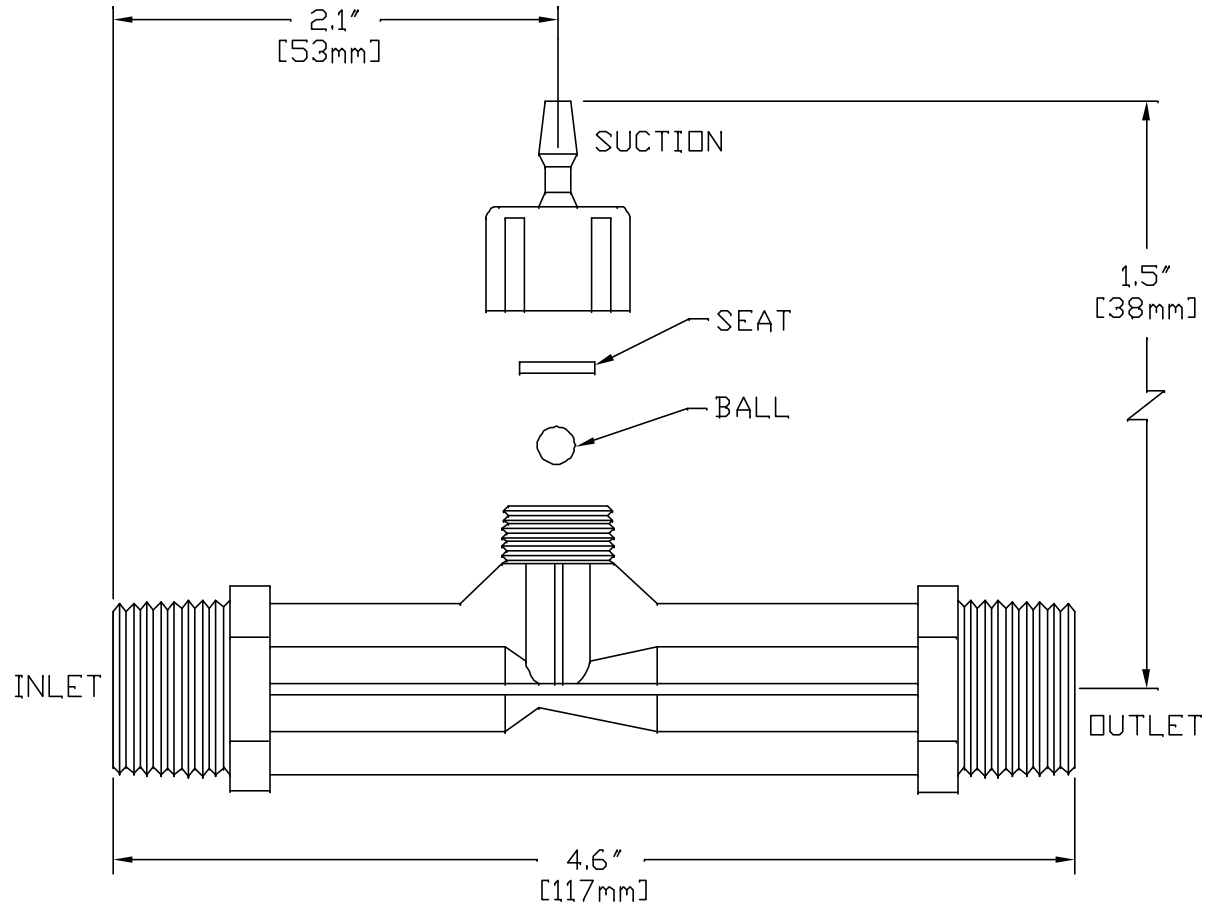
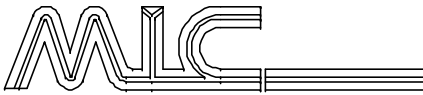


NOTES:

1. INLET & OUTLET: 1/2" MNPT
2. SUCTION PORT: 3/16" (ID) TUBING BARB SHANK
3. MATERIAL OF CONSTRUCTION: GLASS REINFORCED POLYPROPYLENE OR PVDF (KYNAR)
4. MAXIMUM TEMPERATURE RATING:
  - POLYPROPYLENE: 150 F. (65.5 C.)
  - PVDF: 200 F. (93.3 C.)
5. MAXIMUM PRESSURE RATING AT 68 F. (20 C.)
  - POLYPROPYLENE: 150 PSIG (10.3 BAR)
  - PVDF: 200 PSIG (13.8 BAR)



Covered By United States Patent No. 5,863,128  
International Patents Pending

|   |                     |          |                    |                 |      |
|---|---------------------|----------|--------------------|-----------------|------|
| <br>mazzei injector corporation<br>Bakersfield, California, USA | DATE                | 12-14-00 | TITLE              |                 |      |
|   | DRAWN BY            | JRM      | MODEL 287 INJECTOR |                 |      |
|   | REVIEWED BY         | RST      | NUMBER             | JRM-5           | SIZE |
|   | SCALE               | NONE     |                    |                 | REV. |
|   | MATERIAL: SEE NOTES |          |                    | PAGE (1) OF (1) |      |

## Mazzei Model 287 Injector

| English               |                        |                   |                      |                   |                    |
|-----------------------|------------------------|-------------------|----------------------|-------------------|--------------------|
| Operating Pressure    |                        | Model 287         |                      | Model 287         |                    |
| Injector Inlet (psig) | Injector Outlet (psig) | Motive Flow (gph) | Liquid Suction (gph) | Motive Flow (gph) | Air Suction (scfh) |
| 5                     | 0                      | 19.7              | 5.2                  | 17.5              | <1                 |
|                       | 1                      | 18.4              | 2.6                  |                   |                    |
|                       | 2                      | 17.4              | 1.8                  |                   |                    |
|                       | 3                      | 15.2              | 1.2                  |                   |                    |
|                       | 4                      |                   |                      |                   |                    |
| psi @ 0 Vacuum        |                        | 14.8              | (3.5)                |                   |                    |
| 10                    | 0                      | 21.5              | 6.2                  | 18.8              | 1.0                |
|                       | 2                      | 19.9              | 4.8                  | 18.8              | <1                 |
|                       | 5                      | 19.1              | 1.9                  |                   |                    |
|                       | 7                      | 18.3              | 0.8                  |                   |                    |
|                       | 8                      |                   |                      |                   |                    |
| psi @ 0 Vacuum        |                        | 18.0              | (7.7)                |                   |                    |
| 15                    | 0                      | 27.0              | 6.8                  | 24.8              | 2.0                |
|                       | 5                      | 25.6              | 4.1                  | 24.8              | <1                 |
|                       | 7                      | 25.2              | 2.9                  |                   |                    |
|                       | 10                     | 24.8              | 1.3                  |                   |                    |
|                       | 12                     |                   |                      |                   |                    |
| psi @ 0 Vacuum        |                        | 24.5              | (11.5)               |                   |                    |
| 20                    | 0                      | 32.1              | 7.0                  | 30.2              | 3.0                |
|                       | 5                      | 31.7              | 6.1                  | 30.2              | <1                 |
|                       | 10                     | 30.5              | 3.4                  |                   |                    |
|                       | 12                     | 30.0              | 1.9                  |                   |                    |
|                       | 15                     | 29.4              | 0.5                  |                   |                    |
| psi @ 0 Vacuum        |                        | 29.0              | (16.0)               |                   |                    |
| 25                    | 0                      | 37.1              | 7.8                  | 34.2              | 3.5                |
|                       | 5                      | 36.1              | 6.9                  | 34.2              | <1                 |
|                       | 10                     | 35.0              | 4.4                  |                   |                    |
|                       | 15                     | 34.1              | 2.3                  |                   |                    |
|                       | 20                     |                   |                      |                   |                    |
| psi @ 0 Vacuum        |                        | 33.7              | (19.5)               |                   |                    |
| 30                    | 0                      | 40.9              | 8.0                  | 38.0              | 3.5                |
|                       | 5                      | 40.7              | 7.9                  | 38.0              | <1                 |
|                       | 10                     | 39.6              | 5.6                  |                   |                    |
|                       | 15                     | 38.9              | 3.6                  |                   |                    |
|                       | 20                     | 38.6              | 1.7                  |                   |                    |
| 25                    |                        |                   |                      |                   |                    |
| psi @ 0 Vacuum        |                        | 38.1              | (24.5)               |                   |                    |
| 35                    | 0                      | 44.0              | 8.1                  | 41.5              | 4.0                |
|                       | 5                      | 44.0              | 8.0                  | 41.5              | <1                 |
|                       | 10                     | 43.1              | 6.8                  |                   |                    |
|                       | 15                     | 42.4              | 5.0                  |                   |                    |
|                       | 20                     | 41.8              | 3.0                  |                   |                    |
| 25                    | 41.4                   | 1.1               |                      |                   |                    |
| psi @ 0 Vacuum        |                        | 41.0              | (27.0)               |                   |                    |
| 40                    | 0                      | 46.7              | 8.1                  | 44.5              | 4.5                |
|                       | 5                      | 46.7              | 8.1                  | 44.5              | 1.0                |
|                       | 10                     | 46.3              | 7.4                  | 44.3              | <1                 |
|                       | 15                     | 45.6              | 6.3                  |                   |                    |
|                       | 20                     | 44.8              | 4.3                  |                   |                    |
| 25                    | 44.6                   | 2.7               |                      |                   |                    |
| 30                    | 44.1                   | 0.3               |                      |                   |                    |
| psi @ 0 Vacuum        |                        | 43.8              | (31.0)               |                   |                    |
| 45                    | 0                      | 49.0              | 8.1                  | 47.2              | 4.5                |
|                       | 5                      | 49.0              | 8.1                  | 47.2              | 2.0                |
|                       | 10                     | 49.0              | 8.1                  | 47.2              | <1                 |
|                       | 15                     | 48.6              | 6.9                  |                   |                    |
|                       | 20                     | 48.1              | 5.5                  |                   |                    |
| 25                    | 47.6                   | 4.0               |                      |                   |                    |
| 30                    | 47.2                   | 2.4               |                      |                   |                    |
| 35                    |                        |                   |                      |                   |                    |
| psi @ 0 Vacuum        |                        | 46.8              | (35.0)               |                   |                    |
| 50                    | 0                      | 51.5              | 8.3                  | 49.9              | 4.5                |
|                       | 10                     | 51.5              | 8.3                  | 49.9              | <1                 |
|                       | 15                     | 51.5              | 8.0                  |                   |                    |
|                       | 20                     | 51.3              | 5.9                  |                   |                    |
|                       | 25                     | 50.8              | 4.5                  |                   |                    |
| 30                    | 49.9                   | 3.0               |                      |                   |                    |
| 35                    | 49.5                   | 1.2               |                      |                   |                    |
| 40                    |                        |                   |                      |                   |                    |
| psi @ 0 Vacuum        |                        | 48.9              | (39.0)               |                   |                    |

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| English               |                        |                   |                      |                   |                    |
|-----------------------|------------------------|-------------------|----------------------|-------------------|--------------------|
| Operating Pressure    |                        | Model 287         |                      | Model 287         |                    |
| Injector Inlet (psig) | Injector Outlet (psig) | Motive Flow (gph) | Liquid Suction (gph) | Motive Flow (gph) | Air Suction (scfh) |
| 60                    | 0                      | 56.1              | 8.3                  | 54.6              | 6.0                |
|                       | 10                     | 56.0              | 7.8                  | 54.6              | 1.0                |
|                       | 20                     | 56.0              | 7.8                  | 54.6              | <1                 |
|                       | 25                     | 55.5              | 7.3                  |                   |                    |
|                       | 30                     | 55.1              | 5.7                  |                   |                    |
|                       | 35                     | 54.8              | 4.1                  |                   |                    |
|                       | 40                     | 54.5              | 2.7                  |                   |                    |
| 45                    | 54.2                   | 0.7               |                      |                   |                    |
| psi @ 0 Vacuum        |                        | 53.9              | (47)                 |                   |                    |
| 70                    | 0                      | 60.3              | 8.3                  | 58.7              | 7.0                |
|                       | 10                     | 60.3              | 8.3                  | 58.7              | 1.5                |
|                       | 20                     | 60.3              | 8.3                  | 58.7              | <1                 |
|                       | 30                     | 60.1              | 7.4                  |                   |                    |
|                       | 35                     | 59.6              | 6.1                  |                   |                    |
|                       | 40                     | 59.2              | 4.7                  |                   |                    |
|                       | 45                     | 58.9              | 3.5                  |                   |                    |
| 50                    | 58.7                   | 1.7               |                      |                   |                    |
| 55                    |                        |                   |                      |                   |                    |
| psi @ 0 Vacuum        |                        | 58.4              | (55)                 |                   |                    |
| 80                    | 0                      | 64.2              | 8.3                  | 62.8              | 7.0                |
|                       | 20                     | 64.2              | 8.3                  | 62.8              | <1                 |
|                       | 30                     | 64.1              | 8.1                  |                   |                    |
|                       | 35                     | 63.9              | 7.5                  |                   |                    |
|                       | 40                     | 63.5              | 6.4                  |                   |                    |
|                       | 45                     | 63.3              | 5.2                  |                   |                    |
|                       | 50                     | 63.0              | 4.1                  |                   |                    |
| 55                    | 62.6                   | 2.6               |                      |                   |                    |
| 60                    | 62.3                   | 0.9               |                      |                   |                    |
| 65                    |                        |                   |                      |                   |                    |
| psi @ 0 Vacuum        |                        | 62.1              | (63)                 |                   |                    |
| 90                    | 0                      | 68.4              | 8.3                  | 66.4              | 7.0                |
|                       | 20                     | 68.4              | 8.3                  | 66.4              | 1.0                |
|                       | 30                     | 68.4              | 8.3                  | 66.4              | <1                 |
|                       | 40                     | 68.0              | 7.9                  |                   |                    |
|                       | 45                     | 67.7              | 6.9                  |                   |                    |
|                       | 50                     | 67.5              | 5.7                  |                   |                    |
|                       | 55                     | 67.3              | 4.7                  |                   |                    |
| 60                    | 67.1                   | 3.5               |                      |                   |                    |
| 65                    | 66.8                   | 2.0               |                      |                   |                    |
| 70                    | 66.6                   | 0.2               |                      |                   |                    |
| 75                    |                        |                   |                      |                   |                    |
| psi @ 0 Vacuum        |                        | 66.5              | (71)                 |                   |                    |
| 100                   | 0                      | 72.0              | 7.7                  | 70.4              | 7.0                |
|                       | 20                     | 72.0              | 7.7                  | 70.4              | 1.0                |
|                       | 40                     | 71.7              | 7.4                  | 70.1              | <1                 |
|                       | 50                     | 71.4              | 7.2                  |                   |                    |
|                       | 60                     | 70.9              | 5.2                  |                   |                    |
|                       | 65                     | 70.7              | 4.0                  |                   |                    |
|                       | 70                     | 70.5              | 3.0                  |                   |                    |
| 75                    | 70.3                   | 1.3               |                      |                   |                    |
| 80                    |                        |                   |                      |                   |                    |
| psi @ 0 Vacuum        |                        | 70.1              | (79)                 |                   |                    |
| 120                   | 0                      | 79.1              | 6.4                  | 76.8              | 7.0                |
|                       | 40                     | 79.1              | 6.4                  | 76.8              | <1                 |
|                       | 60                     | 78.9              | 5.8                  |                   |                    |
|                       | 80                     | 77.7              | 3.7                  |                   |                    |
|                       | 90                     | 77.3              | 1.5                  |                   |                    |
|                       | 95                     |                   |                      |                   |                    |
|                       | 100                    |                   |                      |                   |                    |
| psi @ 0 Vacuum        |                        | 77.1              | (95)                 |                   |                    |
| 140                   | 0                      | 85.0              | 6.4                  | 83.2              | 7.5                |
|                       | 40                     | 85.0              | 6.4                  | 83.2              | <1                 |
|                       | 60                     | 85.0              | 6.4                  |                   |                    |
|                       | 70                     | 84.8              | 6.1                  |                   |                    |
|                       | 80                     | 84.5              | 5.5                  |                   |                    |
|                       | 90                     | 84.1              | 4.5                  |                   |                    |
|                       | 100                    | 83.6              | 2.9                  |                   |                    |
| 110                   | 82.9                   | 0.6               |                      |                   |                    |
| 120                   |                        |                   |                      |                   |                    |
| psi @ 0 Vacuum        |                        | 82.8              | (112)                |                   |                    |

## Mazzei Model 287 Injector

| Operating Pressure      |                          | Metric            |                      |                   |                   |
|-------------------------|--------------------------|-------------------|----------------------|-------------------|-------------------|
| Injector Inlet (Kg/cm2) | Injector Outlet (Kg/cm2) | Model 287         |                      | Model 287         |                   |
|                         |                          | Motive Flow (l/m) | Liquid Suction (l/m) | Motive Flow (l/m) | Air Suction (l/m) |
| 0.35                    | 0.00                     | 1.24              | 0.33                 | 1.10              | <0.25             |
|                         | 0.07                     | 1.16              | 0.16                 |                   |                   |
|                         | 0.14                     | 1.10              | 0.11                 |                   |                   |
|                         | 0.21                     | 0.96              | 0.08                 |                   |                   |
|                         | 0.28                     |                   |                      |                   |                   |
|                         | Kg/cm2@0 Vac             | 0.93              | (0.25)               |                   |                   |
| 0.70                    | 0.00                     | 1.36              | 0.39                 | 1.19              | 0.5               |
|                         | 0.14                     | 1.26              | 0.30                 | 1.19              | <0.25             |
|                         | 0.35                     | 1.20              | 0.12                 |                   |                   |
|                         | 0.49                     | 1.15              | 0.05                 |                   |                   |
|                         | 0.56                     |                   |                      |                   |                   |
|                         | Kg/cm2@0 Vac             | 1.14              | (0.54)               |                   |                   |
| 1.05                    | 0.00                     | 1.70              | 0.43                 | 1.56              | 0.9               |
|                         | 0.35                     | 1.61              | 0.26                 | 1.56              | <0.25             |
|                         | 0.49                     | 1.59              | 0.18                 |                   |                   |
|                         | 0.70                     | 1.56              | 0.08                 |                   |                   |
|                         | 0.84                     |                   |                      |                   |                   |
|                         | Kg/cm2@0 Vac             | 1.55              | (0.81)               |                   |                   |
| 1.41                    | 0.00                     | 2.02              | 0.44                 | 1.91              | 1.4               |
|                         | 0.35                     | 2.00              | 0.38                 | 1.91              | <0.25             |
|                         | 0.70                     | 1.92              | 0.21                 |                   |                   |
|                         | 0.84                     | 1.89              | 0.12                 |                   |                   |
|                         | 1.05                     | 1.85              | <0.1                 |                   |                   |
|                         | Kg/cm2@0 Vac             | 1.83              | (1.12)               |                   |                   |
| 1.76                    | 0.00                     | 2.34              | 0.49                 | 2.16              | 1.7               |
|                         | 0.35                     | 2.28              | 0.44                 | 2.16              | <0.25             |
|                         | 0.70                     | 2.21              | 0.28                 |                   |                   |
|                         | 1.05                     | 2.15              | 0.15                 |                   |                   |
|                         | 1.41                     |                   |                      |                   |                   |
|                         | Kg/cm2@0 Vac             | 2.13              | (1.37)               |                   |                   |
| 2.11                    | 0.00                     | 2.58              | 0.50                 | 2.40              | 1.7               |
|                         | 0.35                     | 2.57              | 0.50                 | 2.40              | <0.25             |
|                         | 0.70                     | 2.50              | 0.35                 |                   |                   |
|                         | 1.05                     | 2.45              | 0.23                 |                   |                   |
|                         | 1.41                     | 2.43              | 0.11                 |                   |                   |
|                         | Kg/cm2@0 Vac             | 2.40              | (1.72)               |                   |                   |
| 2.46                    | 0.00                     | 2.78              | 0.51                 | 2.62              | 1.9               |
|                         | 0.35                     | 2.78              | 0.50                 | 2.62              | <0.25             |
|                         | 0.70                     | 2.72              | 0.43                 |                   |                   |
|                         | 1.05                     | 2.67              | 0.32                 |                   |                   |
|                         | 1.41                     | 2.64              | 0.19                 |                   |                   |
|                         | Kg/cm2@0 Vac             | 2.59              | (1.90)               |                   |                   |
| 2.81                    | 0.00                     | 2.95              | 0.51                 | 2.81              | 2.1               |
|                         | 0.35                     | 2.95              | 0.51                 | 2.81              | 0.5               |
|                         | 0.70                     | 2.92              | 0.47                 | 2.79              | <0.25             |
|                         | 1.05                     | 2.88              | 0.40                 |                   |                   |
|                         | 1.41                     | 2.83              | 0.27                 |                   |                   |
|                         | Kg/cm2@0 Vac             | 2.76              | (2.18)               |                   |                   |
| 3.16                    | 0.00                     | 3.09              | 0.51                 | 2.98              | 2.1               |
|                         | 0.35                     | 3.09              | 0.51                 | 2.98              | 0.9               |
|                         | 0.70                     | 3.09              | 0.51                 | 2.98              | <0.25             |
|                         | 1.05                     | 3.07              | 0.44                 |                   |                   |
|                         | 1.41                     | 3.03              | 0.35                 |                   |                   |
|                         | Kg/cm2@0 Vac             | 2.95              | (2.46)               |                   |                   |
| 3.52                    | 0.00                     | 3.25              | 0.52                 | 3.15              | 2.1               |
|                         | 0.70                     | 3.25              | 0.52                 | 3.15              | <0.25             |
|                         | 1.05                     | 3.25              | 0.50                 |                   |                   |
|                         | 1.41                     | 3.24              | 0.37                 |                   |                   |
|                         | 1.76                     | 3.20              | 0.28                 |                   |                   |
|                         | Kg/cm2@0 Vac             | 3.08              | (2.74)               |                   |                   |

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| Operating Pressure      |                          | Metric            |                      |                   |                   |
|-------------------------|--------------------------|-------------------|----------------------|-------------------|-------------------|
| Injector Inlet (Kg/cm2) | Injector Outlet (Kg/cm2) | Model 287         |                      | Model 287         |                   |
|                         |                          | Motive Flow (l/m) | Liquid Suction (l/m) | Motive Flow (l/m) | Air Suction (l/m) |
| 4.22                    | 0.00                     | 3.54              | 0.52                 | 3.44              | 2.8               |
|                         | 0.70                     | 3.53              | 0.49                 | 3.44              | 0.5               |
|                         | 1.41                     | 3.53              | 0.49                 | 3.44              | <0.25             |
|                         | 1.76                     | 3.50              | 0.46                 |                   |                   |
|                         | 2.11                     | 3.48              | 0.36                 |                   |                   |
|                         | 2.46                     | 3.46              | 0.26                 |                   |                   |
|                         | 2.81                     | 3.44              | 0.17                 |                   |                   |
|                         | 3.16                     | 3.42              | <0.1                 |                   |                   |
|                         | Kg/cm2@0 Vac             | 3.40              | (3.30)               |                   |                   |
| 4.92                    | 0.00                     | 3.80              | 0.52                 | 3.70              | 3.3               |
|                         | 0.70                     | 3.80              | 0.52                 | 3.70              | 0.7               |
|                         | 1.41                     | 3.80              | 0.52                 | 3.70              | <0.25             |
|                         | 2.11                     | 3.79              | 0.47                 |                   |                   |
|                         | 2.46                     | 3.76              | 0.38                 |                   |                   |
|                         | 2.81                     | 3.73              | 0.30                 |                   |                   |
|                         | 3.16                     | 3.72              | 0.22                 |                   |                   |
|                         | 3.52                     | 3.70              | 0.11                 |                   |                   |
|                         | Kg/cm2@0 Vac             | 3.68              | (3.87)               |                   |                   |
| 5.62                    | 0.00                     | 4.05              | 0.52                 | 3.96              | 3.3               |
|                         | 1.41                     | 4.05              | 0.52                 | 3.96              | <0.25             |
|                         | 2.11                     | 4.04              | 0.51                 |                   |                   |
|                         | 2.46                     | 4.03              | 0.47                 |                   |                   |
|                         | 2.81                     | 4.01              | 0.40                 |                   |                   |
|                         | 3.16                     | 3.99              | 0.33                 |                   |                   |
|                         | 3.52                     | 3.97              | 0.26                 |                   |                   |
|                         | 3.87                     | 3.95              | 0.16                 |                   |                   |
|                         | Kg/cm2@0 Vac             | 3.92              | (4.43)               |                   |                   |
| 6.33                    | 0.00                     | 4.31              | 0.52                 | 4.19              | 3.3               |
|                         | 1.41                     | 4.31              | 0.52                 | 4.19              | 0.5               |
|                         | 2.11                     | 4.31              | 0.52                 | 4.19              | <0.25             |
|                         | 2.81                     | 4.29              | 0.50                 |                   |                   |
|                         | 3.16                     | 4.27              | 0.44                 |                   |                   |
|                         | 3.52                     | 4.26              | 0.36                 |                   |                   |
|                         | 3.87                     | 4.25              | 0.30                 |                   |                   |
|                         | 4.22                     | 4.23              | 0.22                 |                   |                   |
|                         | Kg/cm2@0 Vac             | 4.20              | (4.99)               |                   |                   |
| 7.03                    | 0.00                     | 4.54              | 0.49                 | 4.44              | 3.3               |
|                         | 1.41                     | 4.54              | 0.49                 | 4.44              | 0.5               |
|                         | 2.81                     | 4.52              | 0.47                 | 4.42              | <0.25             |
|                         | 3.52                     | 4.50              | 0.45                 |                   |                   |
|                         | 4.22                     | 4.47              | 0.33                 |                   |                   |
|                         | 4.57                     | 4.46              | 0.25                 |                   |                   |
|                         | 4.92                     | 4.45              | 0.19                 |                   |                   |
|                         | 5.27                     | 4.43              | 0.08                 |                   |                   |
|                         | Kg/cm2@0 Vac             | 4.42              | (5.55)               |                   |                   |
| 8.44                    | 0.00                     | 4.99              | 0.40                 | 4.84              | 3.3               |
|                         | 2.81                     | 4.99              | 0.40                 | 4.84              | <0.25             |
|                         | 4.22                     | 4.98              | 0.37                 |                   |                   |
|                         | 5.62                     | 4.90              | 0.23                 |                   |                   |
|                         | 6.33                     | 4.88              | 0.09                 |                   |                   |
|                         | 6.68                     |                   |                      |                   |                   |
|                         | 7.03                     |                   |                      |                   |                   |
|                         |                          | Kg/cm2@0 Vac      | 4.86                 | (6.68)            |                   |
| 9.84                    | 0.00                     | 5.36              | 0.40                 | 5.25              | 3.5               |
|                         | 2.81                     | 5.36              | 0.40                 | 5.25              | <0.25             |
|                         | 4.22                     | 5.36              | 0.40                 |                   |                   |
|                         | 4.92                     | 5.35              | 0.38                 |                   |                   |
|                         | 5.62                     | 5.33              | 0.35                 |                   |                   |
|                         | 6.33                     | 5.31              | 0.28                 |                   |                   |
|                         | 7.03                     | 5.27              | 0.18                 |                   |                   |
|                         | 7.73                     | 5.23              | <0.1                 |                   |                   |
|                         | Kg/cm2@0 Vac             | 5.22              | (7.07)               |                   |                   |