



## **HSR Carburetor Total Kits**

# **Installation Instructions**

### **HSR42 Kits:**

|               |                               |
|---------------|-------------------------------|
| <b>#42-8</b>  | <b>'84 - '99 Evo Big Twin</b> |
| <b>#42-19</b> | <b>'99 - present Twin Cam</b> |

### **HSR45 Kits:**

|              |                               |
|--------------|-------------------------------|
| <b>#45-2</b> | <b>'84 - '99 Evo Big Twin</b> |
| <b>#45-3</b> | <b>'84 - '99 Evo Big Twin</b> |
| <b>#45-4</b> | <b>'99 - present Twin Cam</b> |

# Total Kit Installation Instructions

The HSR series carburetors are precise yet durable instruments; however, like any other piece of fine equipment, they require correct installation and reasonable care to assure optimum performance and long life. Extra time spent during installation will pay off in both short and long term performance and reliability.

This Mikuni HSR carburetor kit is designed to be a bolt-on application, and as such, is set-up and jetted properly for most applications. However, since Harley-Davidson motors are often highly modified, alternate tuning settings may be required. The Mikuni Tuning Manual helps make jetting alterations and adjustments an easy matter.

**NOTE:** Carburetor Kits not designated as C.A.R.B. exempt, are not legal for motor vehicles operated on public highways in the state of California, or in any other states and countries where similar laws apply.

## Notes, Cautions and Warnings:

Statements in this manual preceded by these words are very important:

### NOTE:

Gives helpful information that can make a job easier.

### CAUTION

Indicates a possibility of damage to vehicle if instructions are not followed.

### WARNING

Indicates a possibility of personal injury or vehicle damage if instructions are not followed.

## WARNING

Read these instructions carefully before you begin installation of your HSR kit. All procedures in this manual should be followed, paying particular attention to the following:

1. Mikuni HSR series carburetors require the use of a push/pull throttle assembly to assure closing of the throttle valve.
2. The throttle cables should be routed freely (without sharp bends) between the throttle twist grip and the carburetor and must not be pinched.
3. Gasoline is extremely flammable and is explosive under certain conditions. Do not install your Mikuni near open flame.
4. Never look directly into the bore of the carburetor while the engine is running as injury may result from possible backfire.

### NOTE:

The Mikuni intake manifold, included in these kits, requires the flanges and seals from a '90 and later "Big Twin." If you do not have these parts, you will need to get them from a Harley-Davidson dealer. The required part numbers are:

- |              |        |       |
|--------------|--------|-------|
| 1. 27009-86A | Flange | 1 ea. |
| 2. 27010-86A | Flange | 1 ea. |
| 3. 26995-86B | Seal   | 2 ea. |

## Disassembly:

1. Disconnect the battery ground wire from the battery.
2. Turn the fuel petcock to the "OFF" position.
3. Elevate the rear of the tank for better access.
4. Remove the coil, horn or other devices on the left side of the engine to gain access to the manifold bolts.
5. Remove the complete air cleaner assembly.
6. Disconnect any vacuum hoses and the fuel hose from the stock carburetor.
7. Disconnect the choke cable from the frame.
8. Remove the stock carburetor.
9. Evo: remove the stock manifold.
10. Twin Cam: unplug MAP sensor, remove manifold and then remove the MAP sensor from the manifold.

## Installation:

### NOTE:

Lubricate the manifold seals (liquid soap, oil or grease).

### Intake Manifold:

1. Install MAP sensor in Mikuni manifold (Twin Cam only).
2. Attach the Mikuni manifold to the engine. Align the manifold before tightening the bolts. The flange surface of the Mikuni manifold should be parallel with the front of the engine's cam cover. Use a level or angle meter to check this. Tighten the manifold bolts.
3. Attach the rubber flange to the Mikuni manifold with the furnished 5/16"x3/4" bolts and washers.

### Choke Cables: Mikuni & Harley-Davidson

### NOTE:

Route the cable with largest radius bends possible. Check the cable for free-play after installation. If there is no free-play, the engine may run rich and deliver poor performance or low fuel mileage.

### Harley Cable (Twin Cam Kits: 42-19, 45-4):

1. Remove the Harley choke cable from the stock carb.
2. Remove the spring and plunger from the cable.
3. Remove the spring and plunger from the Mikuni.
4. Install the Mikuni spring and plunger onto the Harley choke cable. Change nothing else; be sure to use the Harley plastic nut, not the Mikuni nut (See Figure 1).

6. Install the new assembly into the Mikuni carburetor. Be careful to only gently tighten the plastic nut.
7. Loosen the knurled plastic friction nut behind the choke knob and check for free-play (see Figure 2).



Figure 1: Harley nut with Mikuni spring & plunger

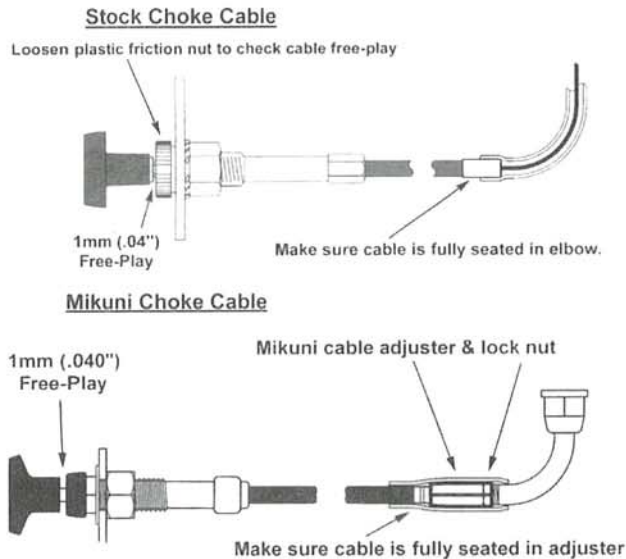


Figure 2: Choke cable adjustments

### Mikuni Cable (Evo Kits: 42-8, 45-2 & 45-3):

1. Remove nut, spring and plunger from the Mikuni.
2. Install the nut, spring and plunger onto the cable.
3. Install the assembly into the Mikuni HSR carburetor. Be careful to only gently tighten the plastic nut.
4. Check for free-play. Adjust the cable as necessary.

#### NOTE:

An optional choke cable mounting bracket is included in the Evo kits for custom installations.

### Carburetor Installation:

1. Insert the carb fully into the rubber flange, align with engine and tighten the clamp.
2. Slip the fuel hose onto the carburetor's fuel fitting and secure with the enclosed hose clamp.

#### NOTE:

Some Twin Cam installations may require removal of a small amount of fin material from the cylinders to clear the float bowl.

### Throttle Cables

The HSR carburetor uses stock 1990 and later Harley-Davidson cables. However, if your Harley is fitted with some other carburetor, you may need to purchase a set of cables. See your dealer for the correct cable set.

1. Route the throttle cables with large radius curves and so they do not interfere with other components.
2. Screw the cable adjusters together to make them as short as possible.
3. Connect the "close" cable first (see Figure 3).
4. Install the "open" cable next (see Figure 3).

5. Adjust the opening cable until the slide can be opened fully. Snug the adjuster lock nut.
6. Turn the handlebar to the right and adjust the throttle free-play with the closing cable adjuster to approximately 1/8" (see Figure 4).

### WARNING

The control cables must not pull tight when the handlebar is turned fully left and right. Also, be sure that the cables clear the fork stops at the steering head so they are not pinched when the handlebar is turned.

There must be some free-play at all handlebar positions to avoid binding in the throttle cables. Binding causes excessive wear and interferes with precise throttle control.

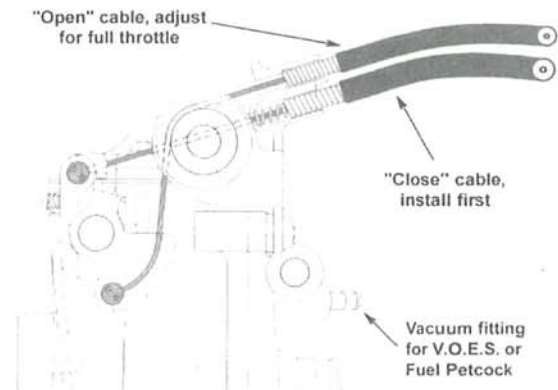


Figure 3: Cable installation guide

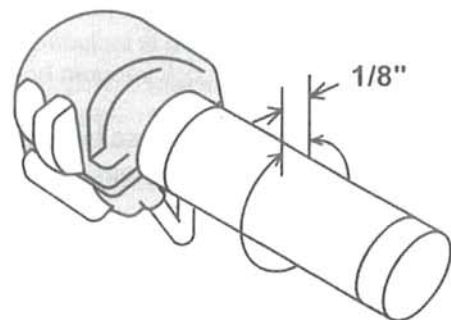


Figure 4: Throttle free-play

### Cable Lube:

Remove upper throttle housing and lube each cable.

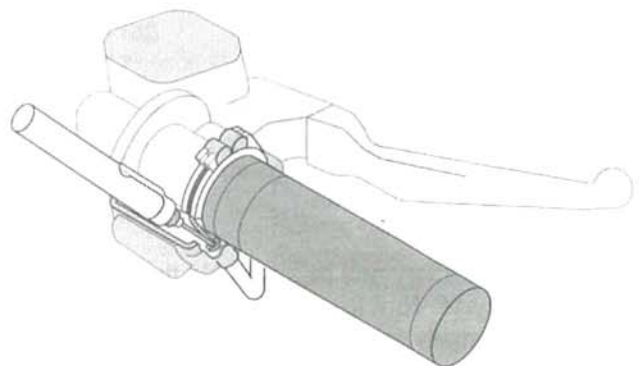


Figure 5: Cable lube procedure

### CAUTION

Cable lubrication is important. Dry cables can result in sticky throttle action, slow return to idle and excessive cable wear.

## Air Cleaner and Breather:

Use the supplied brackets, breather kit parts, O-rings, bolts & washers as required. See illustrations below.

### Evo Engines: KHS-020 breather kit

'84-'91: Use 2 ea. 5/16"x3/4" bolts, washers and O-rings.

'92: Use 2 ea. 1/2"x3/4" bolts and flat washers.

'93-'99: Add the included breather kit (KHS-020).

### TwinCam: KHS-030 breather kit.

1. Loosely attach the brackets and/or breather parts to the cylinder heads with the appropriate hardware.
2. Remove the rubber stud protectors from the Mikuni air filter and place the two backing plates on the studs. Position the air filter up to the carburetor while aligning the brackets with the filter studs. Once the filter is in place, tighten the filter clamp. Then, secure the filter to the brackets with the enclosed 5/16" nuts and flat washers (see Figure 8).
3. Cut out the thin membranes in the back of the filter and insert the plastic elbows. Use the 5/16" i.d. hose to connect the elbows to the breather fittings.
4. Use the stock cover screw to attach the Mikuni air cleaner cover to the air filter.

## Hose Routing:

1. Use the kit's hose clamps to secure the fuel hose to the petcock and carburetor. Fit the screw clamp to the petcock end and the spring clamp to the carb.
2. **Evo:** Fit the V.O.E.S. or petcock hose to the carburetor. A piece of vacuum hose is included in the kit
3. **Twin Cam:** Attach the petcock vacuum hose to the carburetor.
4. Route the float bowl overflow hose below the engine. Do not connect this hose to any other hoses.

## CAUTION

1. If you are not using the V.O.E.S., seal the Vacuum Fitting on the carburetor.
2. The Vent Fitting located above the Fuel Fitting must not be sealed! Sealing it results in erratic air/fuel mixture ratios, poor performance and possible engine damage.

## NOTE:

You may have some hoses remaining after your installation. Since this is a performance application only, some hoses and related hardware may no longer be required.

## Starting:

Re-connect the battery and re-assemble the remainder of the motorcycle. Turn the petcock on and start the engine as you normally would (be sure the throttle is fully closed). After it is warm, set the idle to the recommended 1,000 to 1,100 rpm. To learn more about adjusting your HSR carburetor, refer to the included Tuning Manual.

## Air Cleaner Element Care:

Inspect and, if necessary, clean the air filter every 5,000 miles. The K&N brand filter supplied with this kit is very effective. It removes extremely small dirt particles yet does not substantially interfere with air flow into the engine. When you clean the filter, be sure to follow the cleaning instructions included with this kit.

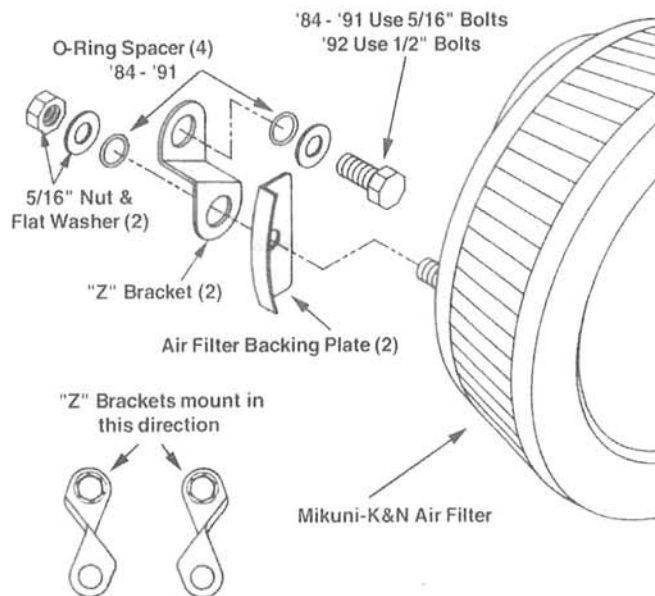


Figure 6: Air cleaner assembly guide

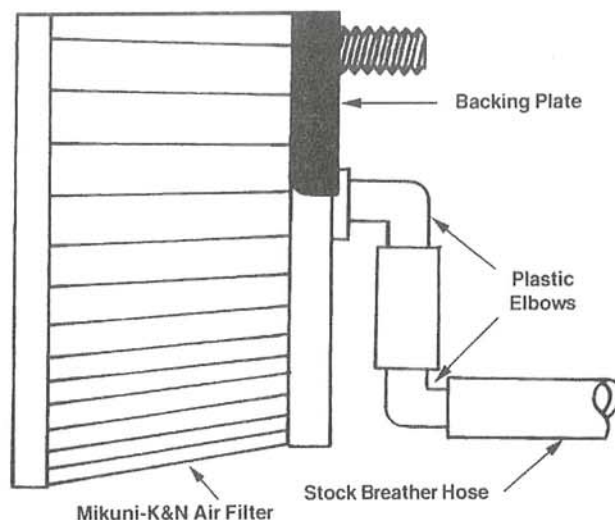
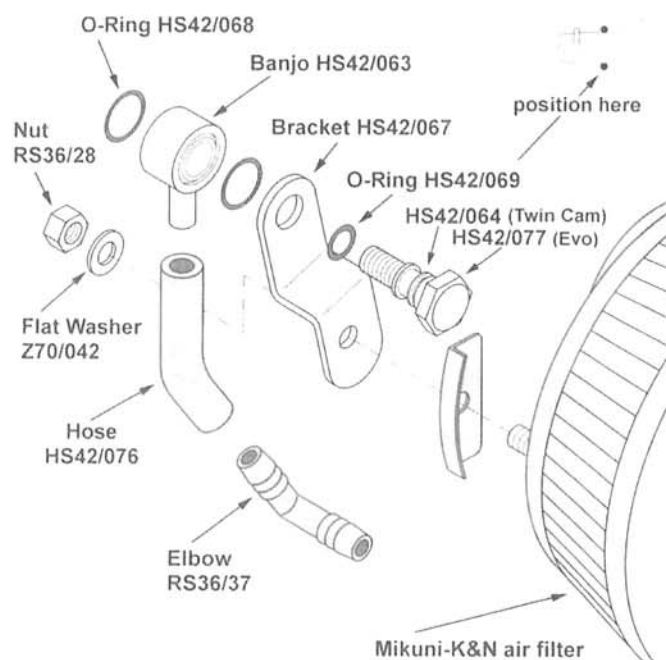


Figure 7: '84 - '92 breather installation



**Figure 8:**  
**'93 - '99 Evo breather Kit (KHS-020)**  
**Twin Cam breather Kit (KHS-030)**

### Twin Cam Optional Tuning

**Suggestion:** Certain Twin Cam 88/95 ci configurations may improve mileage by using our #20 pilot jet, #50 a/p nozzle and #2 needle clip position. These parts are now included. Refer to the HSR Tuning Manual (pg. 8-9) for detailed instructions.

## Kit Contents:

### Twin Cam: Kit: 42-19 45-4

|                  |                      |   |   |
|------------------|----------------------|---|---|
| TM42-6           | Carburetor           | 1 |   |
| TM45-2           | Carburetor           |   | 1 |
| HS42/012         | Air Filter, 2-1/2"   | 1 |   |
| HS42/012-300     | Air Filter, 3"       |   | 1 |
| HS42/021-250-CHR | Cover A/C (Chrome)   | 1 | 1 |
| HS42/061-45TC    | Manifold             | 1 | 1 |
| HS42/062-42      | Rubber Flange        | 1 |   |
| HS42/062-45      | Rubber Flange        |   | 1 |
| KHS-030          | Breather Kit         | 1 | 1 |
| N100.604-165     | Main Jet             | 1 |   |
| N100.604-180     | Main Jet             |   | 1 |
| VM28/486-20      | Pilot Jet            | 1 |   |
| TM42/11-50       | Acc. Pump Nozzle     | 1 |   |
| N124.063         | O-Ring               | 1 |   |
| RS36/47          | Plate, Back          | 2 | 2 |
| Z70/042          | Flat Washer, 5/16"   | 2 | 2 |
| Z70/045          | Hose Clamp           | 1 | 1 |
| Z70/05512        | Hose, Fuel           | 1 | 1 |
| Z70/146          | Nylon Cable Tie      | 4 | 4 |
| HS42/073         | Cable Lube           | 1 | 1 |
| RS36/27-075      | Bolt, Hex 5/16"x3/4" | 2 | 2 |

### Evo: Kit: 42-8 45-2

|                  |                     |   |   |
|------------------|---------------------|---|---|
| TM42-6           | Carburetor          | 1 |   |
| TM45-2           | Carburetor          |   | 1 |
| HS42/012         | Air Filter, 2-1/2"  | 1 |   |
| HS42/012-300     | Air Filter, 3"      |   | 1 |
| HS42/019         | Bracket, Air Filter | 2 | 2 |
| HS42/021-250-CHR | Cover A/C           | 1 | 1 |
| HS42/034         | O-ring              | 4 | 4 |
| HS42/037         | Bolt, 1/2"-13 x 1"  | 2 | 2 |
| HS42/038         | 1/2" Washer         | 2 | 2 |
| HS42/061-45      | Manifold            | 1 | 1 |
| HS42/062-42      | Rubber Flange       | 1 |   |
| HS42/062-45      | Rubber Flange       |   | 1 |
| KHS-020          | Breather Kit        | 1 | 1 |
| N100.604-155     | Main Jet            | 1 |   |
| N100.604-165     | Main Jet            | 1 |   |
| N100.604-170     | Main Jet            |   | 1 |
| N100.604-180     | Main Jet            |   | 1 |
| RS36/02-17       | Hose Clamp          | 1 | 1 |
| RS36/23          | Choke Bracket       | 1 | 1 |
| RS36/27-075      | Bolt, 5/16" x 3/4"  | 4 | 4 |
| RS36/3609        | Hose, 3/16" x 9"    | 1 | 1 |
| RS36/47          | Plate, Back         | 2 | 2 |
| RS36/54          | Screw, Cover        | 1 | 1 |
| Z70/042          | Flat Washer, 5/16"  | 4 | 4 |
| Z70/045          | Hose Clamp          | 1 | 1 |
| Z70/05512        | Hose, Fuel          | 1 | 1 |
| Z70/146          | Cable Tie, 7-1/2"   | 4 | 4 |
| 990-662-002      | Choke Cable Assy    | 1 | 1 |
| HS42/073         | Cable Lube          | 1 | 1 |

**Note:** The 45-3 Kit does not include a manifold. Otherwise, it is identical to the 45-2 Kit.

# HSR PARTS LIST

| #    | PART NO.                | DESCRIPTION                                   |  |
|------|-------------------------|-----------------------------------------------|--|
| 1.   | C5=0410-B               | Screw, Top Cover                              |  |
| 2.   | CW2=0414-B              | Screw, Top Cover                              |  |
| 3.   | 776-39005               | Top Cover, (42/45)                            |  |
| 3a.  | HS42/081                | Top Cover, (HSR48)                            |  |
| 4.   | <b>TM42/04</b>          | Gasket, Top Cover                             |  |
| 5.   | <b>BS32/126</b>         | E-Ring, Jet Needle                            |  |
| 6.   | <b>826-03002</b>        | Washer, Jet Needle                            |  |
| 7.   | J8-8DDY01-97            | Jet Needle (42)                               |  |
| 7a.  | J8-8CFY02-97            | Jet Needle (45/48)                            |  |
| 8.   | TM42/03                 | Lever, T.V. (42/45)                           |  |
| 8a.  | TM42/08-1A              | Lever, T.V. (48)                              |  |
| 9.   | B40I/56                 | E-Ring, Link Lever                            |  |
| 10.  | B40I/10                 | Packing, Link Lever                           |  |
| 11.  | 834-23041               | Pin, Link Lever                               |  |
| 12.  | TM42/08-3.0             | Throttle Valve (Slide)                        |  |
| 13.  | 739-13002               | Screw, Needle Retainer                        |  |
| 14.  | TM42/16                 | Clip, Needle Retainer                         |  |
| 15.  | TM42/13                 | Sealing Ring, T.V. (42/45)                    |  |
| 15a. | TM48/02                 | Sealing Ring, T.V. (48)                       |  |
| 16.  | TM42/10                 | Seal, Throttle Valve                          |  |
| 17.  | 925-98006               | Pulley, Cable Bracket                         |  |
| 18.  | 53974                   | E-Ring, Cable Bracket                         |  |
| 19.  | TM42/51                 | Bracket Ass'y, Cable                          |  |
| 19a. | TM42/53                 | Bracket Ass'y, Sportster                      |  |
| 20.  | B3=0520-B               | Bolt, Bracket                                 |  |
| 21.  | VM28/204                | Spacer, Bracket                               |  |
| 22.  | TM42/38                 | Plate, Lock Tab                               |  |
| 23.  | C2=0514-B               | Screw                                         |  |
| 24.  | 640-12001               | Starter Nut, Choke                            |  |
| 25.  | VM14/241                | Spring, Starter Plunger                       |  |
| 26.  | N189.192                | Starter Plunger                               |  |
| 27.  | <del>TM42/06</del>      | <del>Body, Bearing &amp; Spigot (42/45)</del> |  |
| 27a. | <del>TM48/02</del>      | <del>Body, Bearing &amp; Spigot (48)</del>    |  |
| 28.  | 616-94029               | Seal, Spigot Body                             |  |
| 29.  | 925-19011               | Ring (Steel)                                  |  |
| 30.  | TM42/43                 | Lever, A/P                                    |  |
| 31.  | N138.019                | Pin, Throttle Lever                           |  |
| 32.  | TM42/48                 | Lever, Throttle                               |  |
| 33.  | M12F/46-BB              | Spring, A/P                                   |  |
| 34.  | MC-0316-B               | Screw, A/P                                    |  |
| 35.  | TM42/47                 | Spring, A/P                                   |  |
| 36.  | <del>TM42SS1/01-0</del> | <del>Mixing Body (42/45)</del>                |  |
| 36a. | <del>TM48SS1/01</del>   | <del>Mixing Body (48)</del>                   |  |
| 37.  | B36/95                  | Packing, Shaft (Plastic)                      |  |
| 38.  | TM42/36                 | Adjusting Screw, A/P                          |  |
| 39.  | B30/205                 | O-Ring, A/P Screw                             |  |
| 40.  | TM40/89                 | Bolt                                          |  |
| 40a. | TM42/17                 | Plate, Lock Tab for Shaft                     |  |
| 41.  | BN38/43                 | Pin, Return Lever                             |  |
| 42.  | TM42/46                 | Lever, Return                                 |  |
| 43.  | B30/1069                | Adjusting Screw, Throttle                     |  |
| 44.  | N3=04                   | Nut, Throttle Stop                            |  |
| 45.  | TM42/19                 | Spring, Throttle Return                       |  |
| 46.  | 700-15012               | Shaft, Throttle                               |  |
| 47.  | TM42/15                 | Plate, Fuel Joint Retainer                    |  |
| 48.  | C2=0410-B               | Screw, Fuel Joint                             |  |
| 49.  | 604-26014               | Screw, Pilot Air                              |  |
| 50.  | N133.206                | Spring, Pilot Air                             |  |
| 51.  | VM12/205                | Washer, Pilot Air                             |  |
| 52.  | <b>N133.037</b>         | O-Ring, Pilot Air                             |  |
| 53.  | TM40/27                 | Fuel Joint                                    |  |
| 54.  | <b>KV/10</b>            | O-Ring, Fuel Joint                            |  |
| 55.  | B30/398                 | Packing, Idle Adjuster                        |  |
| 56.  | VM22/138                | Washer, Idle Adjuster                         |  |
| 57.  | 730-09018               | Spring, Idle Adjuster                         |  |
| 58.  | 925-15001               | Ring, Idle Adjuster                           |  |
| 59.  | TM42/32                 | Idle Adjuster (Long)                          |  |
| 59a. | 990-605-065             | Idle Adjuster (Short)                         |  |
| 60.  | BS30/97-00              | Air Jet (Blank)                               |  |
| 61.  | 784-430000-Y-6          | Needle Jet (723)                              |  |
| 62.  | TM42/11-70              | Nozzle, Accel. Pump                           |  |
| 63.  | <b>N124.063</b>         | O-Ring, A/P                                   |  |
| 64.  | VM28/486-25             | Pilot Jet                                     |  |
| 65.  | TM42/12                 | Extender, Main Jet (42/45)                    |  |
| 65a. | TM42/12-1A              | Extender, Main Jet (48)                       |  |
| 66.  | N100.604-160            | Main Jet                                      |  |
| 67.  | <b>616-33003</b>        | O-Ring N.V.                                   |  |
| 68.  | <b>VM13/216</b>         | Screw, N.V. Retainer                          |  |
| 69.  | <b>786-27001-4.2</b>    | Needle Valve Ass'y (42/45)                    |  |
| 69a. | <b>786-27002-1A</b>     | Needle Valve Ass'y (48)                       |  |
| 70.  | 859-32027               | Float Ass'y                                   |  |
| 71.  | BV26/22                 | Pin, Float                                    |  |
| 72.  | C2=0410                 | Screw, Float Pin                              |  |
| 73.  | <b>616-94028</b>        | Packing, Float Bowl                           |  |
| 74.  | TM42/05                 | Float, Chamber Body                           |  |
| 75.  | <b>N122.028</b>         | Hose, Overflow                                |  |
| 76.  | <b>VM28/254</b>         | O-Ring, Drain Plug                            |  |
| 77.  | TM32/41                 | Drain plug (42/45)                            |  |
| 77a. | TM32/41-1D              | Drain Plug (48)                               |  |
| 78.  | <b>C2=0412-B</b>        | Screw, Flt Bowl, short                        |  |
| 79.  | TM36/44-1A              | Rod, A/P                                      |  |
| 80.  | <b>TM36/64</b>          | Boot, A/P Rod                                 |  |
| 81.  | TM36/60                 | Plunger, A/P                                  |  |
| 82.  | VM14SC13/89             | Spring, A/P                                   |  |
| 83.  | N198.063                | Rubber Cap, Purge Port                        |  |

## Alternate Parts

### Jet Needles:

| HSR42        | HSR45/48     |        |
|--------------|--------------|--------|
| J8-8DDY01-95 | J8-8CFY02-95 | Richer |
| J8-8DDY01-96 | J8-8CFY02-96 | Richer |
| J8-8DDY01-97 | J8-8CFY02-97 | Std    |
| J8-8DDY01-98 | J8-8CFY02-98 | Leaner |

### Accelerator Pump Nozzles:

|            |        |
|------------|--------|
| TM42/11-70 | Std    |
| TM42/11-60 | Leaner |
| TM42/11-50 | Leaner |

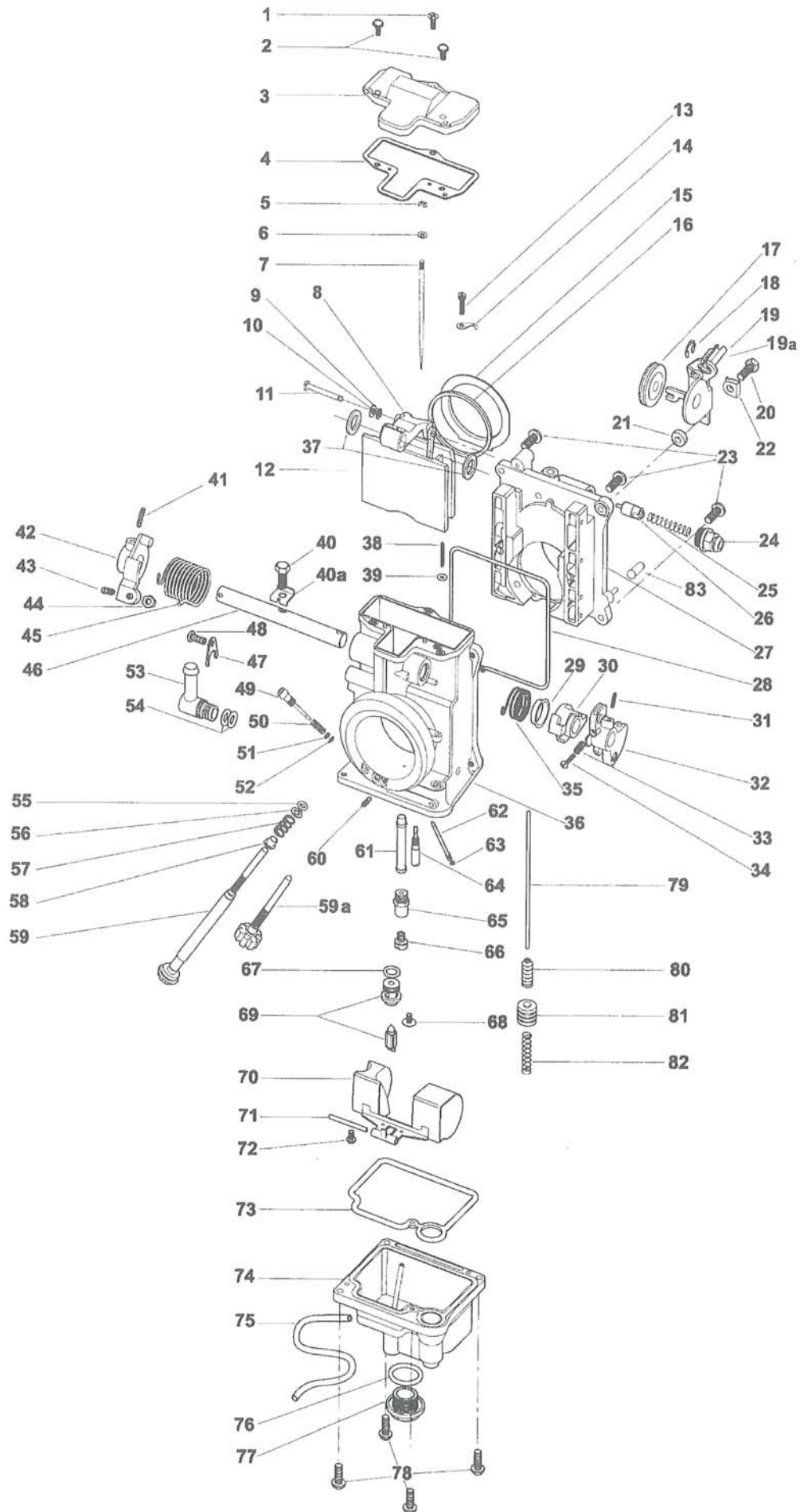
### Needle Valve Assemblies:

|                  |                |
|------------------|----------------|
| 786-27002-1A-4.5 | Std (HSR48)    |
| 786-27001-4.2    | Std (HSR42/45) |
| 786-27001-3.5    | Smaller        |
| 786-27001-2.3    | Pressure only  |

### Rebuild Kit:

|           |                |
|-----------|----------------|
| HSR42/45: | <b>KHS-016</b> |
| HSR48:    | <b>KHS-031</b> |

**NOTE:**  
 1. Lined-through part numbers are not available.  
 2. Parts in bold are included in rebuild kits.



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