

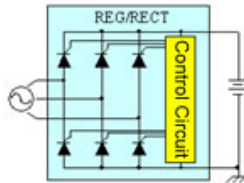
Shindengen SH775

as sold by Polaris

These are series type regulators that open the circuit to the

https://www.shindengen.co.jp/product_e/electro/catalog.html

► Three-Phase Open Regulator



These regulators rectify the output from a three-phase generator, charge batteries, and control charging when battery voltage is high by opening the generator input.

3-Phase Regulator Rectifier Lineup

Series Style Regulator Matrix

| P/N | Current (Aave) *1 | | Maximum Current | Protection | | Size (mm) | | | Note |
|--------------|-------------------|------------------|-----------------|--------------|-----------|-----------|------|----|-------------------|
| | No Cooling | 1m/s air Cooling | | Over-voltage | Over-heat | W | D | H | |
| SH775 series | 14A | 27A | 35A | ○ | | 90 | 84.5 | 32 | |
| SHxx1 series | 22A | 37A | 50A | ○ | ○ | 110 | 100 | 32 | Under development |
| SHxx2 series | 30A | 37A | 50A | ○ | ○ | 140 | 110 | 40 | Under development |

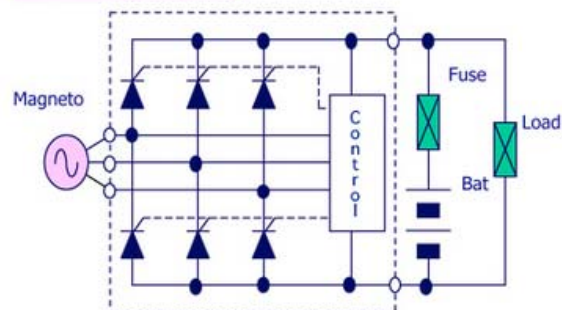
*1 The values are the amperage for the use in 40°C of the regulator ambient temperature.

*2 The voltage set point can be changed as required.

*3 The spec and/or the size are subject to change without notice.



Connecting Diagram



I bought mine here for \$85 with shipping:

<http://www.polarisparts123.com/oemparts/c/polaris/parts>

Another new Series Regulator available as Replacement Candidate:

<http://www.triumphrat.net/speed-triple-forum/104504-charging-system-diagnostics-rectifier-regulator-upgrade-2.html>

I've just become aware of an alternative for R/R replacement which would be ideal for the Twins and possibly also the Triples:

It does NOT appear to be suited for the high rpm 4-cylinder Triumph 600-4's ([TT600](#), Speed4, Daytona 600/650) - at high rpm it loses regulation on those bikes.

(However see further down this thread for details on the **SH847 Series R/R** which has been proven successful on those models) **GPM I found the SH847 is rated at 50amps.**

[SH847 SERIES RR KITS ARE NOW AVAILABLE](#) from Roadstercycle.com. Click link to left.

[..\..\V-Strom\Tech\Voltage Regulator\2014 Suzuki DL1000A ELECTRICAL \(DL1000AL4 E33\) Part No 5 SH847 Series RR .pdf](#)

It is made by [Shindengen](#) and has the exact same [Form Factor](#) as the FH012/020 series [MOSFET Rectifier/Regulator](#) that has enjoyed great acclaim & success.

A couple of things to note - it has lower current spec than the FH012/020, however still **plenty** adequate for the Twins (the FHO12/020 is actually way overkill re current rating requirement anyway for the Twins); it is not MOSFET but SCR.

Wait I hear you cry - "you have been espousing the benefits of MOSFET regarding the [reliability](#) of these units, why are you now suggesting a replacement SCR type?"

Here is the SIGNIFICANT difference - this new R/R is SERIES - **not** SHUNT!!

Why is that of benefit?

The difference between Series & Shunt is that:

Shunt - the Stator always has to apply maximum generated current - when the R/R is in regulation it shorts across the winding to 'shunt' current away from the load directly back to the stator. In an SCR (OEM) Shunt Regulator the [SCRs](#) get extremely hot and they ultimately burn out if that heat is not adequately cooled - that is why OEM needs to up front directly in the cooling path.

Because of the way it operates, if you reduce the system load (e.g. turn off the lights) the R/R will actually have to shunt MORE current and will run hotter - but the stator load is the same regardless of whether the current is going to the load, or back through the SCR's.

Series - this is fundamentally different in that in a Series design, instead of diverting (shunting) excess current back to the stator to control the output voltage, the regulation works by interrupting the current path to the load. This means that the Regulator ONLY supplies current demanded by the load itself, and no excess current parallel path through a shunt. So the net result is that this type of Regulator is MUCH kinder on the stator because the stator is always supplying much less current! So the stator does not get so hot and its reliability increases significantly.

The fact that it has SCR's is not quite so problematic as in the Shunt application, because they are

flowing less current and for a shorter duration. So they will not get as hot as when used in shunt mode.

This particular unit is a [Shindengen](#) SH775 regulator and is used on [Polaris models](#).
It is VERY inexpensive - brand new, e.g. \$85

<http://polarisparts123.com/partnumber-search/> (enter 4012941)

**Polaris REGULATOR-3PH,35A,SERIES,105C for 2011 Polaris R11HR76AG/AR RANGER 6X6 800 EFI
4012941**

(or wherever else you can source Polaris parts)





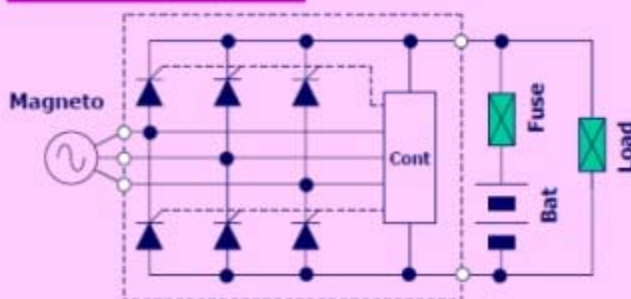
3-Phase Regulator Rectifier Lineup

SH775 Standard Model

Outline



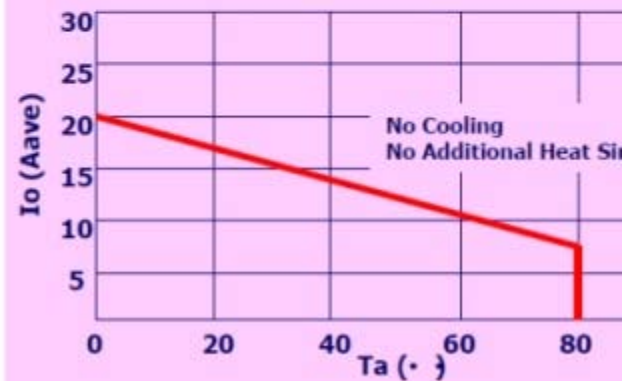
Connecting Diagram



Electrical Characteristic

| Item | Min | Typ | Max | |
|---------------------------|--------------------------------|------|------|-------|
| Set-point | 14.0 | 14.5 | 15.0 | V |
| Temperature Coefficient | -5 | 0 | +5 | mV/°C |
| Output Current | - | - | 35 | A |
| Continuous Output Current | Refer to Ta-Io De-rating Curve | | | |

Ta-Io De-rating Curve



Read more about it in these threads off the Suzuki GS Forum

<http://www.thegsresources.com/forum...d.php?t=200004>

<http://www.thegsresources.com/forum...d.php?t=209843>

Lots of testing information on there:

Here is some data from one of the GS guys who measured the stator current on his bike with Shunt vs

[Series R/R](#)

(Quoted data reproduced from GS Forum - from 2nd link above)

Quote²:

Here are some test results comparing my old shunt SH-232 R/R to the series SH-775.

Disclaimer- I have no idea how accurate my [ac current clamp meter](#) is at frequencies above 60 Hz; I know it's accurate on 3 phase 60 Hz stuff. I suspect it might be pretty good at 120 Hz (1200 rpm), but at 400 Hz, who knows.

On the good old SH-232;

at 1200 rpm, stator line current = 6.5 amp ; R/R output 12.8 volts DC

at 4000 rpm, stator line current = 11 amp; R/R output 14.2 volts DC

On the SH-775

at 1200 rpm, stator line current = 6.7 amp; R/R output 13.0 volts DC

at 4000 rpm, stator line current = 6.8 amp; R/R output 14.2 volts DC

With the SH-775, turning off headlight, resulted in an immediate drop of stator line current to 3.5 amp at 1200 rpm.

Interpreting those results, shows that the stator design is producing just barely about enough current at idle to satisfy the load - that is why the current is the same with either type of R/R - in the [series case](#) is running pretty much wide open and in the shunt case is shunting very little. i.e. all of the generated current is going to the load. The output voltage is not quite at peak, so both R/R have output not quite satisfied by the stator.

As the rpm increase however, now both R/R types have to start working:

- in the case of the Shunt unit, the excess current is diverted back through the Shunt and the current goes up (note that the system load would not have changed however the stator current goes up dramatically!!)

- with the [Series R/R](#), the stator current is virtually unchanged because instead of shunting back excess current, it operates differently by only allowing through enough to satisfy the load. It is drawing virtually exact same current from stator at 4K as it is at idle.

The final piece of data shows what happens when you turn off the lights (i.e. reduce the load) - the stator current goes down with the [Series R/R](#). Not shown, but in the case of the Shunt R/R, this would make no difference, it would remain the same.

The basic principle of operation is that it is a 3 phase SCR Bridge Rectifier. Instead of continuously conducting [diodes](#) (when in the appropriate forward bias part of the cycle) the SCR's can be controlled to turn on only for a specific part of the cycle - this they do not conduct continuously, only for the duration of the firing angle of the [SCRs](#).

Here is an excellent simulation I found on You Tube

[You Tube](#)

for the techno-geeks (and you know who you are!!! 🤖) you can read more here -
<http://web.ing.puc.cl/~power/paperspdf/dixon/21.pdf> - skip to section 12.2.4 (page 12-10)

You will need the [Furukawa connectors](#), same as those utilized on the FH series of [Regulators](#)

SH847 SERIES R/R KITS ARE NOW AVAILABLE



This is the newest R/R from Shindengen, the same people who build the FH020AA and SH775 so you know the quality is there. These are 50 amp peak models that have been tested on the Rotax motored Buell and Aprilia models and have been working great. They have been running these on the 600 Ducati with no issues. These are scarce but I have a pretty good line on them now. They go fast. You can get the auto reset circuit breaker or maxifuse. Again remember that

you can make these harnesses any length, check the highlighted areas above for add on wire lengths for battery and stator.

I am only selling SH847 only as a Super kit as this R/R is very expensive and I don't want any issues due to old or bad charging system wiring. I want to make sure this setup is rock solid in every way. The dimensions of the SH847 are as follows. 1.5" thick, W 4.75" x L 4.75" Bolt holes center to center 4.0" Bolt holes are 2" from the non-connector side end.

I just got a new supplier for the SH847 regulator so I am able to give better pricing now.

THE NEW SH847 SUPER KITS ARE \$199.95