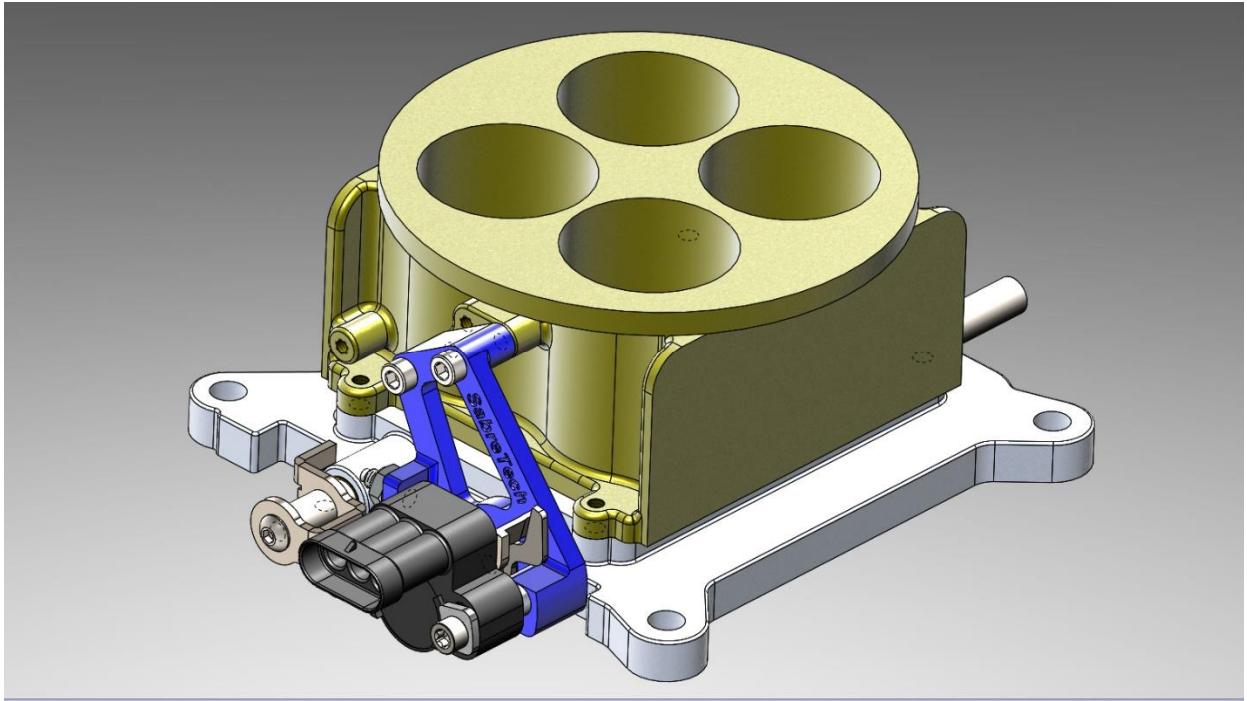


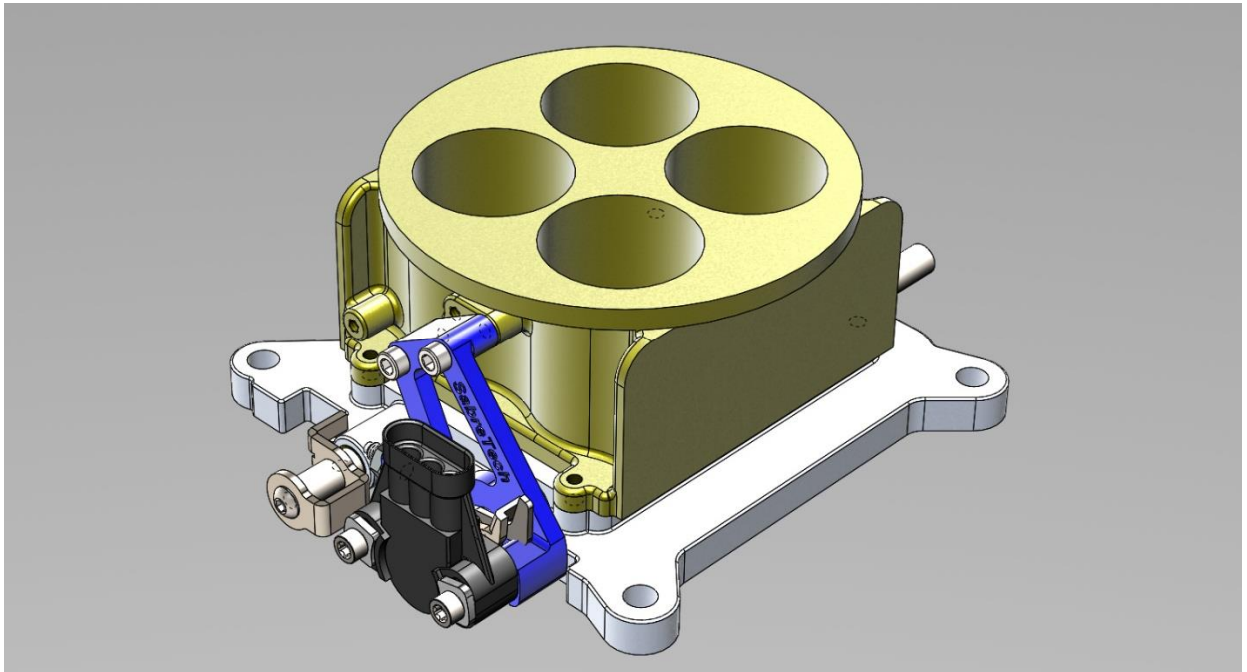
# *SabreTech*

## **Throttle Position Sensor Bracket**

Wells TP107 / Standard TH32 / AC/Delco 213-890 Style



Wells TPS111 / Standard TH41 / AC/Delco 213-904 Style



*Patents applied for with the United States Patent Office*

## Typical Installation

### Prepare Carburetor

These instructions assumes your carburetor has the primary shaft extending out of the right side of the carb base. Different carb tuners are known to replace the primary shaft without this extension and the opening is capped. This bracket is not designed to work with these types of carburetors and you can ask your tuner if he would replace the shaft with the stock shaft.

Some carb tuners install their own Wide Open Throttle (WOT) stop that limits the secondary opening to achieve maximum flow characteristics. This device, one such device can be seen in the image below, in most cases must be removed to make room for the new bracket/throttle stop. Make sure the secondary shaft/butterflies are secured in a position to allow the new stop limits the rotation just as the stop bracket did. You will see this installation step later in these instructions.

You will also see in the image below of a different type of sensor mount. It is sold by Innovate and it does not keep calibrations acceptable. As being made of sheet metal, the sensor moves around due to the easy flexing of the bracket. It also relies on the base nut for its placement and it is also not aligned with the centerline of rotation of the primary shaft. When the sensor arm is articulated the resulting movement is not linear to the rotation angle of the shaft. Any time the carb is removed or the nut securing it is loosened, the calibration is lost. It is also easy to move the sensor by inadvertently hitting it with something which also causes it to go out of calibration. I have even seen it flex as the throttle is opened and closed.



Other methods, such as string pots have shown to have the same issues when considering the mounting created to hold them. Additionally, when mounted in the engine bay, it has been the experiences that the string cannot live in the extreme environment and also when the string end eyelet is not made to be rotational, the pressure at that joint will also break the string.

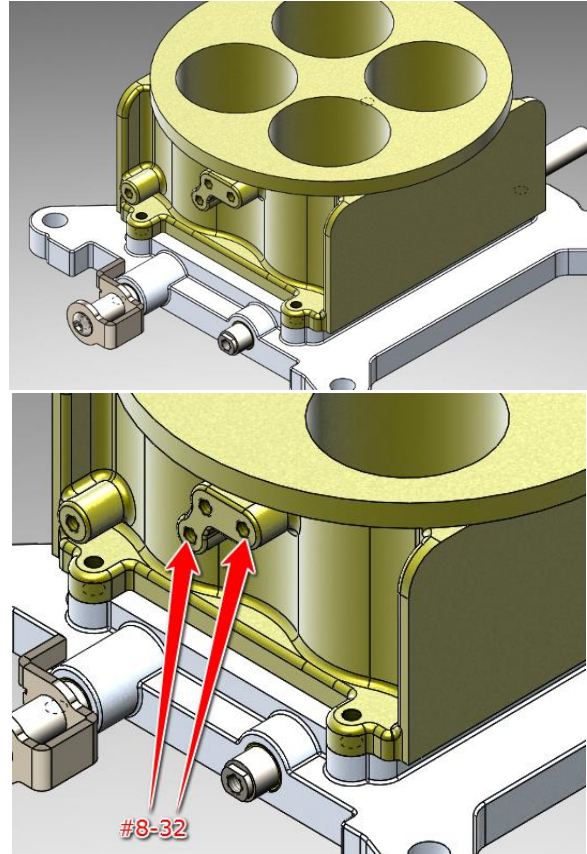
The **SabreTech** bracket is affixed to the carb body and never loses its calibration accuracy no matter how many times the carb may be removed, for whatever reason, or swapped out by another carb. If a team has spare carbs, it is recommended that a complete sensor bracket and sensor be installed on both and have each calibrated with a unique calibration table that uses something like the carb serial number for its unique name. That way, all the data person needs to do is to load the appropriate calibration table and upload the new configuration to the data logger. The only occasion to recalibrate any installed sensor would be replacement of a sensor that has failed or when the carburetor goes back to the tuner and it is removed.

**Note:** Keep the alignment bushing used in the installation as this bushing aligns the bracket and sensor to the center of shaft rotation.

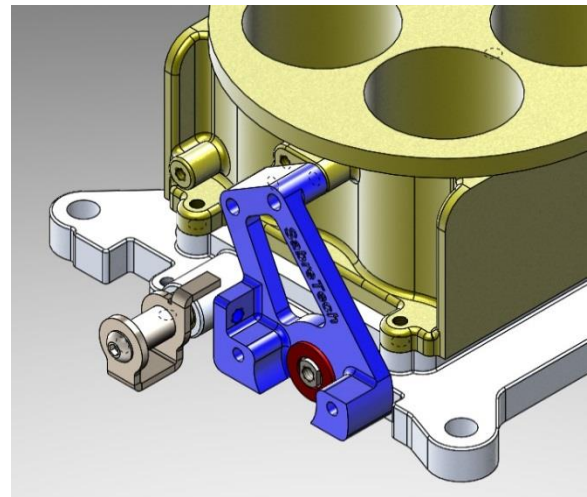
## Tap Mounting Boss Threads

Tap two existing holes on throttle body right side by first using a #29 drill (.1360" dia.) on the two holes designated by the arrows. Do not drill the hole any deeper than it already is, this is just to make sure the proper clearance for a #8-32 bottoming tap. This step is the most critical as you need to use taping fluid and be very careful not to break the tap inside the bores.

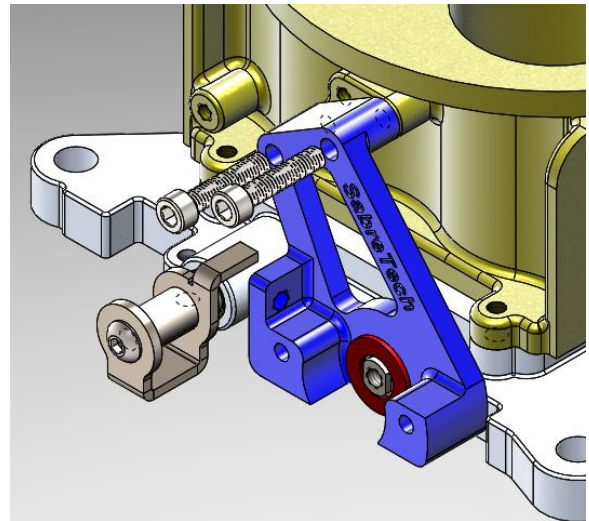
When both holes are tapped, blow out the holes to make sure the chips are removed and also spray some brake clean or carb cleaner into the holes and blow again. Make sure the venturi inlets are covered so no debris gets into them.



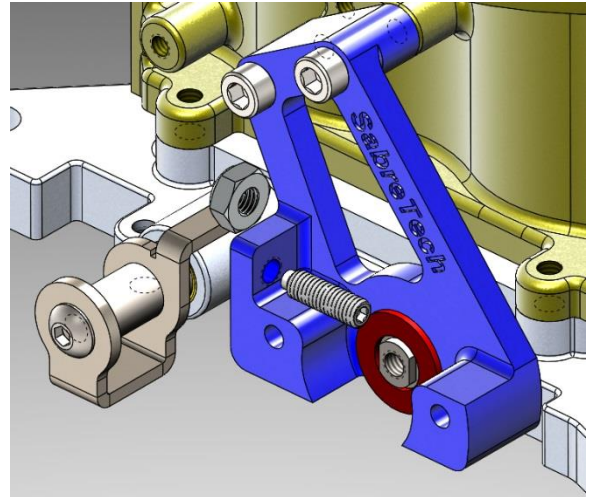
Place the bracket on the primary shaft aligning the bracket mounting holes with the new threaded holes in the bosses.



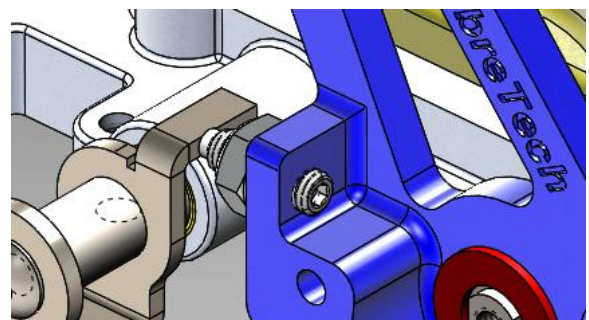
Use the #8-32 x 7/8 Socket Head screws to secure the bracket to the carburetor. Use a non-permanent thread locker like Blue Loctite 242 or 243 to make sure the screws don't loosen from vibration.



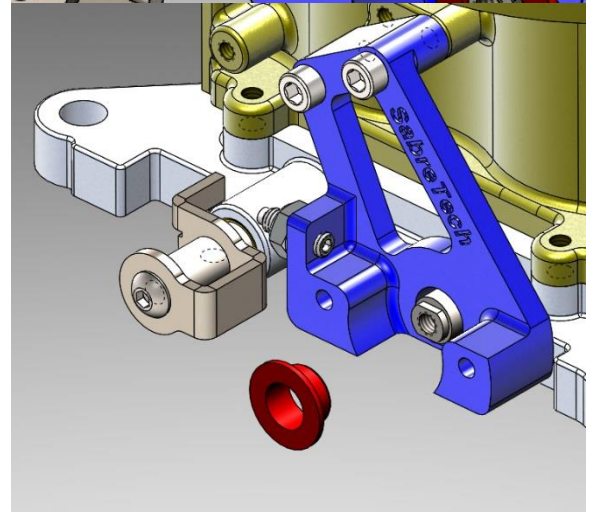
Install the WOT set screw to the sensor bracket along with the nyloc hex nut. This is to some carb tuners a critical adjustment. As mentioned earlier, some tuners have made their own bracket that will be in the way of this new bracket so the secondaries must be secured somehow in the WOT position before removing the original bracket if installed. Once removed, adjust the new set-screw to the stop position and tighten the stop nut to secure the adjustment position.



You can now remove the method you used to keep the throttle open to WOT as described at the start of these instructions.

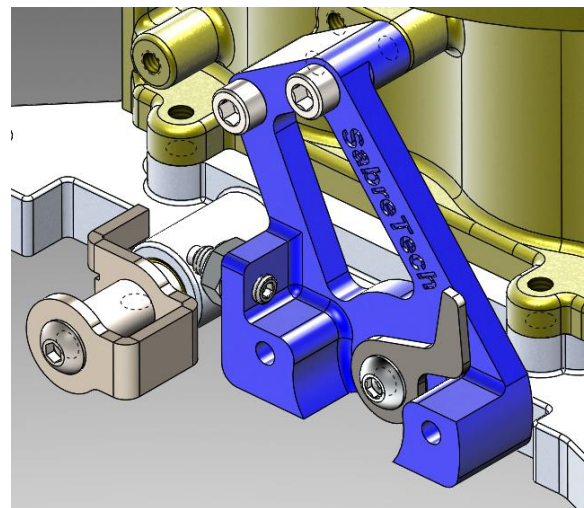
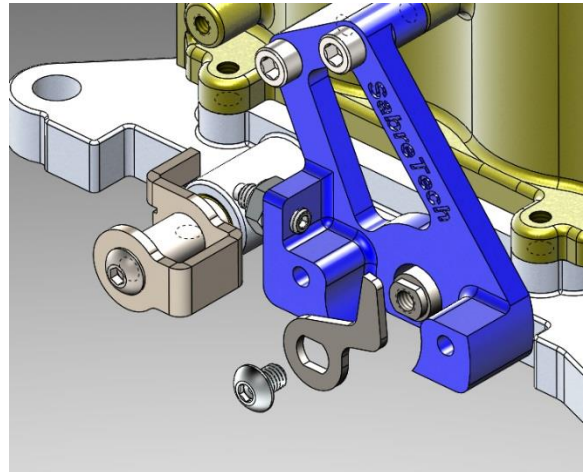


Remove and keep the primary shaft alignment bushing. It is advisable not to leave on the bracket to

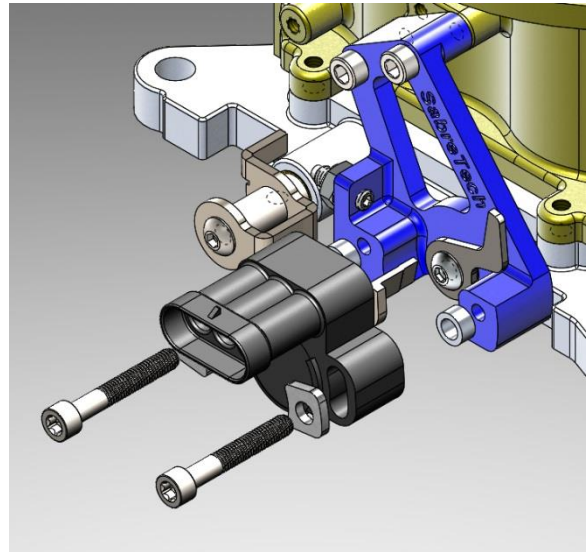


mitigate any binding that may cause a throttle sticking situation. Keep the bushing in the event the carb is sent off for repair or tuning so the bracket can be reinstalled properly.

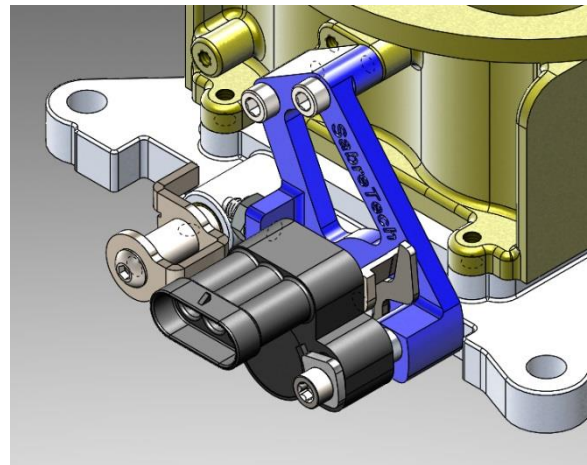
Secure the sensor lever arm onto the primary shaft and secure with the #10-32 x 1/4 Button Head Screw, again using Loctite 242 or 243 thread locker. 243 is the lubricant resistive type.



Now it is time to install the sensor. The parts shown are for the TPS107 style sensor with the horizontal sensor connection. The TPS111 has a vertical connection. The TPS111 does not use the two small aluminum spacers because of the way the lever flag is mounted, and the size of the flag itself. See the two images on the front page of these instructions to see the difference of the two styles of sensors that will work with this bracket. Be mindful that some low profile air cleaner bottom plates might interfere with the mating connector and wires coming from it if a typical Delphi Weatherpack connector is used. Some data companies have the wires permanently attached to the sensor and the resulting cavity is filled with a black potting material with a cable lead to their particular style of connector typical for their systems.



At this point the sensor must be calibrated according to the data system's instructions. Typically, the sensor must be rotated slightly so some voltage from zero is present when the throttle position is closed or at 0%. Then the carburetor must be brought to 100% open to make sure the voltage is still below the maximum attainable from the sensor itself. These sensors typically have a 120° overall swing stop-to-stop sensing range so getting it to read the full swing is not a challenge.



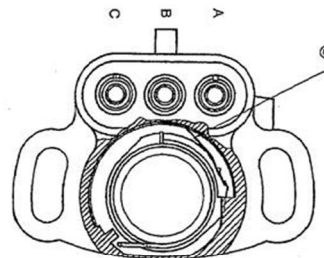
Sabre also offers either potted sensor cables covered with DR25 shrink and a choice of open pigtail wire ends as a part of the sensor or with the desired connectors of Deutsch Autosport, DTM, Binder 719 or 712, and Switchcraft EN3C. The same connectors are also available with a Delphi Weatherpack connector on the other end. A separate sheet will have a full listing of several cross reference numbers of compatible sensors from Wells, Standard Motor Products and AC/Delco. If a Weatherpack adapter whip is used, the sensor can be obtained from virtually any auto parts store in the event of a sensor failure at the track. The sheet will also have the pinout assignments as well.

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## TH32T

Catalog Name	Interchange Part	Label	List Price	Buyers Guide
ACDELCO	<b>213-3860</b>	Throttle Position Sensor (TPS)	\$ 0.00	
ACDELCO	<b>213-906</b>	Throttle Position Sensor	\$ 0.00	
ACDELCO GM ORIGINAL EQUIPMENT	<b>213-906</b>	Throttle Position Sensor	\$ 0.00	
ACDELCO GM ORIGINAL EQUIPMENT CANADA	<b>213-906</b>	Throttle Position Sensor	\$ 0.00	
ACDELCO PROFESSIONAL	<b>213-3860</b>	Throttle Position Sensor	\$ 110.99	
ACDELCO PROFESSIONAL CANADA	<b>213-3860</b>	Throttle Position Sensor	\$ 110.99	
AIRTEX ENG. MGMT. SYSTEMS	<b>5S5077</b>	Throttle Position Sensor	\$ 0.00	
AUTOPART INTERNATIONAL	<b>1802-98679</b>	Throttle Position Sensor	\$ 0.00	
AUTOPART INTERNATIONAL	<b>98679</b>	Throttle Position Sensor	\$ 0.00	
AUTOZONE/AEM	<b>5S5077</b>	Throttle Position Sensor	\$ 0.00	
AUTOZONE/DURALAST-WELLS	<b>TPS107</b>	Throttle Position Sensor	\$ 0.00	
AUTOZONE/TOMCO	<b>14054</b>	Throttle Position Sensor	\$ 0.00	
CARQUEST	<b>71-7573</b>	Throttle Position Sensor	\$ 0.00	
CARQUEST	<b>9966</b>	Throttle Position Sensor	\$ 0.00	
CARQUEST	<b>TH32</b>	Throttle Position Sensor	\$ 0.00	
CARQUEST/CABIN AIR FILTERS	<b>9966</b>		\$ 0.00	
CARQUEST/STANDARD MOTOR PRODS.	<b>71-7573</b>	THROTTLE POSITION SENSOR (TPS)	\$ 0.00	
CARQUEST/WELLS	<b>71-7573</b>	Throttle Position Sensor	\$ 0.00	
DELPHI	<b>SS10422</b>	Throttle Position Sensor	\$ 0.00	
MASTER PRO IGNITION	<b>2-9966</b>	Throttle Position Sensor	\$ 0.00	



## TH41T

Catalog Name	Interchange Part	Label	List Price	Buyers Guide
ACDELCO	<b>213-3859</b>	Throttle Position Sensor (TPS)	\$ 0.00	
ACDELCO	<b>213-904</b>	Throttle Position Sensor	\$ 0.00	
ACDELCO PROFESSIONAL	<b>213-3859</b>	Throttle Position Sensor	\$ 131.68	
ACDELCO PROFESSIONAL CANADA	<b>213-3859</b>	Throttle Position Sensor	\$ 131.68	
ADVAN-TECH	<b>5J6</b>	Throttle Position Sensor	\$ 0.00	
AIRTEX ENG. MGMT. SYSTEMS	<b>5S5068</b>	Throttle Position Sensor	\$ 0.00	
AUTOPART INTERNATIONAL	<b>1802-04022</b>	Throttle Position Sensor	\$ 0.00	
AUTOPART INTERNATIONAL	<b>4022</b>	Throttle Position Sensor	\$ 0.00	
AUTOPRIDE PRIVATE LABELS	<b>AP14061</b>	Throttle Position Sensor	\$ 0.00	
AUTOZONE/AEM	<b>5S5068</b>	Throttle Position Sensor	\$ 0.00	
AUTOZONE/DURALAST-WELLS	<b>TPS111</b>	Throttle Position Sensor	\$ 0.00	
AUTOZONE/TOMCO	<b>14061</b>	Throttle Position Sensor	\$ 0.00	
BWD AUTOMOTIVE	<b>EC1037</b>	Throttle Position Sensor	\$ 149.33	
CARQUEST	<b>71-7564</b>	Throttle Position Sensor	\$ 0.00	
CARQUEST	<b>9969</b>	Throttle Position Sensor	\$ 0.00	
CARQUEST	<b>TH41</b>	Throttle Position Sensor	\$ 0.00	
CARQUEST RED	<b>38010</b>	Throttle Position Sensor	\$ 0.00	
CARQUEST RED/WELLS	<b>38010</b>	Throttle Position Sensor	\$ 0.00	
CARQUEST/CABIN AIR FILTERS	<b>9969</b>		\$ 0.00	
CARQUEST/STANDARD MOTOR PRODS.	<b>71-7564</b>	THROTTLE POSITION SENSOR (TPS)	\$ 0.00	





