

## Tool Instruction A/C System Flush Tool Instruction

4328094R2

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Tool Number: 19-000-01 and 19-000-02 (Medium Duty Only)



0000039424

Figure 1. A/C System Flush Tool 19-000-01.

### Purpose

The A/C System Flush Tool (Figure 1) cleans the A/C system from contaminants caused by compressor failure or use of incorrect refrigerant or oil.


### Application(s)


This tool set applies to all trucks manufactured by International Trucks<sup>®</sup> and branded as International<sup>®</sup> built during model year 2004 through 2012.

## Application(s) (cont.)


### Disclaimer


Please refer to the A/C HVAC Service Resource Center or TSI 12-16-04R1 before using the A/C System Flush Tool 19-000-01 or 19-000-02 (Medium Duty Only). This is to make sure the proper refrigerant system components are cleaned or replaced.


 **WARNING:** Read all safety instructions in the “Safety Information” section of the *Engine Service Manual* or *Engine Diagnostic Manual* to prevent personal injury or death.

 **WARNING:** To prevent personal injury or death, safety goggles or other adequate eye protection must be worn when working with refrigerant. The temperature of liquid refrigerant is 20° F (-29° C). Serious injury or blindness may result from refrigerant contacting the eyes.

 **WARNING:** To prevent personal injury or death, allow engine to cool before draining coolant.

 **WARNING:** To prevent personal injury or death, refrigerant must be removed from the air conditioning system before any components of the system are removed or replaced. Removing components while pressure is in the system may cause personal injury or death.

 **WARNING:** Carbon monoxide is a colorless, odorless, and dangerous gas that is present in vehicle exhaust. To prevent personal injury or death, when it is necessary to operate the engine during vehicle service in a confined area, always use the proper equipment to vent the exhaust gasses outside of the work area.





 **WARNING:** To prevent personal injury or death, shift transmission to park or neutral, set parking brake, and block wheels before doing diagnostic or service procedures.



**GOVERNMENT REGULATION:** Engine fluids (oil, fuel, and coolant) may be a hazard to human health and the environment. Handle all fluids and other contaminated materials (e.g. filters, rags) in accordance with applicable regulations. Recycle or dispose of engine fluids, filters, and other contaminated materials according to applicable regulations.





## Tool Contents

**Table 1 Flushing Equipment**

Image	Tool Number	Qty	Description
 <p>0000039420</p>	19-352-01	1	Flush Tank Assembly
 <p>0000039421</p>	19-352-01-01	1	Tank Assembly
 <p>0000039422</p>	19-352-01-02	1	Flush Gun Assembly
 <p>0000039423</p>	19-352-01-07	1	Regulator and Pulse Valve Assembly






**Tool Contents (cont.)**

**Table 1. Flushing Equipment (cont.)**

Image	Tool Number	Qty	Description
 <p>0000039618</p>	19-352-02	1	Discharge Assembly
 <p>0000039619</p>	19-352-02-01	1	Discharge Barrel
 <p>0000039620</p>	19-352-02-04	1	Discharge Hose
 <p>0000039621</p>	19-352-02-02	1	Charcoal Filter Pack

## Tool Contents (cont.)

Table 1. Flushing Equipment (cont.)

Image	Tool Number	Qty	Description
 <p>0000039623</p>	19-352-02-05	3	Filter Pack
 <p>0000039624</p>	19-352-03	1	Nitrogen Regulator Assembly
 <p>0000039622</p>	19-352-03-01	1	Nitrogen Regulator
 <p>0000039625</p>	19-352-03-02	1	Nitrogen Regulator Hose
 <p>0000042160</p>	19-352-03-04	1	Blow Gun

## Tool Contents (cont.)

**Table 2 Flush Fittings**

Image	Tool Number	Qty	Description
 <p>0000039627</p>	19-353-01	1	A/C Fill Tool Fitting 3/4M
 <p>0000039626</p>	19-353-02 (for 19-000-01 Kit only)	1	A/C Line Plug Tool 3/4M
 <p>0000039614</p>	19-353-03	2	A/C Fill Tool Fitting 3/4F
 <p>0000039615</p>	19-353-04	1	A/C Drain Tool Fitting 3/4F





## Tool Contents (cont.)

Table 2. Flush Fittings (cont.)

Image	Tool Number	Qty	Description
 <p>0000039617</p>	19-353-05	1	A/C Fill Tool Fitting 1/2F
 <p>0000039615</p>	19-353-06	2	A/C Drain Tool Fitting 1/2F
 <p>0000039616</p>	19-353-07	2	A/C Drain Tool Fitting 1/2M
 <p>0000039628</p>	19-353-08 (for 19-000-01 Kit only)	1	A/C Line Plug Tool 1/2M
 <p>0000039629</p>	19-353-09	1	A/C Fill Tool Fitting 1/2M

## Tool Contents (cont.)




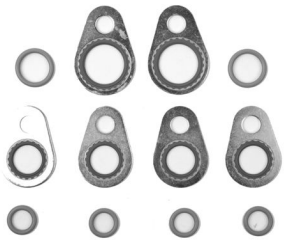
Table 2. Flush Fittings (cont.)

Image	Tool Number	Qty	Description
 <p>0000039630</p>	<p>19-353-10 (for 19-000-01 Kit only)</p>	<p>1</p>	<p>A/C Fill Tool Fitting <math>7/16</math>M</p>
 <p>0000039631</p>	<p>19-353-11 (for 19-000-01 Kit only)</p>	<p>1</p>	<p>A/C Drain Tool Fitting <math>3/8</math>F</p>
 <p>0000039632</p>	<p>19-043-01</p>	<p>1</p>	<p>Condenser Loop Tool</p>
 <p>0000039633</p>	<p>19-094-01</p>	<p>2</p>	<p>Evaporator Adaptor Tool</p>






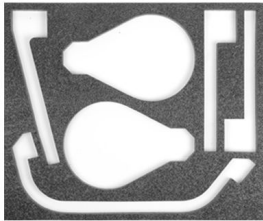
## Tool Contents (cont.)

Table 2. Flush Fittings (cont.)

Image	Tool Number	Qty	Description
 <p>0000039634</p>	<p>19-094-02 (for 19-000-01 Kit only)</p>	<p>1</p>	<p>Evaporator Adaptor Tool</p>
 <p>0000039636</p>	<p>19-632-01 (for 19-000-01 Kit only)</p>	<p>1</p>	<p>Line Loop Tool</p>
 <p>0000039636</p>	<p>19-632-02 (for 19-000-01 Kit only)</p>	<p>1</p>	<p>Line Loop Tool</p>
 <p>0000042190</p>	<p>19-310-01</p>	<p>1</p>	<p>Adapter Fitting O-Ring Kit</p>

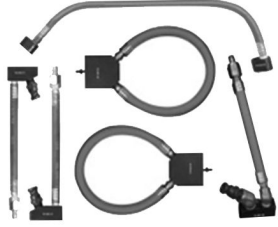
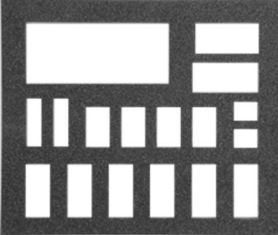

## Tool Contents (cont.)

Table 2. Flush Fittings (cont.)

Image	Tool Number	Qty	Description
 <p>0000039638</p>	TC3Q	1	Drier Cutting Tool
 <p>0000042156</p>	19-353-16	1	Micron Gauge Adapter
 <p>0000042161</p>	19-000-01-06	1	Roll Cart
 <p>0000039639</p>	19-000-01-01	1	Roll Cart Foam Cut-Outs (Top Drawer)



## Tool Contents (cont.)

Table 2. Flush Fittings (cont.)


Image	Tool Number	Qty	Description
 <p>0000042162</p>	19-000-01-02	1	Laminate Tool Layout Sheet (Top Drawer)
 <p>0000042158</p>	19-000-01-03	1	Roll Cart Foam Cut-Outs (Bottom Drawer)
 <p>0000042163</p>	19-000-01-04	1	Laminate Tool Layout Sheet (Bottom Drawer)

## Tool Contents (cont.)

**Table 2. Flush Fittings (cont.)**

Image	Tool Number	Qty	Description
 <p>NAVISTAR Tool Instruction A/C System Flush Tool Instruction Tool Number: 000042164</p> <p>0000042164</p>	4328094R2	1	Instruction Sheet
 <p>YELLOW JACKET</p> <p>0000042157</p>	69086	1	Micron Gauge

**Table 3 Additional Tools Required (Not Included in Kit)**

Image	Tool Number	Qty	Description
 <p>0000042159</p>	ZTSE4660	1	Cap Plug

## Instructions

### Assembly Instructions

#### Roll Cart 19-000-01-06



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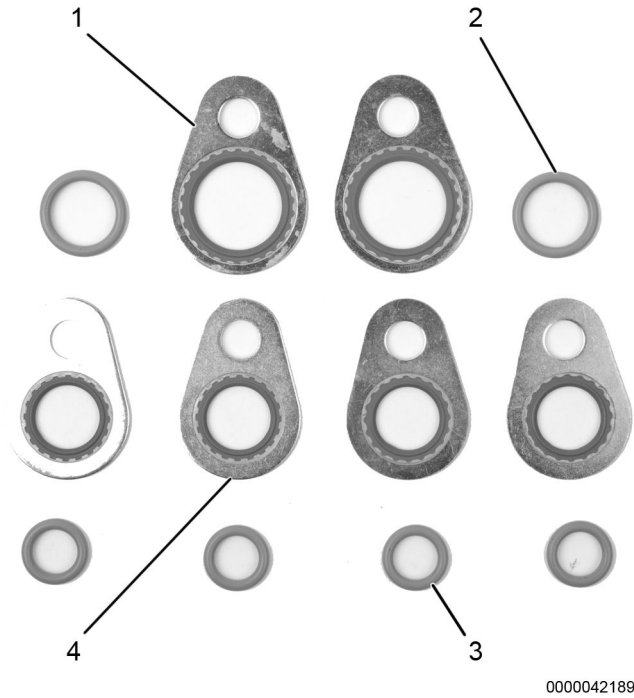
**Figure 2. Roll Cart 19-000-01-06.**

The Roll Cart 19-000-01-06 (Figure 2) has been provided to safely store the entire adapter set along with the other tools that are included in the Flush Kit. This tool cart will include foam cut-outs and laminate tool layouts in each drawer. Some assembly may be required. Please see manufacturer instructions included with the cart.

## Instructions (cont.)

### Adapters

#### Adapter Fitting O-Ring Kit 19-310-01



**Figure 3. Adapter Fitting O-Ring Kit 19-310-01.**

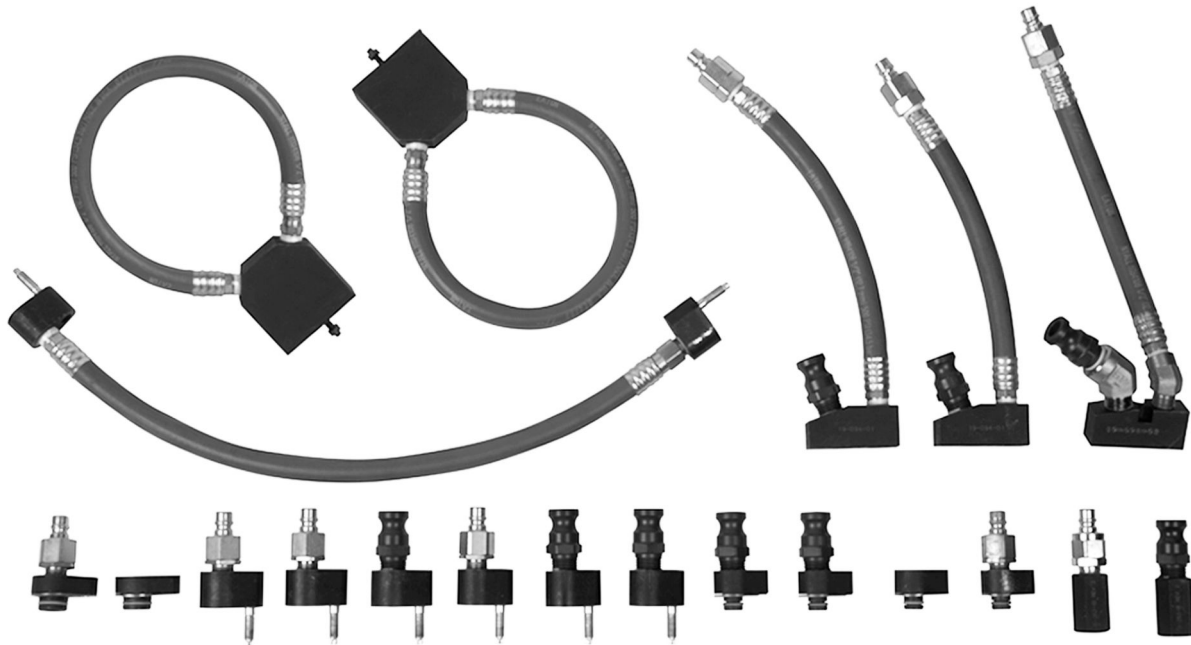
1. Large seal 3543882C1 (2)
2. Large orange O-ring 3543728C1 (2)
3. Small orange O-ring 3543727C1 (4)
4. Small seal 3543881C1 (4)

The Adapter Fitting O-Ring Kit 19-310-01 (Figure 3) contains the needed seals and O-rings to properly seal the Adapter Fittings (Figure 4).

1. Install the two (2) large seals 3543882C1 (Figure 3, Item 1) and the two (2) Large orange O-rings 3543728C1 (Figure 3, Item 2) on Adapter Fittings 19-353-02 and 19-353-01.
2. Install the four (4) small seals 3543881C1 (Figure 3, Item 4) and the four (4) small orange O-rings 3543727C1 (Figure 3, Item 3) on Adapter Fittings 19-353-09, 19-353-08, and both 19-353-07 adapters.

## Instructions (cont.)

### Adapter Fittings



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**Figure 4. Adapter Fittings from 2004 to Present.**

The adapter fitting set includes all fittings needed to completely set up and flush all International® branded trucks from model year 2004 to present (Figure 4).

1. Inspect all flush fittings for damage, and replace any seals that are deteriorated.
2. Using Application Table (Table 4), install all fittings in their proper locations.
3. Follow the Flushing and Purging procedures outlined in TSI 12-16-04.

## Instructions (cont.)

Table 4 Application Table

	TerraStar®, DuraStar®, WorkStar®, TranStar®, ProStar®, LoneStar®			PayStar® and 9900	Orifice Tube
	2007	2008	2010	2010	Pre-2007
Front Evaporator Liquid	19-353-07	19-094-01	19-094-01	19-094-02	19-353-07
Front Evaporator Suction	19-353-01				19-353-01
Suction Line at Compressor	19-353-03	19-353-03	19-353-03	19-353-03	19-353-03
Suction Line Plug	19-353-02	19-353-02	19-353-02	N/A	N/A
Suction Line at TXV	19-353-04	19-353-04	19-353-04	N/A	19-353-04
Condenser Line at Compressor	19-353-06	19-353-06	19-353-06	19-353-06	19-353-06
Condenser Line Plug	19-353-08	19-353-08	N/A	N/A	N/A
Condenser Line Loop	19-043-01	19-043-01	19-043-01	19-043-01	19-043-01
Condenser Line at Receiver/Drier	19-353-05	19-353-05	19-353-05	19-353-10	19-353-05
Evaporator Line at Receiver/Drier	N/A	N/A	N/A	19-353-11	N/A
Sleeper Rear Suction Line	19-353-03	19-353-03	19-353-03	N/A	N/A
Sleeper Rear Liquid Line	19-353-06	19-353-06	19-353-06	N/A	N/A
Sleeper Rear Lines at Rear TXV	19-632-01	19-632-01	19-632-01	19-632-02	N/A
Sleeper Evaporator	19-094-01	19-094-01	19-094-01	N/A	N/A
Sleeper Evaporator No-Idle	N/A	N/A	19-094-02	N/A	N/A



## Instructions (cont.)

Table 4. Application Table (cont.)

<b>Condenser Inlet</b>	19-353-07	19-353-07	19-353-07	19-353-07	19-353-07
<b>Condenser Outlet</b>	19-353-09	19-353-09	19-353-09	19-353-09	19-353-09

### Discharge Assembly 19-352-02



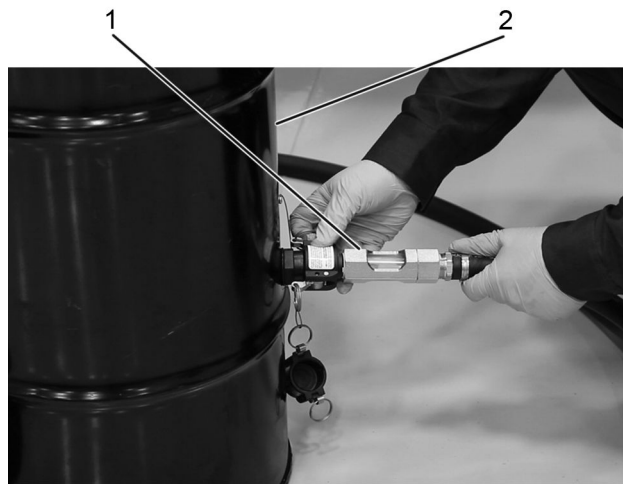
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**Figure 5. Discharge Assembly 19-352-02.**

The Discharge Assembly 19-352-02 (Figure 5) is used to safely collect waste solvent that has been flushed through each A/C component and reduces the release of VOCs (Volatile Organic Compounds) to a safe level. The Discharge Hose 19-352-02-04 connects to the adapters with the black fittings.

## Instructions (cont.)

### Discharge Assembly 19-352-02.



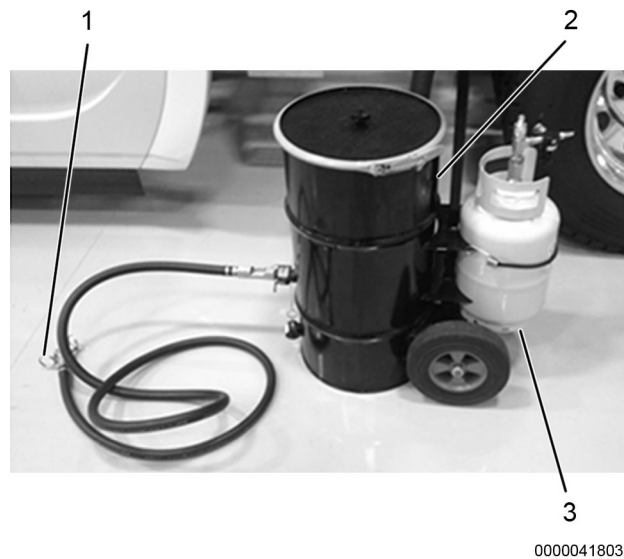
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**Figure 6. Discharge Assembly 19-352-02.**

1. Discharge Hose 19-352-02-04
  2. Discharge Barrel 19-352-02-01
- 
1. Connect Discharge Hose 19-352-02-04 (Figure 6, Item 1) to Discharge Barrel 19-352-02-01 (Figure 6, Item 2) using cam-lock coupling.

## Instructions (cont.)

### Discharge Assembly 19-352-02



**Figure 7. Discharge Assembly 19-352-02.**

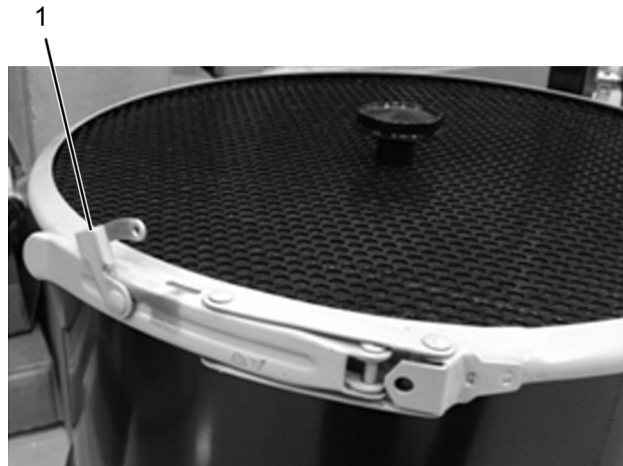
1. Discharge Hose 19-352-02-04
  2. Discharge Barrel 19-352-02-01
  3. Flush Tank Assembly 19-352-01
2. Place Flush Tank Assembly 19-352-01 (Figure 7, Item 3) on rear of Discharge Barrel 19-352-02-01 (Figure 7, Item 2). Using supplied strap, lock Flush Tank Assembly 19-352-01 to Discharge Barrel 19-352-02-01.

**! WARNING: Make sure discharge assembly is completely drained. Excessive amounts of Volatile Organic Compounds (VOCs) could be released into local air if barrel is not drained. Read MSDs thoroughly before performing any flushing work.**

## Instructions (cont.)

### Discharge Assembly 19-352-02 Filter Maintenance

Due to the chemicals that are used in the flushing solvent, filters may deteriorate over time from usage. It is recommended to inspect the filters before every use. Failure to inspect or replace deteriorated filters may result in a high amount of VOCs being released.



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**Figure 8. Discharge Barrel 19-352-02-01 Closing Ring Lock.**

1. Discharge Barrel 19-352-02-01 closing ring lock
1. Release lock (Figure 8, Item 1) on Discharge Barrel 19-352-02-01 closing ring.

## Instructions (cont.)



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**Figure 9. Discharge Barrel 19-352-02-01 Closing Ring Lever.**

1. Discharge Barrel 19-352-02-01 closing ring lever
2. Release lever (Figure 9, Item 1) on Discharge Barrel 19-352-02-01 closing ring.
3. Slide closing ring down Discharge Barrel 19-352-02-01.

## Instructions (cont.)



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**Figure 10. Charcoal Filter Pack 19-352-02-02.**

4. Using black knob on Charcoal Filter Pack 19-352-02-02, remove charcoal filter pack (Figure 10).
5. Inspect Charcoal Filter Pack 19-352-02-02 and replace if needed.

## Instructions (cont.)



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**Figure 11. Filter Pack 19-352-02-05.**

6. Remove all three Filter Packs 19-352-02-05 (Figure 11).
7. Inspect all three Filter Packs 19-352-02-05 and replace if needed.

## Instructions (cont.)

### Nitrogen Regulator Assembly 19-352-03



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**Figure 12. Nitrogen Regulator Assembly 19-352-03.**

The Nitrogen Regulator Assembly 19-352-03 (Figure 12) is used to supply nitrogen to the Flush Tank Assembly 19-352-01 to pressurize the flushing system. Also, the Nitrogen Regulator Assembly 19-352-03 will be used to purge the A/C components of solvent when the flushing procedure is completed.



## Instructions (cont.)

### Nitrogen Regulator Assembly 19-352-03



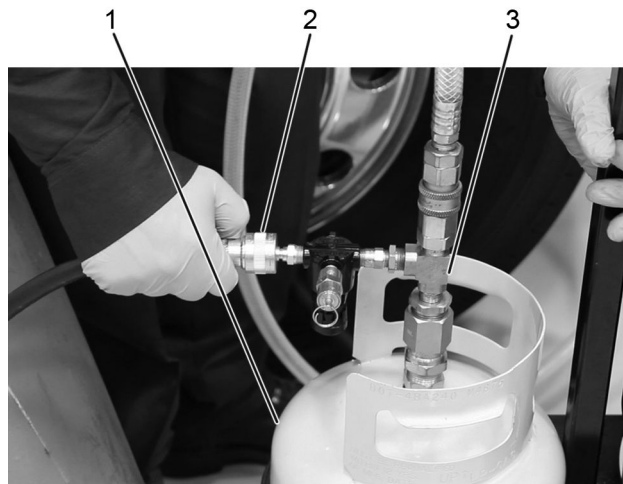
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**Figure 13. Nitrogen Regulator Assembly 19-352-03.**

1. Nitrogen Regulator Assembly 19-352-03
1. Connect Nitrogen Regulator Assembly 19-352-03 (Figure 13) to nitrogen source.

## Instructions (cont.)

### Flushing Connection



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**Figure 14. Flushing Connection.**

1. Flush Tank 19-352-01-01
  2. Nitrogen Regulator Hose 19-352-03-02
  3. Regulator and Pulse Valve Assembly 19-352-01-07
2. Connect Nitrogen Regulator Hose 19-352-03-02 (Figure 14, Item 2) to Regulator and Pulse Valve Assembly 19-352-01-07 (Figure 14, Item 3) located on Flush Tank 19-352-01-01 (Figure 14, Item 1) for flushing the system.

## Instructions (cont.)

### Purging Connection



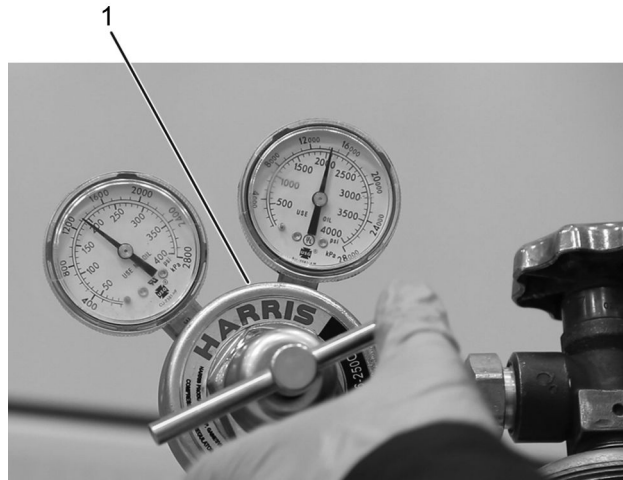
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**Figure 15. Nitrogen Regulator Assembly 19-352-03.**

1. Nitrogen Regulator Assembly 19-352-03
1. Connect Flush Gun Assembly 19-352-01-02 to fitting located on Nitrogen Regulator Assembly 19-352-03 (Figure 15, Item 1) for purging. Nitrogen Regulator Hose 19-352-03-02 can stay connected to Flush Tank Assembly 19-352-01 while purging.

## Instructions (cont.)

### Nitrogen Regulator Assembly 19-352-03



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**Figure 16. Nitrogen Regulator Assembly 19-352-03-01.**

1. Nitrogen Regulator Assembly 19-352-03-01
1. To adjust Nitrogen Regulator Assembly 19-352-03-01 (Figure 16, Item 1) for more pressure, rotate tee handle clockwise until desired pressure has been reached.
2. To adjust Nitrogen Regulator Assembly 19-352-03-01 (Figure 16, Item 1) for less pressure, rotate tee handle counterclockwise until desired pressure has been reached.



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**Figure 17. Blow Gun 19-352-03-04.**

The Blow Gun 19-352-03-04 (Figure 17) is used with the Nitrogen Regulator Assembly 19-352-03 to dry A/C lines that were removed from the vehicle.

## Instructions (cont.)



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**Figure 18. Nitrogen Flushed Through A/C Line.**

## Instructions (cont.)

### Flush Tank Assembly 19-352-01



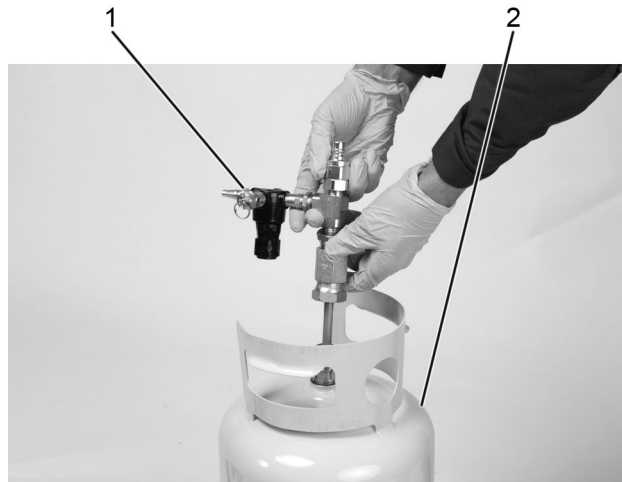
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**Figure 19. Flush Tank Assembly 19-352-01.**

The Flush Tank Assembly 19-352-01 (Figure 19) is used to supply high pressure pulsated solvent by the Flush Gun Assembly 19-352-01-02 by pulling the trigger. The Flush Gun Assembly 19-352-01-02 connects to the adapters with the silver fittings.

## Instructions (cont.)

### Flush Tank Assembly 19-352-01 Filling Procedure



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**Figure 20. Flush Tank Assembly 19-352-01 Filling Procedure.**

1. Regulator and Pulse Valve Assembly 19-352-01-07
  2. Tank Assembly 19-352-01-01
- 
1. Remove Regulator and Pulse Valve Assembly 19-352-01-07 (Figure 20, Item 1) from Tank Assembly 19-352-01-01 (Figure 20, Item 2).

## Instructions (cont.)



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**Figure 21. Tank Assembly 19-352-01-01.**

1. Tank Assembly 19-352-01-01
2. Add recommended amount of A/C flush solvent to Tank Assembly 19-352-01-01 (Figure 21, Item 1).
3. Reinstall Regulator and Pulse Valve Assembly 19-352-01-07 to Tank Assembly 19-352-01-01.



## Instructions (cont.)

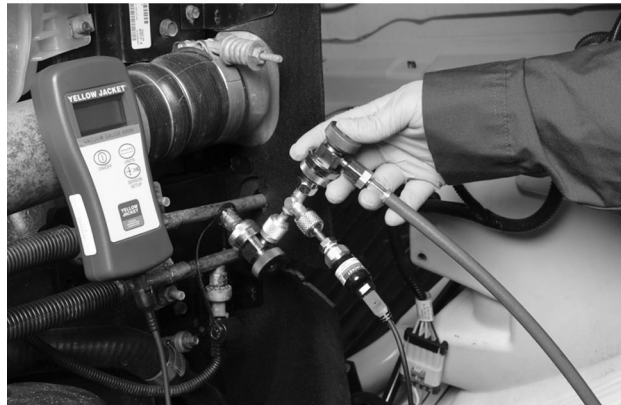
### Micron Gauge 69086 and Micron Gauge Adapter 19-353-16



**Figure 22. Micron Gauge 69086 and Micron Gauge Adapter 19-353-16.**

1. Micron Gauge 69086
2. Micron Gauge Adapter 19-353-16

The Micron Gauge 69086 (Figure 22, Item 1) and Micron Gauge Adapter 19-353-16 (Figure 22, Item 2) are used together to verify that the complete A/C system is reaching the specified vacuum reading.



**Figure 23. Micron Gauge and Micron Gauge Adapter.**

## Instructions (cont.)

### Drier Cutting Tool TC3Q

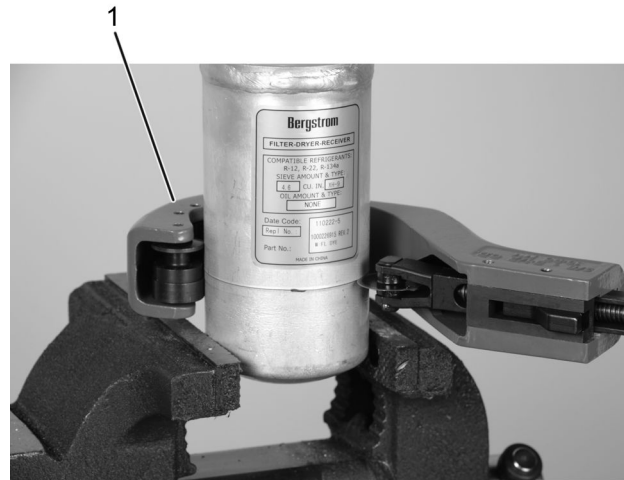


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**Figure 24. Drier Cutting Tool TC3Q.**

The Drier Cutting Tool TC3Q (Figure 24) is used to cut open the filter drier assembly to inspect for metal debris caused by a failed compressor.

## Instructions (cont.)



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**Figure 25. Drier Cutting Tool TC3Q.**

1. Drier Cutting Tool TC3Q
1. Following the proper procedures located in TSI 12-16-04, use the Drier Cutting Tool TC3Q (Figure 25, Item 1) to inspect the receiver/drier during the A/C diagnostic procedure.

## Instructions (cont.)



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## Contact Information

For questions, concerns or feedback related to Service Tools:

Navistar Service Tool Support Center

Submit a Service Tool iKNOW Case File or call 1-800-365-0088