19 Series Hydrostatic Vehicle Transmissions

OUT OF PRINT
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Features, Benefits and Specifications

System Components
The split-system configuration of Vickers 19 Series transmissions provides optimum application and installation freedom for the vehicle designer. The variable displacement, axial piston transmission pump is available as a single unit, or as a double unit designed for use with two independent motors.

The single pump is furnished with an integral supercharge pump, or with a tandem-mounted single or double vane pump which provides high pressure for the vehicle hydraulic system and also supercharges the hydrostatic transmission. The double transmission pump has a tandem-mounted single or double vane pump for these functions.

The piston pump’s control shaft position determines the rate and direction of flow to the axial piston motor (fixed or variable displacement), which in turn determines the speed and direction of the motor’s output shaft. Displacement of the variable motor is lever or pilot pressure controlled; reducing displacement proportionally increases speed and reduces torque. Minimum stroke of the variable motor is preset by Vickers to fit each application.

Closed-loop replenishing check valves and a supercharge relief valve are built into the transmission pumps. Integral cross-port high pressure relief valves are also included when required. The only components needed to complete the transmission system are a reservoir, filter, heat exchanger and connecting lines. If an auxiliary vane pump is used, depending on its application, an external pressure relief valve may be required for pump protection.

Auxiliary Pump Options
Auxiliary vane pumps (single or double) can be provided with a cover containing either a flow control or priority valve, and a relief valve to protect the pump. From total vane pump delivery, the priority or flow control valve directs a controlled, essentially constant volume of fluid to the auxiliary circuit. From the auxiliary circuit, this flow goes to the supercharge circuit. Delivery in excess of the controlled flow goes directly to the supercharge circuit.

When the relief valve in the priority valve cover opens, controlled flow is diverted to tank. Excess delivery continues directly to the supercharge circuit. When the relief valve in the flow control cover opens, all pump delivery goes to the supercharge circuit. Controlled flow rates and relief valve settings are shown in model codes on following pages.

The single auxiliary pump on the TA1919 double transmission pump is available with a flow divider valve in its cover for auxiliary circuits employing single acting cylinders. The valve directs a fixed percentage of pump delivery to the auxiliary circuit. From the auxiliary circuit, this flow goes to the supercharge circuit. The balance of vane pump delivery is continuously directed to the supercharge circuit.

Circuit diagrams of the various main and auxiliary pump combinations are shown on following pages.

Low-Cost, Simplified Installation
The packaging of multiple pumps in a single assembly requiring only one mounting and drive point, e.g. TA19V10 and TA1919V10, greatly reduces the cost of the total vehicle hydraulic installation. In dual path vehicles, for example, the TA1919 double transmission pump eliminates the need for a splitter gear box to distribute engine power to the two transmission pumps. To further facilitate installation, pump and motor controls can be specified for either side of the unit, and auxiliary pump ports can be located in various positions.

Convenient, Easy Control
The vehicle operator can use a single lever to control speed, dynamic braking and reversing. There are no gears to shift, and speed is directly proportional to lever position. Slowing or stopping is not required to change speed or reverse vehicle direction.

Optimum Torque/Speed Ratios
Infinitely variable output speed in forward and reverse, with smooth, stepless acceleration and deceleration throughout the speed range, provides optimum torque/speed ratios. Selected speeds hold essentially constant regardless of vehicle attitude or load, and vehicle traction is maximized on any terrain.

Integral Overload Protection
When required, main relief valves can be included in the transmission pump to limit loading of mechanical and hydraulic members in the power train. Engine overloads can be prevented by controlling pump displacement.

Split-System Configuration
Vickers pumps and motors can be interconnected to form a complete variable speed, reversible hydrostatic transmission, or they can be used separately for a variety of applications.

Specifications
Theo. Max. Displacement
Pumps, MFE19, MVE19 Motors .............. 2.5 cu. in./rev. 
MFE15 Motor ........................................ 2.0 cu. in./rev. 
Max. Rated Input Speed ...................... 3600 rpm
Max. Rated Output Speed
Fixed Motor .................................. 3600 rpm
Variable Motor – full displacement ........ 3600 rpm
– partial displacement ............. 4000 rpm
Max. Intermittent Pressure ................. 5000 psi
Max. Continuous Pressure ................. 3000 psi
Rated Horsepower ..................... 22.5 hp per 1000 rpm
Fluid ................................ Per Fluid Recommendation Sheet M-2950-S
Filtration ........................................ 10 Micron Nominal, 25 Micron Absolute, or Better

*Less than 3600 rpm for units incorporating auxiliary pump. Maximum input speed is limited to maximum vane pump speed shown on installation drawings on following pages.
TA19 Pump

Model Code

TA19 R – 2 A R – 21

1 Transmission Pump
Rated at 72 l/min (19 USgpm) at 1800 rpm

2 Shaft Rotation Viewed From Shaft End
R – Right hand (clockwise)
L – Left hand (counterclockwise)

3 Input Shaft
2 – SAE B-B splined

4 Control Pintle Location Viewed From Shaft End With Drain Port Up
A – Right hand side
B – Left hand side

5 Main Relief Valve
R – Relief valve
O – No relief valve

Dimensions & Circuit Diagram

mm (inch)

Supercharge Inlet “T”
1.3125-12 UN-2B Thd.
SAE “O” Ring Boss Connection
1.000 O. D. Tubing

Port “A”
1.3125-12 UN-2B Thd.
SAE “O” Ring Boss Connection
1.000 O.D. Tubing

Port “B”
1.3125-12 UN-2B Thd.
SAE “O” Ring Boss Connection
1.000 O.D. Tubing

Control Pintle Pressure Rotation Position Port
R.H. 1 A
R.H. 2 B
L.H. 1 B
L.H. 2 A

Input Shaft
2 – SAE B-B splined

Main Relief Valve
R – Relief valve
O – No relief valve

SAE B-B Splined Shaft

External Involute Spline

*Modified ANSI B92.1 – 1970

23.9 (0.94) Pitch Dia.
20.6 (0.81) Base Dia.

24.9 (0.98) Max.
24.6 (0.97) Min.

15 Teeth 16/32 Pitch 30° Pr. Angle

Major Dia. Form Dia. Minor Dia.
22.1 (0.87) 21.3 (0.84) Max.
22.1 (0.87) 21.3 (0.84) Min.

Construction Plug Do Not Remove

Neutral Position To ⧔ Pintle Key

Neutral Position

Drain Port “D”
1.0625-12 UN-2B Thd.
SAE “O” Ring Boss Connection
.750 O.D. Tubing

SAE O Ring Boss Connection

1.000 O.D. Tubing

SAE O Ring Boss Connection

1.000 O.D. Tubing

D (20 PSI max.)

TA 19 Circuit Diagram
TA19V10 Pump

Model Code

TA19 V10 F L – 2 A R – 07 A D 6 H 21

1 Transmission Pump
Rated at 72 l/min (19 USgpm) at 1800 rpm

2 Auxiliary Vane Pump

3 Vane Pump Cover Option
(Omit if not required)
F – Flow control
P – Priority flow

4 Rotation Viewed From Shaft End
R – Right hand (clockwise)
L – Left hand (counterclockwise)

5 Input Shaft
2 – SAE B-B splined

6 Control Pintle Location Viewed From Shaft End With Drain Port Up
A – Right hand side
B – Left hand side

7 Main Relief Valve
R – Relief valve
O – No relief valve

8 Vane Pump Ring Capacity at 1200 rpm
04 – 15 l/min (4 USgpm)
05 – 18 l/min (5 USgpm)
06 – 22 l/min (6 USgpm)
07 – 26 l/min (7 USgpm)

9 Vane Pump Inlet Position Viewed From Cover End
A – 45°F counterclockwise from case drain
C – 135°F clockwise from case drain

10 Position of Vane Pump Outlet, or Primary Outlet, Viewed From Cover End
A – Opposite inlet
B – 90°F counterclockwise from inlet
C – In line with inlet
D – 90°F clockwise from inlet

11 Flow Rate Through Orifice In “F” Cover
2, 3, 4, 5, 6, 7 or 8 USgpm

12 Flow Rate Through Orifice In “P” Cover
1, 2, 3, 4 or 6 USgpm

13 Vane Pump Relief Valve Setting, “F” & “P” Cover
A – 17 bar (250 psi)
B – 35 bar (500 psi)
C – 51 bar (750 psi)
D – 70 bar (1000 psi)
E – 86 bar (1250 psi)
F – 100 bar (1500 psi)
G – 120 bar (1750 psi)
H – 140 bar (2000 psi)
J – 155 bar (2250 psi)
K – 175 bar (2500 psi)

14 Design Number

Circuit Diagrams

May be required if surge in aux. circuit flow can occur

TA19V10 with Main Relief Valves

TA19V10F with Main Relief Valves

TA19V10P with Main Relief Valves
Dimensions

mm (inch)

V10 Auxiliary Pump Data

<table>
<thead>
<tr>
<th>Ring Size GPM*</th>
<th>Max. RPM</th>
<th>Max. PSI</th>
<th>&quot;A&quot; Dimension</th>
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<tbody>
<tr>
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<td>5</td>
<td>3200</td>
<td>2500</td>
<td>73.4 (2.89)</td>
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<tr>
<td>6</td>
<td>3000</td>
<td>2200</td>
<td>78.5 (3.09)</td>
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<tr>
<td>7</td>
<td>2800</td>
<td>2000</td>
<td>78.5 (3.09)</td>
</tr>
</tbody>
</table>

*At 1200 RPM & 100 PSI

External Involute Spline

SAE B-B Splined Shaft

ANS B92.1 – 1970

23.9 (0.94) Pitch Dia. 20.6 (0.81) Base Dia.

Flat Root Class 5 Side Fit

15 Teeth 16/32 Pitch 30° Pr. Angle

Major Dia. 24.9 (0.98) Max. 24.6 (0.97) Min.
Minor Dia. Form Dia. 22.1 (0.87) – Max. 21.3 (0.84) Min.
Optional V10F Auxiliary Pump

Secondary Outlet “PT”
.750-16 UNF-2B Straight Thd.
SAE “O” Ring Boss Connection
.500 O.D. Tubing

Primary Outlet “PS”
(Controlled Flow)
.750-16 UNF-2B Straight Thd.
SAE “O” Ring Boss Connection
.500 O.D. Tubing

Inlet Port "T"
1.3125-12 UNF-2B Straight Thd.
SAE "O" Ring Boss Connection
1.000 O.D. Tubing

Inlet Port Position “C”

<table>
<thead>
<tr>
<th>Ring Size (GPM*)</th>
<th>Max. RPM</th>
<th>Max. PSI</th>
<th>“A” Dimension</th>
</tr>
</thead>
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<td>91.2 (3.59)</td>
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<td>3200</td>
<td>2500</td>
<td>91.2 (3.59)</td>
</tr>
<tr>
<td>6</td>
<td>3000</td>
<td>2200</td>
<td>96.3 (3.79)</td>
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<tr>
<td>7</td>
<td>2800</td>
<td>2000</td>
<td>96.3 (3.79)</td>
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</tbody>
</table>

*At 1200 RPM & 100 PSI

Optional V10P Auxiliary Pump

Secondary Outlet “S”
.750-16 UNF-2B Straight Thd.
SAE “O” Ring Boss Connection
.500 O.D. Tubing

Inlet Port “T”
1.3125-12 UNF-2B Straight Thd.
SAE “O” Ring Boss Connection
.375 O.D. Tubing

Inlet Port Position “C”

Primary Outlet “P”
.5625-18 UNF-2B Straight Thd.
SAE “O” Ring Boss Connection
.375 O.D. Tubing

Inlet Port Position “C”

*At 1200 RPM & 100 PSI
**Model Code**

| TA19 V20 | F | L | 2 | A | R | 07 | A | D | 6 | H | 21 |
|----------|---|---|---|---|---|----|---|---|---|---|---|---|

1. **Transmission Pump**
   - Rated at 72 l/min (19 USgpm) at 1800 rpm

2. **Auxiliary Vane Pump**

3. **Vane Pump Cover Option**
   - F – Flow control
   - P – Priority flow

4. **Rotation Viewed From Shaft End**
   - R – Right hand (clockwise)
   - L – Left hand (counterclockwise)

5. **Input Shaft**
   - 2 – SAE B-B splined

6. **Control Pintle Location Viewed From Shaft End With Drain Port Up**
   - A – Right hand side
   - B – Left hand side

7. **Main Relief Valve**
   - R – Relief valve
   - O – No relief valve

8. **Vane Pump Ring Capacity at 1200 rpm**
   - 07 – 26 l/min (7 USgpm)
   - 08 – 30 l/min (8 USgpm)
   - 09 – 34 l/min (9 USgpm)
   - 10 – 37 l/min (10 USgpm)
   - 11 – 41 l/min (11 USgpm)
   - 12 – 45 l/min (12 USgpm)
   - 13 – 49 l/min (13 USgpm)

9. **Vane Pump Inlet Position Viewed From Cover End**
   - A – 45°F counterclockwise from case drain
   - C – 135°F clockwise from case drain

10. **Position of Vane Pump Outlet, or Primary Outlet, Viewed From Cover End**
    - A – Opposite inlet
    - B – 90°F counterclockwise from inlet
    - C – In line with inlet
    - D – 90°F clockwise from inlet

11. **Flow Rate Through Orifice In “F” Cover**
    - 2, 4, 6, 8 or 10 USgpm

12. **Flow Rate Through Orifice In “P” Cover**
    - 2, 5, 3, 4, 6 or 8 USgpm

13. **Vane Pump Relief Valve Setting, “F” & “P” Cover**
    - A – 17 bar (250 psi)
    - B – 35 bar (500 psi)
    - C – 51 bar (750 psi)
    - D – 70 bar (1000 psi)
    - E – 86 bar (1250 psi)
    - F – 100 bar (1500 psi)
    - G – 120 bar (1750 psi)
    - H – 140 bar (2000 psi)
    - J – 155 bar (2250 psi)
    - K – 175 bar (2500 psi)

**Circuit Diagrams**

- May be required if surge in aux. circuit flow can occur
- TA19V20 with Main Relief Valves
- TA19V20F with Main Relief Valves
- TA19V20P with Main Relief Valves
TA19V20 Pump

Dimensions
mm (inch)

- **Shaft Rotation**, **Pintle Position**, **Pressure Port**
  - R.H. 1 A
  - R.H. 2 B
  - L.H. 1 B
  - L.H. 2 A

**V20 Auxiliary Pump Data**

<table>
<thead>
<tr>
<th>Ring Size GPM*</th>
<th>Max. RPM</th>
<th>Max. PSI</th>
<th>“A” Dimension</th>
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<tr>
<td>7</td>
<td>3000</td>
<td>2500</td>
<td>77.5 (3.05)</td>
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<tr>
<td>8 &amp; 9</td>
<td>2800</td>
<td>2500</td>
<td>77.5 (3.05)</td>
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<tr>
<td>10 &amp; 11</td>
<td>2500</td>
<td>2500</td>
<td>82.6 (3.25)</td>
</tr>
<tr>
<td>12 &amp; 13</td>
<td>2400</td>
<td>2200</td>
<td>86.1 (3.39)</td>
</tr>
</tbody>
</table>

*At 1200 RPM & 100 PSI

**SAE B-B Splined Shaft**

- External Involute Spline
- Modified ANS B92.1 – 1970
- Pitch Dia. 23.9 (0.94) Max.
- Base Dia. 20.6 (0.81) Max.
- Flat Root Class 5 Side Fit
- 15 Teeth 16/32 Pitch 30° Pr. Angle
- Major Dia. *24.9 (0.98) Max.
- Form Dia. 22.1 (0.87) Min.
- Minor Dia. 21.3 (0.84) Min.

*Drain Port “D”
1.0625-12 UN-2B Straight Thd. SAE “O” Ring Boss Connection .750 O.D. Tubing

*Inlet Port “T”
1.125-12 UNF-2B Straight Thd. SAE “O” Ring Boss Connection 1.000 O.D. Tubing

*Neutral Position To Cover Pintle Key

*Construction Plug
Do Not Remove
Optional V20F Auxiliary Pump

**mm (inch)**

Outlet Port “PS”
.750-16 UNF-2B Straight Thd.
SAE “O” Ring Boss Connection
.500 O.D. Tubing

Cover Position “A”

59.6
(2.35)

23.9
(0.94)

Construction Plug
*Do not remove*

Secondary Outlet “PT”
.750-16 UNF-2B Straight Thd.
SAE “O” Ring Boss Connection
.500 O.D. Tubing

Ring Size Max. Max. “A” Dimension

<table>
<thead>
<tr>
<th>GPM*</th>
<th>RPM</th>
<th>PSI</th>
<th>Dimension</th>
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<td>2500</td>
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<td>8 &amp; 9</td>
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<td>2500</td>
<td>100.8 (3.97)</td>
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<tr>
<td>10 &amp; 11</td>
<td>2500</td>
<td>2500</td>
<td>105.9 (4.17)</td>
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<tr>
<td>12 &amp; 13</td>
<td>2400</td>
<td>2200</td>
<td>109.5 (4.31)</td>
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</tbody>
</table>

*At 1200 RPM & 100 PSI

Optional V20P Auxiliary Pump

**mm (inch)**

Inlet Port “T”
1.625-12 UNF-2B Straight Thd.
SAE “O” Ring Boss Connection
1.250 O.D. Tubing

Secondary Outlet “S”
.875-14 UNF-2B Straight Thd.
SAE “O” Ring Boss Connection
.625 O.D. Tubing

Inlet Port “T”
1.625-12 UNF-2B Straight Thd.
SAE “O” Ring Boss Connection
1.250 O.D. Tubing
TA19V2010 Pump

Model Code

TA19V2010 F L – 2 A R – 11 – 05 C B D 6 H 21

1. Transmission Pump
   Rated at 72 l/min (19 USgpm) at 1800 rpm

2. Double Auxiliary Vane Pump

3. Vane Pump Cover Option
   (Omit if not required)
   F – Flow control
   P – Priority flow

4. Rotation Viewed From Shaft End
   R – Right hand (clockwise)
   L – Left hand (counterclockwise)

5. Input Shaft
   2 – SAE B-B splined

6. Control Pintle Location Viewed
   From Shaft End With Drain Port Up
   A – Right hand side
   B – Left hand side

7. Main Relief Valve
   R – Relief valve
   O – No relief valve

8. Ring Capacity at 1200 rpm
   (Shaft End Vane Pump)
   07 – 26 l/min (7 USgpm)
   08 – 30 l/min (8 USgpm)
   09 – 34 l/min (9 USgpm)
   11 – 41 l/min (11 USgpm)
   12 – 45 l/min (12 USgpm)
   13 – 49 l/min (13 USgpm)

9. Ring Capacity at 1200 rpm
   (Cover End Vane Pump)
   04 – 15 l/min (4 USgpm)
   05 – 18 l/min (5 USgpm)
   06 – 22 l/min (6 USgpm)
   07 – 26 l/min (7 USgpm)

10. Vane Pump No. 1 Outlet Position
    Viewed From Cover End
    A – 45° F counterclockwise from case drain
    C – 135° F clockwise from case drain

11. Vane Pump Inlet Position Viewed
    From Cover End
    A – Opposite no. 1 outlet
    B – 90° F counterclockwise from no. 1 outlet
    C – In line with no. 1 outlet
    D – 90° F clockwise from no. 1 outlet

12. Position of Vane Pump Outlet
    No. 2 or Primary Outlet, Viewed
    From Cover End
    A – 135° counterclockwise from inlet
    B – 45° counterclockwise from inlet
    C – 45° clockwise from inlet
    D – 135° clockwise from inlet

13. Flow Rate Through Orifice In
    “F” Cover
    2, 3, 4, 5, 6, 7 or 8 USgpm
    Flow Rate Through Orifice In
    “P” Cover
    1, 2, 3, 4, 5, 6 or 7 USgpm

14. Vane Pump Relief Valve Setting,
    “F” & “P” Cover
    A – 17 bar (250 psi)
    B – 35 bar (500 psi)
    C – 51 bar (750 psi)
    D – 70 bar (1000 psi)
    E – 86 bar (1250 psi)
    F – 100 bar (1500 psi)
    G – 120 bar (1750 psi)
    H – 140 bar (2000 psi)
    J – 155 bar (2250 psi)
    K – 175 bar (2500 psi)

15. Design Number

Circuit Diagrams

May be required if surge in aux. circuit flow can occur

TA19V2010 with Main Relief Valves

TA19V2010F with Main Relief Valves

TA19V2010P with Main Relief Valves
Optional V2010F Auxiliary Pump

mm (inch)

Optional V2010P Auxiliary Pump

mm (inch)
TA1919V10 Pump

Model Code

<table>
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<th>TA1919 V10 F L – 2 A R – 07 A D 62 5 H 21</th>
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<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>14</td>
</tr>
</tbody>
</table>

Circuit Diagrams

May be required if surge in aux. circuit flow can occur

TA1919V10 with Main Relief Valves

May be required if surge in aux. circuit flow can occur

TA1919V10F with Main Relief Valves

May be required if surge in aux. circuit flow can occur

TA1919V10F with Replenishing Valves

May be required if surge in aux. circuit flow can occur

TA1919V10P with Main Relief Valves
### Dimensions

**mm (inch)**

<table>
<thead>
<tr>
<th>V10 Aux. Pump Data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ring Size GPM</strong></td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>7</td>
</tr>
</tbody>
</table>

**Construction Plug Do Not Remove**

- Super charge Inlet “S”
  - .875-14 UNF-2B Straight Thd.
  - SAE “O” Ring Boss Connection
  - .625 O.D. Tubing

Use of a secondary support of unit is required at mounting points “Y” & “Z” as shown. Outboard support to be such that external loads do not cause stress or deflection of the unit structure.
Optional V10F Auxiliary Pump

Optional V10P & V10D Auxiliary Pumps

<table>
<thead>
<tr>
<th>Ring Size GPM*</th>
<th>Max. RPM</th>
<th>Max. PSI</th>
<th>“G” Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>3400</td>
<td>2500</td>
<td>91.2 (3.59)</td>
</tr>
<tr>
<td>5</td>
<td>3200</td>
<td>2500</td>
<td>91.2 (3.59)</td>
</tr>
<tr>
<td>6</td>
<td>3000</td>
<td>2200</td>
<td>96.3 (3.79)</td>
</tr>
<tr>
<td>7</td>
<td>2800</td>
<td>2000</td>
<td>96.3 (3.79)</td>
</tr>
</tbody>
</table>

*At 1200 RPM & 100 PSI
TA1919V20 Pump

Model Code

<table>
<thead>
<tr>
<th>TA1919 V20 F L – 2 A R – 07 A D 6 H 21</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>F</td>
</tr>
<tr>
<td>P</td>
</tr>
<tr>
<td>4</td>
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<tr>
<td>R</td>
</tr>
<tr>
<td>L</td>
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<td>5</td>
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<tr>
<td>2</td>
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<td>6</td>
</tr>
<tr>
<td>Code</td>
</tr>
<tr>
<td>A</td>
</tr>
<tr>
<td>B</td>
</tr>
<tr>
<td>C</td>
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<tr>
<td>D</td>
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<td>7</td>
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<tr>
<td>R</td>
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<tr>
<td>O</td>
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<td>8</td>
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<td>07</td>
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<td>11</td>
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<td>A</td>
</tr>
<tr>
<td>C</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>A</td>
</tr>
<tr>
<td>B</td>
</tr>
<tr>
<td>C</td>
</tr>
<tr>
<td>D</td>
</tr>
</tbody>
</table>

Flow Rate Through Orifice In "F" Cover
2, 4, 6, 8 or 10 USgpm

Flow Rate Through Orifice In "P" Cover
2, 2.5, 3, 4, 6 or 8 USgpm

Vane Pump Relief Valve Setting, "F" & "P" Cover
A – 17 bar (250 psi)
B – 35 bar (500 psi)
C – 51 bar (750 psi)
D – 70 bar (1000 psi)
E – 86 bar (1250 psi)
F – 100 bar (1500 psi)
G – 120 bar (1750 psi)
H – 140 bar (2000 psi)
J – 155 bar (2250 psi)
K – 175 bar (2500 psi)

Design Number

Circuit Diagrams

TA1919V20 with Main Relief Valves
May be required if surge in aux. circuit flow can occur

TA1919V20F with Main Relief Valves
May be required if surge in aux. circuit flow can occur

TA1919V20P with Main Relief Valves
May be required if surge in aux. circuit flow can occur
**Dimensions**

mm (inch)

<table>
<thead>
<tr>
<th>Outlet 1.3125-12 UN-2B Str. Thd. – 4 Places SAE “O” Ring Boss Connection 1.000 O.D. Tubing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cover Position “C”</td>
</tr>
</tbody>
</table>

**V20 Auxiliary Pump Data**

<table>
<thead>
<tr>
<th>Ring Size</th>
<th>Max. GPM*</th>
<th>Max. RPM</th>
<th>Max. PSI</th>
<th>“A” Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>3000</td>
<td>2500</td>
<td>77.7 (3.06)</td>
<td></td>
</tr>
<tr>
<td>8 &amp; 9</td>
<td>2800</td>
<td>2500</td>
<td>77.7 (3.06)</td>
<td></td>
</tr>
<tr>
<td>10 &amp; 11</td>
<td>2500</td>
<td>2500</td>
<td>82.6 (3.25)</td>
<td></td>
</tr>
<tr>
<td>12 &amp; 13</td>
<td>2400</td>
<td>2200</td>
<td>86.1 (3.39)</td>
<td></td>
</tr>
</tbody>
</table>

*At 1200 RPM & 100 PSI

Use of a secondary support of unit is required at mounting points “Y” & “Z” as shown. Outboard support to be such that external loads do not cause stress or deflection of the unit structure.

**SAE B-B Splined Shaft**

*Modified ANS B92.1 – 1970

23.9 (0.94) Pitch Dia. 20.6 (0.81) Base Dia.

Flat Root Class 5 Side Fit

15 Teeth 16/32 Pitch 30° Pr. Angle

<table>
<thead>
<tr>
<th>Major Dia.</th>
<th>Form Dia.</th>
<th>Minor Dia.</th>
</tr>
</thead>
<tbody>
<tr>
<td>24.9 (0.98) Max. 24.6 (0.97) Min.</td>
<td>22.1 (0.87)</td>
<td>21.3 (0.84) Min.</td>
</tr>
</tbody>
</table>
Optional V20F Auxiliary Pump

Outlet Port “PS”
.750-16 UNF-2B
Straight Thread
SAE “O” Ring
Boss Connection
.500 O.D. Tubing

Cover Position “A”

Secondary Outlet “PT”
.750-16 UNF-2B
Straight Thread
SAE “O” Ring
Boss Connection
.500 O.D. Tubing

Ring Size  GPM*  Max. RPM  Max. PSI  “G” Dimension
7      3000    2500    101.1 (3.98)
8 & 9   2800    2500    101.1 (3.98)
10 & 11 2500    2500    105.9 (4.17)
12 & 13 2400    2200    109.5 (4.31)

*At 1200 RPM & 100 PSI

Optional V20P Auxiliary Pump

Tank Port “T” for Pressure Relief

Primary Outlet Port “P”

Cover Position “A”

Secondary Outlet “PT”
.750-16 UNF-2B
Straight Thread
SAE “O” Ring
Boss Connection
.500 O.D. Tubing

Inlet Port “T”
1.625-12 UN-2B
Straight Thread
SAE “O” Ring
Boss Connection
1.250 O.D. Tubing

73.2 (2.88)
146.0 (5.75)
124.0 (4.88)
62.0 (2.44)
Circuit Diagrams
Dimensions

Shaft-End Vane Pump

<table>
<thead>
<tr>
<th>Ring Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPM*</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Max. RPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
</tr>
<tr>
<td>500</td>
</tr>
<tr>
<td>500</td>
</tr>
<tr>
<td>500</td>
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</table>

<table>
<thead>
<tr>
<th>Max. PSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>77.5</td>
</tr>
<tr>
<td>77.5</td>
</tr>
<tr>
<td>82.6</td>
</tr>
<tr>
<td>82.6</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>&quot;A&quot; Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral Position To C Pintle Key</td>
</tr>
</tbody>
</table>

Cover-End Vane Pump

<table>
<thead>
<tr>
<th>Ring Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2 &amp; 3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Max. RPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>2500</td>
</tr>
<tr>
<td>2500</td>
</tr>
<tr>
<td>2200</td>
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<tr>
<td>2000</td>
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</table>

<table>
<thead>
<tr>
<th>Max. PSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>73.7</td>
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<tr>
<td>80.0</td>
</tr>
<tr>
<td>85.1</td>
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<tr>
<td>85.1</td>
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</table>

<table>
<thead>
<tr>
<th>&quot;B&quot; Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral Position</td>
</tr>
</tbody>
</table>

*At 1200 RPM & 100 PSI

Outlet Port "P2" .875-14 UNF-2B Straight Thd. SAE "O" Ring Boss Connection .625 O.D. Tubing

Inlet Port "T" 1.875-12 UN-2B Straight Thd. SAE "O" Ring Boss Connection 1.500 O.D. Tubing

External Involute Spline

*Modified ANSI B92.1 – 1970

23.9 (0.94) Pitch Dia.

20.6 (0.81) Base Dia.

Flat Root Class 5 Side Fit

15 Teeth 16/32 Pitch 30° Pr. Angle

Major Dia. 24.9 (0.98) Max.

24.6 (0.97) Min.

Form Dia. 22.1 (0.87)

21.3 (0.84) Min.

Minor Dia.

Use of a secondary support of unit is required at mounting points "Y" & "Z" as shown. Outboard support to be such that external loads do not cause stress or deflection of the unit structure.
Optional V1010F Auxiliary Pump

mm (inch)

<table>
<thead>
<tr>
<th>Ring Size</th>
<th>Max. GPM</th>
<th>Max. RPM</th>
<th>Max. PSI</th>
<th>“A” Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>3400</td>
<td>500</td>
<td>77.5</td>
<td>(3.05)</td>
</tr>
<tr>
<td>5</td>
<td>3200</td>
<td>500</td>
<td>77.5</td>
<td>(3.05)</td>
</tr>
<tr>
<td>6</td>
<td>3000</td>
<td>500</td>
<td>82.6</td>
<td>(3.25)</td>
</tr>
<tr>
<td>7</td>
<td>2800</td>
<td>500</td>
<td>82.6</td>
<td>(3.25)</td>
</tr>
</tbody>
</table>

*At 1200 RPM & 100 PSI

Optional V1010P Auxiliary Pump

Shaft-End Vane Pump

<table>
<thead>
<tr>
<th>Ring Size</th>
<th>Max. GPM</th>
<th>Max. RPM</th>
<th>Max. PSI</th>
<th>“A” Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2 &amp; 3</td>
<td>3400</td>
<td>2500</td>
<td>91.2</td>
<td>(3.59)</td>
</tr>
<tr>
<td>4</td>
<td>3400</td>
<td>2500</td>
<td>97.5</td>
<td>(3.84)</td>
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<tr>
<td>5</td>
<td>3200</td>
<td>2500</td>
<td>97.5</td>
<td>(3.84)</td>
</tr>
<tr>
<td>6</td>
<td>3000</td>
<td>2200</td>
<td>102.6</td>
<td>(4.04)</td>
</tr>
<tr>
<td>7</td>
<td>2800</td>
<td>2000</td>
<td>102.6</td>
<td>(4.04)</td>
</tr>
</tbody>
</table>

Cover-End Vane Pump

<table>
<thead>
<tr>
<th>Ring Size</th>
<th>Max. GPM</th>
<th>Max. RPM</th>
<th>Max. PSI</th>
<th>“A” Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2 &amp; 3</td>
<td>3400</td>
<td>2500</td>
<td>91.2</td>
<td>(3.59)</td>
</tr>
<tr>
<td>4</td>
<td>3400</td>
<td>2500</td>
<td>97.5</td>
<td>(3.84)</td>
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<tr>
<td>5</td>
<td>3200</td>
<td>2500</td>
<td>97.5</td>
<td>(3.84)</td>
</tr>
<tr>
<td>6</td>
<td>3000</td>
<td>2200</td>
<td>102.6</td>
<td>(4.04)</td>
</tr>
<tr>
<td>7</td>
<td>2800</td>
<td>2000</td>
<td>102.6</td>
<td>(4.04)</td>
</tr>
</tbody>
</table>

*At 1200 RPM & 100 PSI
MFE15/19 Motor

Model Code

<table>
<thead>
<tr>
<th></th>
<th>Fixed Displacement Motor</th>
<th></th>
<th>Thru Shaft</th>
<th></th>
<th>Design Number</th>
<th></th>
<th>End Ports (Omit for side ports)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>3</td>
<td></td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td>Available only on side-ported models. Omit if not required.</td>
<td></td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td>Output Shaft</td>
<td></td>
<td></td>
<td></td>
<td>Output Shaft 2 – SAE B-B splined</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Circuit Diagram

Dimensions

End-Ported Model
(See side-ported models next page for additional dimensions.)

mm (inch)

Drain Port “D1”. Same size as side-ported model.

Ports “A” and “B” – Same size as side-ported model.

Alternate Drain Port “D2”. Same size as side-ported model.

Construction Plug 2 Places. Do Not Remove.
Dimensions

Side-Ported Model

SAE B-B Splined Shaft

External Involute Spline

*Modified ANS B92.1 – 1970

23.9 (0.94) Pitch Dia. 20.6 (0.81) Base Dia.

Flat Root Class 5 Side Fit

15 Teeth 16/32 Pitch 30° Pr. Angle

ASA B5.15 – 1960

19.8 (0.78) Pitch Dia. 17.3 (0.68) Base Dia.

Flat Root Class 1 Side Fit

25 Teeth 32/64 Pitch 30° Pr. Angle

Thru shaft extension is limited to a maximum torque of 2900 in. lbs. with no overhung load. Applications subjecting shaft extension to both bending and torsional loads are subject to engineering approval.

Optional Thru Shaft

ASA B5.15 – 1960

19.8 (0.78) Pitch Dia. 17.3 (0.68) Base Dia.

Flat Root Class 1 Side Fit

25 Teeth 32/64 Pitch 30° Pr. Angle

Thru shaft extension is limited to a maximum torque of 2900 in. lbs. with no overhung load. Applications subjecting shaft extension to both bending and torsional loads are subject to engineering approval.

These pads may be used to mount brake on thru shaft version. Retorque .375-16 screws to 42 – 45 ft. lbs.

Direction of R.H. Rotation

Shaft Rotation Pressure Port
R.H. “B”
L.H. “A”
## MVE19 Motor

### Model Code

| 1 | Rated at 19 gpm at 1800 rpm |
| 2 | Thru Shaft (Omit if not required) |
| 3 | Output Shaft |
| 4 | Motor Design Number |
| 5 | Control Pintle Location Viewed From Shaft End With Drain Port Up |
| 6 | Minimum Displacement Angle |
| 7 | Control Design Number |

**MVE19 Model Code**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
</table>

### Circuit Diagram

![Circuit Diagram](image)
Dimensions

mm (inch)

SAE B-B Splined Shaft

External Involute Spline

*Modified
ANS B92.1 – 1970

23.9 (0.94) Pitch Dia. 20.6 (0.81) Base Dia.

Flat Root Class 5 Side Fit

15 Teeth 16/32 Pitch 30° Pr. Angle

<table>
<thead>
<tr>
<th>Major Dia.</th>
<th>Form Dia.</th>
<th>Minor Dia.</th>
</tr>
</thead>
<tbody>
<tr>
<td>*24.9 (0.98) Max.</td>
<td>22.1 (0.87)</td>
<td>21.3 (0.84) Min.</td>
</tr>
<tr>
<td>24.6 (0.97) Min.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Optional Thru Shaft

External Involute Spline

ASA B5.15 – 1960

19.8 (0.78) Pitch Dia. 17.3 (0.68) Base Dia.

Flat Root Class 1 Side Fit

25 Teeth 32/64 Pitch 30° Pr. Angle

<table>
<thead>
<tr>
<th>Major Dia.</th>
<th>Form Dia.</th>
<th>Minor Dia.</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.3 (0.80) Max.</td>
<td>19.1 (0.75)</td>
<td>18.8 (0.74) Max.</td>
</tr>
<tr>
<td>20.0 (0.79) Min.</td>
<td></td>
<td>18.5 (0.73) Min.</td>
</tr>
</tbody>
</table>

Thru shaft extension is limited to a maximum torque of 2900 in. lbs. with no overhung load. Applications subjecting shaft extension to both bending and torsional loads are subject to engineering approval.
MVE19-M Motor

Model Code

MVE19 X - 2 - 30 - M - 13 - 10 - 030

1 Variable Displacement Motor
Rated at 19 gpm at 1800 rpm

2 Thru Shaft
Available only on side-ported models.
Omit if not required.

3 Output Shaft
2 – SAE B-B splined

4 Motor Design Number

5 External Pilot Pressure Control

6 Minimum Displacement Angle
7 – 7° (.945 CIR)
9 – 9° (1.22 CIR)
11 – 11° (1.49 CIR)
13 – 13° (1.78 CIR)
15 – 15° (2.06 CIR)

7 Control Design Number

8 End Ports (Omit for side ports)

Circuit Diagram

Dimensions

End-Ported Model
(See side-ported models
next page for additional
dimensions.)

mm (inch)

Alternate Drain Port “D2”. Same size as side-ported model.

Ports “A” and “B” – Same size as side-ported model.
### Dimensions

#### Side-Ported Model

**SAE B-B Splined Shaft**

- **External Involute Spline**
  - *Modified* ANSI B92.1 – 1970
  - 23.9 (0.94) Pitch Dia.
  - 20.6 (0.81) Base Dia.
  - Flat Root Class 5 Side Fit

**ASA B5.15 – 1960**

- 19.8 (0.78) Pitch Dia.
- 17.3 (0.68) Base Dia.
- Flat Root Class 1 Side Fit

#### Optional Thru Shaft

**External Involute Spline**

- *Modified* ANSI B92.1 – 1970

**ASA B5.15 – 1960**

- 19.8 (0.78) Pitch Dia.
- 17.3 (0.68) Base Dia.

**Pressure Port**

<table>
<thead>
<tr>
<th>Shaft Rotation</th>
<th>Pressure Port</th>
</tr>
</thead>
<tbody>
<tr>
<td>R.H.</td>
<td>“B”</td>
</tr>
<tr>
<td>L.H.</td>
<td>“A”</td>
</tr>
</tbody>
</table>

**Shaft Rotation**

- R.H.
- L.H.

**Direction of R.H. Rotation**

#### Dimensions

<table>
<thead>
<tr>
<th>Major Dia.</th>
<th>Form Dia.</th>
<th>Minor Dia.</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.3 (0.80) Max.</td>
<td>19.1 (0.75)</td>
<td>18.8 (0.74) Max.</td>
</tr>
<tr>
<td>20.0 (0.79) Min.</td>
<td>(0.75)</td>
<td>18.5 (0.73) Min.</td>
</tr>
</tbody>
</table>