

THE CLEANEST WASH

It is never easy shopping for a washing machine. With each brand rolling out complex-sounding jargon and features, it is difficult to conclude some simple facts: how well do washing machines actually clean and at what cost in terms of electricity and water bills.

Consumer VOICE tested washing machines by washing manufacturer-prescribed loads of cotton items and various types of soiled strips. We then assigned ratings based on washing ability, safety, noise and efficiency with both water and energy.

The findings of the *Consumer VOICE* tests of five semiautomatic, four top-loading and three front-loading washing machines have some myth-breaking findings which debunk the popular perception about the energy efficiency and cleaning performance of the front-loading machines. World wide, consumers buy the expensive front-loading washers because they save money in electricity bills and provide better cleaning. The Indian market reality is different.



Washing machines are not just expensive to purchase, they are also costly to operate. The cheapest branded washing machine comes at

a cost of Rs 6500 and the upper cost bracket can hover anywhere near Rs 25,000. The basic question for a consumer household wanting to buy a washing machine is whether to spend a little more money and invest

in a front-loader, or to go along with the cheaper top-loading washers.

Consumer VOICE bought 12 models of washing machines of three categories from the retail market, sent them to a laboratory for rigor-

Key Findings

1. Samsung washing machines are the most energy-efficient in the top-loading and semi-automatic category. Operating a Samsung machine will cost you only Rs 676 in energy bills every year.

2. Most washing machines' manuals do not give clear information on how much electricity the machines consume during operations.

3. Energy label standards formulation is underway in India and it is expected that washing machines will display energy labels in the next year or two.

4. Front-loading machines are super water-savers. Their water consumption (around 40 litres) is three times less than that of top-loading or semi-automatic machines.

5. The Videocon Multie 6000—a semi-automatic washing machine—removes most water from clothes, as compared to the other machines. Videocon Multie 6000 leaves only 30 per cent of water in the clothes, as against other machines which leave upto 65 per cent of water in clothes, on an average.

The Good Buys

Front-loading: Among the front-loading machines, the Rs 25,500 Siemens WMA 1016 gets the highest score of 79.81.

For better cleaning, choose the LG top-loading machine: The LG WFT7512FN, priced at Rs 13,400, showed the best performance in cleaning clothes soiled with carbon, red wine and curry. This top-loading automatic machine delivered better cleaning results than the rest of the 11 brands tested. Its overall score is 85.39.

Semi-automatic: If you are looking for a washing machine that is cheap and if you do not mind putting in some manual labour like taking wet clothes out of a semi-automatic washing machine, the Whirlpool Super Soaks Steel 9711 is a good buy. Priced at Rs 7500, this Whirlpool machine performs reasonably well in cleaning and has excellent water-extracting performance. In terms of energy efficiency performance, it is ranked fourth. The Whirlpool Super Soaks Steel 9711 is convenient to use, that is loading and unloading clothes is easy, it has fairly accessible controls and the machine is not difficult to clean. This Whirlpool's overall score is 86.20.

If we consider the overall scenario, it is the automatic front-loading machines that perform better in the cleaning parameters than the top-loading or semi-automatic washing machines.

Samsung top-loading: saving on electricity: The Samsung WA80HAG top-loading machine, which costs Rs 12,500, will save you the most on energy bills, among the 12 washing machines tested by *Consumer VOICE*. Samsung's energy consumption is only 0.162 kWh per cycle—an approximate energy consumption bill of Rs 676 in a year, if the weekly wash load is about 30 kilograms.

How to Save Energy with Your Washing Machine

Getting the best energy value from any washing machine depends on several energy-saving washing practices. For example:

- If possible, wash one big load rather than two small ones.
- Load the washer to capacity.
- If you must wash smaller loads, select lower water levels and shorter durations if possible.
- Use cold water rinses.
- Use lower temperature settings and pre-treat or pre-soak stains or heavily soiled clothing.
- Use the recommended amount and type of detergent.

Source: <http://www.ftc.gov/bcp/edu/pubs/consumer/alerts/alt070.shtm>

Table I

Brands Tested and Their Overall Ranks

Brand and model	Rank
Semi-auto	
Whirlpool Super Soak Steel 9711	1
Samsung WT 8202 EGXTL	2
Videocon Multie 6000	3
Godrej GDS 50NT	4
LG WP-9251	5
Top-Loading Automatic	
LG WF-T7512FN	1
Electrolux Alpha Care	2
Samsung WA 80 HAG	3
Videocon K 5800	4
Front-Loading Automatic	
Siemens WMA 1016	1
IFB Senator	2
Whirlpool 10125 Sensation Classic	3

ous testing for six months, and is now bringing the test results to you to help you decide which type and which brand of washing machine delivers the best performance and at what price.

First, let us talk about the automatic front-loading washing machines. *Consumer VOICE* tested the regular models of IFB, Whirlpool and Siemens in the front-loading automatic category and there are both positive and negative aspects to the test findings of the front-loaders.

If you want to know how well front-loading washing machines perform in the 'washing' tests, i.e. if they remove stains and clean soiled clothes, then front-loaders definitely deliver better results than the top-loading and semiautomatic machines. If the water consumption is considered, frontloaders again walk away with the honours as their water-consumption is only half as compared to top-loaders and semi-automatic. The catch, however, lies with the electricity consumption of these washers.

Of all the three categories (semi-auto, top-loading auto and front-loading auto), front-loading washing machines consume the most electric-

ity (machines tested as per the directions of the operating manuals of the respective brands). So much so that the energy consumption difference

How We Test

The washing machine test was a challenging one for the *Consumer VOICE* technical team and it involved 6 months of rigorous laboratory testing to arrive at the final results. After 12 most popular brands of washing machines were chosen through a nation-wide market survey, *Consumer VOICE* sent the coded washing machine samples to an NABL-accredited laboratory. The Indian Standard IS 14155: 1994 was referred to for testing purposes.

The first point of detailed preparation came when a standard cloth had to be chosen to test the cleaning efficiency of the machines. As per Indian Standards' specifications, a pure cotton cloth was selected and soiled. Its reflectance was measured with laboratory test apparatus before the washing cycle and after it.

When the cleaning cycles were in operation, different loads of clothes with varying weights were kept ready so that the exact load instructions as given in the manufacturers' manuals could be followed. The machines tested were of the capacity: 5.5-6.5 kgs.

between the frontloader with the highest energy consumption (IFB) and the most energy-efficient (Samsung WA 80 HAG) top-loader is up to 8 times (see Table III), if machines of all the three categories are compared together. This comparison has been done according to the rated load of operation for one complete cycle of washing. If we analyse the results in pure monetary terms, the most energy-efficient top-loading machine will cost you Rs 676 in electricity bills in a year, while a front-loading machine will mean an annual electricity bill of Rs 2129.

If the front-loading machines can improve their energy consumption

Table II

Comparison of Front-loading, Top-loading and Semi-automatic Machines

Features	Front-loading	Top-loading	Semi-automatic
Price	Most expensive machines to buy, up to Rs 25,000	Competitively priced under Rs 14,000	Low investment cost at Rs 7000
Energy consumption	Highest electricity consumption	Saves you money in energy bills	Saves you money in energy bills
Water consumption	Water saver: only 30-50 litres of water consumption	Very high water consumption: up to 100 litres per cycle	Water consumption as high as top-loader
Convenience	Fully automatic features mean less manual intervention. But the advanced features can be confusing for average user sometimes	Easy to use and requires minimal effort like draining out of detergent solution and putting in of fresh water	You need to invest time with a semi-automatic machine.

Table III

How Much Water and Electricity Your Washing Machine Consumes

Brand and model	Capacity in Kg	Water consumption in litres	Cost of water per cycle in Rs	Energy consumption per cycle in kWh	Electricity cost @ Rs 5 per kWh	Detergent used per wash in gms	Detergent cost per cycle @ 150 per kg	Total cost per cycle in Rs	Total yearly cost in Rs*
Semi-automatic									
LG WP-9251	6.2	95	0.95	0.42	2.10	66	0.99	4.04	1050
Samsung WT-8202	6	92	0.92	0.192	0.96	50	0.75	2.63	684
Whirlpool Super Soak Steel 9711	6.2	102	1.02	0.222	1.11	60	0.90	3.03	788
Videocon Multie 6000	6	105	1.05	0.478	2.39	60	0.90	4.34	1128
Godrej GDS 650NT	6	108	1.08	0.484	2.42	60	0.90	4.40	1144
Auto top-loading									
Samsung WA 80 HAG	6	89	0.89	0.162	0.81	60	0.90	2.6	676
LG WF-T7512FN	6.5	108	1.08	0.212	1.06	60	0.90	3.04	790
Videocon K 5800	5.8	116	1.16	0.338	1.69	60	0.90	3.75	975
Electrolux Alpha Care	5.5	87	0.87	0.255	1.275	80	1.20	3.345	870
Auto front-loading									
IFB Senator	6	45	0.45	1.368	6.84	60	0.90	8.19	2129
Whirlpool 10125 Sensation	6.5	40	0.40	0.952	4.76	45	0.67	5.83	1516
Siemens WMA 1016	5.5	33	0.33	0.931	4.655	60	0.90	5.88	1529

*Yearly cost of washing calculated on the basis of total weekly load of 30 kg for a family of four

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performance, there is a good possibility of their emerging as the best washing machine choice given their low water consumption and better cleaning.

Cleaning soiled and stained clothes

Consumer VOICE drafted a detailed test programme based on national standards to find out how well washing machines clean clothes (see box 'How We Test'). We soiled the fabric strips with carbon (carbon powder was mixed with mineral oil and the mixture was then diluted with carbon tetrachloride to obtain maximum blackness), red wine, Indian curry and cocoa-milk and tested each washing machine for these tests separately. A standard cloth specimen was chosen for testing purposes. These standard cloth specimens were of different sizes to represent bed sheets, shirts, etc. To

test the cleaning efficacy, the washed cloth samples were inspected under a spectrophotometer in the laboratory to get as accurate a result as possible.

Front-loading cleaning. The expensive front-loading washing machines were designed to deliver better cleaning performance. When clothes cleaned by the three front-loading machines (IFB, Whirlpool and Siemens) were analysed, it was found that frontloading machines are indeed better at giving better cleaned clothes than the top-loading or semi-automatic machines.

Top-loading cleaning. While generally, front-loading washing machines show better performance than the top-loading, if we go into the specifics, it is the LG automatic top loading (WF-T7512FN) which performs exceptionally well in

cleaning clothes soiled with carbon, red wine and curry. This LG machine got a score of 18.48 on 20, in washing performance.

Semi-automatic cleaning. There is little to choose between the cleaning performance of semiautomatic and top-loading machines. Both categories of machines do not show any significant difference of washing performance, and one can choose either type of washing machine as far as the removal of stains is concerned.

Rinsing efficiency

Once the clothes are inside the washing machine, at least in the

Most Energy Efficient Washing Machines

Front loading	:	Siemens WMA 1016 (0.931 kWh)
Top loading	:	Samsung WA80HA (0.162 kWh only)
Semi-automatic	:	Samsung WT-8202 (0.192 kWh)

Front Loading Versus Top-Loading

If you're in the market to buy a new washer, one of the first decisions you'll want to make is whether to buy a top-loading or a front-loading washing machine. Front-loading automatic washing machines are fully automatic and most expensive to buy. One of the greatest advantages of the front-loading machines is supposed to be their water and energy efficiency. In an increasingly environmentally-aware marketplace, this is an important aspect. However, *Consumer VOICE* laboratory tests show that while front-loading machines are indeed true to their water-efficiency promise, the same cannot be said about their energy consumption.

While a top-loading machine requires enough water to cover all the clothes in its drum, a front-loading washer needs only a third of that amount because its drum is set vertically in the machine. As the drum turns, it uses gravity to drop the clothes back into the water. And while a top-loading machine will empty the soapy water and refill for a rinse agitation cycle, a front-loading machine just sprays clean water through the scoops in the drums on the load as the drum continues to turn, saving gallons.

Clothing life: There's no question that agitators are tough on your clothes. Because only gravity is at work in a front-loading machine, you'll save a lot of wear and tear on your laundry, extending the life of your clothes and linens.

Cost: In this department, the front-loading washer is at a significant disadvantage. Typically, they cost upwards of twenty thousand rupees as compared to between ten to fifteen thousands rupees of cost of top-loaders and just about seven thousand rupees for semi-automatic washing machines.

Ease of use: If bending or kneeling is difficult for you, stay with a top-loading machine. You'll need to kneel or bend to load the clothes as well as remove the wet load from a front-loading washer.

Last-minute lid-flipping: We have all run back to the washing machine to toss in a just-found pair of socks or T-shirt after the machine has started. But with most front-loading machine, there's no turning back ('delayed start' feature) once you push the start button. The door locks until the cycle has ended. There are, however, a few models that allow a few seconds to add a garment, but once that light or time has elapsed, your clothing has to wait for the next load.

Heavy and shifty: Front-loading machines are heavy and weigh more than 70 kgs as compared to top-loaders that weigh less than half. This heavy weight is due to the in-built concrete counter weights added to the machine to balance the machine during spin cycles. When *Consumer VOICE* tested machines for over 6 months, we found that front-loading machines tend to shift a lot from the place of their installation during the spin-cycle. Users should keep this aspect in mind while standing near a washing machine.

Be prepared for high repair costs: Front-loading machines are not only expensive to buy, they are also costliest to repair.

Table IV
Comparative Performance of Washing Machines

Brand and model	Capacity in kg	Retail price in Rs+	Packing, marking instruction manuals and convenience	General and safety tests*	Washing performance	Rinsing efficiency	Water extracting efficiency	Water consumption	Energy consumption	Overall score
Semi auto										
Weightage per cent	—	—	10	35	20	10	10	7.5	7.5	100
Whirlpool Super Soak Steel 9711	6.2	7400-7500	9.40	32.61	13.72	9.71	9.99	3.51	7.26	86.20
Samsung WT-8202 EGXTZ	6	6200-6500	7.50	32.95	13.53	9.73	8.32	4.10	7.38	83.51
Videocon Multie 6000	6	6100-6500	8.70	31.99	13.08	9.80	10.00	3.33	6.24	83.14
Godrej GDS 650NT	6	6200-7100	8.20	32.13	12.49	9.66	9.55	3.17	6.23	81.43
LG WP-9251	6.2	6800-7500	9.10	32.90	12.18	9.64	6.17	3.92	6.48	80.39
Auto top loading										
LG WF-T7512FN	6.5	13,000-13,400	9.10	32.70	18.48	6.00	8.63	3.17	7.31	85.39
Electrolux Alpha Care	5.5	10,200-12,500	8.70	31.51	13.72	9.94	6.74	4.38	7.13	82.12
Samsung WA 80 HAG	6	12,200-12,500	8.40	32.34	10.67	9.88	7.18	4.26	7.50	80.23
Videocon K 5800	5.8	11,000-11,500	9.60	32.49	10.88	9.98	6.94	2.70	6.80	78.39
Auto front loading										
Siemens WMA 1016	5.5	25,500	8.10	27.07	15.21	9.51	7.64	7.50	4.78	79.81
IFB Senator	6	23,200-24,500	7.70	28.86	15.62	9.88	6.88	6.81	3.0	78.75
Whirlpool 10125 Sensation Classic	6.5	17,700-20,000	8.00	29.57	14.17	8.19	6.90	7.10	4.68	78.61

Rating: > 91 = Very good*****, 71-90 = Good****, 51-70 = Average***, 31-50 = poor**, up to 30 = very poor*

Note: The above data presented is score obtained with respect to assigned weightage. It is based on the actual performance of tested brands. *The safety tests include protection against electric shock, electric insulation and leakage current, insulation resistance and electric strength (after humidity treatment), input power, temperature rise test, endurance test, test for noise at standard wash and spin mode. + The prices on the left indicate the average retail price of 2008 according to ORG survey. The prices on the right indicate washing machine prices at the time of sample purchase i.e., May 2007.

semi-automatic machines, the detergent water has to be drained and fresh water put in the machine again for the rinsing cycle. In top-loading and front-loading automatic machines, the rinsing happens automatically without the user having to intervene much.

The rinsing efficiency of all machines is comparable with each other and there is not a significant rinsing performance difference between semi-auto, top-loading and front-loading washing machines. Of all the machines tested, the Videocon K5800 auto top-loading had the best rinsing results (a score of 9.98 on 10).

Water-extracting efficiency

If you are the kinds who use cotton clothes more than other kinds of fabrics, extracting water from the

washed clothes can be quite a job. The front-loading machines' fast spinning cycles are meant to extract more water from clothes as compared to other machines, so that the drying time of the washed clothes is reduced.

When *Consumer VOICE* determined the water-extracting efficiency of all the three types of washing machines, we did not find the front-loaders to perform any better. In fact their average performance was not any better than how top-loaders and semi-automatic machines fared. However, all the machines met the minimum standards requirements in this parameter.

It is the Videocon Multie 6000—a semi-automatic washing machine—that removes most water from clothes, as compared to the other machines. The Videocon Multie 6000 leaves only 30 per cent

of water in the clothes, as against other machines which leave up to 65 per cent of water in clothes, on an average.

The washing machine and its electricity bill

Most washing machines' manuals do not give any clear information on how much electricity the machines consume during operations. So while all machines advertise their low-water consumption rates, none gives clear cut information on how much exactly will its running cost a consumer in terms of the electricity bills.

Consumer VOICE tested electricity consumption of each machine in kilowatts per hour at full rated load and the results show that while the electricity consumption results of semi-automatic and automatic

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top-loading are comparable, the most expensive front-loading washing machines (all the 3 brands) are at the bottom of the ladder in energy consumption.

While the most energy-efficient auto top-loading will cost you Rs 676 in energy bills every year, a front-loading will cost you Rs 2129 for the same time period.

The high energy-consumption of front-loading machines can be attributed to the fact that the automatic front-loading washing machines take longer duration of time to wash and have a different design from semi-automatic or top-loading machines. Since they operate for a longer period of time, they naturally consume more electricity.

Worldwide there are energy labels for washing machines and consumers are advised to choose a washing machine primarily based on its energy efficiency performance. All European manufacturers and retailers for example, must tell the consumer about the energy efficiency of household washing machines, fridges, freezers, tumble dryers, washer-dryers, dishwashers, air conditioners, ovens and light bulbs. Products in the UK are rated from 'A' to 'G', with 'A' being the most efficient and 'G' being the least-efficient in terms of energy.

In India, currently, energy

label standards formulation is underway and it is hoped that washing machines in India will display energy labels in the next year or two.

Water consumption

A decided advantage of front-loading washing machines is that they consume only one third of water, as compared to top-loading or semi-automatic machines, for each cycle of washing. This means that if a semi-automatic and top-loading machine needs at least 100 litres of water for each cycle, a front-loading economises much better and requires only 35-50 litres of water for each cycle.

Consumer VOICE test findings show that front-loading machines' actual performance is far better than what these brands claim as their water consumption. While Whirlpool Sensation Classic and Siemens WMA1016 claimed 60 and 54 litres as their respective water consumption, we found that the actual water usage was only 40 and 33 litres, respectively.

On the other hand, there are machines like the Videocon K5800 top loading which advertise their water consumption as 108 litres, but their actual consumption of water is as high as 116 litres per cycle.

The noisiest machines

Washing machines emit noise both while washing as well as during the spinning cycles. The tests measured this noise as up to 80 decibels, which is as much noise as emitted by a vacuum cleaner, but is somewhat tolerable.

The noisiest washing machine is the front-loading IFB Senator and the quietest is the semi-automatic Samsung WT-8202 EGXTL.

Table V
Rate Your Washing Machine

Brand	Category	Rating	Score	Energy costs for a year
Whirlpool Super Soak Steel 9711	Semi-automatic	****	86.20	Rs 788
Samsung WT-8202 EGXTZ	Semi-automatic	****	83.51	Rs 684
Videocon Multie 6000	Semi-automatic	****	83.14	Rs 1128
Godrej GDS 650NT	Semi-automatic	****	81.43	Rs 1144
LG WP-9251	Semi-automatic	****	80.39	Rs 1050
LG WF-T7512FN	Automatic top-loading	****	85.39	Rs 790
Electrolux Alpha Care	Automatic top-loading	****	82.12	Rs 870
Samsung WA 80 HAG	Automatic top-loading	****	80.23	Rs 676
Videocon K 5800	Automatic top-loading	***	78.39	Rs 975
Siemens WMA1016	Automatic front-loading	***	79.81	Rs 1529
IFB Senator	Automatic front-loading	***	78.75	Rs 2129
Whirlpool 10125 Sensation Classic	Automatic front-loading	***	78.61	Rs 1516

Expensive Detergents for Expensive Machines?

Only the 'automatic-enabled' (premium) versions of detergents are recommended by washing machine manufacturers for use in the washing machines. The front-loading washing machines therefore require the most expensive variety of detergents to be used. This is because the detergents need to be low-sudsing (i.e. creating less lather) than the typical laundry detergents. Excessive amounts of suds can hamper the wash action (by cushioning the clothes as they fall), and in extreme cases can even be harmful to the machine itself (by overflowing the drum and getting into mechanical and electronic parts in extreme cases). Front-loading machines require this special detergent because they use less water. Less water means regular laundry detergents do not dissolve as easily and can leave soap residue on your clothes. If you still want to use your regular detergent, put far less quantity of it in the washing machine, than what you would put while washing clothes manually.

Courtesy: Consumer VOICE magazine, August 2008 issue