | 120 | 3 | 6.51 | 3 | 6.51 | 0 | 0.00 |
| COMPETITOR | 240 | 3 | 10.42 | 4 | 6.05 | 1 | 0.06 |
| TSURUMI | 240 | 4 | 6.05 | 4 | 6.05 | 0.00 | 0.00 |
| COMPETITOR | 360 | 3 | 15.62 | 4 | 9.07 | 1.32 | 0.20 |
| TSURUMI | 360 | 4 | 9.07 | 4 | 9.07 | 0.00 | 0.00 |
| COMPETITOR | 700 | 4 | 17.64 | 6 | 7.77 | 2.55 | 0.75 |
| TSURUMI | 700 | 6 | 7.77 | 6 | 7.77 | 0.00 | 0.00 |
| COMPETITOR | 1200 | 4 | 30.64 | 8 | 7.70 | 13.67 | 6.90 |
| TSURUMI | 1200 | 8 | 7.70 | 8 | 7.70 | 0.00 | 0.00 |
| COMPETITOR | 3000 | 8 | 19.24 | 12 | 8.60 | 2.93 | 3.70 |
| TSURUMI | 3000 | 12 | 8.60 | 12 | 8.60 | 0.00 | 0.00 |

**Tsurumi increases overall system efficiency!**

Example:

Sewage or Wastewater System 1200 GPM @ 40’ TDH using competitors 4” pump requires 25 Hp.

Tsurumi would supply a 8” pump, the increaser is eliminated and TDH is now 26.33’. Horsepower requirement is now 15 Hp.

**System efficiency increased by 40%!**