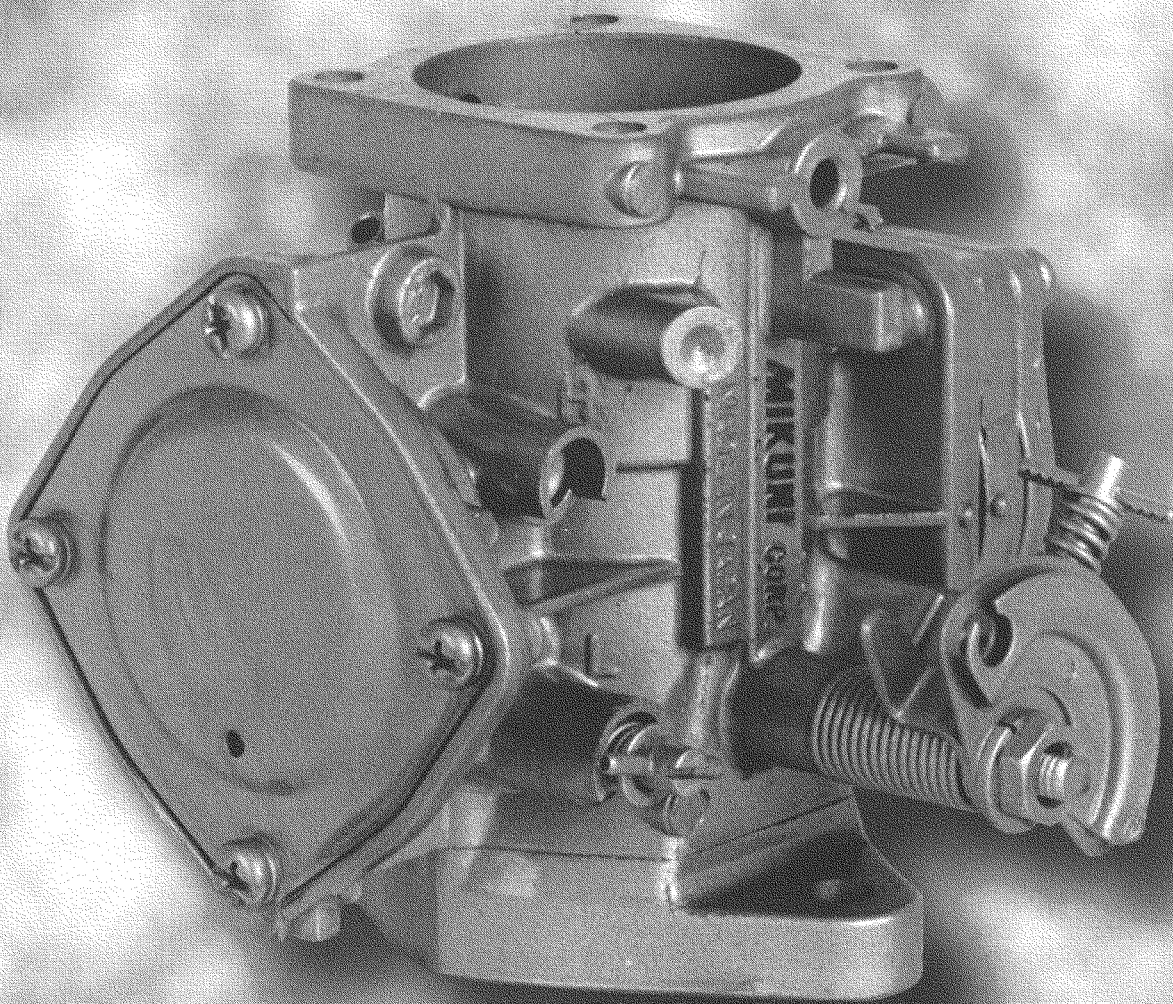


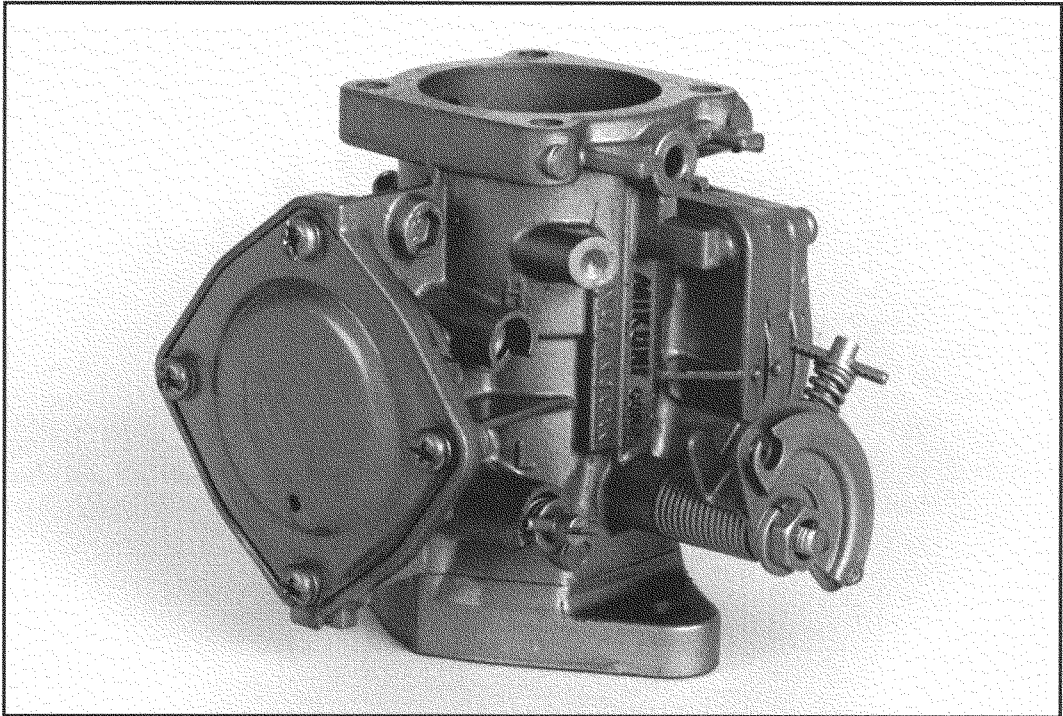
MIKUNI

SUPER BN CARBURETORS



**WATERCRAFT CARBURETOR
Owner's Manual**

Revised 3/96



Mikuni Super BN46 Carburetor (Jet cover side).

INTRODUCTION

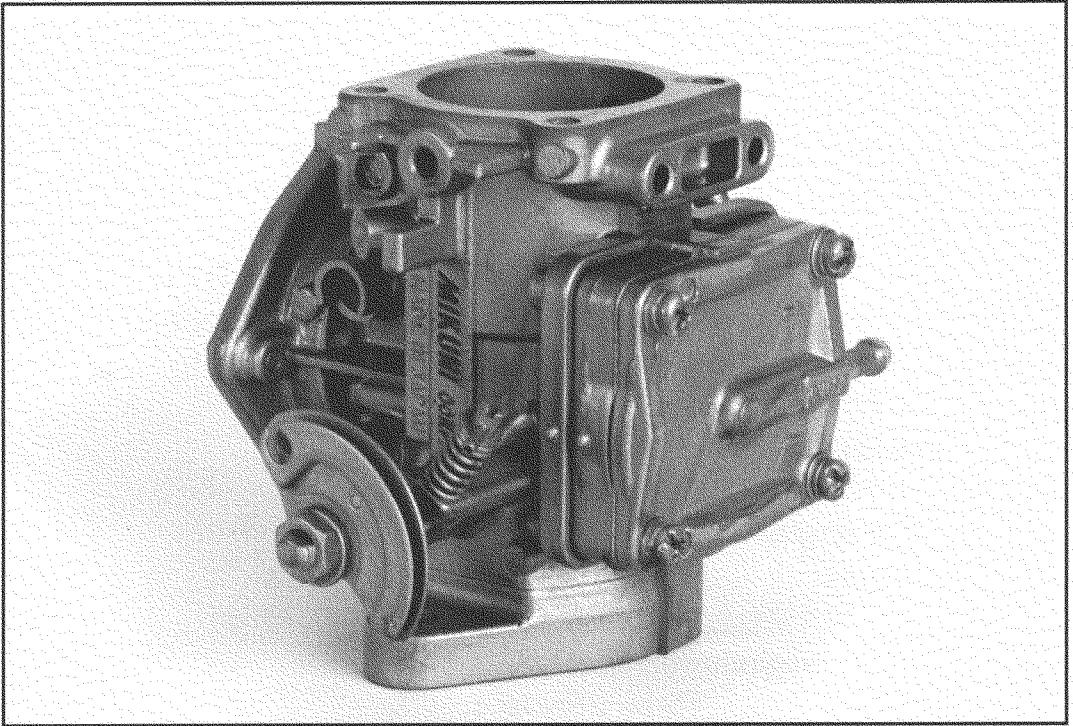
SUPER BN

The Super BN Carburetor for high performance applications is the latest in a series of watercraft carburetors from Mikuni. The Super BN earns its name because of the increased performance it delivers over previous Mikuni BN Carbs.

What differentiates the Super BN from previous BNs?

- 1). The fuel pump and jet sections are separate for easier maintenance.
- 2). It has an integral fuel filter.
- 3). The fuel pump capacity is increased by almost 20%.
- 4). Air flow is increased by 9%.
- 5). It is easily tuneable with replaceable jets (in a wide range of sizes) and an array of other tuning components.

With the introduction of the Super BN Series of carburetors, Mikuni American has made a renewed commitment to the watercraft industry by researching carburetor tuning applications and disseminating this information to the customer. In the past, jetting information was available through many different sources, but unfortunately, with as many different recommendations as there were sources. With this manual, Mikuni American is able to provide a more reliable and consistent source of approved technical information.



Mikuni Super BN46 Carburetor (Fuel pump view).

CARB --- ***INSTALLATION***

CAUTION: Exercise care when changing carburetion components and any time you work with the fuel system on your watercraft. Work in a well ventilated area. Do not engage the starter while fuel lines are disconnected. Immediately clean up any fuel spill that might occur during carb installation.

A: As when installing any performance product, a degree of mechanical ability is required. If after reviewing the parts and instructions you don't feel that you can properly complete this installation, take your watercraft to a competent professional. Proper installation and adjustment will save time, money and aggravation.

B: In most cases your new Super BN Carburetor will be installed in conjunction with an aftermarket manifold and flame arrestor/air filter system. We recommend using this manual, together with the applicable shop manual for your watercraft, and the instructions from the aftermarket manifold manufacturer to help you with the installation and tuning of the Super BN Carburetor.

C: Super BN carbs were designed to, and work best, in the down draft position. Many tuners choose to mount Super BNs in more of a side draft position. This will work okay, as long as the carbs are oriented with the pump on top and the regulator portion down, otherwise the jet portion will constantly drain into the carb making calibration impossible.

D: HOW TO DETERMINE THE CORRECT CARB SIZE TO USE

The following recommendations are for performance applications:

Piston port and reed valve twin cylinder engines

- 1). Up to 80 hp SBN 44
- 2). Up to 90 hp SBN 46
- 3). 90 hp and up Dual SBN 38, 44 or 46's

Rotary valve engines

- 1). Limited class SBN 44/46's or dual SBN 38's
- 2). Mod class Dual SBN 44/46's

Three cylinder engines

- 1). Limited class Three SBN 38's
- 2). Mod class Three SBN 44/46's

E: ALL APPLICATIONS

- 1). Use a new gasket between the carb(s) and the intake manifold.
- 2). Use flat washers and self-locking nuts to secure the carb(s).
- 3). Be sure that the fuel lines are of the correct diameter for the carb fittings. Secure all hose connections with cable ties or hose clamps.
- 4). If the primer fitting is not being used, plug or cap the fitting.
- 5). When installing the throttle cable, be sure to securely tighten the jam nuts. Allow free play at the throttle lever. Make sure that the throttle cable is not pulled open as the handlebars are turned from side to side; correct the cable routing if necessary.

F: INSTALLING DUAL SUPER BN CARBS

The only Super BN carbs that are factory prepared to be used as duals are the BN38-34-8075, 8076. Several other models have extended throttle shafts to make them easier to use as duals; one of the carbs will need to be modified slightly prior to use. The modification consists of removing the throttle lever, idle stop, spring and sleeve, and then cutting the threaded shaft end to the desired length.

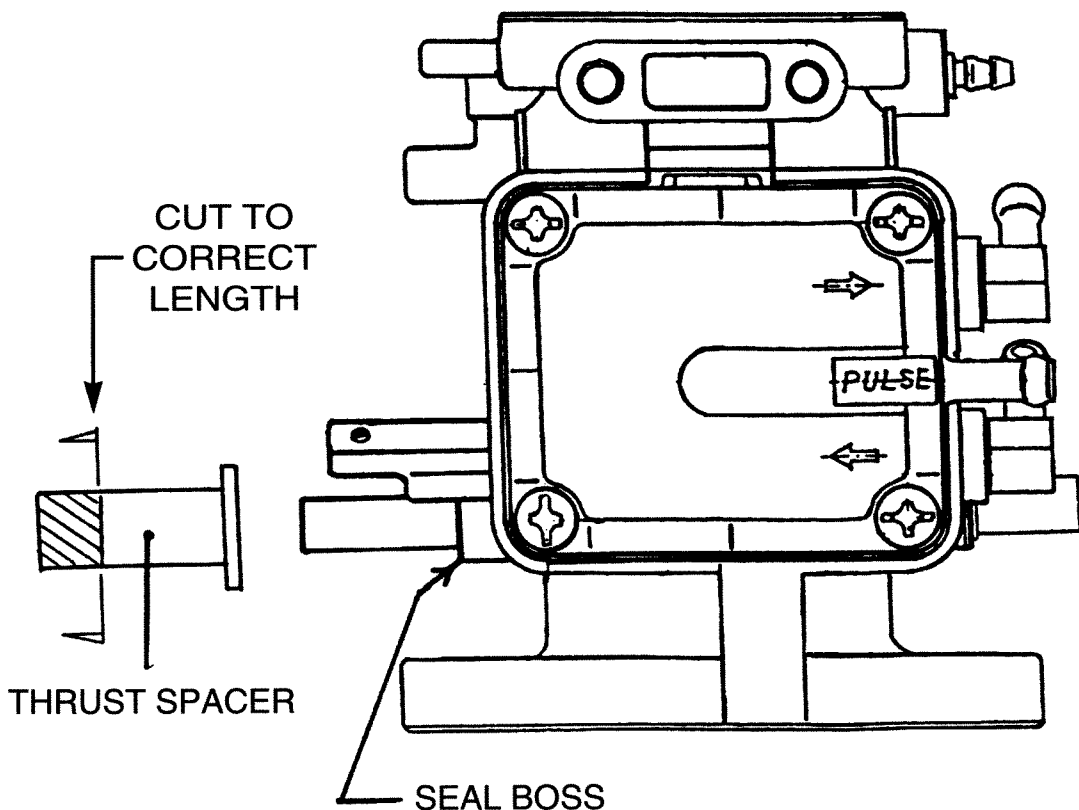
After removing the above mentioned parts, place both carbs on the manifold and cut enough of the threaded end of the shaft to allow one eighth inch (0.125") clearance between the shaft ends: Be sure to chamfer the sharp edge.

A Mikuni coupling kit, **MK-BN/001**, is recommended to connect the two carbs together and synchronize them.

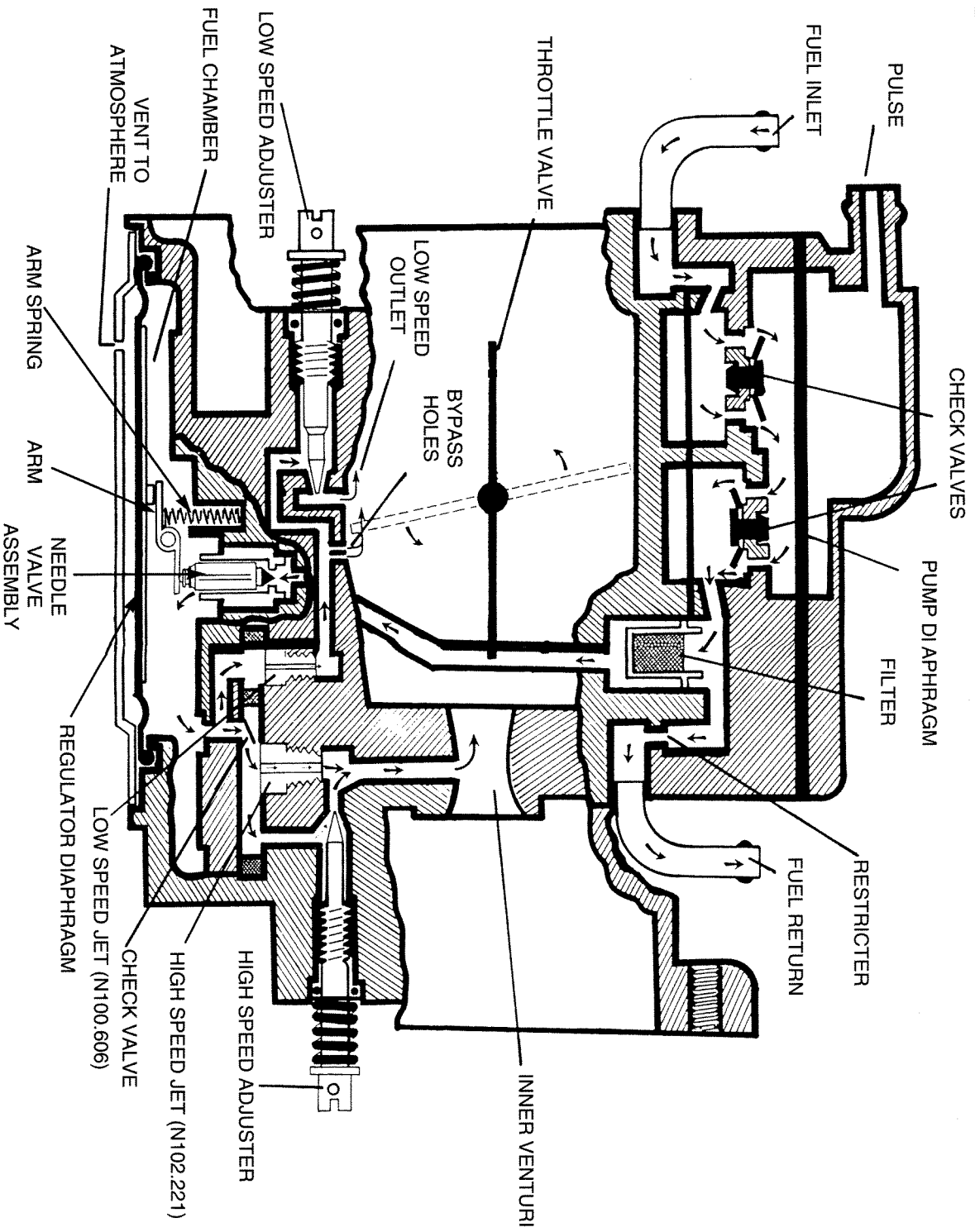
NOTE: The sleeve that was removed from the carb is actually a **thrust spacer** and must be used with the coupler. The sleeve should be shortened to the correct length and placed between the end of the coupler and the seal boss (see illustration) to prevent the shaft from moving side to side; this movement can cause damage to the throttle valve.

G: SYNCHRONIZING DUAL CARBS

- 1). Place the coupling on the throttle shaft between the carbs and secure the carbs to the manifold.
- 2). Back out the idle stop screw until it no longer contacts the throttle linkage.
- 3). Position the coupling between the carbs, against the shortened sleeve, and securely tighten the set screws on one end only.
- 4). Use the eraser end of a pencil or similar blunt object to push and hold the throttle valve closed in the carb without a return spring. With the throttle valve held closed, tighten the remaining screws.
- 5). Adjust the idle stop screw for the desired idle speed.



INTERNAL COMPONENTS



CUTAWAY DRAWING

Use the cutaway drawing (pages 6&7) to learn about the inner workings of the Super BN carburetor. Starting with the fuel pump, fuel enters through the **fuel inlet**, being drawn in by the engine's **pulse** acting on the **pump diaphragm**. The fuel passes through a series of **check valves** and then the fuel required by the engine passes through a **fuel filter**. Excess fuel is diverted through a **restrictor** and then back to the fuel tank via the **fuel return**. The purpose of the fuel restrictor is to act as a fuel pressure regulator for the fuel pump.

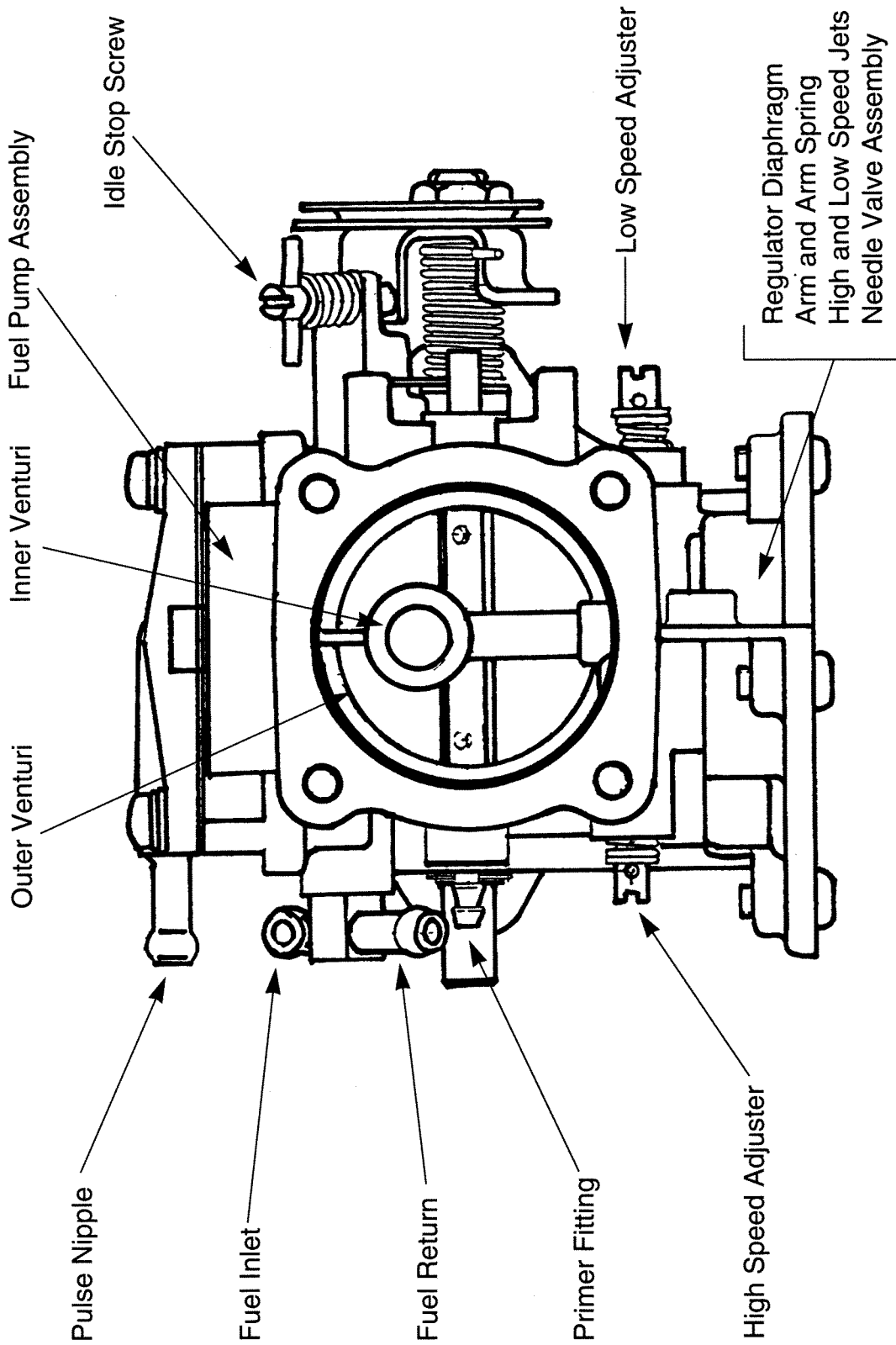
After the fuel passes through the filter it goes directly to the **needle valve assembly** and then into the **fuel chamber**. Fuel flow into the fuel chamber is controlled by the **regulator diaphragm, arm spring, arm,** and the **vent to atmosphere**. These components, along with the needle valve, make up the regulator portion of the Super BN. As you will learn, the Super BN is part carburetor and part fuel regulator. The regulator portion controls fuel flow at lower speeds, idle to 1/4 throttle, and the carburetor portion controls fuel flow from about 1/4 throttle to full throttle.

At idle, fuel is drawn through the **low speed jet** to the **low speed outlet**, via the **low speed adjuster**, and to the **bypass holes**. The low speed adjuster controls fuel flow for a smooth idle and initial throttle response. As the **throttle valve** is opened from the idle position, the bypass holes are increasingly exposed to the air flow. Their function is to help the carburetor "transition" from low speed to high speed operation. The size of the low speed jet directly affects fuel flow through the bypass holes for low speed performance. The other function affecting low speed performance is the regulator portion of the BN. The regulator portion can be turned by changing the arm spring tension or the size of the needle valve, or both. More of that later.

As the Super BN transitions to its high speed fuel circuit, at about 3/8 throttle, fuel is drawn through the **check valve**, and initially through the **high speed jet**. The function of the check valve is to prevent the low speed circuit from sucking in air through the high speed circuit at throttle openings of less than three eighths. Fuel from the high speed jet passes through the **inner venturi** then into the engine. The **high speed adjuster** controls the maximum amount of fuel flow for full throttle performance from about 3/4 throttle opening.

For a closer look at the contribution of each tuning circuit refer to the Fuel Flow Chart towards the back of this manual.

EXTERNAL COMPONENTS



MK-BN38/44 SPR

REBUILD KIT FOR SUPER BN38, BN44 and BN46

(Kit Includes Items 1-16 to Rebuild One Carb)

SUPER BN EXPLODED

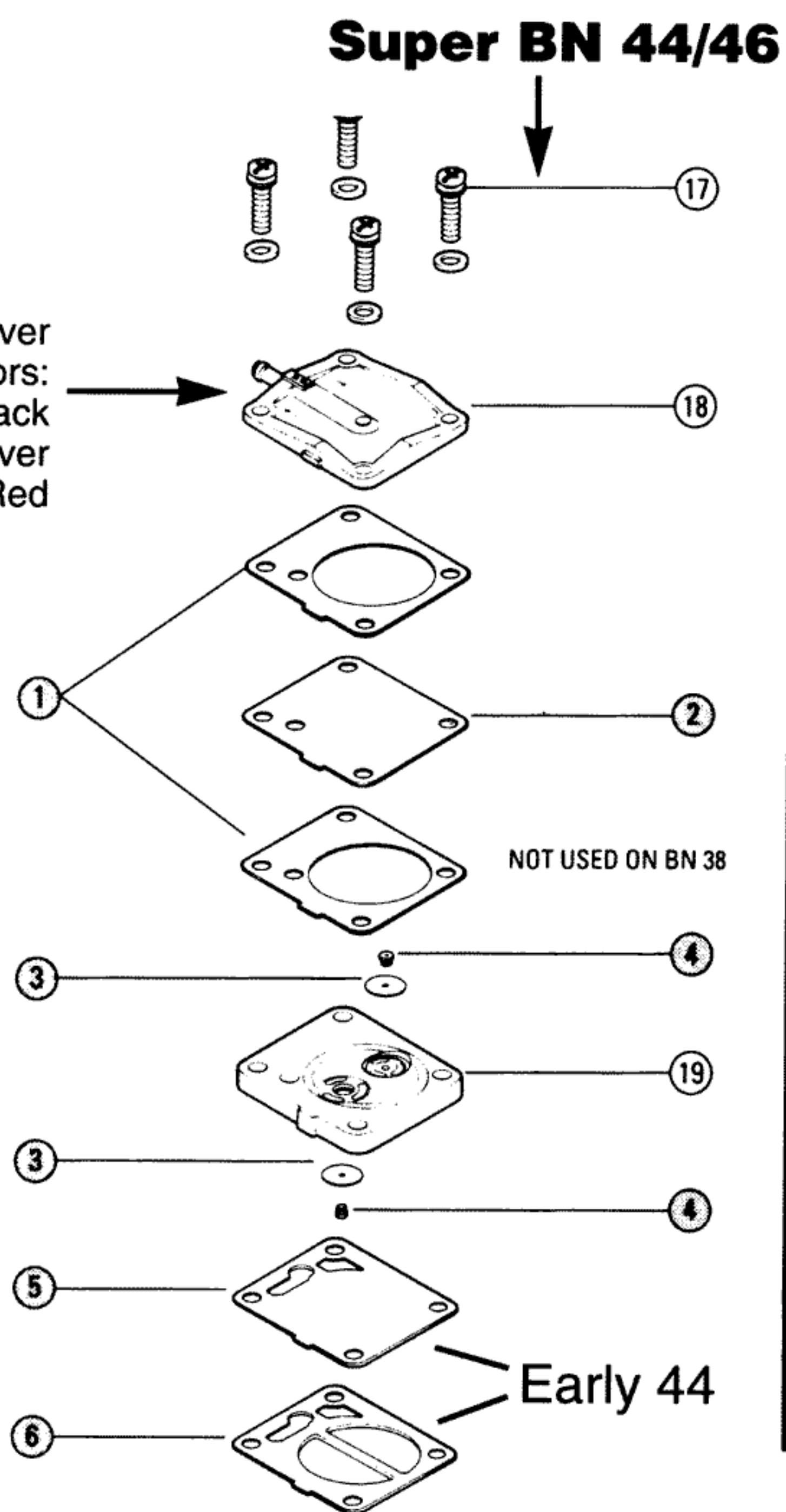
No. Part No. Description

- 1. BN38/547 Gasket, Pump (2)
- 1a. 616-72001* O-ring
- 2. BN34/97 Diaphragm, Pump (Clear)
- 3. BN34/124 Check Valve (2) (Clear)
- 4. BN34/125 Grommet, Check Valve (2)
- 5. BN34/100** Diaphragm, Damper
- 5a. BN34/129* Diaphragm, Damper
- 6. BN34/101** Gasket, Damper
- 6a. 616-92007* O-Ring
- 7. BN44/146 Filter
- 8. B30/305 O-Ring, Hi Speed
- 9. MD12/16 O-Ring, Low Speed
- 10. KV/10 O-Ring, Needle Valve
- 11. BN34/123 Gasket, Valve Body
- 12. BN34/107 Check Valve (Clear)
- 13. 730-03027 Spring, Arm (115 grams)
- 14. VM30/97 Pin, Arm
- 15. BN38/534 Arm (Stainless)
- 16. BN44/145 Diaphragm Assembly

(Items 17-43 for Reference Only Not Included in Kit)

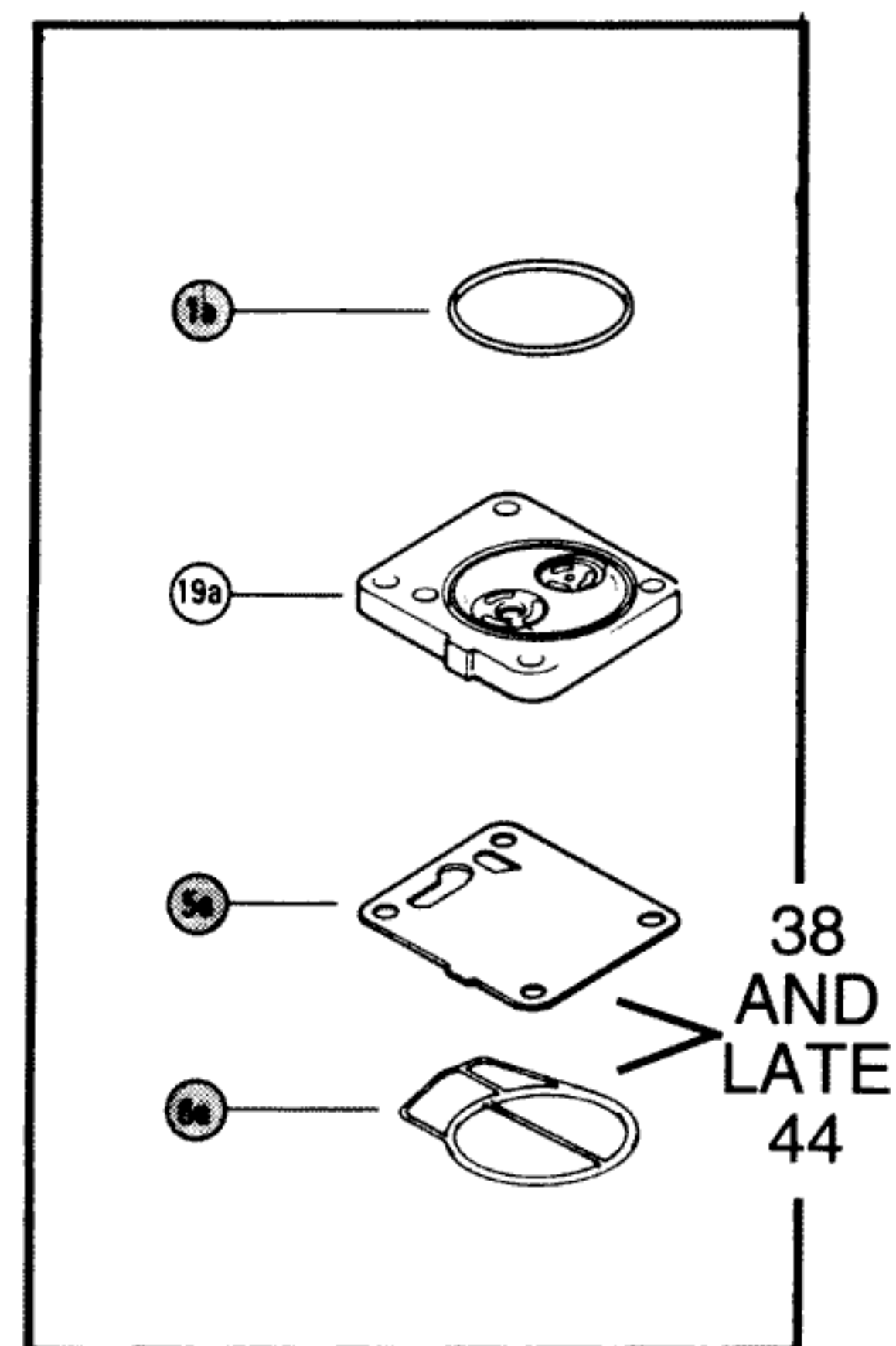
- 17. BN34/120-30 Screw with 2 Washers, Stainless-30mm (4pcs.)

*Item 18. Pump Cover
Available in Colors:
999-642-002-1A-Black
-1B-Silver
-1C-Red



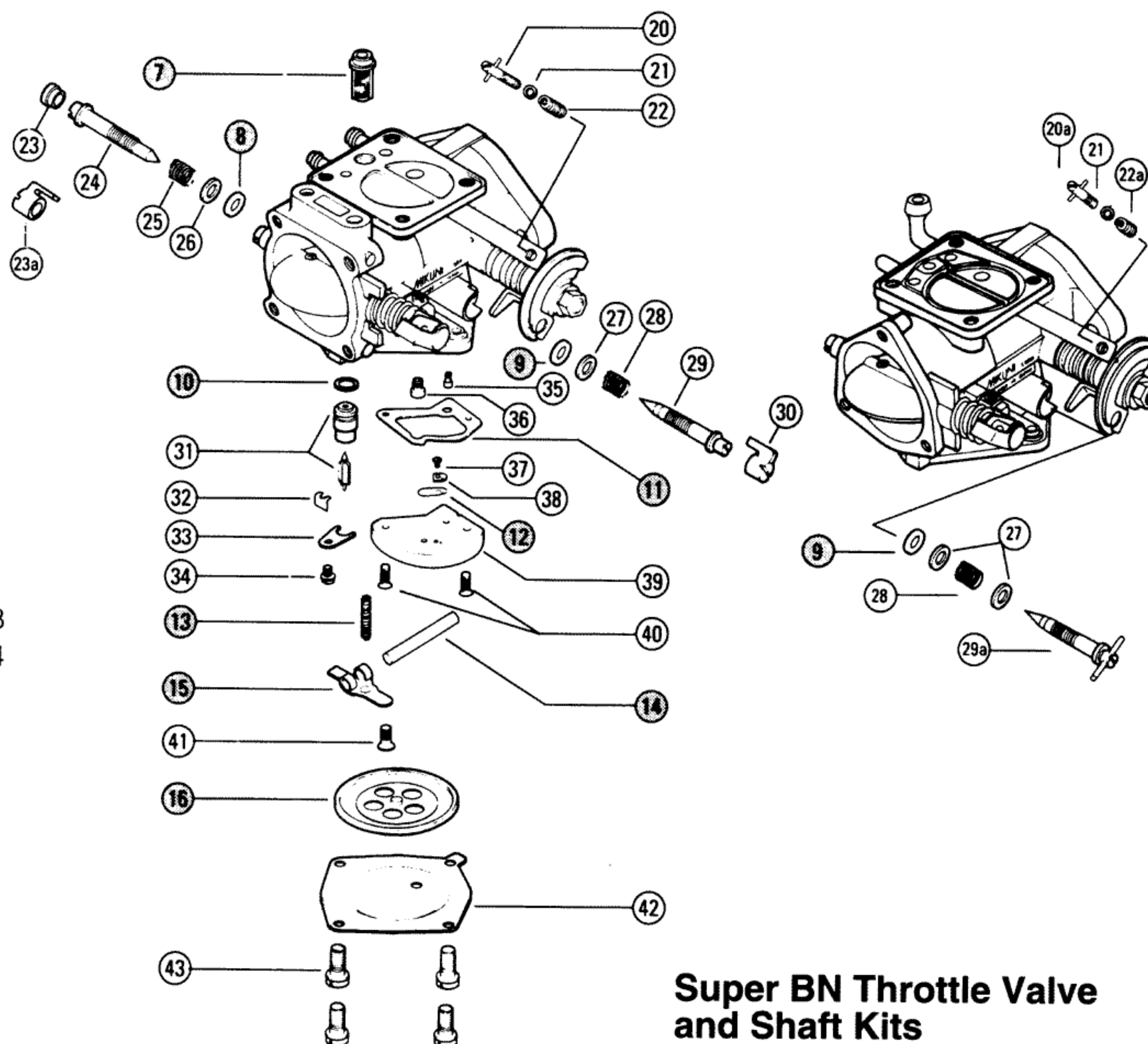
Super BN 38

Also used in late style Super BN 44



- *18. BN34/95B Cover, Pump
- 19. BN34/98** Body Assembly, Pump
- 19a. BN34/128* Body Assembly, Pump
- 20. BN44/109** Stop Screw, Idle
- 20a. BN34/82* Stop Screw, Idle
- 21. BN38/39 Washer (Aluminum)
- 22. BN38/341** Spring, Idle
- 22a. BN38/344* Spring, Idle
- 23. B26/03** Cap
- 23a. BN44/118* Cap with Tab
- 24. 604-25017 Adjuster, Hi Speed, 38/44
- 24a. BN 44/167 Adjuster, Hi Speed w/ Cross Bar, 38/44
- 25. BN38/344 Spring, Hi Speed
- 26. BN38/39 Washer, Hi Speed (Aluminum)
- 27. BN38/172 Washer, Low Speed (Aluminum)
- 28. BN38/343 Spring, Low Speed
- 29. 604-26008** Adjuster, Low Speed, 44
- 29a. BN38/477* Adjuster, Low Speed (with Cross Bar), 38
- 29b. BN44/166 Adjuster, Low Speed (with Cross Bar), 44
- 30. BN44/188 Cap
- 31. 786-35015-size Needle Valve Assembly (Viton)
- 32. VM15/285 Spring Clip, N.V.
- 33. BN34/117-GG Plate, N.V. Retainer
- 34. CW2-0307-G Screw with Washer
- 35. N100.606-size Jet, Low Speed
- 36. N102.221-size Jet, High Speed
- 37. BV15/121-05-GG Screw
- 38. BN34/108-GG Plate, Valve
- 39. BN44/165 Valve Body Assembly
- 40. C5-0414-G Screw (2pcs)
- 41. C6-0308-G Screw
- 42. BN44/147 Cover (Stainless)
- 43. MCWS-0512 Screw with Washer (4) (Stainless)

Note: *BN38 & later BN44
**BN44 only



Super BN Throttle Valve and Shaft Kits

MK-BN/038 TV for 38mm carbs
MK-BN/044 TV for 44mm carbs
MK-BN/046 TV for 46mm carbs
Kit includes: throttle shaft, throttle valve, screws, seals, bushings, heavy duty e-ring, and instructions

10

11

PRINCIPLES OF — ***CARBURETION***

FUEL REGULATOR PORTION

Because the Super BN is a watercraft carburetor, it cannot vent its fuel chamber to the atmosphere like a carb with a float system; this would cause fuel leakage into the hull in the case of a roll-over. The Super BN's fuel chamber is contained by the regulator diaphragm, with fuel on one side and atmospheric pressure on the other.

As the fuel in the chamber is drawn in by engine suction, the diaphragm moves in response to the depletion of fuel and the effect of atmospheric pressure pushing against it. The diaphragm contacts and moves the needle valve arm allowing fresh fuel to enter the fuel chamber. As fuel enters the fuel chamber it is being pushed in under pressure from the fuel pump with enough force to push the diaphragm back against the atmospheric pressure. When the fuel chamber is once again filled, the diaphragm relieves the pressure on the arm and the needle valve closes. In this way, the diaphragm mechanism precisely regulates the amount of fuel in the fuel chamber.

Once again, the regulator portion of the Super BN primarily affects tuning at throttle openings of 1/4 or less in response to the engines high manifold pressure. The regulator portion of the BN carbs is a tuneable component and can be adjusted to most any engine configuration. The terms most commonly used in this adjustment is "Pop-Off" pressure.

Pop-off is a relative term, it refers to the pressurization of the needle valve with compressed air, through the fuel inlet, and noting the pressure necessary to open the needle valve or "pop" it off its' seat. The higher the pressure that is required indicates a higher pop-off.

CARBURETOR PORTION

The Super BN starts performing like a conventional carbs as the throttle is opened through and past 1/4 in that is uses replaceable jets and adjuster screw to make changes in calibration. At or beyond 1/4 throttle opening, the engine replaces manifold pressures with air velocity.

What is the difference between manifold pressure and air velocity? Manifold pressure is the suction generated by the engine against a very restrictive mechanism within the carb: The closed or nearly closed throttle plate. As the throttle is opened, the carb transitions from being controlled by the regulator portion to responding as a normal carb does.

High air velocity, created by the engine as it revs up, appears as a strong suction (or low pressure) within the carb body. Fuel flow through the carb is caused by the differential in pressures between the positive atmospheric pressure on the diaphragm and the suction within the carb body. Because air velocity creates such a strong suction, pop-off pressure has virtually no affect on calibration past about 1/4 throttle.

Accurately tuning a Super BN, for any application, requires a basic understanding of its functions and adhering to a few basic rules. Most importantly, you can only expect the carb to work as well as your engine does; the performance of your Super BN cannot make up for a weak or worn out engine.

Another point to stress here is that you may not be able to achieve maximum performance from your watercraft simply by changing jets in your Super BN. A mismatch of engine components and or porting may create a carburetion nightmare. The best advise is to use quality parts and service from reputable dealers.

To achieve an accurate calibration with a Super BN you should adjust the tuneable circuits in the following order:

1. LOW SPEED ADJUSTER

To adjust a smooth idle.

2. POP-OFF PRESSURE

Just off idle to 1/4 throttle in conjunction with the low speed jet.

3. LOW SPEED JET

Just off idle to 1/3 throttle.

4. HIGH SPEED JET

1/3 to 3/4 throttle.

5. HIGH SPEED ADJUSTER

3/4 to wide open throttle.

The reason for adjusting the circuits in this order is because several circuits contribute to the total fuel delivery of the carb. Changing the low speed jet for example, affects wide open throttle fuel delivery to some degree, ref. Fuel Flow Chart.

The exceptions to the rule are the low speed adjuster and the regulator portion: The low speed adjuster has no effect past 1/3 throttle. The regulator portion has no tuning effect past 1/4 throttle, although it continues to control the fuel supply.

IDLE STOP SCREW

The idle stop screw is used to adjust the idle speed (rpm) by opening or closing the throttle valve. Refer to your watercraft owners manual for the correct idle speed. As a rule of thumb, adjust the idle speed to approximately 1100 rpm.

LOW SPEED ADJUSTER

The low speed adjuster is used in conjunction with the idle stop screw to adjust and maintain idle speed and smoothness. Experiment turning the low speed adjuster in and out in small increments until a smooth idle is obtained. As the idle stop screw is turned in or out to raise or lower idle speed the low speed mixture is also affected.

For clarification, if the idle stop screw is turned out to lower idle speed, this action increases manifold pressure slightly and richens the

low speed mixture so that a mixture adjustment may be required. The low speed adjuster is very sensitive and adjustments should be made in small increments only.

NOTE: Remember, the low speed adjuster is **only** for adjusting the idle mixture. If you use the adjuster to help get rid of a low speed hesitation, you will probably find that your engine will load up in no wake zones, or after extended idling.

POP-OFF PRESSURE AND LOW SPEED JET

HOW DO POP-OFF PRESSURE AND THE LOW SPEED JET WORK TOGETHER?

These two circuits overlap, although the low speed jet continues past 1/4 throttle where pop-off pressure has little to no effect. In general, if your pop-off pressure is slightly too high, you can compensate by increasing the size of the low speed jet. The opposite is also true; if the low speed jet is slightly too small, you can compensate with less pop-off pressure. Once you get to the point where you think each is adjusted correctly, it's best to try varying the two to make certain you have the best combination. For example: If you have pop-off pressure of 30 psi. and a 67.5 low speed jet, you should also try a pop-off of say 35 psi. and a 70 low speed jet.

To verify that you have the correct combination there are two things to test:

1. Throttle response should be crisp, with no hesitation.
2. Ride the boat at a constant 1/4 throttle opening for about 1 minute and then quickly open the throttle fully, there should be no hesitation and the engine should not show signs of being loaded up. If it hesitates, it's lean; if it's loaded up, it's rich. The first test is to check pop-off pressure, the second test is for checking the correctness of the low speed jet size.

Take the time to ride the boat slowly and thoroughly test your jetting changes. After a jet change, it takes the engine a few minutes of use to completely respond to the change.

WHEN DOES IT BECOME NECESSARY TO ADJUST POP-OFF?

When personal watercraft come from the factory they have fairly high pop-off due to the fact that they also have somewhat restrictive air intake systems that cause the engine to generate very high manifold pressures; the higher the manifold pressures, the higher the pop-off pressure required to properly regulate the fuel delivery to the engine.

As you modify or change your watercraft's flame arrestor to a less restrictive type you will most likely start to experience a lean hesitation caused by a decrease in manifold pressure. This change will require an adjustment in pop-off pressure to regain crisp throttle response. Because most aftermarket flame arrestors are less restrictive than stock, you will need to decrease pop-off to compensate.

TUNING (cont.)

The Super BN carbs that come from Mikuni American are already set up for performance applications, and come with pop-off settings lower than the carbs that come as original equipment.

Pop-off pressure, (the regulator portion of the Super BN) is a tuneable component of the Super BN and works in conjunction with the low speed jet for good initial throttle response. The components that make up the regulator portion of the Super BN are:

1. Needle Valve, available in 4 sizes, 1.5, 2.0, 2.3 and 2.5
2. Arm Spring, available in 4 sizes, 115 gr., 95 gr., 80 gr. and 65 gr.
3. Arm
4. Regulator Diaphragm

The arm has a limited range of adjustment; from the arm being level with the adjacent carb surface to being bent upwards no more than .040" (1mm) above that surface. If the arm is bent upwards too much, it can cause the needle valve to be held open when the diaphragm and cover are installed. If the arm is bent down, its movement becomes limited and may not be enough to allow the needle valve to open fully.

ADJUSTING POP-OFF PRESSURE

Pop-off pressure is adjusted by replacing the arm spring with one of a different gram rating. Sometimes, in order to achieve the desired pop-off pressure, it is also necessary to change the needle valve size; keep in mind that it's always best to use the smallest needle valve size to obtain the correct pop-off pressure.

MEASURING POP-OFF PRESSURE

You can measure pop-off pressure with a "Pop-off" pump, available from Mikuni through your dealer, or you can get a relatively good indication of pop-off pressure by simply using the needle valve and arm spring guide in this manual. Pop-off pumps are available in three ranges: 0-30psi., 0-60psi. and 0-100psi.. For most performance applications the 0-30psi. pump is appropriate.

Pop-off pressures, in psi., from needle valve size and arm spring combinations:

	Pop-Off Arm Spring (color & strength)			
	Gold	Dull Silver	Black	Shiny Silver
Needle Valve Size	115 grams	95 grams	80 grams	65 grams
1.5	55 psi.	43 psi.	38 psi.	32 psi.
2.0	32 psi.	25 psi.	21 psi.	18 psi.
2.3	22 psi.	20 psi.	17 psi.	15 psi.
2.5	19 psi.	17 psi.	14 psi.	12 psi.

CHECKING POP-OFF WITH A POP-OFF PUMP

- 1). Attach the pump to the fuel inlet nipple.
- 2). Cover, or in some way plug the fuel return nipple.
- 3). Remove the regulator diaphragm to observe the needle valve.
- 4). During testing, it is important to obtain consistent readings. To accomplish this, it is necessary to keep the needle valve wet. Use WD-40 or something similar to wet the needle valve.

NOTE: Don't use gasoline because of the fire hazard. Protect your eyes from the spray when the needle pops open.

- 5). Pressurize the carb with the pump until the needle valve pops open, being careful to note the indicated pressure. Test the valve 3 times to assure an accurate reading.

An indication that your pop-off needs to be adjusted is a lean hesitation when you open the throttle from idle; in the extreme, the engine may even die. It is much easier to detect a lean pop-off than it is a rich one, so it is wise to adjust your pop-off until you get it too lean and then back up until the lean hesitation disappears.

NOTE: It is recommended that you do not use too large a needle valve for your application. Many tuners recommend using a 2.3 or 2.5 needle valve in all cases. Actually, we recommended using the smallest needle valve that gives you the correct pop-off pressure for your engine. A 1.5 needle valve can flow the maximum amount of fuel that the Super BN can pump, so the only reason to use a large needle valve is to obtain the correct needle valve and arm spring combination (pop-off) for your watercraft.

HIGH SPEED JET / THROTTLE POSITION AND JETTING

The high speed jet begins contributing fuel at about 3/8 throttle, overlapping the low speed jet. The high speed jet is the primary tuning component from 1/2 to 3/4 throttle. As you have probably noticed, tuning circuit operations are denoted in fractions of throttle openings.. the reason for this is simple: Carb jetting does not relate to engine rpm or the boat's speed, it only recognizes how far the throttle has been opened; each circuit of the carb responds in turn. This is why it's very important, when trying to diagnose a carb problem, that you identify at which throttle opening the problem occurs, in order to adjust the appropriate circuit.

The procedure for testing for the correct high speed jet size is the same as for the low speed, except that you should now hold the throttle at a constant 1/2 open for one minute, then quickly open the throttle fully to check engine response. If the engine hesitates, the carb is lean. If the engine takes a second or two to clear out and then accelerate, the carb is too rich. In either case, make the appropriate jet change and do the complete test again.

HIGH SPEED ADJUSTER

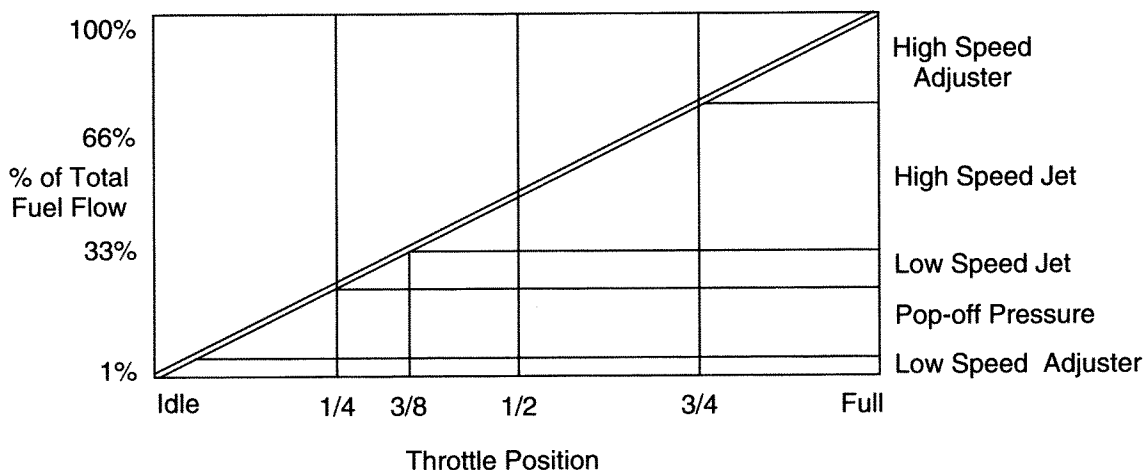
The high speed adjuster is the last circuit to adjust. It primarily controls fuel delivery from 3/4 throttle to wide open throttle. Turning the screw clockwise reduces fuel flow, counter clockwise increases fuel flow. The maximum fuel flow is achieved at three turns out from closed.

To test the high speed adjuster it is recommended that you start with a fresh set of spark plugs, to get quicker plug readings. Unless you have an exhaust gas temperature gauge, you will have to rely on plug readings.

You will need to be in an area where you can hold the throttle wide open for several minutes then chop the throttle and stop the engine just prior to removing the plugs to read them. Ideally, you're looking for a nice brown color on the electrode.

Another indicator of proper adjustment is a maximum rpm reading on a tachometer. If the carb is lean or rich, it won't pull as high an rpm reading as when it's right on.

FUEL FLOW CHART



TUNING COMPONENTS FOR THE SUPER BN CARBURETOR

DESCRIPTION	PART NUMBER
REBUILD KIT (Consists of all necessary gaskets and diaphragms) For 38, 44 and 46.	MK-BN38/44 SPR
NEEDLE VALVE SIZES AVAILABLE Standard replacement (1.5, 2.0, 2.3 and 2.5)	786-35015-(size)
For use with high alcohol content gasoline (1.5, 2.0, 2.3 and 2.5)	786-35018-(size)
ARM SPRINGS	
115 grams Gold	730-03027
95 grams Dull Silver	730-03027-T
80 grams Black	730-03033
65 grams Shiny Silver	730-03030
LOW SPEED JETS	
Sizes 50 thru 150 in increments of 2.5.	N100.606-(size)
HIGH SPEED JETS:	
Sizes 50 thru 200 in increments of 2.5	N102.221-(size)

SUPER BN SPECIFICATIONS

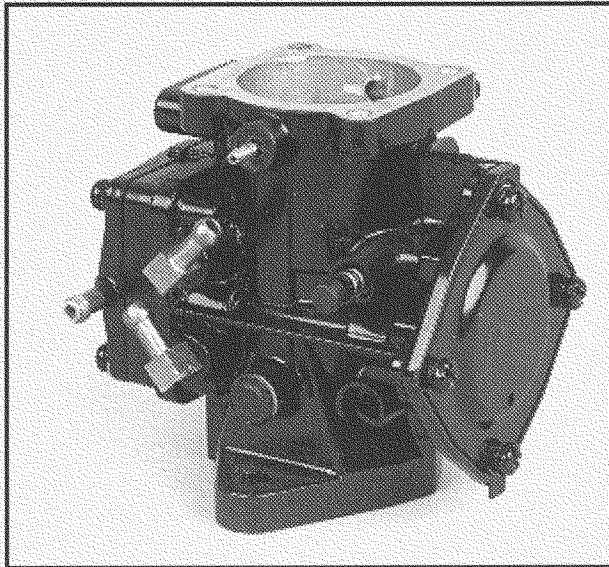
Carb	Low Speed Jet	High Speed Jet	Needle Valve	Arm spring (grams)	Low Speed Adjuster	High Speed Adjuster	Choke or Primer	Color
BN46-42-8002#	120	150	2.5	80gr.	1.0	1.5	Primer	Silver
BN44-40-8067#	120	140	2.5	80gr	1.0	1.5	Primer	Silver
BN44-40-8052#	100	125	2.3	65gr.	1.0	1.5	Primer	Black
BN44-40-43	120	115	1.5	115gr.	1.0	.75	Choke	Black
BN38-34-8113#	65	107.5	2.0	115gr.	1.0	1.5	Primer	Silver
BN38-34-55-D	65	107.5	2.0	115gr.	1.0	1.5	Choke	Black
BN38-34-8075*	65	107.5	2.0	115gr.	1.0	1.5	Primer	Black
BN38-34-8076*	65	107.5	2.0	115gr.	1.0	1.5	Primer	Black
BN34-28-8010	77.5	80	1.5	165gr.	1.25	.75	Choke	Black

Denotes carbs that have extended throttle shafts and can be coupled together as duals.

* Denotes carbs that are designed to be used as a set and can only be used as duals.

SUPER BN --- ***ACCESSORIES***

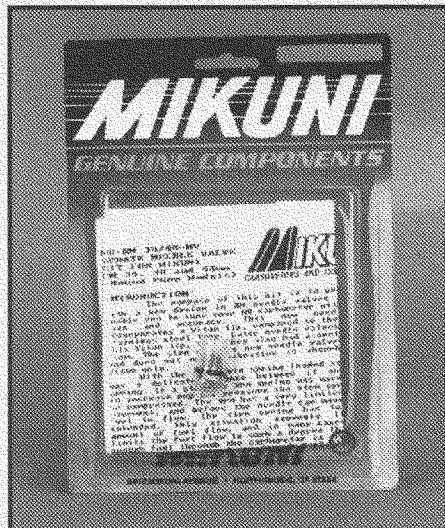
- MK-BN/001** Coupling Kit for dual BN38, BN44, BN46 carburetors.
- MK-BN PMP** "Pop-Off" Pump with 30# gauge.
- MK-BN PMP-60** "Pop-Off" Pump with 60# gauge.
- MK-BN PMP-100** "Pop-Off" Pump with 100# gauge.
- MK-BN38 NV** Needle valve replacement kit for Super BN38 contains 2.0 needle valve and 115 gr. spring w/approx. 32 lbs. pop-off and 80 gr. spring for 21 lbs. pop-off. Instructions included.
- MK-BN44 NV 1** Needle valve replacement kit for Super BN44 and BN46. Contains 2.3 needle valve and 65 gr. spring for 15 lbs. pop-off.
- MK-BN44 NV 2** Needle valve replacement kit for High Performance Super BN44 and BN46, contains 2.5 needle valve and 80 gr. spring for 15 lbs. pop-off.
- MK-BN38/44 SPR** Carb rebuild kit: Includes all gaskets and diaphragms to rebuild carb; does not include needle valve. For all Super BN 38,44, and 46
- MK-BN/002** Carb wrench - 12 mm (for easy removal/ installation)
- MK-BN/003** Carb wrench - 13 mm (for easy removal/ installation)
- MK-BN/O38** Throttle valve and shaft kit, SBN38.
- MK-BN/044** Throttle valve and shaft kit, SBN44.
- MK-BN/046** Throttle valve and shaft kit, SBN46.
- HIGH PERFORMANCE CARB KITS**
- BN44-650-K** Kawasaki 650 SX/TS, SBN44.
- BN46-650-K** Kawasaki 650 SX/TS, SBN46.
- BN44-750-K** Kawasaki 750 SX/SS, SBN44.
- BN46-750-K** Kawasaki 750 SX/SS, SBN46.



**Mikuni Super BN Single
BN44-40-8052 (shown)**



**Carb Rebuild Kit
MK-BN38/44 SPR**



**Needle Valve Kit
MK-BN44 NV 1
MK-BN44 NV 2**



**Coupling Kit
MK-BN/001**

TROUBLE SHOOTING GUIDE

PROBLEM	POSSIBLE CAUSE	CORRECTION
Hard starting	Incorrect use of primer	Review primer operation
	Fuel lines improperly connected	Reconnect in correct sequence
	Intake air leak	Check manifold connections
	Ignition problem	*Repair or replace as necessary
	Low cylinder compression	*Repair or replace as necessary
	Idle speed set too low	Adjust idle speed according to specifications in owners manual
	Clogged idle circuit	Remove carb and chemically clean
	Improper adjustment of low speed adjuster	Adjust low speed adjuster for a smooth idle
	Idle speed set too high	Adjust idle speed according to specifications in owners manual
	Throttle linkage sticking	Clean and inspect linkage, lubricate, repair or replace as necessary
Engine idles but won't rev up	Throttle cable sticking	Correct routing or replace as necessary
	Pop-off pressure too high or low speed jet too small	Adjust pop-off or low speed jet per manual
	Leaking anti-siphon valve	Replace valve
	Leaking needle valve	Clean or replace needle valve
Engine "loads up" during extended idling, i.e., in 5 mph zones	Pop-off pressure too low	Increase pop-off pressure
	Low speed jet too large	Replace low speed jet with smaller size jet
	Incorrect air/fuel mixture	Mid range- change low speed jet High speed-readjust high speed adjuster
	Clogged air cleaner/flame arrester	Clean as necessary
Engine surges when cruising at constant throttle setting	Throttle not synchronized (Dual carb applications)	Re-synchronize carbs
	Clogged fuel filter or water separator	*Clean as necessary
	Components loose in carb, i.e., jets	Tighten as necessary
	Ignition problem	*Repair or replace as necessary
	Low cylinder compression	*Repair or replace as necessary
	Needle valve size is too small for engine needs	Replace needle valve with larger size
	High speed jet too small	Replace jet with larger size
Engine does not develop full power or misses during acceleration	Carburetor too large for engine	Use more restrictive flame arrester or smaller carb
	Carburetor is too lean at full throttle and turning out high speed adjuster has no effect	Replace jet with larger size

*Refer to Shop Manual for your craft.

PERFORMANCE TIPS

THE "LEFT TURN SYNDROME"

You will find in all instances that your watercraft will turn more easily to the right than to the left. The reasons are basically simple. First, engine torque constantly places pressure on the hull to turn right.

If your engine's performance is marginal, you can notice a dramatic fall-off in power in a hard turn. This power fall-off can't always be blamed on the engine, Being over-propped can also cause the engine to slow enough to fall off its' power peak. An engine with a peaky power curve is especially susceptible to a very dramatic power loss in a hard left turn.

Most recently, with the increase of Sportabout racing, there has been a marked improvement in hull design with a dramatic increase in "G" forces encountered while turning: over 2.5 G's. In some instances, such a hard turn can cause a momentary loss of power due to fuel starvation in the carbs. Jetting changes cannot correct this situation, the best solution is to rotate the mounting of the carbs 90°, so that their throttle shafts are perpendicular to the crankshaft axis rather than parallel. To date, this solution to the problem has been 100% successful.

FUEL DRIPPING FROM THE INNER VENTURI AT IDLE

This situation occurs periodically and is easy to cure. What causes this problem is a combination of two things. First, low pop-off pressure (due to installation of a 2.5 needle valve with a light spring pressure) together with an engine that has a substantial vibration at idle

The engine vibration causes the needle valve to leak, which causes the engine to run even rougher. You can view this occurrence by carefully looking into the throat of the carb at idle, you will be able to see the fuel dripping from the inner venturi. In this same way you can also check to see that the problem is corrected. The cure for the problem is to increase pop-off pressure until the dripping stops.

ENGINE HESITATION WHEN ACCELERATING AFTER A HIGH SPEED DECELERATION

You may find it desirable to increase the number of anti-siphon valves (part no. BN34/107), If you ride very fast and find that you have a noticeable stumble when re-opening the throttle after a long, high speed deceleration. This is caused by excess fuel in the carb.

The engine revs fairly high while decelerating, but it uses very little fuel. The fuel pump still pulses hard, but there is no demand for the fuel. A small amount of fuel will overflow the fuel chamber, leak through the high speed circuit and get deposited on top of the closed throttle valve. This fuel causes a momentary rich condition when the throttle is re-opened.

The solution is to use one or two additional anti-siphon valves. Never use more than two extra, and recheck your calibration after installing any extra valves; in some cases extra valves can adversely affect throttle response.



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