# Index Section C
# ENGINE ROOM

# Private Enterprise vs Government Subsidy

Lessons from History

(adapted from an address by Burt Folsom, author of Myth of the Robber Barons)

We are in the midst of a war of ideas regarding the marketplace and morality in the marketplace. The free market is under attack. Open competition and entrepreneurship are being attacked as to whether they are the best methods for providing economic growth and prosperity to the United States. The competing model, big, invasive government, has been gaining unwarranted support throughout the twentieth century. The big government model rests on three points: (1) the free market is inefficient and therefore we need big government to step in and regulate, (2) most businessmen are "robber barons" and their corruption causes the need for government to intervene and regulate, and (3) government can produce economic development efficiently. We have seen the big government model in the New Deal, the Great Society and the proposed Clinton health plan. This has caused some people, who have not had either time or inclination for reflection, to conclude that if the government model is growing then big government must work better, be more efficient, and perhaps be more moral than capitalism. This would be a very wrong conclusion to draw based upon historical precedents. There have been times in history when the entrepreneurial free market and big government were at work on the same problem simultaneously. Competing head-tohead, the free market has always proved far more efficient than our own government.

## Cornelius Vanderbilt vs Collins and Congress

The steamship industry was America's first serious large-scale industry. In the steamship industry we had new technological developments allowing people to cross the ocean in about a two week period. In the 1840's, how would these new possibilities for trade be approached with faster transportation now available? Would private industry step forward to provide the answer? A man named Edward Collins came to Congress with an idea. He said, "If you will give me $385,000 per year, I believe I can deliver passengers between England and the United States for $200 each. I can also do freight and mail, charging for those things of course, and if you will just give me a $385,000 subsidy, I will be glad to undertake this for you. And oh, by the way, could you build four ships for me, too?" It would come to $3,000,000, but Congress went for the offer and Collins was underway. Collins claimed before the first ship sailed that he would become more efficient and later would require no subsidies. But in each year of his enterprise, Mr. Collins came back to Congress asking for, not for a decrease, but an increase. He was soon up- to six, seven, then eight hundred thousand dollars a year!

Finally, Cornelius Vanderbilt, a steamboat operator on the east coast, went to Congress and said, "Enough of thisl It is completely inefficient." He told Congress, "I don't know what Mr. Collins is going to ask for this year, but whatever it is, I will do it for half." Congress went into great debate, but eventually granted Collins his subsidy (with increase) because they said they didn't know if Vanderbilt could actually do it. So Vanderbilt decided if that was the way they wanted it, then with no subsidy he would compete against Mr. Collins. The competition was under way between the privately financed ship of Commodore Vanderbilt and the government subsidized Collins Line. Vanderbilt announced his entry into the competition, adding, "...by the way, I intend to charge less-none of this $200 per passenger!" Vanderbilt created the third class fare, sometimes called the sardine class because they were packed together so closely on board. But for $30.00 he made it possible for many more people to afford the voyage on his ship. This is the way many immigrants came to this country. He also saved on fuel by going a little slower, and cut his insurance cost. He even commissioned runners to bring people to his ship. After one year, Vanderbilt was flourishing and Collins was in trouble. Collins' response was to go to Congress and request another increase in his subsidy in order to compete with Vanderbilt. So efficient was Vanderbilt that Collins demanded $900,000 from Congress. It was debated whether to give Collins $900,000 or go with Vanderbilt, who had promised to do it for nothing. To help Congress make up its mind, Collins invited them on board his ship (paid for by taxpayers) to wine and dine them. Congress came away convinced they needed to remain committed to Mr. Collins, feeling that since they had started with him it would be dishonest to take away his subsidy now. Still, Collins was nervous. The vote had been close. He decided to run his ships a little faster and promote them as being the most efficient means of travel between Liverpool and New York City. The results were one ship sunk, with four hundred people aboard. Another ship, sailing from New York on April 18 of 1856, has yet to arrive (many think it never will). Collins, faced with the humiliation of the loss of half of his fleet and many lives, now had to go back to Congress to request another increase in subsidy and yet another ship so he could compete with Vanderbilt. Had Congress' seen enough?

Congress built him another shipt Unfortunately, it was poorly built and made only one crossing. The ship cost $1,000,000 to build, and had to be sold at a loss of over $900,000. Collins was now in the awkward (but now familiar) position of having to go back to Congress. Finally, the "Just Say No" campaign took effect. Congress became furious. Many congressmen believed that there should be no more federal subsidies in the future, and-that matters should be decided by open competition. Collins had his subsidy completely stripped, leaving him to compete head-to-head with Vanderbilt. Within one year the collies Line was bankrupt!

## The Great Northern vs Subsidized Railroads

I wish it could be said that Congress had learned its lesson, but within ten years there were people coming to Congress with a great idea to span the nation with transcontinental railroads, linking California with New York. The Union Pacific and the Central Pacific came to Congress requesting a subsidy to build their lines, as did the Northern Pacific and the Atcheson, Topeka and the Sante Fe. Three of the four were transcontinentals, . all received Federal subsidies of either cash, land, or both. In the midst of this was one company that built and operated across the continent with no subsidies: the Great Northern, built by James Hill. The US. had three transcontinentals with subsidies and one without. The three transcontinental railroads that received Federal subsidies all went bankrupt. These railroads had few incentives to build efficiently, only to grab their subsidies and run. The Great Northern did not, and succeeded. The transcontinentals afford us yet another comparison between private enterprise and government-supported enterprise, even before the twentieth century.

## Andrew Carnegie vs Federalized Steel Production

Another example comes from the steel industry. This industry was crucial to the United States becoming a world economic power. Carnegie Steel was founded by Andrew Carnegie in 1872. At the time, England was the biggest steel producer in the world The price of steel rail was about sixty dollars per ton. Carnegie was incredibly innovative. He adopted the Bessemer process, the open hearth, and tried new methods of accounting to make his company more efficient. He applied a merit system that: rewarded employees for good ideas, and put those ideas into practice.. He became so adept at cutting costs that, by 1900, Andrew Carnegie could produce steel rail for eleven dollars per ton, while England was still producing steel at twenty-five dollars per ton. Carnegie Steel, the forerunner of U.S. Steel, was now producing more rail than the entire country of England. We had gone from being second rate to being the dominant producer of steel in the world. Carnegie's was an incredible performance and vindication of the free market. But a Sen. Bill Tillman of South Carolina called the steel companies greedy because of the fortune Carnegie had made in steel. The reasoning was that if there was profit, then there must be oppression there too. President Woodrow Wilson became convinced of the need for a government-run steel mill to compete with the privately run steel mills. After long debate, in 1920 the U.S. finally got its first steel mill run by bureaucrats. The plant, built in Charleston, West Virginia, began by building armor plate. $17,500,000 later, the first armor plate came off the mill. The cost was about eight hundred dollars per ton! The next president, Warren G. Harding, closed the government's steel mill.

Virtually none of these aforementioned examples can be found in any college level textbook. How can we draw effective conclusions about the proper role of government in our economy if we are unaware of how it has performed in the past. Here is another example:

## Smaller Slices of a Growing Pie vs Bigger Slices of a Shrinking Pie

We are all familiar with the Misery Index-a term invented in the 70's-where the percentage of inflation is added to the percentage of unemployment to produce a value that is called the Misery Index. The federal income tax is essential to big government as its largest source of revenue. The federal income tax was enacted in 1913. One of the first things those income tax dollars went for was that government funded steel mill. We have had fifteen presidents since that time. Can you guess which three presidents in that period have had the lowest misery indices? The three lowest indices were during the administrations of. Calvin Coolidge, Ronald Reagan (both terms), and John F Kennedy. And what did these three presidents have in common? Tax Cuts! These presidents were the only three in the last eighty years to cut tax rates. In all three administrations, a decrease in the tax rate produced an increase in government revenues. Investors who had previously sought to avoid punitive tax rates by seeking tax-favored investments, tax exempt municipal bonds and similar investment schemes, brought their money back into the economy, producing "a bigger pie." Seventy percent of nothing is nothing but twenty five percent of something is something, and that is what Coolidge did. The top marginal rate was 73% when Harding/Coolidge took office and was 25% when Coolidge left. The rate on the lowest end was 4% and it dropped to .5%-an eight-fold cut. There was a three-fold cut at the top level and an eight-fold cut at the bottom. These lower rates generated a billion dollars more in 1929 than had been previously generated with the higher rates earlier in the decade. Tax revenues increased by roughly 30% when the marginal rates were reduced. Kennedy and Reagan also found this to be true. In 1980, under Reagan, when the top rate was 70% the Federal government took in approximately 500 billion dollars. In 1990, when the top rate was 28% the Federal government took in one trillion dollars-roughly twice as much because investment comes back into the economy. Unfortunately, the facts of history get lost in the political spin.

Capitalism is the most moral, efficient and equitable system of economic exchange in history. But beyond that, it favors the underdog. Entrenched old wealth has no advantage in the free market. The best example that comes to mind is that of Will Kellogg.

## The Power of an Idea in a Free Market

The story of Will Kellogg is really the story of two brothers, Will and his eight years older brother. His brother, John Harvey Kellogg, was an "A" student and always the teachers pet. He became a physician, erected his own hospital in Battle Creek, Michigan, and became one of the wealthiest people in the community with an estate that covered an entire city block.

Will Kellogg went through school with this hanging over him. Everyone asked, "Why can't you do as well as your brother?" Will dropped out at the age of 12. His parents owned a broom factory and thought they would put him to work making brooms. He wasn't very good, so they put him to work selling them. Unfortunately, his technique wasn't very good with that either. Will Kellogg was the consummate failure. His parents would put him in business, he would fail, then come back home. Finally, at the age of 20, his parents shoved him out of the house to work for his brother. To get an idea of the work he did for his brother at the hospital, his nickname was "J.H. s Lacky." He shined his brother's shoes and was often seen in the morning running behind John's bicycle taking notes on what he would have him do during the day. He took all sorts of abuse from his brother, and even had to give his brother a shave.

Will worked for his brother 25 years and was never paid more than twenty dollars a week, in spite of the fact that the hospital was grossing over four million dollars. One of Will Kellogg's jobs was to prepare food and feed patients at the hospital. One of the foods he had to prepare was a moist wheat meal for breakfast. Will would roll this wheat meal out, cut,it into squares, and serve it. One night he laid it out, but got distracted and never got around to rolling it. The next morning, fearing John's wrath if he found the mistake, Will ran the roller over the now dry wheat meal. Instead of wet meal, what came out was a flake. Will took the flakes to his brother and said, "Look what I have done! Let's serve into the patients," and John Harvey agreed. The patients liked it and wanted it the next day. The patients even called to see how they could get it after they went home! Will Kellogg had an idea. Why not market these flaked cereals (they had corn, oat and others by now)? John Harvey felt that it was beneath his station to go into business for "filthy lucre" as he called it. He refused again and again, provoking Will to quit. John told him, "Well, if you are going to make this cereal you will have to buy the patents from me!" So Will had to take the life savings he had accumulated on his $20 per week salary and buy the patents from his brother. Will Kellogg was not a man with an education or a brilliant mind, but he was a man with a good idea, and he was persistent. Will Kellogg was on his own at 46 years old, ready to be an entrepreneur, and a creativity began to appear that no one knew he posessed. He experimented with four color advertisements in magazines-very innovative in the early 1900's. He had Norman Rockwell design cereal covers for ham! He developed test marketing to determine which kinds of cereals people wanted most and how much of each to produce. What he found was that most people preferred corn flakes. But he still hadn't cracked the New York market. Until he cracked New York he couldn't play the commercial game. Will Kellogg had an idea about how to sell Corn Flakes in New York. He would have a special promotion called "Wednesday Is Wink Day!" Every Wednesday, if a woman went into her grocer and winked, she got a free box of Kellogg's Corn Flakes. This was risque stuff in 1910! A wild idea, but in a free market wild ideas get to compete with the more established ones. Will's idea was so successful that, after this campaign, regular shipments of Corn Flakes to New York City went from 2 train car loads to 30 train car loads. Kellogg had conquered the New York market and had a product he could sell nationally. By 1940, he was one of the wealthiest people in America.

The free market gives everybody a second chance. Big government may still hold appeal in the political arena, but in the real world, it cannot offer each individual hope for personal prosperity, family security and individual liberty.

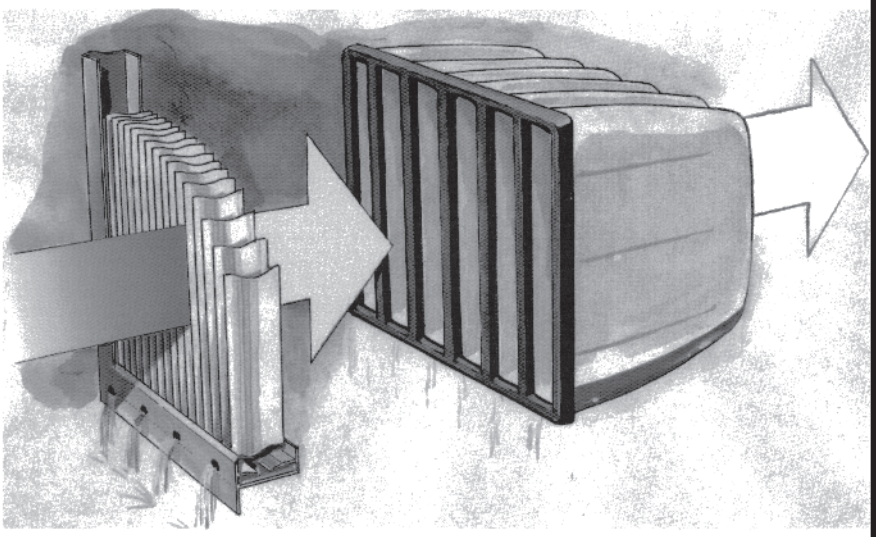
# Wide Infinidry: 2-stage Marine Air Intake System

This ultra-compact Marine Air Intake System in a 2 stage configuration is a marked advancement in Air Intake technology. Combining the high-efficiency Wide ME moisture separator with the newly developed and patented Filtrair PTL-DS "Drop-Safe" pocket filter represent a totally re-engineered Marine Air Intake design-philosophy: The Wide IFD (InFiniDry)

The forward-draining, non-reentrainment pocket filter provide highest quality air filtration and water separation in the same stage.

Consequently, the Wide Infinidry 2-stage system outperforms traditional 3 and 4-stage systems on all accounts:

- **Dramatically reduced pressure drop.**
- **No water or salt re-entrainment**
- **Eliminating salt deposit build-up downstream of filter bag**
- **Reduced maintenance cost.**
- **Reduced installation cost.**
- **More compact filter house.**



FIRST STAGE: Moisture separation and coarse filtration.

First stage replaces traditional Louvre/Hood and Pre-Filter with a single stage high efficiency Wide ME moisture separator.

A first stage separator is usually kept very clean by occasional rough weather, requiring minimal additional maintenance.

Coarse dust and soot particles are also separated and then flushed out along with the water.

SECOND STAGE: Fine filtration, coalescing and drainage.

Traditionally, a Marine Filter also served as a coalescer, and the coalesced droplets were separated with another downstream mist separator.

Now, with the patented Filtrair PTL-DS, the very fine droplets entering the filter is not only coalesced, but also accumulated and drained into the water-sealed bottom of the pocket filter. From there the water is drained forward, and never enter the clean side. This completely eliminates the problem of saturated droplets entering the clean side and potentially contaminating clean-side air with salt and other water soluble contaminants.

Comprehensive performance data for system components are available from A.S. Wide.

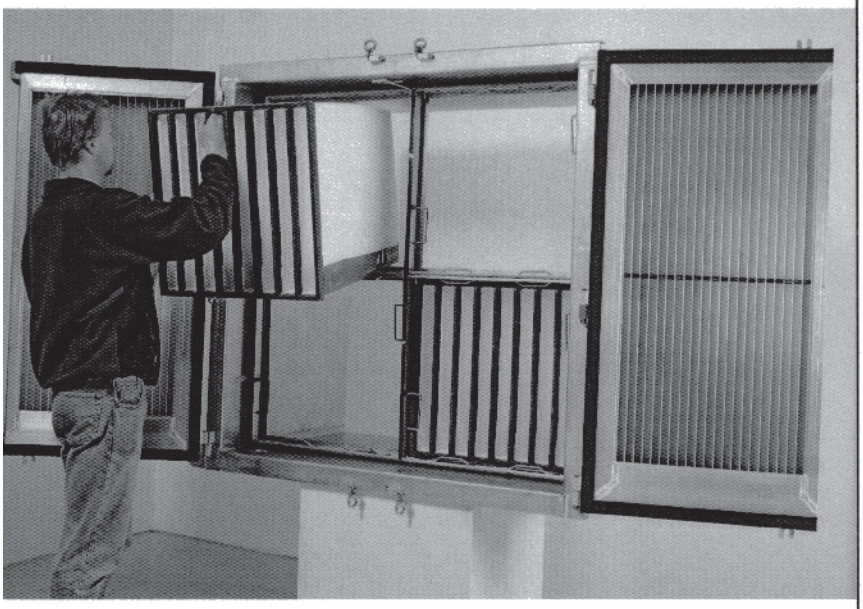
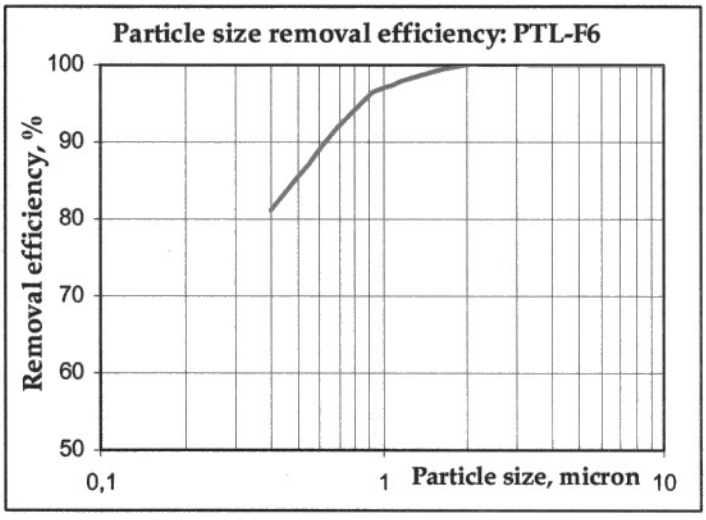
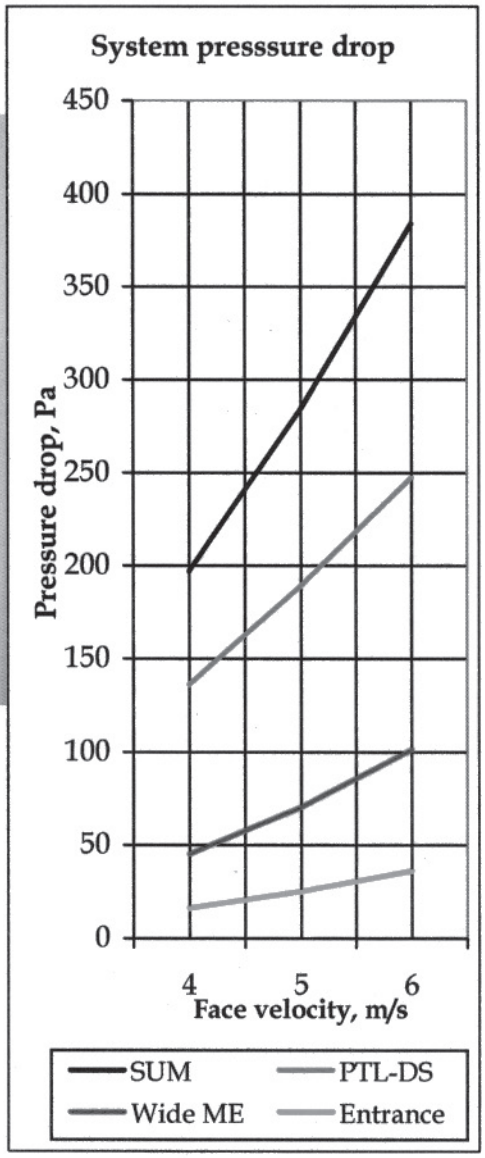


Photo: Four-bag front hinged Wide Infinidry.
The Wide Infinidry 2-stage Marine Air Intake System is easily scalable from a single filter unit to large multi-bank systems for hundreds of filter bags.




**System pressure drop.**
Chart is based on uniform face velocity. Actual face velocity should be calculated for each design to determine correct pressure drop for each stage.

# MODEL DDF DIRECT DRIVE RATING TABLES

CFM and BHP at Static Pressure Shown • Ratings at 70˚F., .075 Density, Sea Level

Performance shown is for installation type D-Ducted inlet, Ducted outlet.

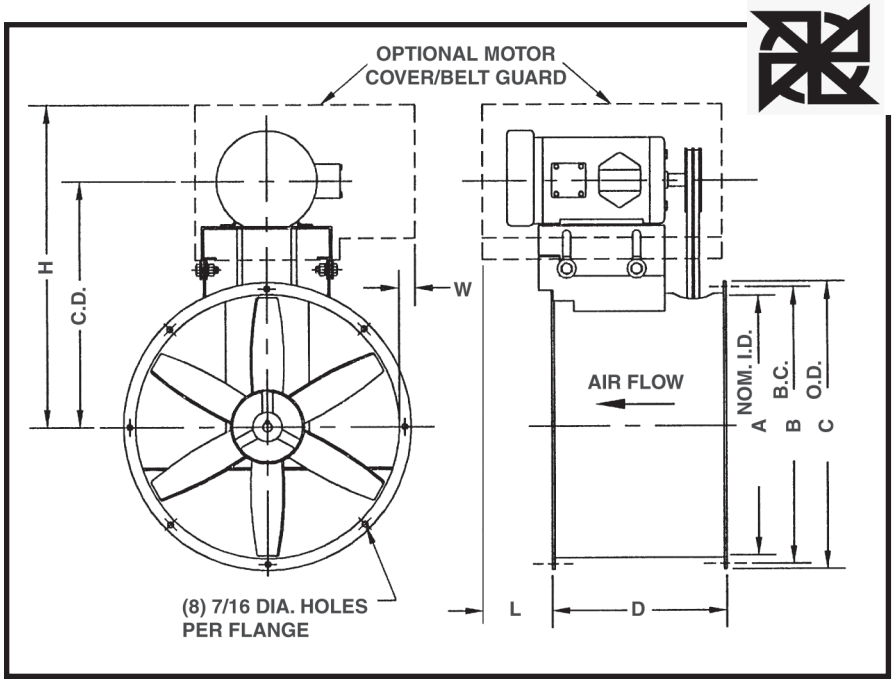
Performance ratings do not include the effects of appurtenances in the airstream.

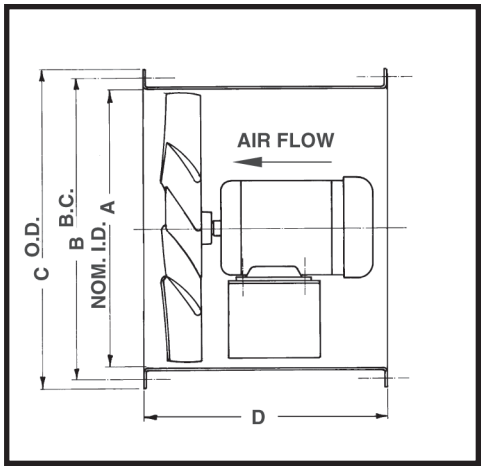
| FAN SIZE | PROP NO. | MOTOR HP | FAN RPM | 1/8" SP | | 1/4" SP | | 3/8" SP | | 1/2" SP | | 5/8" SP | | 3/4" SP | | 7/8" SP | | 1" SP | | 1 1/8" SP | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| 12" | 12-6-24 | 1/2 | 3450 | 2031 | .40 | 1971 | .40 | 1912 | .41 | 1828 | .44 | 1739 | .46 | 1616 | .48 | 1442 | .50 | | | | |
| | 12-4-30 | 3/4 | 3450 | 2449 | .58 | 2368 | .59 | 2286 | .60 | 2196 | .63 | 2102 | .67 | 2008 | .70 | 1886 | .72 | 1764 | .73 | | |
| 15" | 15-6-25 | 1/3 | 1750 | 2028 | .17 | 1851 | .18 | 1587 | .20 | | | | | | | | | | | | |
| | 15-6-36 | 1/3 | 1750 | 2369 | .21 | 2147 | .23 | 1794 | .25 | | | | | | | | | | | | |
| | 15-6-43 | 1/2 | 1750 | 2870 | .48 | 2640 | .49 | 2330 | .49 | 1962 | .39 | | | | | | | | | | |
| | 15-6-25 | 1 1/2 | 3450 | 4200 | 1.22 | 4130 | 1.24 | 4061 | 1.25 | 3991 | 1.26 | 3922 | 1.28 | 3827 | 1.31 | 3728 | 1.35 | 3628 | 1.39 | 3529 | 1.43 |
| | 15-4-30 | 1 1/2 | 3450 | 4619 | 1.34 | 4505 | 1.38 | 4391 | 1.42 | 4277 | 1.46 | 4152 | 1.46 | 4025 | 1.46 | 3898 | 1.46 | 3769 | 1.46 | 3591 | 1.43 |
| | 15-6-36 | 2 | 3450 | 4967 | 1.55 | 4864 | 1.58 | 4762 | 1.61 | 4660 | 1.64 | 4558 | 1.67 | 4456 | 1.70 | 4331 | 1.75 | 4203 | 1.80 | 4075 | 1.85 |
| 18" | 18-4-22A | 1/3 | 1750 | 3205 | .28 | 2906 | .30 | 2505 | .32 | | | | | | | | | | | | |
| | 18-6-25 | 1/2 | 1750 | 3427 | .27 | 3190 | .31 | 2935 | .34 | 2571 | .40 | | | | | | | | | | |
| | 18-6-35 | 1/2 | 1750 | 3937 | .37 | 3648 | .40 | 3316 | .45 | 2779 | .46 | | | | | | | | | | |
| | 18-6-36 | 3/4 | 1750 | 4536 | .65 | 4256 | .68 | 3926 | .70 | | | | | | | | | | | | |
| | 18-6-43 | 1 | 1750 | 4977 | .76 | 4747 | .78 | 4457 | .82 | 4130 | .87 | 3705 | .88 | | | | | | | | |
| 24" | 24-4-16A | 3/4 | 1750 | 4870 | .53 | 4560 | .53 | 4015 | .55 | 3280 | .56 | 2515 | .56 | 1880 | .56 | | | | | | |
| | 24-4-20A | 1 | 1750 | 6854 | .91 | 6331 | .95 | 5785 | .97 | 5233 | 1.02 | | | | | | | | | | |
| | 24-6-31 | 1 1/2 | 1750 | 7345 | 1.12 | 6805 | 1.12 | 5950 | 1.12 | 4795 | 1.07 | 3300 | 1.09 | 2000 | 1.28 | | | | | | |
| | 24-4-33 | 2 | 1750 | 9178 | 1.54 | 8729 | 1.63 | 8275 | 1.69 | 7821 | 1.74 | 7169 | 1.78 | 6425 | 1.78 | | | | | | |
| | 24-6-41 | 3 | 1750 | 10314 | 2.30 | 9976 | 2.36 | 9637 | 2.43 | 9221 | 2.52 | 8793 | 2.62 | 8246 | 2.70 | 7601 | 2.75 | | | | |
| 30" | 30-6-22 | 3/4 | 1150 | 8037 | .57 | 6749 | .61 | 3672 | .55 | | | | | | | | | | | | |
| | 30-4-41 | 2 | 1150 | 12059 | 1.51 | 11241 | 1.55 | 10232 | 1.61 | 8616 | 1.71 | | | | | | | | | | |
| | 30-7-40 | 3 | 1150 | 12633 | 1.91 | 12050 | 2.00 | 11257 | 2.12 | 10240 | 2.23 | | | | | | | | | | |
| | 30-4-20A | 2 | 1750 | 12483 | 1.68 | 11792 | 1.71 | 10974 | 1.76 | 10113 | 1.82 | 9188 | 1.89 | | | | | | | | |
| | 30-6-22 | 3 | 1750 | 13192 | 1.88 | 12468 | 1.98 | 11700 | 2.10 | 10907 | 2.20 | 9907 | 2.12 | | | | | | | | |
| | 30-4-41 | 7 1/2 | 1750 | 19014 | 5.24 | 18511 | 5.30 | 18008 | 5.36 | 17505 | 5.42 | 16863 | 5.50 | 16199 | 5.59 | 15534 | 5.67 | 14550 | 5.84 | 13488 | 6.00 |
| | 30-7-40 | 10 | 1750 | 19729 | 6.54 | 19346 | 6.68 | 18963 | 6.82 | 18579 | 6.96 | 18194 | 7.10 | 17646 | 7.29 | 17099 | 7.49 | 16552 | 7.68 | 15827 | 7.84 |
| 34" | 34-6-29 | 1 | 1150 | 11916 | 1.09 | 10349 | 1.14 | | | | | | | | | | | | | | |
| | 34-6-26 | 3 | 1150 | 15524 | 1.99 | 14623 | 2.09 | 13628 | 2.19 | 12323 | 2.26 | 10277 | 2.12 | | | | | | | | |
| | 34-6-29 | 5 | 1750 | 19166 | 3.73 | 18377 | 3.81 | 17478 | 3.90 | 16464 | 3.99 | 15058 | 3.99 | | | | | | | | |
| | 34-6-26 | 10 | 1750 | 24383 | 6.79 | 23808 | 6.95 | 23234 | 7.10 | 22659 | 7.26 | 22018 | 7.41 | 21364 | 7.57 | 20711 | 7.73 | 19961 | 7.86 | 19008 | 7.94 |
| 36" | 36-6-25 | 1 1/2 | 1150 | 13814 | 1.42 | 12093 | 1.47 | | | | | | | | | | | | | | |
| | 36-6-26 | 3 | 1150 | 18275 | 2.44 | 17312 | 2.58 | 16353 | 2.68 | 15198 | 2.77 | 13857 | 2.80 | 11818 | 2.70 | | | | | | |
| | 36-6-25 | 5 | 1750 | 22329 | 4.85 | 21358 | 4.98 | 20344 | 5.08 | 19199 | 5.16 | 17924 | 5.19 | | | | | | | | |
| | 36-6-26 | 10 | 1750 | 28522 | 8.28 | 27982 | 8.52 | 27388 | 8.75 | 26752 | 8.98 | 26104 | 9.15 | 25447 | 9.30 | 24852 | 9.47 | 24280 | 9.65 | 23375 | 9.73 |
| 42" | 42-6-26 | 2 | 850 | 18525 | 1.78 | 16724 | 1.86 | 14196 | 1.86 | | | | | | | | | | | | |
| | 42-6-26 | 5 | 1150 | 26890 | 4.03 | 25559 | 4.20 | 24210 | 4.35 | 22724 | 4.43 | 21058 | 4.48 | | | | | | | | |
| 48" | 48-6-19 | 2 | 850 | 20791 | 1.61 | 18327 | 1.72 | 15731 | 1.79 | 11495 | 1.78 | | | | | | | | | | |
| | 48-6-30 | 5 | 850 | 27881 | 2.88 | 26156 | 3.10 | 24358 | 3.36 | 22027 | 3.56 | 18566 | 3.75 | 13018 | 3.95 | | | | | | |
| | 48-6-19 | 5 | 1150 | 29574 | 3.78 | 27840 | 4.01 | 26032 | 4.17 | 24119 | 4.30 | 22236 | 4.41 | 20044 | 4.47 | | | | | | |
| | 48-6-30 | 10 | 1150 | 38681 | 6.81 | 37518 | 7.21 | 36237 | 7.48 | 34932 | 7.84 | 33608 | 8.18 | 32137 | 8.46 | 30377 | 8.74 | 28246 | 9.02 | 25615 | 9.30 |

**Little Things Mean A Lot**

A FEW WASHERS

The **Story:** The $1.6 billion Hubble Space telescope was launched into orbit on April 24 1990, and immediately needed repairs. Cost of the rescue mission: $86 million. Cause of the problem: a few 250 washers that technicians used to fill in a gap in an optical testing device. No one noticed they were there ... until they shook loose.




**DIMENSIONS IN INCHES±1/8"**

| FAN SIZE | MOTOR HP | ALL MODELS | | | D | | FAN SHAFT O.D. | | FAN SHAFT KEY | | OPT. MOTOR/BELT COVER (1) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | BAF & BAFA only | ALL OTHER MODELS | BAF & BAFA only | TAF, WAF, HTF, WAF/HTF & TAFA | BAF & BAFA only | TAF, WAF, HTF, WAF/HTF & TAFA | H MAX. | W MAX. | L MAX. |
| 12 | ALL | 12 | 13 1/8 | 14 1/2 | 12 | 20 | 3/4 | 1 | 3/16 | 1/4 | 18 9/16 | 3 1/16 | 8 |
| 15 | ALL | 15 | 16 1/8 | 17 1/2 | 12 | 20 | 3/4 | 1 | 3/16 | 1/4 | 20 1/2 | 3 3/4 | 8 |
| 18 | ALL | 18 | 19 1/8 | 20 1/2 | 12 | 20 | 3/4 | 1 | 3/16 | 1/4 | 22 5/16 | 2 5/16 | 8 |
| 24 | ALL | 24 | 25 13/16 | 27 1/4 | 16 | 21 | 3/4 | 1 3/16 | 3/16 | 3/8 | 25 3/8 | – | 8 1/2 |
| 30 | ALL | 30 | 31 3/4 | 33 1/4 | 16 | 22 | 1 | 1 7/16 | 1/4 | 3/8 | 32 3/16 | – | 8 9/16 |
| 34 | ALL | 34 | 35 11/16 | 37 1/4 | 16 | 26 | 1 | 1 7/16 | 1/4 | 3/8 | 34 3/8 | – | 8 9/16 |
| 36 | ALL | 36 | 37 7/8 | 39 1/4 | 16 | 28 | 1 | 1 7/16 | 1/4 | 3/8 | 35 13/16 | – | 8 1/2 |
| 42 | ALL | 42 | 43 9/16 | 45 1/4 | 16 | 29 | 1 | 1 7/16 | 1/4 | 3/8 | 39 1/16 | – | 8 1/2 |
| 48 | 3-7 1/2 | 48 | 49 5/8 | 51 | – | 31 | – | 1 7/16 | – | 3/8 | 41 5/8 | – | – |
| | 10-15 | 48 | 49 5/8 | 51 | – | 31 | – | 1 15/16 | – | 1/2 | 42 3/8 | – | – |

(1) All models; height, length and width varies with motor frame size. Maximums are shown for each size. For actual dimensions, consult white prints.

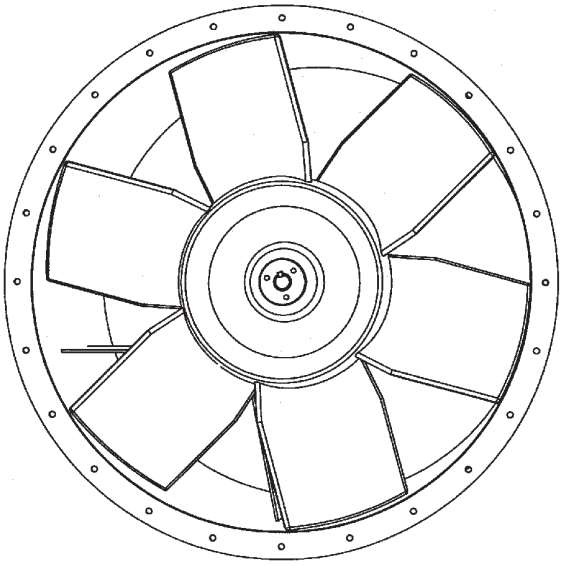
**APPROX. SHIPPING WEIGHT LESS MOTOR**

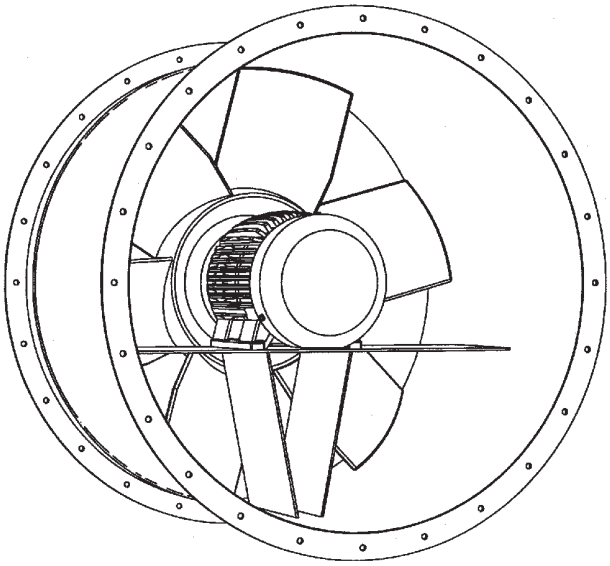
| FAN SIZE | MODELS BAF & BAFA | MODELS TAF, WAF, HTF, WAF/HTF, & TAFA | MODEL DDF |
|---|---|---|---|
| 12 | 36 | 70 | 30 |
| 15 | 55 | 75 | 50 |
| 18 | 68 | 85 | 64 |
| 24 | 108 | 145 | 80 |
| 30 | 130 | 180 | 95 |
| 34 | 180 | 270 | 160 |
| 36 | 190 | 295 | 180 |
| 42 | 225 | 410 | 205 |
| 48 | — | 530 | 270 |

**Custom Fans availabe in many different configurations, housing thicknesses, materials, coatings & performances.**
**CALL FOR PRICING**

**Little Things Mean A Lot**
A PAINT SCRAPER
The Story: In September 1978, a sailor accidentally dropped a 75 cent paint scraper into the torpedo launcher of the nuclear sub, U.S.S. *Swordfish*. The sub was forced to scrap its mission so repairs could be performed in drydock. Cost to U.S. taxpayers: $171,000.

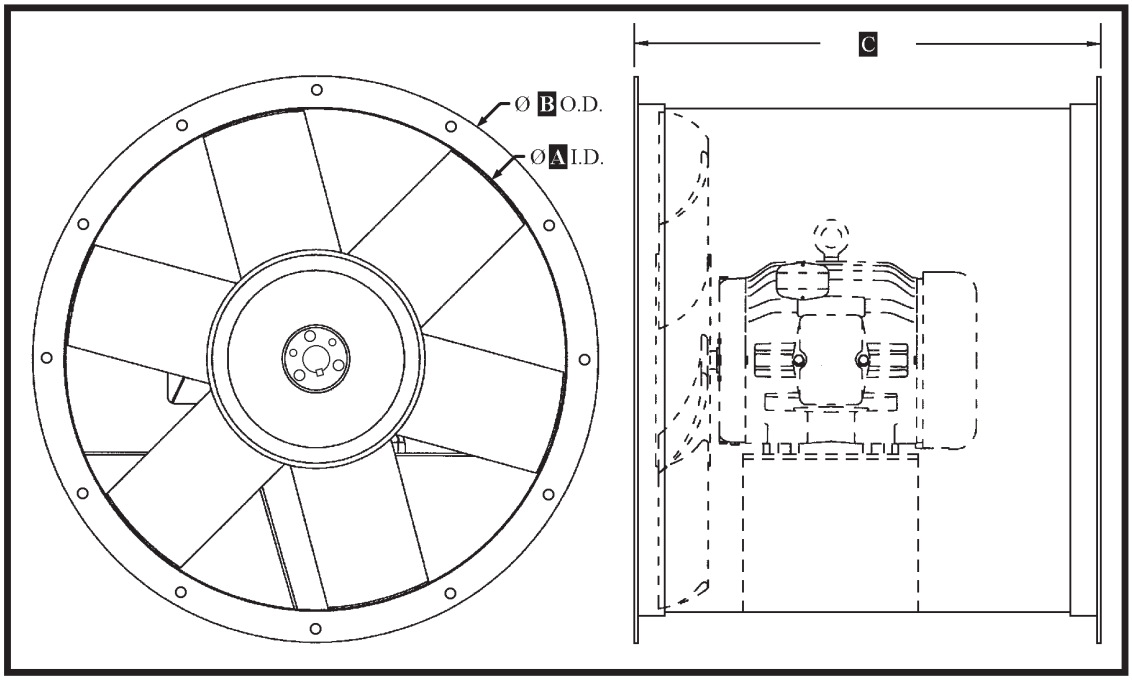
# TUBEAXIAL FANS





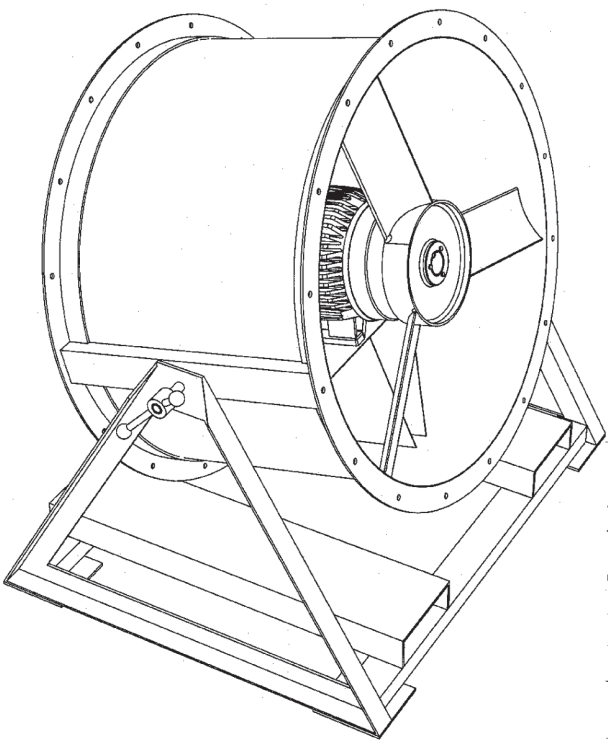
Heavy Duty Marine and Industrial Tube-axial fans featuring Byrne, Rice & Turner one-piece cast aluminum impellers. Our units come with a variety of pitches, hub-to-tip ratios, and a number of blade combinations to fit almost any application. Standard housings are available up to 1/4” thick, and constructed of painted or galvanized steel, stainless steel, or aluminum. Motor mounts fit standard NEMA frame motors. Custom construction is available.

| A | B | C |
|---|---|---|
| **12** | 15¼ | 15 |
| **16** | 18⅝ | 16 |
| **18** | 21⅛ | 18 |
| **24** | 27⅛ | 20 |
| **30** | 34⅛ | 24 |
| **36** | 40⅛ | 24 |
| **42** | 47⅛ | 30 |
| **48** | 53⅛ | 30 |



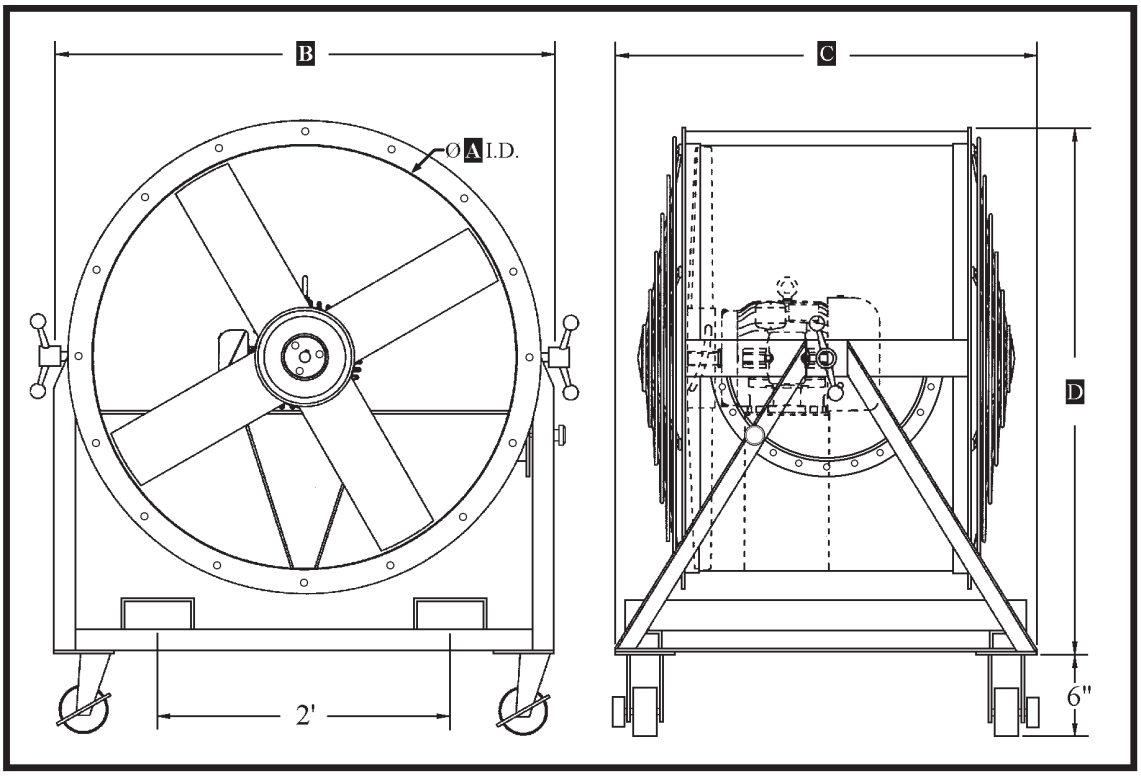

Dimensions and specifications are subject to change.

# A-Frame Man Coolers

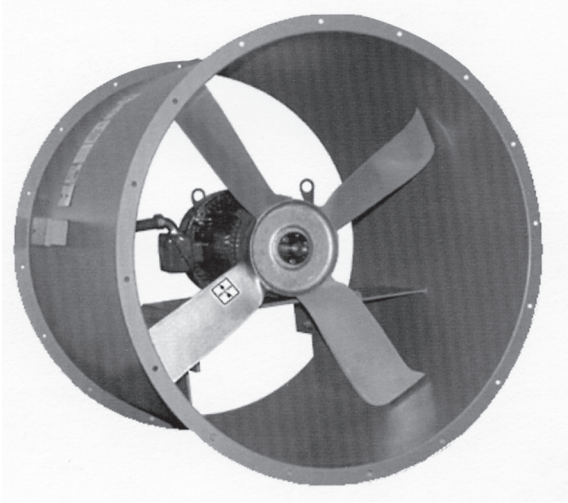


Portable A-Frame and Fixed Column Mounting Man Cooler fans provide heavy-duty air movement for personnel and equipment cooling. These fans feature Byrne, Rice & Turner's cast aluminum impellers in a heavy gauge, continuous welded housing. Portable A-Frame units rotate 270 degrees on their base, and come with an optional lifting lug and heavy duty locking wheels. Column Mounting units tilt and swivel for exact directional airflow. Housings are available in hot dip galvanized and painted steel construction.

| A | 23 | 29 | 35 | 41 | 47 | 53 |
|---|---|---|---|---|---|---|
| B | 30½ | 37½ | 43½ | 49½ | 55½ | 61½ |
| C | 29⅜ | 32⅞ | 36⅜ | 41 | 44½ | 49 |
| D | 34 | 40 | 46 | 53 | 59 | 66 |




Dimensions and specifications are subject to change.

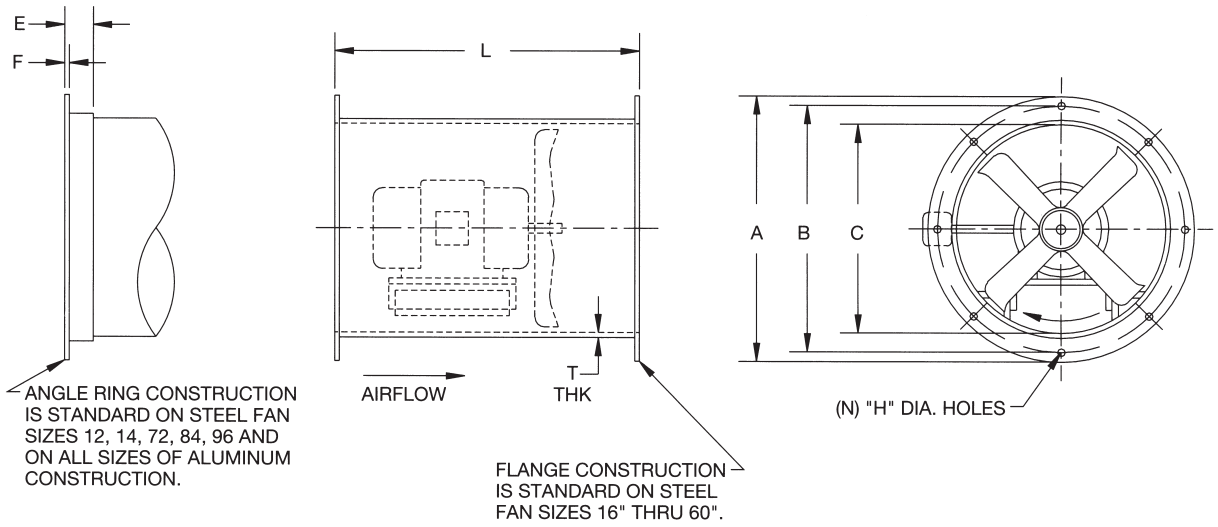


Aerovent

**Model TA**
**Direct Drive**
**Tubeaxial**

# Dimensional Data

## Model TA Direct Drive Tubeaxial Fan




| SIZE | A | B | C | H | L | N | STEEL | | | STAINLESS STEEL | | | ALUMINUM | | | MIN. MTR. FRAME SIZE | MAX.MTR. FRAME SIZE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | E | F | T | E | F | T | E | F | T | | |
| **12** | 14 7/8 | 13 7/8 | 12 1/4 | 11/32 | 22 | 8 | 1 1/4 | 1/8 | .075 | 1 1/4 | 1/8 | .075 | 1 1/4 | 1/8 | .125 | 48 | 56 |
| **14** | 16 7/8 | 15 7/8 | 14 1/4 | 11/32 | 22 | 8 | 1 1/4 | 1/8 | .075 | 1 1/4 | 1/8 | .075 | 1 1/4 | 1/8 | .125 | 48 | 56 |
| **16** | 18 7/8 | 17 7/8 | 16 1/8 | 11/32 | 24 | 8 | FLANGED | | .105 | FLANGED | | .105 | 1 1/4 | 1/8 | .160 | 48 | 145T/U |
| **18** | 20 7/8 | 19 7/8 | 18 1/8 | 11/32 | 24 | 8 | FLANGED | | .105 | FLANGED | | .105 | 1 1/4 | 1/8 | .160 | 48 | 145T/U |
| **21** | 24 | 22 7/8 | 21 1/4 | 7/16 | 24 | 8 | FLANGED | | .105 | FLANGED | | .105 | 1 1/4 | 1/8 | .160 | 48 | 184T/U |
| **24** | 27 | 25 7/8 | 24 1/4 | 7/16 | 24 | 8 | FLANGED | | .105 | FLANGED | | .105 | 1 1/4 | 1/8 | .160 | 48 | 184T/U |
| **30** | 33 1/2 | 32 | 30 1/4 | 7/16 | 27 | 8 | FLANGED | | .105 | FLANGED | | .105 | 1 1/2 | 3/16 | .160 | 56 | 215T/U |
| **36** | 40 | 38 3/8 | 36 3/4 | 7/16 | 34 | 16 | FLANGED | | .135 | FLANGED | | .135 | 1 1/2 | 3/16 | .160 | 182T/U | 256T/U |
| **42** | 46 | 44 5/8 | 42 3/4 | 9/16 | 34 | 16 | FLANGED | | .135 | FLANGED | | .135 | 1 1/2 | 3/16 | .160 | 182T/U | 286T/U |
| **48** | 52 | 50 5/8 | 48 5/8 | 9/16 | 36 | 16 | FLANGED | | .179 | FLANGED | | .179 | 1 1/2 | 3/16 | .190 | 182T/U | 286T/U |
| **54** | 59 | 57 1/4 | 54 5/8 | 5/8 | 36 | 16 | FLANGED | | .179 | FLANGED | | .179 | 2 | 1/4 | .190 | 213T/U | 286T/U |
| **60** | 65 | 63 1/4 | 60 5/8 | 5/8 | 38 | 16 | FLANGED | | .179 | FLANGED | | .179 | 2 | 1/4 | .190 | 254T/U | 326T/U |
| **72** | 77 | 75 1/4 | 72 5/8 | 11/16 | 38 | 16 | 2 | 1/4 | .179 | 2 | 1/4 | .179 | 2 | 1/4 | 1/4 | 254T/U | 365T/U |
| **84** | 91 | 88 1/4 | 84 5/8 | 11/16 | 42 | 16 | 3 | 5/16 | .179 | 3 | 5/16 | .179 | 3 | 5/16 | 1/4 | 324T/U | 365T/U |
| **96** | 103 | 100 1/4 | 96 5/8 | 11/16 | 48 | 16 | 3 | 5/16 | .179 | 3 | 5/16 | .179 | 3 | 5/16 | 5/16 | 365T/U | 404T/U |

Dimensions shown are in inches unless otherwise indicated.

Dimensions are not to be used for construction.

# Performance Data

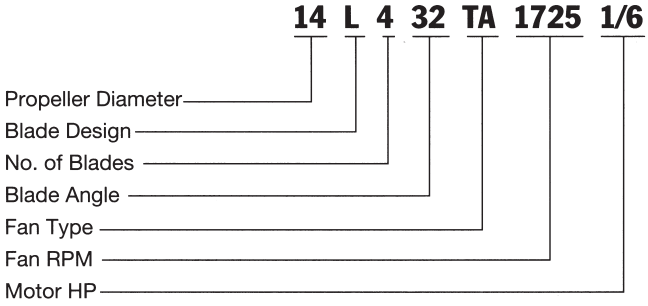
To identify a specific fan for ordering or engineering specification, it is necessary to show the complete catalog number as shown at the right. All performance data is available in curve form upon request.

All capacities shown in the performance tables that follow are for standard air conditions: 70°F at sea level (0.075 lbs./cu.ft. air density).

The tables show a representative sample of the wide range of propellers available.

Performance for belt driven fans begins on page 11.

## Catalog Number System




## Size 12 TA Direct Drive Tubeaxial

| CATALOG NUMBER | | | | CUBIC FEET PER MINUTE & HORSEPOWER AT STATIC PRESSURE | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PROP | FAN TYPE | RPM | HP | 0" SP | | 1/8" SP | | 1/4" SP | | 3/8" SP | | 1/2" SP | | 3/4" SP | | 1" SP | | 1¼" SP | | 1½" SP | |
| | | | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| 12M617 | TA | 1725 | 1/12 | 923 | .051 | 761 | .055 | 396 | .056 | | | | | | | | | | | | |
| 12M622 | TA | 3450 | 1/2 | 2156 | .380 | 2102 | 398 | 2044 | .416 | 1980 | .433 | 1908 | .451 | 1714 | .482 | | | | | | |

## Size 14 TA Direct Drive Tubeaxial

| CATALOG NUMBER | | | | CUBIC FEET PER MINUTE & HORSEPOWER AT STATIC PRESSURE | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PROP | FAN TYPE | RPM | HP | 0" SP | | 1/8" SP | | 1/4" SP | | 3/8" SP | | 1/2" SP | | 3/4" SP | | 1" SP | | 1¼" SP | | 1½" SP | |
| | | | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| 14L432 | TA | 1725 | 1/6 | 1980 | .123 | 1732 | .135 | 1396 | .144 | | | | | | | | | | | | |
| 14L420 | TA | 3450 | 1/2 | 2808 | .493 | 2720 | .510 | 2624 | .524 | 2520 | .534 | 2403 | .537 | 2101 | .534 | 1478 | .534 | | | | |
| 14L426 | TA | 3450 | 3/4 | 3484 | .739 | 3364 | .734 | 3241 | .735 | 3115 | .740 | 2990 | .755 | 2706 | .783 | 2238 | .786 | | | | |

## Size 16 TA Direct Drive Tubeaxial

| CATALOG NUMBER | | | | CUBIC FEET PER MINUTE & HORSEPOWER AT STATIC PRESSURE | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PROP | FAN TYPE | RPM | HP | 0" SP | | 1/8" SP | | 1/4" SP | | 3/8" SP | | 1/2" SP | | 3/4" SP | | 1" SP | | 1¼" SP | | 1½" SP | |
| | | | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| 16L432 | TA | 1160 | 1/8 | 1988 | .073 | 1530 | .083 | | | | | | | | | | | | | | |
| 16L432 | TA | 1725 | 1/4 | 2957 | .240 | 2677 | .259 | 2359 | .270 | 1817 | .266 | | | | | | | | | | |
| 16L420 | TA | 3450 | 1 | 4192 | .961 | 4092 | .987 | 3987 | 1.01 | 3874 | 1.03 | 3753 | 1.04 | 3471 | 1.04 | 3100 | 1.04 | 2490 | 1.04 | | |

## Size 18 TA Direct Drive Tubeaxial

| CATALOG NUMBER | | | | CUBIC FEET PER MINUTE & HORSEPOWER AT STATIC PRESSURE | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PROP | FAN TYPE | RPM | HP | 0" SP | | 1/8" SP | | 1/4" SP | | 3/8" SP | | 1/2" SP | | 3/4" SP | | 1" SP | | 1¼" SP | | 1½" SP | |
| | | | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| 18L432 | TA | 1160 | 1/8 | 2777 | .109 | 2270 | .120 | | | | | | | | | | | | | | |
| 18L420 | TA | 1725 | 1/6 | 2962 | .139 | 2620 | .156 | 2206 | .179 | 1468 | .177 | | | | | | | | | | |
| 18L426 | TA | 1725 | 1/4 | 3629 | .241 | 3282 | .256 | 2905 | .277 | 2398 | .273 | | | | | | | | | | |
| 18L430 | TA | 1725 | 1/3 | 3886 | .313 | 3576 | .334 | 3239 | .350 | 2749 | .359 | | | | | | | | | | |
| 18L432 | TA | 1725 | 1/2 | 4130 | .359 | 3806 | .381 | 3457 | .392 | 2987 | .401 | | | | | | | | | | |

## Size 21 TA Direct Drive Tubeaxial

| CATALOG NUMBER | | | | CUBIC FEET PER MINUTE & HORSEPOWER AT STATIC PRESSURE | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PROP | FAN TYPE | RPM | HP | 0" SP | | 1/8" SP | | 1/4" SP | | 3/8" SP | | 1/2" SP | | 3/4" SP | | 1" SP | | 1¼" SP | | 1½" SP | |
| | | | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| 21L432 | TA | 1160 | 1/4 | 4410 | .236 | 3833 | .256 | 2998 | .262 | | | | | | | | | | | | |
| 21L424 | TA | 1725 | 1/2 | 5435 | .433 | 5072 | .472 | 4643 | .506 | 4124 | .524 | 3470 | .521 | | | | | | | | |
| 21L430 | TA | 1725 | 3/4 | 6172 | .677 | 5814 | .712 | 5432 | .741 | 5021 | .762 | 4428 | .776 | | | | | | | | |
| 21L432 | TA | 1725 | 1 | 6558 | .777 | 6183 | .812 | 5786 | .838 | 5365 | .851 | 4802 | .865 | | | | | | | | |
| 21S720 | TA | 1725 | 1/2 | 4959 | .383 | 4696 | .440 | 4397 | .487 | 4043 | .520 | 3623 | .547 | | | | | | | | |
| 21S724 | TA | 1725 | 3/4 | 6117 | .631 | 5831 | .693 | 5514 | .743 | 5156 | .777 | 4726 | .797 | | | | | | | | |

Performance shown is for installation type D: Ducted inlet, ducted outlet.
Performance ratings do not include the effects of appurtenances in the airstream.

# Performance Data

## Size 24 TA Direct Drive Tubeaxial

| CATALOG NUMBER PROP | FAN TYPE | RPM | HP | CUBIC FEET PER MINUTE & HORSEPOWER AT STATIC PRESSURE 0" SP CFM | 0" SP BHP | 1/8" SP CFM | 1/8" SP BHP | 1/4" SP CFM | 1/4" SP BHP | 3/8" SP CFM | 3/8" SP BHP | 1/2" SP CFM | 1/2" SP BHP | 3/4" SP CFM | 3/4" SP BHP | 1" SP CFM | 1" SP BHP | 1¼" SP CFM | 1¼" SP BHP | 1½" SP CFM | 1½" SP BHP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 24L422 | TA | 1160 | 1/3 | 5591 | .298 | 4970 | .329 | 4267 | .349 | 3291 | .361 | | | | | | | | | | |
| 24L428 | TA | 1160 | 1/2 | 6604 | .457 | 5966 | .483 | 5258 | .497 | 4271 | .502 | | | | | | | | | | |
| 24L432 | TA | 1160 | 3/4 | 7238 | .584 | 6596 | .614 | 5896 | .631 | 4909 | .630 | | | | | | | | | | |
| 24L420 | TA | 1750 | 1 | 7808 | .863 | 7410 | .913 | 7001 | .957 | 6589 | .991 | 6136 | 1.02 | 4927 | 1.04 | | | | | | |
| 24L426 | TA | 1750 | 1½ | 9464 | 1.35 | 9065 | 1.40 | 8634 | 1.44 | 8161 | 1.46 | 7635 | 1.47 | 6399 | 1.50 | | | | | | |
| 24L432 | TA | 1750 | 2 | 10920 | 2.00 | 10504 | 2.05 | 10072 | 2.10 | 9625 | 2.13 | 9166 | 2.16 | 8043 | 2.17 | | | | | | |
| 24S720 | TA | 1160 | 1/3 | 5077 | .248 | 4618 | .300 | 4062 | .332 | 3169 | .357 | | | | | | | | | | |
| 24S720 | TA | 1750 | 1 | 7660 | .852 | 7369 | .937 | 7057 | 1.01 | 6722 | 1.07 | 6355 | 1.12 | | | | | | | | |

## Size 30 TA Direct Drive Tubeaxial

| CATALOG NUMBER PROP | FAN TYPE | RPM | HP | CUBIC FEET PER MINUTE & HORSEPOWER AT STATIC PRESSURE 0" SP CFM | 0" SP BHP | 1/8" SP CFM | 1/8" SP BHP | 1/4" SP CFM | 1/4" SP BHP | 3/8" SP CFM | 3/8" SP BHP | 1/2" SP CFM | 1/2" SP BHP | 3/4" SP CFM | 3/4" SP BHP | 1" SP CFM | 1" SP BHP | 1¼" SP CFM | 1¼" SP BHP | 1½" SP CFM | 1½" SP BHP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30L418 | TA | 870 | 1/3 | 7001 | .281 | 5985 | .320 | 4734 | .331 | | | | | | | | | | | | |
| 30L424 | TA | 870 | 1/2 | 8789 | .456 | 7713 | .498 | 6419 | .515 | | | | | | | | | | | | |
| 30L432 | TA | 870 | 3/4 | 10604 | .752 | 9525 | .794 | 8304 | .815 | | | | | | | | | | | | |
| 30L422 | TA | 1160 | 1 | 10920 | .910 | 10154 | .973 | 9357 | 1.02 | 8465 | 1.06 | 7322 | 1.08 | | | | | | | | |
| 30L428 | TA | 1160 | 1½ | 12898 | 1.40 | 12114 | 1.45 | 11287 | 1.49 | 10396 | 1.51 | 9225 | 1.51 | | | | | | | | |
| 30L432 | TA | 1160 | 2 | 14138 | 1.78 | 13346 | 1.84 | 12512 | 1.89 | 11634 | 1.92 | 10562 | 1.93 | | | | | | | | |
| 30L420 | TA | 1750 | 3 | 15251 | 2.63 | 14756 | 2.73 | 14252 | 2.83 | 13740 | 2.91 | 13226 | 2.98 | 12136 | 3.10 | 10795 | 3.17 | 9038 | 3.17 | | |
| 30L428 | TA | 1750 | 5 | 19458 | 4.79 | 18947 | 4.88 | 18423 | 4.96 | 17885 | 5.03 | 17334 | 5.09 | 16200 | 5.17 | 14837 | 5.21 | 13159 | 5.22 | | |
| 30S720 | TA | 1160 | 1 | 10381 | .814 | 9691 | .901 | 8968 | .973 | 8181 | 1.03 | 7183 | 1.08 | | | | | | | | |
| 30S723 | TA | 1750 | 1 | 17089 | 3.50 | 16710 | 3.67 | 16312 | 3.84 | 15891 | 3.99 | 15444 | 4.14 | 14437 | 4.38 | 13239 | 4.55 | | | | |

## Size 36 TA Direct Drive Tubeaxial

| CATALOG NUMBER PROP | FAN TYPE | RPM | HP | CUBIC FEET PER MINUTE & HORSEPOWER AT STATIC PRESSURE 0" SP CFM | 0" SP BHP | 1/8" SP CFM | 1/8" SP BHP | 1/4" SP CFM | 1/4" SP BHP | 3/8" SP CFM | 3/8" SP BHP | 1/2" SP CFM | 1/2" SP BHP | 3/4" SP CFM | 3/4" SP BHP | 1" SP CFM | 1" SP BHP | 1¼" SP CFM | 1¼" SP BHP | 1½" SP CFM | 1½" SP BHP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 36L418 | TA | 870 | 3/4 | 12647 | .688 | 11404 | .775 | 10090 | .823 | 8168 | .843 | | | | | | | | | | |
| 36L422 | TA | 870 | 1 | 14728 | .938 | 13486 | 1.02 | 12086 | 1.08 | 10428 | 1.12 | | | | | | | | | | |
| 36L428 | TA | 870 | 1½ | 16937 | 1.44 | 15670 | 1.52 | 14198 | 1.58 | 12377 | 1.62 | | | | | | | | | | |
| 36L418 | TA | 1160 | 2 | 16863 | 1.63 | 15941 | 1.76 | 14994 | 1.86 | 14038 | 1.92 | 12935 | 1.97 | 9290 | 1.94 | | | | | | |
| 36L424 | TA | 1160 | 3 | 20196 | 2.53 | 19236 | 2.63 | 18252 | 2.74 | 17261 | 2.83 | 16209 | 2.91 | 13361 | 3.00 | | | | | | |
| 36L432 | TA | 1160 | 5 | 24554 | 4.32 | 23578 | 4.46 | 22550 | 4.58 | 21464 | 4.66 | 20309 | 4.70 | 17557 | 4.73 | | | | | | |
| 36L420 | TA | 1750 | 7½ | 27305 | 6.65 | 26730 | 6.79 | 26142 | 6.93 | 25541 | 7.06 | 24924 | 7.19 | 23652 | 7.42 | 22301 | 7.62 | 20761 | 7.80 | 18912 | 7.93 |
| 36L424 | TA | 1750 | 10 | 30468 | 8.67 | 29836 | 8.84 | 29197 | 9.00 | 28552 | 9.16 | 27899 | 9.31 | 26584 | 9.59 | 25248 | 9.85 | 23766 | 10.08 | 22079 | 10.27 |
| 36S715 | TA | 1750 | 5 | 21298 | 3.76 | 20727 | 3.98 | 20150 | 4.19 | 19565 | 4.39 | 18974 | 4.58 | 17782 | 4.92 | 16488 | 5.22 | 15022 | 5.47 | 13160 | 5.69 |
| 36S719 | TA | 1750 | 7½ | 25823 | 5.61 | 25233 | 5.89 | 24633 | 6.15 | 24024 | 6.41 | 23405 | 6.64 | 22144 | 7.07 | 20820 | 7.44 | 19362 | 7.74 | 17671 | 7.99 |
| 36S724 | TA | 1750 | 10 | 29900 | 8.70 | 29437 | 8.91 | 28957 | 9.11 | 28461 | 9.31 | 27944 | 9.51 | 26842 | 9.90 | 25612 | 10.28 | 24225 | 10.64 | 22679 | 11.02 |

## Size 42 TA Direct Drive Tubeaxial

| CATALOG NUMBER PROP | FAN TYPE | RPM | HP | CUBIC FEET PER MINUTE & HORSEPOWER AT STATIC PRESSURE 0" SP CFM | 0" SP BHP | 1/8" SP CFM | 1/8" SP BHP | 1/4" SP CFM | 1/4" SP BHP | 3/8" SP CFM | 3/8" SP BHP | 1/2" SP CFM | 1/2" SP BHP | 3/4" SP CFM | 3/4" SP BHP | 1" SP CFM | 1" SP BHP | 1¼" SP CFM | 1¼" SP BHP | 1½" SP CFM | 1½" SP BHP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 42L420 | TA | 870 | 2 | 21524 | 1.76 | 20145 | 1.87 | 18669 | 1.96 | 17038 | 2.04 | 14989 | 2.10 | | | | | | | | |
| 42L426 | TA | 870 | 3 | 25420 | 2.67 | 23944 | 2.84 | 22405 | 2.97 | 20804 | 3.05 | 18785 | 3.12 | | | | | | | | |
| 42L420 | TA | 1160 | 5 | 28698 | 4.18 | 27679 | 4.32 | 26620 | 4.46 | 25518 | 4.59 | 24380 | 4.71 | 21784 | 4.90 | 18084 | 4.98 | | | | |
| 42L428 | TA | 1160 | 7½ | 35808 | 7.35 | 34741 | 7.53 | 33617 | 7.69 | 32426 | 7.84 | 31154 | 7.99 | 28283 | 8.21 | 24682 | 8.27 | | | | |
| 42L418 | TA | 1750 | 15 | 40338 | 12.07 | 39632 | 12.40 | 38920 | 12.70 | 38201 | 12.99 | 37476 | 13.25 | 36006 | 13.71 | 34543 | 14.05 | 33018 | 14.31 | 31294 | 14.55 |
| 42S715 | TA | 870 | 1½ | 16788 | .995 | 15434 | 1.16 | 14040 | 1.30 | 12485 | 1.41 | 10453 | 1.50 | | | | | | | | |
| 42S719 | TA | 870 | 2 | 20355 | 1.49 | 18950 | 1.70 | 17481 | 1.87 | 15892 | 2.01 | 14002 | 2.11 | | | | | | | | |
| 42S715 | TA | 1160 | 3 | 22385 | 2.36 | 21377 | 2.59 | 20349 | 2.80 | 19308 | 2.99 | 18235 | 3.16 | 15753 | 3.44 | | | | | | |
| 42S719 | TA | 1160 | 5 | 27141 | 3.52 | 26097 | 3.81 | 25025 | 4.08 | 23926 | 4.31 | 22804 | 4.52 | 20316 | 4.86 | 17034 | 5.12 | | | | |
| 42S724 | TA | 1160 | 7½ | 31427 | 5.46 | 30602 | 5.68 | 29727 | 5.89 | 28792 | 6.10 | 27780 | 6.30 | 25429 | 6.68 | 22512 | 7.08 | | | | |

Performance shown is for installation type D: Ducted inlet, ducted outlet.
Performance ratings do not include the effects of appurtenances in the airstream.

**Only in America** ..... do drugstores make the sick walk all the way to the back of the store to get their prescriptions while healthy people can buy cigarettes at the front.

# Performance Data

## Size 48 TA Direct Drive Tubeaxial

| CATALOG NUMBER PROP | FAN TYPE | RPM | HP | CUBIC FEET PER MINUTE & HORSEPOWER AT STATIC PRESSURE | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 0" SP | | 1/8" SP | | 1/4" SP | | 3/8" SP | | 1/2" SP | | 3/4" SP | | 1" SP | | 1¼" SP | | 1½" SP | |
| | | | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| 48L420 | TA | 695 | 2 | 25638 | 1.75 | 23651 | 1.88 | 21496 | 1.98 | 18917 | 2.07 | 14790 | 2.05 | | | | | | | | |
| 48L426 | TA | 695 | 3 | 30278 | 2.65 | 28158 | 2.85 | 25945 | 2.99 | 23419 | 3.07 | 19786 | 3.10 | | | | | | | | |
| 48L424 | TA | 870 | 5 | 35810 | 4.47 | 34105 | 4.66 | 32358 | 4.84 | 30597 | 5.00 | 28728 | 5.15 | 23649 | 5.30 | | | | | | |
| 48L418 | TA | 1160 | 7½ | 39868 | 6.84 | 38647 | 7.16 | 37407 | 7.44 | 36146 | 7.68 | 34882 | 7.87 | 32262 | 8.14 | 29025 | 8.35 | 24190 | 8.33 | | |
| 48L422 | TA | 1160 | 10 | 46428 | 9.33 | 45231 | 9.60 | 43995 | 9.86 | 42715 | 10.10 | 41386 | 10.32 | 38560 | 10.69 | 35453 | 11.01 | 31731 | 11.21 | | |
| 48S719 | TA | 870 | 5 | 30351 | 2.89 | 28753 | 3.21 | 27096 | 3.49 | 25389 | 3.73 | 23531 | 3.93 | 18638 | 4.22 | | | | | | |
| 48S719 | TA | 1160 | 10 | 40468 | 6.86 | 39280 | 7.29 | 38067 | 7.70 | 36828 | 8.08 | 35568 | 8.42 | 32957 | 9.02 | 30029 | 9.49 | 26392 | 9.89 | | |
| 48S724 | TA | 1160 | 15 | 46858 | 10.63 | 45922 | 10.95 | 44944 | 11.27 | 43918 | 11.58 | 42836 | 11.89 | 40448 | 12.49 | 37664 | 13.06 | 34422 | 13.67 | 28634 | 13.72 |

## Size 54 TA Direct Drive Tubeaxial

| CATALOG NUMBER PROP | FAN TYPE | RPM | HP | CUBIC FEET PER MINUTE & HORSEPOWER AT STATIC PRESSURE | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 0" SP | | 1/8" SP | | 1/4" SP | | 3/8" SP | | 1/2" SP | | 3/4" SP | | 1" SP | | 1¼" SP | | 1½" SP | |
| | | | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| 54L418 | TA | 695 | 3 | 33981 | 2.65 | 31667 | 2.90 | 29297 | 3.07 | 26727 | 3.18 | 23347 | 3.25 | | | | | | | | |
| 54L426 | TA | 695 | 5 | 43073 | 4.76 | 40702 | 5.06 | 38231 | 5.29 | 35690 | 5.43 | 32611 | 5.56 | | | | | | | | |
| 54L416 | TA | 870 | 5 | 38923 | 4.45 | 36952 | 4.53 | 34974 | 4.65 | 33035 | 4.83 | 30977 | 5.03 | 25560 | 5.31 | | | | | | |
| 54L420 | TA | 870 | 7½ | 45656 | 6.17 | 43907 | 6.40 | 42084 | 6.62 | 40184 | 6.82 | 38207 | 7.00 | 33544 | 7.30 | 25869 | 7.18 | | | | |
| 54L426 | TA | 870 | 10 | 53919 | 9.34 | 52039 | 9.73 | 50108 | 10.07 | 48124 | 10.35 | 46131 | 10.55 | 41561 | 10.86 | 34934 | 10.91 | | | | |
| 54S715 | TA | 870 | 5 | 35611 | 3.49 | 33882 | 3.85 | 32116 | 4.18 | 30331 | 4.48 | 28454 | 4.74 | 23951 | 5.16 | 17575 | 5.47 | | | | |
| 54S719 | TA | 870 | 7½ | 43177 | 5.21 | 41388 | 5.66 | 39546 | 6.08 | 37656 | 6.45 | 35711 | 6.77 | 31296 | 7.27 | 24662 | 7.59 | | | | |
| 54S724 | TA | 870 | 10 | 49995 | 8.07 | 48579 | 8.41 | 47070 | 8.75 | 45445 | 9.08 | 43667 | 9.40 | 39484 | 10.01 | 33712 | 10.54 | | | | |

## Size 60 TA Direct Drive Tubeaxial

| CATALOG NUMBER PROP | FAN TYPE | RPM | HP | CUBIC FEET PER MINUTE & HORSEPOWER AT STATIC PRESSURE | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 0" SP | | 1/8" SP | | 1/4" SP | | 3/8" SP | | 1/2" SP | | 3/4" SP | | 1" SP | | 1¼" SP | | 1½" SP | |
| | | | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| 60L418 | TA | 580 | 3 | 38873 | 2.60 | 35784 | 2.88 | 32614 | 3.06 | 28849 | 3.17 | 22835 | 3.15 | | | | | | | | |
| 60L426 | TA | 580 | 5 | 49274 | 4.68 | 46107 | 5.02 | 42805 | 5.26 | 39224 | 5.40 | 34380 | 5.50 | | | | | | | | |
| 60L418 | TA | 695 | 5 | 46580 | 4.48 | 44019 | 4.83 | 41387 | 5.10 | 38729 | 5.28 | 35654 | 5.42 | 25355 | 5.30 | | | | | | |
| 60L424 | TA | 695 | 7½ | 55786 | 6.94 | 53120 | 7.24 | 50387 | 7.52 | 47632 | 7.77 | 44704 | 7.99 | 36693 | 8.22 | | | | | | |
| 60L414 | TA | 870 | 7½ | 48819 | 6.52 | 46797 | 6.77 | 44727 | 7.02 | 42629 | 7.26 | 40496 | 7.50 | 35099 | 7.83 | 27085 | 7.58 | | | | |
| 60L418 | TA | 870 | 10 | 58309 | 8.79 | 56273 | 9.24 | 54201 | 9.64 | 52091 | 9.97 | 49992 | 10.22 | 45347 | 10.58 | 39018 | 10.78 | 26228 | 9.93 | | |
| 60L424 | TA | 870 | 15 | 69833 | 13.61 | 67712 | 13.99 | 65558 | 14.35 | 63370 | 14.70 | 61169 | 15.02 | 56627 | 15.60 | 51270 | 16.08 | 42350 | 15.90 | | |
| 60L428 | TA | 870 | 20 | 78088 | 18.38 | 76064 | 18.75 | 73948 | 19.12 | 71725 | 19.46 | 69377 | 19.78 | 64205 | 20.35 | 58130 | 20.64 | 50276 | 20.66 | | |
| 60L416 | TA | 1160 | 20 | 71140 | 17.84 | 69500 | 17.96 | 67856 | 18.11 | 66210 | 18.31 | 64562 | 18.54 | 61317 | 19.14 | 58014 | 19.87 | 54270 | 20.65 | 49911 | 21.34 |
| 60S716 | TA | 870 | 10 | 50206 | 7.19 | 48092 | 7.61 | 45971 | 8.03 | 43851 | 8.45 | 41730 | 8.88 | 37342 | 9.68 | 32167 | 10.31 | | | | |
| 60S715 | TA | 1160 | 20 | 65086 | 13.97 | 63655 | 14.65 | 62210 | 15.30 | 60750 | 15.93 | 59275 | 16.53 | 56306 | 17.65 | 53259 | 18.65 | 49936 | 19.53 | 46254 | 20.27 |

## Size 72 TA Direct Drive Tubeaxial

| CATALOG NUMBER PROP | FAN TYPE | RPM | HP | CUBIC FEET PER MINUTE & HORSEPOWER AT STATIC PRESSURE | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 0" SP | | 1/8" SP | | 1/4" SP | | 3/8" SP | | 1/2" SP | | 3/4" SP | | 1" SP | | 1¼" SP | | 1½" SP | |
| | | | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| 72L418 | TA | 580 | 7½ | 67102 | 6.47 | 63421 | 6.97 | 59639 | 7.37 | 55818 | 7.62 | 51405 | 7.82 | 36701 | 7.66 | | | | | | |
| 72L412 | TA | 695 | 7½ | 61402 | 7.28 | 58246 | 7.59 | 54947 | 7.87 | 51519 | 8.11 | 47749 | 8.29 | 38428 | 8.32 | 25337 | 7.67 | | | | |
| 72L414 | TA | 695 | 10 | 67320 | 8.25 | 64280 | 8.60 | 61161 | 8.94 | 58015 | 9.28 | 54722 | 9.59 | 45864 | 9.93 | 31944 | 9.27 | | | | |
| 72L420 | TA | 695 | 15 | 86303 | 13.22 | 83393 | 13.66 | 80375 | 14.08 | 77239 | 14.47 | 74009 | 14.82 | 66791 | 15.43 | 57156 | 15.79 | | | | |
| 72L424 | TA | 695 | 20 | 96298 | 17.23 | 93112 | 17.76 | 89871 | 18.26 | 86573 | 18.72 | 83275 | 19.16 | 76233 | 19.94 | 67457 | 20.48 | | | | |
| 72L412 | TA | 870 | 15 | 76863 | 14.28 | 74361 | 14.68 | 71790 | 15.05 | 69143 | 15.39 | 66438 | 15.70 | 60628 | 16.21 | 53747 | 16.44 | 45544 | 16.21 | 34952 | 15.32 |
| 72L414 | TA | 870 | 20 | 84272 | 16.19 | 81854 | 16.62 | 79398 | 17.05 | 76899 | 17.48 | 74378 | 17.90 | 69245 | 18.72 | 62957 | 19.33 | 54525 | 19.38 | 43732 | 18.55 |

## Size 84 TA Direct Drive Tubeaxial

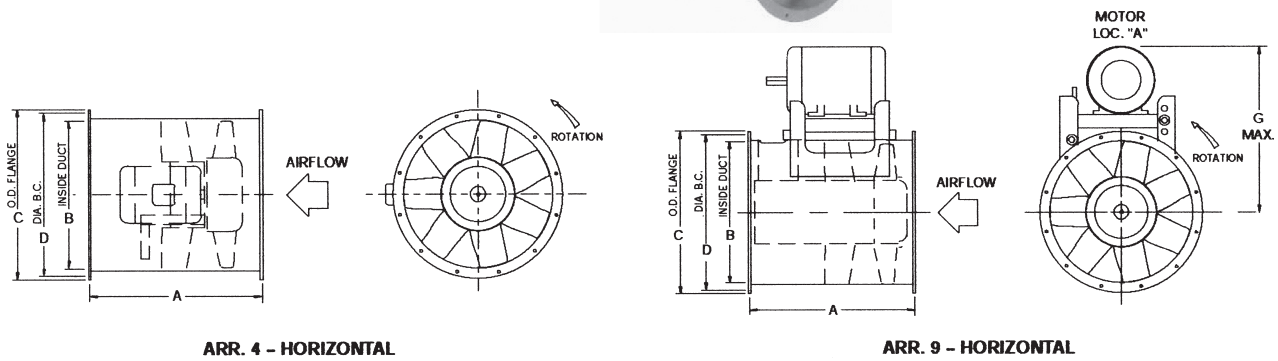
| CATALOG NUMBER PROP | FAN TYPE | RPM | HP | CUBIC FEET PER MINUTE & HORSEPOWER AT STATIC PRESSURE | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 0" SP | | 1/8" SP | | 1/4" SP | | 3/8" SP | | 1/2" SP | | 3/4" SP | | 1" SP | | 1¼" SP | | 1½" SP | |
| | | | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| 84L412 | TA | 580 | 10 | 80948 | 9.07 | 76538 | 9.48 | 71918 | 9.84 | 67092 | 10.14 | 61677 | 10.36 | 48179 | 10.30 | | | | | | |
| 84L414 | TA | 695 | 20 | 106347 | 17.68 | 102818 | 18.23 | 99223 | 18.77 | 95556 | 19.30 | 91900 | 19.84 | 83956 | 20.80 | 73345 | 21.28 | 58710 | 20.55 | | |

## Size 96 TA Direct Drive Tubeaxial

| CATALOG NUMBER PROP | FAN TYPE | RPM | HP | CUBIC FEET PER MINUTE & HORSEPOWER AT STATIC PRESSURE | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 0" SP | | 1/8" SP | | 1/4" SP | | 3/8" SP | | 1/2" SP | | 3/4" SP | | 1" SP | | 1¼" SP | | 1½" SP | |
| | | | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| 96L412 | TA | 580 | 20 | 120831 | 17.68 | 115818 | 18.30 | 110624 | 18.86 | 105258 | 19.37 | 99678 | 19.81 | 86681 | 20.33 | 70508 | 20.01 | 48251 | 18.53 | | |
| 96L414 | TA | 580 | 25 | 132478 | 20.04 | 127641 | 20.72 | 122703 | 21.39 | 117672 | 22.05 | 112658 | 22.72 | 101059 | 23.82 | 84424 | 23.93 | 61006 | 22.37 | | |

Performance shown is for installation type D: Ducted inlet, ducted outlet.
Performance ratings do not include the effects of appurtenances in the airstream.

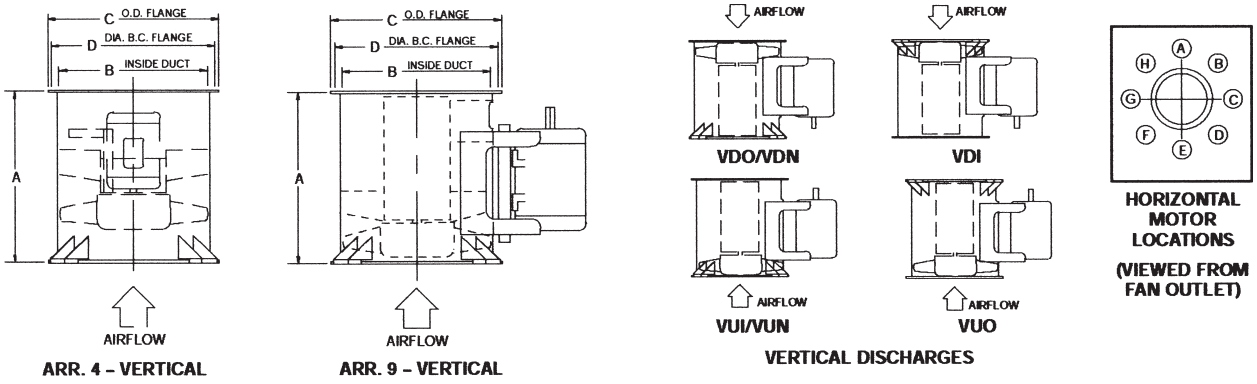
# *AXIFAN® VANEAXIAL FANS*
TYPE TCVA




**ARR. 4 – HORIZONTAL** **ARR. 9 – HORIZONTAL**

**HORIZONTAL DISCHARGES**

**HOR** = Horizontal – No Clips or Legs **HCH** = Horizontal Ceiling Hung with Suspension Clips **HBM** = Horizontal Base Mounted with Support Legs




**ARR. 4 – VERTICAL** **ARR. 9 – VERTICAL**

**VERTICAL DISCHARGES**

**VDO** = Vertical Down Floor Mounted With Legs
**VDN** = Vertical Down Discharge Without Legs
**VDI** = Vertical Down Ceiling Hung With Legs

**VUI** = Vertical Up Floor Mounted With Legs
**VUN** = Vertical Up Discharge Without Legs
**VUO** = Vertical Up Ceiling Hung With Legs

| FAN SIZE | A ARR. 9 HUB RATIO 3-5 | A ARR. 9 HUB RATIO 6-7 | A ARR. 4 HUB RATIO 3-5 | A ARR. 4 HUB RATIO 6-7 | B | C | D | G (MAX.) | MAXIMUM MOTOR FRAME APR. 9 - HUB RATIO 3 | 4 | 5 | 6 | 7 | APR. 4 - HUB RATIO 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **12** | NA | 24.50 | NA | 24.50 | 12.16 | 15.16 | 13.88 | 19.25 | NA | NA | NA | 184T | 184T | NA | NA | NA | NA | 145T |
| **15** | 22.00 | 27.00 | NA | 27.00 | 15.16 | 18.16 | 16.88 | 20.50 | NA | NA | 215T | 215T | 215T | NA | NA | NA | 145T | 184T |
| **18** | 24.50 | 28.00 | 24.50 | 28.00 | 18.16 | 21.16 | 19.88 | 27.50 | NA | 215T | 215T | 215T | 215T | NA | NA | 145T | 184T | 215T |
| **21** | 27.00 | 32.00 | 27.00 | 32.00 | 21.19 | 24.19 | 22.88 | 31.75 | NA | 256T | 256T | 256T | 256T | NA | 145T | 184T | 215T | 215T |
| **24** | 28.00 | 36.25 | 28.00 | 36.25 | 24.19 | 27.19 | 25.88 | 34.50 | NA | 256T | 256T | 256T | 256T | NA | 184T | 215T | 215T | 256T |
| **28** | 32.00 | 40.25 | 32.00 | 40.25 | 28.25 | 31.25 | 30.00 | 38.25 | NA | 286T | 286T | 286T | 286T | NA | 215T | 215T | 256T | 286T |
| **32** | 36.25 | 47.00 | 36.25 | 47.00 | 32.25 | 35.25 | 34.00 | 41.00 | NA | 286T | 286T | 286T | 286T | NA | 215T | 256T | 286T | 365T |
| **36** | 40.25 | 53.25 | 40.25 | 53.25 | 36.25 | 39.25 | 38.00 | 45.25 | NA | 326T | 326T | 326T | 326T | NA | 256T | 286T | 365T | 405T |
| **42** | 47.00 | 53.25 | 47.00 | 53.25 | 42.38 | 46.38 | 44.63 | 49.50 | NA | 326T | 326T | 326T | NA | NA | 286T | 365T | 405T | NA |
| **48** | 53.25 | NA | 53.25 | NA | 48.38 | 52.38 | 50.63 | 53.25 | NA | 326T | 326T | NA | NA | NA | 365T | 405T | NA | NA |
| **54** | 53.25 | NA | 53.25 | NA | 54.38 | 58.38 | 56.63 | 59.00 | 365T | 365T | NA | NA | NA | 365T | 405T | NA | NA | NA |
| **60** | 53.25 | NA | 53.25 | NA | 60.38 | 64.38 | 63.38 | 60.25 | 365T | NA | NA | NA | NA | 405T | NA | NA | NA | NA |

DIMENSIONS ARE NOT TO BE USED FOR CONSTRUCTION. CERTIFIED DRAWINGS AVAILABLE UPON REQUEST.

**Little Things Mean A Lot**
A DECIMAL POINT
The **Story:** In 1999, Lockheed Martin signed a contract to sell military aircraft to "an international customer" (The company won't say who). Unfortunately, whoever drew up the contract misplaced a decimal point in the formula for determining the price. The mistake wasn't discovered until after the contract was signed, and the customer insisted on sticking to the wording of the contract exactly. Cost to Lockheed Martin: $70 million.

## TCVA 12D7

**Wheel Dia.: 12"** **Outlet Area: 0.807 ft²** **Tip Speed: 3.14 x RPM**

| PROP | RPM | 0.25" SP | | 0.5"SP | | 0.75" SP | | 1" SP | | 1.25" SP | | 1.5" SP | | 2" SP | | 2.5" SP | | 3" SP | | 4" SP | | 5" SP | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| 12D7 | 1750 | 1027 | 0.13 | 930 | 0.14 | 808 | 0.15 | | | | | | | | | | | | | | | | |
| | 3500 | 2192 | 0.84 | 2147 | 0.90 | 2101 | 0.96 | 2054 | 1.01 | 2007 | 1.05 | 1959 | 1.08 | 1860 | 1.12 | 1749 | 1.17 | 1617 | 1.23 | | | | |

## TCVA 15D6, D7

**Wheel Dia.: 15"** **Outlet Area: 1.254 ft²** **Tip Speed: 3.93 x RPM**

| PROP | RPM | 0.25" SP | | 0.5"SP | | 0.75" SP | | 1" SP | | 1.25" SP | | 1.5" SP | | 2" SP | | 2.5" SP | | 3" SP | | 4" SP | | 5" SP | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| 15D6 | 1750 | 2547 | 0.32 | 2353 | 0.36 | 2121 | 0.39 | 1809 | 0.42 | | | | | | | | | | | | | | |
| | 3500 | 5351 | 2.31 | 5268 | 2.39 | 5182 | 2.47 | 5094 | 2.55 | 5003 | 2.63 | 4908 | 2.71 | 4707 | 2.86 | 4486 | 3.00 | 4243 | 3.14 | 3617 | 3.34 | | |
| 15D7 | 1750 | 2300 | 0.35 | 2159 | 0.39 | 2007 | 0.42 | 1826 | 0.45 | | | | | | | | | | | | | | |
| | 3500 | 4798 | 2.47 | 4733 | 2.58 | 4667 | 2.68 | 4600 | 2.78 | 4531 | 2.88 | 4462 | 2.97 | 4318 | 3.13 | 4170 | 3.25 | 4013 | 3.35 | 3652 | 3.59 | | |

**TCVA sizes 12 and 15 are not licensed to bear the AMCA Seal.**

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## TCVA 18D5, D6, D7

**Wheel Dia.: 18"** **Outlet Area: 1.799 ft²** **Tip Speed: 4.71 x RPM**

| PROP | RPM | 0.25" SP | | 0.5"SP | | 0.75" SP | | 1" SP | | 1.25" SP | | 1.5" SP | | 2" SP | | 2.5" SP | | 3" SP | | 4" SP | | 5" SP | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| 18D5 | 1170 | 2743 | 0.22 | 2110 | 0.25 | | | | | | | | | | | | | | | | | | |
| | 1750 | 4463 | 0.64 | 4180 | 0.70 | 3828 | 0.77 | 3412 | 0.83 | | | | | | | | | | | | | | |
| 18D6 | 1170 | 2834 | 0.25 | 2402 | 0.29 | | | | | | | | | | | | | | | | | | |
| | 1750 | 4523 | 0.75 | 4297 | 0.81 | 4040 | 0.88 | 3745 | 0.94 | 3403 | 1.00 | | | | | | | | | | | | |
| 18D7 | 1170 | 2671 | 0.25 | 2355 | 0.29 | 1885 | 0.32 | | | | | | | | | | | | | | | | |
| | 1750 | 4209 | 0.74 | 4038 | 0.82 | 3849 | 0.89 | 3635 | 0.95 | 3390 | 1.00 | 3098 | 1.05 | | | | | | | | | | |
| | 3500 | 8656 | 5.44 | 8578 | 5.60 | 8498 | 5.77 | 8417 | 5.93 | 8335 | 6.09 | 8250 | 6.24 | 8075 | 6.55 | 7892 | 6.84 | 7698 | 7.11 | 7269 | 7.60 | 6781 | 8.04 |

## TCVA 21D4, D5, D6, D7

**Wheel Dia.: 21"** **Outlet Area: 2.448 ft²** **Tip Speed: 5.50 x RPM**

| PROP | RPM | 0.25" SP | | 0.5"SP | | 0.75" SP | | 1" SP | | 1.25" SP | | 1.5" SP | | 2" SP | | 2.5" SP | | 3" SP | | 4" SP | | 5" SP | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| 21D4 | 880 | 2674 | 0.17 | | | | | | | | | | | | | | | | | | | | |
| | 1170 | 4163 | 0.36 | 3333 | 0.42 | | | | | | | | | | | | | | | | | | |
| | 1750 | 6705 | 1.05 | 6328 | 1.18 | 5852 | 1.28 | 5291 | 1.38 | 4603 | 1.43 | | | | | | | | | | | | |
| 21D5 | 880 | 3085 | 0.21 | | | | | | | | | | | | | | | | | | | | |
| | 1170 | 4550 | 0.44 | 3945 | 0.51 | | | | | | | | | | | | | | | | | | |
| | 1750 | 7195 | 1.34 | 6885 | 1.44 | 6532 | 1.55 | 6115 | 1.66 | 5651 | 1.76 | 5074 | 1.83 | | | | | | | | | | |
| 21D6 | 880 | 3222 | 0.22 | | | | | | | | | | | | | | | | | | | | |
| | 1170 | 4623 | 0.46 | 4162 | 0.54 | 3532 | 0.60 | | | | | | | | | | | | | | | | |
| | 1750 | 7221 | 1.40 | 6976 | 1.51 | 6706 | 1.62 | 6392 | 1.74 | 6027 | 1.86 | 5620 | 1.95 | | | | | | | | | | |
| 21D7 | 880 | 3089 | 0.24 | 2522 | 0.29 | | | | | | | | | | | | | | | | | | |
| | 1170 | 4353 | 0.51 | 4024 | 0.59 | 3619 | 0.65 | 3057 | 0.69 | | | | | | | | | | | | | | |
| | 1750 | 6750 | 1.56 | 6558 | 1.68 | 6353 | 1.80 | 6132 | 1.91 | 5889 | 2.01 | 5621 | 2.10 | 4982 | 2.26 | | | | | | | | |

## TCVA 24D5, D6, D7

**Wheel Dia.: 24"** **Outlet Area: 3.191 ft²** **Tip Speed: 6.28 x RPM**

| PROP | RPM | 0.25" SP | | 0.5"SP | | 0.75" SP | | 1" SP | | 1.25" SP | | 1.5" SP | | 2" SP | | 2.5" SP | | 3" SP | | 4" SP | | 5" SP | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| 24D4 | 880 | 4462 | 0.33 | | | | | | | | | | | | | | | | | | | | |
| | 1170 | 6513 | 0.69 | 5724 | 0.80 | 4662 | 0.87 | | | | | | | | | | | | | | | | |
| | 1750 | 10244 | 2.08 | 9844 | 2.27 | 9391 | 2.45 | 8846 | 2.60 | 8237 | 2.75 | 7552 | 2.88 | | | | | | | | | | |
| 24D5 | 880 | 4866 | 0.36 | 3700 | 0.43 | | | | | | | | | | | | | | | | | | |
| | 1170 | 6910 | 0.75 | 6306 | 0.87 | 5483 | 0.98 | | | | | | | | | | | | | | | | |
| | 1750 | 10735 | 2.31 | 10415 | 2.48 | 10062 | 2.65 | 9656 | 2.83 | 9164 | 3.02 | 8621 | 3.18 | 7282 | 3.37 | | | | | | | | |
| 24D6 | 880 | 5025 | 0.41 | 4238 | 0.49 | | | | | | | | | | | | | | | | | | |
| | 1170 | 7019 | 0.88 | 6567 | 0.99 | 5992 | 1.10 | 5276 | 1.19 | | | | | | | | | | | | | | |
| | 1750 | 10827 | 2.74 | 10564 | 2.90 | 10282 | 3.07 | 9978 | 3.23 | 9639 | 3.40 | 9257 | 3.58 | 8384 | 3.87 | 7200 | 4.04 | | | | | | |
| 24D7 | 880 | 4765 | 0.45 | 4207 | 0.52 | 3381 | 0.57 | | | | | | | | | | | | | | | | |
| | 1170 | 6602 | 0.96 | 6249 | 1.08 | 5842 | 1.18 | 5360 | 1.27 | 4744 | 1.34 | | | | | | | | | | | | |
| | 1750 | 10142 | 2.97 | 9927 | 3.16 | 9701 | 3.35 | 9464 | 3.53 | 9212 | 3.69 | 8942 | 3.85 | 8337 | 4.12 | 7623 | 4.36 | 6639 | 4.51 | | | | |

## TCVA 28D4, D5, D6, D7

**Wheel Dia.: 28"** **Outlet Area: 4.353 ft²** **Tip Speed: 7.33 x RPM**

| PROP | RPM | 0.25" SP | | 0.5"SP | | 0.75" SP | | 1" SP | | 1.25" SP | | 1.5" SP | | 2" SP | | 2.5" SP | | 3" SP | | 4" SP | | 5" SP | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| 28D4 | 880 | 7383 | 0.60 | 5856 | 0.72 | | | | | | | | | | | | | | | | | | |
| | 1170 | 10393 | 1.25 | 9605 | 1.46 | 8487 | 1.62 | 7107 | 1.71 | | | | | | | | | | | | | | |
| | 1750 | 16076 | 3.81 | 15651 | 4.13 | 15184 | 4.43 | 14656 | 4.73 | 14008 | 5.02 | 13254 | 5.27 | 11562 | 5.64 | | | | | | | | |
| 28D5 | 880 | 8063 | 0.72 | 6968 | 0.87 | | | | | | | | | | | | | | | | | | |
| | 1170 | 11182 | 1.56 | 10567 | 1.74 | 9768 | 1.94 | 8796 | 2.10 | 7530 | 2.18 | | | | | | | | | | | | |
| | 1750 | 17173 | 4.91 | 16814 | 5.17 | 16430 | 5.44 | 16015 | 5.71 | 15558 | 5.98 | 15030 | 6.28 | 13798 | 6.83 | 12360 | 7.20 | | | | | | |
| 28D6 | 880 | 8246 | 0.82 | 7430 | 0.96 | 6321 | 1.07 | | | | | | | | | | | | | | | | |
| | 1170 | 11347 | 1.80 | 10840 | 1.98 | 10248 | 2.16 | 9530 | 2.34 | 8698 | 2.48 | 7562 | 2.56 | | | | | | | | | | |
| | 1750 | 17357 | 5.71 | 17048 | 5.97 | 16724 | 6.23 | 16382 | 6.49 | 16020 | 6.75 | 15630 | 7.02 | 14731 | 7.59 | 13698 | 8.08 | 12476 | 8.44 | | | | |
| 28D7 | 880 | 7961 | 0.90 | 7328 | 1.03 | 6529 | 1.14 | 5356 | 1.21 | | | | | | | | | | | | | | |
| | 1170 | 10904 | 1.96 | 10484 | 2.15 | 10019 | 2.33 | 9487 | 2.50 | 8881 | 2.65 | 8176 | 2.77 | | | | | | | | | | |
| | 1750 | 16634 | 6.21 | 16373 | 6.51 | 16101 | 6.79 | 15819 | 7.07 | 15524 | 7.35 | 15215 | 7.62 | 14541 | 8.13 | 13777 | 8.60 | 12923 | 9.02 | 10495 | 9.50 | | |

Performance shown is for installation Type B: Free inlet, ducted outlet.
Performance ratings do not include the effects of appurtenances in the airstream.

**Only in America** ..... do people order double cheeseburgers, large fries, and a diet coke.

## TCVA 32D4, D5, D6, D7

**Wheel Dia.: 32"** **Outlet Area: 5.672 ft²** **Tip Speed: 8.38 x RPM**

| PROP | RPM | 0.25" SP | | 0.5"SP | | 0.75" SP | | 1" SP | | 1.25" SP | | 1.5" SP | | 2" SP | | 2.5" SP | | 3" SP | | 4" SP | | 5" SP | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| 32D4 | 880 | 11546 | 1.13 | 10135 | 1.35 | 8170 | 1.47 | | | | | | | | | | | | | | | | |
| | 1170 | 15941 | 2.43 | 15156 | 2.73 | 14147 | 3.02 | 12871 | 3.27 | 11382 | 3.43 | | | | | | | | | | | | |
| 32D5 | 880 | 12324 | 1.35 | 11258 | 1.56 | 9803 | 1.75 | | | | | | | | | | | | | | | | |
| | 1170 | 16886 | 2.97 | 16225 | 3.23 | 15459 | 3.51 | 14494 | 3.81 | 13396 | 4.05 | 12104 | 4.22 | | | | | | | | | | |
| | 1750 | 25757 | 9.45 | 25354 | 9.84 | 24933 | 10.23 | 24488 | 10.63 | 24016 | 11.03 | 23512 | 11.44 | 22330 | 12.31 | 20924 | 13.16 | 19383 | 13.79 | | | | |
| 32D6 | 880 | 12560 | 1.53 | 11706 | 1.72 | 10590 | 1.93 | 9184 | 2.07 | | | | | | | | | | | | | | |
| | 1170 | 17129 | 3.39 | 16563 | 3.65 | 15936 | 3.91 | 15208 | 4.19 | 14354 | 4.46 | 13415 | 4.69 | | | | | | | | | | |
| | 1750 | 26058 | 10.86 | 25706 | 11.24 | 25340 | 11.63 | 24960 | 12.01 | 24563 | 12.40 | 24146 | 12.80 | 23234 | 13.60 | 22167 | 14.46 | 20976 | 15.24 | 18103 | 16.31 | | |
| 32D7 | 880 | 11915 | 1.71 | 11269 | 1.92 | 10519 | 2.10 | 9626 | 2.26 | 8469 | 2.38 | | | | | | | | | | | | |
| | 1170 | 16184 | 3.78 | 15734 | 4.08 | 15254 | 4.36 | 14737 | 4.63 | 14168 | 4.87 | 13542 | 5.08 | 12061 | 5.48 | | | | | | | | |
| | 1750 | 24563 | 12.09 | 24276 | 12.55 | 23982 | 13.00 | 23680 | 13.44 | 23369 | 13.87 | 23050 | 14.29 | 22378 | 15.11 | 21653 | 15.86 | 20862 | 16.55 | 19053 | 17.81 | 16675 | 18.73 |

## TCVA 36D4, D5, D6, D7

**Wheel Dia.: 36"** **Outlet Area: 7.166 ft²** **Tip Speed: 9.42 x RPM**

| PROP | RPM | 0.25" SP | | 0.5"SP | | 0.75" SP | | 1" SP | | 1.25" SP | | 1.5" SP | | 2" SP | | 2.5" SP | | 3" SP | | 4" SP | | 5" SP | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| 36D4 | 880 | 16908 | 2.01 | 15599 | 2.32 | 13758 | 2.59 | 11408 | 2.72 | | | | | | | | | | | | | | |
| | 1170 | 23101 | 4.39 | 22281 | 4.81 | 21339 | 5.23 | 20147 | 5.64 | 18741 | 6.00 | 17177 | 6.27 | | | | | | | | | | |
| 36D5 | 880 | 17812 | 2.36 | 16739 | 2.65 | 15304 | 2.96 | 13573 | 3.19 | | | | | | | | | | | | | | |
| | 1170 | 24226 | 5.25 | 23510 | 5.63 | 22719 | 6.01 | 21811 | 6.41 | 20711 | 6.83 | 19494 | 7.20 | 16518 | 7.65 | | | | | | | | |
| | 1750 | 36790 | 16.87 | 36344 | 17.43 | 35881 | 17.99 | 35400 | 18.55 | 34898 | 19.12 | 34373 | 19.69 | 33232 | 20.86 | 31885 | 22.11 | 30324 | 23.35 | 26812 | 25.14 | | |
| 36D6 | 880 | 18039 | 2.76 | 17189 | 3.04 | 16189 | 3.33 | 14978 | 3.61 | 13544 | 3.83 | | | | | | | | | | | | |
| | 1170 | 24434 | 6.21 | 23844 | 6.58 | 23212 | 6.95 | 22530 | 7.33 | 21773 | 7.71 | 20919 | 8.11 | 18967 | 8.78 | 16345 | 9.17 | | | | | | |
| | 1750 | 37013 | 20.09 | 36638 | 20.64 | 36252 | 21.19 | 35856 | 21.75 | 35448 | 22.31 | 35027 | 22.86 | 34142 | 23.98 | 33184 | 25.11 | 32118 | 26.29 | 29668 | 28.51 | 26746 | 30.16 |
| 36D7 | 880 | 16937 | 3.01 | 16260 | 3.32 | 15513 | 3.61 | 14667 | 3.85 | 13701 | 4.08 | 12550 | 4.27 | | | | | | | | | | |
| | 1170 | 22887 | 6.74 | 22404 | 7.18 | 21899 | 7.59 | 21368 | 7.99 | 20804 | 8.37 | 20200 | 8.72 | 18847 | 9.33 | 17252 | 9.89 | 15076 | 10.23 | | | | |
| | 1750 | 34618 | 21.75 | 34307 | 22.41 | 33990 | 23.06 | 33667 | 23.71 | 33337 | 24.34 | 33000 | 24.97 | 32303 | 26.18 | 31571 | 27.35 | 30796 | 28.44 | 29085 | 30.39 | 27127 | 32.15 |

## TCVA 42D4, D5, D6, D7

**Wheel Dia.: 42"** **Outlet Area: 9.793 ft²** **Tip Speed: 11.00 x RPM**

| PROP | RPM | 0.25" SP | | 0.5"SP | | 0.75" SP | | 1" SP | | 1.25" SP | | 1.5" SP | | 2" SP | | 2.5" SP | | 3" SP | | 4" SP | | 5" SP | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| 42D4 | 880 | 26744 | 3.91 | 25325 | 4.43 | 23435 | 4.91 | 21092 | 5.30 | 18321 | 5.51 | | | | | | | | | | | | |
| | 1170 | 36280 | 8.64 | 35328 | 9.35 | 34282 | 10.05 | 33100 | 10.73 | 31654 | 11.37 | 29964 | 11.94 | 26183 | 12.78 | | | | | | | | |
| 42D5 | 880 | 28687 | 4.93 | 27528 | 5.38 | 26173 | 5.85 | 24459 | 6.36 | 22520 | 6.76 | 20179 | 7.01 | | | | | | | | | | |
| | 1170 | 38756 | 11.13 | 37949 | 11.72 | 37088 | 12.33 | 36158 | 12.93 | 35137 | 13.56 | 33958 | 14.22 | 31200 | 15.48 | 27995 | 16.32 | | | | | | |
| 42D6 | 880 | 29062 | 5.70 | 28090 | 6.14 | 27015 | 6.59 | 25775 | 7.06 | 24331 | 7.53 | 22727 | 7.91 | | | | | | | | | | |
| | 1170 | 39168 | 12.96 | 38476 | 13.54 | 37751 | 14.12 | 36986 | 14.71 | 36174 | 15.31 | 35301 | 15.91 | 33289 | 17.19 | 30979 | 18.31 | 28259 | 19.14 | | | | |

## TCVA 48D4, D5

**Wheel Dia.: 48"** **Outlet Area: 12.76 ft²** **Tip Speed: 12.57 x RPM**

| PROP | RPM | 0.25" SP | | 0.5"SP | | 0.75" SP | | 1" SP | | 1.25" SP | | 1.5" SP | | 2" SP | | 2.5" SP | | 3" SP | | 4" SP | | 5" SP | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| 48D4 | 880 | 40854 | 7.65 | 39370 | 8.42 | 37659 | 9.17 | 35471 | 9.89 | 32915 | 10.52 | 30051 | 10.98 | | | | | | | | | | |
| | 1170 | 55107 | 17.19 | 54071 | 18.22 | 52968 | 19.25 | 51782 | 20.26 | 50490 | 21.25 | 49016 | 22.24 | 45388 | 24.07 | 41326 | 25.49 | 36478 | 26.21 | | | | |
| 48D5 | 880 | 43198 | 9.41 | 41930 | 10.08 | 40530 | 10.76 | 38926 | 11.47 | 36985 | 12.23 | 34832 | 12.89 | 29600 | 13.70 | | | | | | | | |
| | 1170 | 58123 | 21.43 | 57221 | 22.31 | 56275 | 23.21 | 55278 | 24.10 | 54221 | 25.01 | 53091 | 25.93 | 50452 | 27.90 | 47305 | 29.82 | 43864 | 31.26 | | | | |

## TCVA 54D3, D4

**Wheel Dia.: 54"** **Outlet Area: 16.12 ft²** **Tip Speed: 14.14 x RPM**

| PROP | RPM | 0.25" SP | | 0.5"SP | | 0.75" SP | | 1" SP | | 1.25" SP | | 1.5" SP | | 2" SP | | 2.5" SP | | 3" SP | | 4" SP | | 5" SP | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| 54D3 | 880 | 55364 | 11.29 | 53573 | 12.61 | 51547 | 13.81 | 49065 | 14.81 | 45991 | 15.55 | 42671 | 16.25 | 35015 | 16.95 | | | | | | | | |
| | 1170 | 74569 | 25.14 | 73310 | 26.96 | 71977 | 28.72 | 70555 | 30.40 | 69024 | 32.00 | 67340 | 33.48 | 63143 | 35.75 | 58315 | 37.66 | 52894 | 39.19 | | | | |
| 54D4 | 880 | 59058 | 13.90 | 57481 | 14.97 | 55747 | 16.04 | 53785 | 17.09 | 51385 | 18.13 | 48608 | 19.08 | 42352 | 20.44 | | | | | | | | |
| | 1170 | 79378 | 31.56 | 78255 | 33.00 | 77079 | 34.43 | 75841 | 35.85 | 74531 | 37.27 | 73135 | 38.67 | 69916 | 41.45 | 65914 | 44.11 | 61581 | 46.33 | 50902 | 48.57 | | |

## TCVA 60D3

**Wheel Dia.: 60"** **Outlet Area: 19.88 ft²** **Tip Speed: 15.71 x RPM**

| PROP | RPM | 0.25" SP | | 0.5"SP | | 0.75" SP | | 1" SP | | 1.25" SP | | 1.5" SP | | 2" SP | | 2.5" SP | | 3" SP | | 4" SP | | 5" SP | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| 60D3 | 880 | 76383 | 18.69 | 74454 | 20.52 | 72341 | 22.26 | 69975 | 23.85 | 67109 | 25.15 | 63696 | 26.16 | 56146 | 27.99 | | | | | | | | |
| | 1170 | 102607 | 41.98 | 101230 | 44.50 | 99790 | 46.95 | 98279 | 49.33 | 96683 | 51.63 | 94988 | 53.83 | 91138 | 57.76 | 86292 | 60.71 | 80962 | 63.33 | 68815 | 67.10 | | |

Performance shown is for installation Type B: Free inlet, ducted outlet.
Performance ratings do not include the effects of appurtenances in the airstream.

**Little Things Mean A Lot**

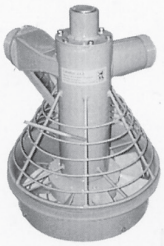
THE WORD 'PLEASE'

The Story: In 1995 Pacific Bell Telephone told its 4,500 directory assistance operators to answer calls with either: "Hi, this is _____, what city?"or "Hi, I'm _____, what city?" According to Pac Bell, these new greetings take 1.2 seconds to say, compared to 1.7 seconds when "please" is used. The phone company calculated that shaving half a second off of each call makes it possible for operators to handle 135,000 more calls per hour.

## FANS

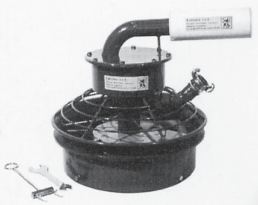
### Portable Water Driven Gas Freeing Fan AX 2001-A for tanks

| | | |
|---|---|---|
| Net Weight: | | 14 Kg |
| Diameter of fan propeller: | | 309 mm |
| Exterior diameter of supporting Ring: | | 360 mm |
| Work pressure: | | 3 to 14 bars |
| Average air flow: | 6 bars | 8300 m³/h |
| | 11 bars | 12000 m³/h |
| Water Consumption: | 6 bars | 30 m³/h |
| | 11 bars | 40 m³/h |
| Material construction: | | Stainless Steel |
| Material of Fan Blades: | | Nylon Coated |
| Inlet Connection: | | Dia. 2-1/2 - 7-1/2 tpi |



### Portable Air Driven Gas Freeing Fan AX 2004 for tanks

| | | |
|---|---|---|
| Net Weight: | | 9 Kg |
| Diameter of fan propeller: | | 311 mm |
| Exterior diameter of supporting Ring: | | 360 mm |
| Work pressure: | | 2 to 8 bars |
| Average air flow: | 4 bars | 4770 m³/h |
| | 7 bars | 6850 m³/h |
| Air Consumption: | 6 bars | 50 l/s |
| Material construction: | | Stainless Steel |
| Material of Fan Blades: | | Nylon Coated<br>Anti-Static Epoxy paint |
| Inlet Connection: | | 3/4 Female |



## COMPRESSORS

CHAMPION


### R-SERIES SPLASH LUBRICATED RECIPROCATING TWO-STAGE AIR COMPRESSORS

#### SPLASH & PRESSURE LUBRICATED — HORIZONTAL TANK (ELECTRIC)

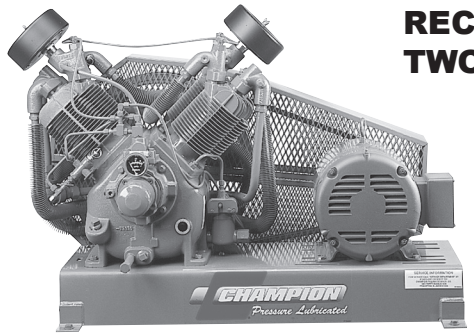
| Horizontal Tank | | | | | | | | 125 PSI Rating* | | | 175 PSI Rating* | | | 250 PSI Rating* | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Motor HP | Tank Cap Gal. | Splash R-Series Model | Pump Comp. Model | Pressure PL-Series Model | Pump Comp. Model | L x W x H Dimensions inches | Aprox. Ship Wt. lbs. | RPM | CFM Displ. | CFM Del'y | RPM | CFM Displ. | CFM Del'y | RPM | CFM Displ. | CFM Del'y |
| 1½ | 30 | HR1-3 | R-10D | — | — | 41½ x 21 x 44⅜ | 300 | 575 | 11.2 | 6.0 | 542 | 10.5 | 5.3 | — | — | — |
| | 60 | HR1-6 | | — | | 51½ x 22¾ x 48⅝ | 400 | | | | | | | | | |
| | 80 | HR1-8 | | — | | 66½ x 22¾ x 48⅝ | 425 | | | | | | | | | |
| 2 | 30 | HR2-3 | | — | | 41½ x 21 x 44⅜ | 320 | 765 | 14.9 | 8.3 | 725 | 14.1 | 7.5 | — | — | — |
| | 60 | HR2-6 | | — | | 51½ x 22¾ x 48⅝ | 425 | | | | | | | | | |
| | 80 | HR2-8 | | — | | 66½ x 22¾ x 48⅝ | 455 | | | | | | | | | |
| 3 | 60 | HR3-6 | R-15B | HPL3-6 | PL-15 | 51½ x 22¾ x 48⅝ | 425 | 485 | 14.1 | 10.9 | 440 | 12.8 | 9.7 | 380 | 11.0 | 8.0 |
| | 80 | HR3-8 | | HPL3-8 | | 66½ x 22¾ x 48⅝ | 485 | | | | | | | | | |
| | 120 | HR3-12 | | HPL3-12 | | 72½ x 24 x 55 | 725 | | | | | | | | | |
| 5 | 60 | HR5-6 | | HPL5-6 | | 51½ x 22¾ x 48⅝ | 445 | 805 | 23.5 | 19.1 | 710 | 20.7 | 16.5 | 640 | 18.6 | 13.6 |
| | 80 | HR5-8 | | HPL5-8 | | 66½ x 22¾ x 48⅝ | 535 | | | | | | | | | |
| | 120 | HR5-12 | | HPL5-12 | | 72½ x 24 x 55 | 765 | | | | | | | | | |
| 7½ | 80 | HR7F-8 | | HPL7F-8 | | 66½ x 22¾ x 48⅝ | 570 | 1035 | 29.9 | 24.6 | 1035 | 29.9 | 23.5 | 940 | 27.4 | 19.4 |
| | 120 | HR7F-12 | | HPL7F-12 | | 72½ x 24 x 55 | 800 | | | | | | | | | |
| | 80 | HR7-8 | R-30D | HPL7-8 | PL-30 | 66½ x 22½ x 49¾ | 665 | 670 | 39.6 | 30.0 | 575 | 33.5 | 25.8 | 520 | 30.2 | 21.3 |
| | 120 | HR7-12 | | HPL7-12 | | 72½ x 24 x 55¼ | 860 | | | | | | | | | |
| 10 | 80 | HR10-8 | | HPL10-8 | | 66½ x 22½ x 49¾ | 675 | 810 | 48.5 | 37.3 | 740 | 43.1 | 34.8 | 640 | 37.1 | 27.5 |
| | 120 | HR10-12 | | HPL10-12 | | 72½ x 24 x 55¼ | 890 | | | | | | | | | |
| | 250 | HR10-25 | | — | — | 87½ x 34¼ x 61⅜ | 1283 | | | | | | | | | |
| 15 | 80 | HR15F-8 | | — | — | 66½ x 22½ x 49¾ | 740 | 1045 | 63.5 | 50.2 | 1045 | 63.5 | 49.0 | 900 | 52.5 | 42.6 |
| | 120 | HR15F-12 | | HPL15F-12 | PL-40 | 72½ x 24 x 55¼ | 960 | | | | | | | | | |
| | 250 | HR15F-25 | | HPL15F-25 | | 88½ x 31 x 60⅝ | 1275 | | | | | | | | | |
| | 120 | HRA15-12 | R-40A | HPL15-12 | | 73½ x 27⅜ x 62½ | 1110 | 890 | 71.1 | 59.0 | 770 | 61.5 | 53.7 | 700 | 55.9 | 45.8 |
| | 250 | HRA15-25 | | HPL15-25 | | 88½ x 31 x 68¾ | 1495 | | | | | | | | | |
| 20 | 120 | HRA20-12 | R-70A | HPL20-12 | PL-70 | 73½ x 27½ x 64 | 1325 | 770 | 109.0 | 91.9 | 655 | 93.0 | 76.7 | 545 | 77.4 | 64.1 |
| | 250 | HRA20-25 | | HPL20-25 | | 88½ x 31 x 70¼ | 1790 | | | | | | | | | |
| 25 | 120 | HRA25-12 | | HPL25-12 | | 73½ x 27½ x 64 | 1365 | 890 | 127.8 | 102.1 | 770 | 109.4 | 90.1 | 660 | 93.7 | 76.8 |
| | 250 | HRA25-25 | | HPL25-25 | | 88½ x 31 x 70¼ | 1735 | | | | | | | | | |
| 30 | 120 | HRA30-12 | | HPL30-12 | | 73½ x 27½ x 64 | 1404 | 890 | 127.8 | 102.1 | 890 | 127.8 | 101.0 | 770 | 109.4 | 90.0 |
| | 250 | HRA30-25 | | HPL30-25 | | 88½ x 31 x 70¼ | 1774 | | | | | | | | | |

NOTE: Pressure lubricated units are capable of 250 PSIG operation.

## SPLASH & PRESSURE LUBRICATED — VERTICAL TANK (ELECTRIC)

| Vertical Tank | | | | | | | | 125 PSI Rating* | | | 175 PSI Rating* | | | 250 PSI Rating* | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Motor HP | Tank Cap Gal. | Splash R-Series Model | Pump Comp. Model | Pressure PL-Series Model | Pump Comp. Model | L x W x H Dimensions inches | Aprox. Ship Wt. lbs. | RPM | CFM Displ. | CFM Del'y | RPM | CFM Displ. | CFM Del'y | RPM | CFM Displ. | CFM Del'y |
| 1.5 | 60 | VR1-6 | R-10D | — | — | 32 1/2 x 22 1/2 x 76 1/2 | 400 | 575 | 11.2 | 6.0 | 542 | 10.5 | 5.3 | — | — | — |
| | 80 | VR1-8 | | | | 32 x 24 x 77 | 425 | | | | | | | | | |
| 2 | 60 | VR2-6 | | | | 32 1/2 x 22 1/2 x 76 1/2 | 425 | 765 | 14.9 | 8.3 | 725 | 14.1 | 7.5 | — | — | — |
| | 80 | VR2-8 | | | | 32 x 24 x 77 | 455 | | | | | | | | | |
| 3 | 60 | VR3-6 | R-15B | VPL3-6 | PL-15 | 32 1/2 x 22 1/2 x 76 1/2 | 425 | 485 | 14.1 | 10.9 | 440 | 12.8 | 9.7 | 380 | 11.0 | 8.0 |
| | 80 | VR3-8 | | VPL3-8 | | 32 x 24 x 77 | 485 | | | | | | | | | |
| | 120 | VR3-12 | | VPL3-12 | | 42 1/2 x 30 x 80 1/2 | 725 | | | | | | | | | |
| 5 | 60 | VR5-6 | | VPL5-6 | | 32 1/2 x 22 1/2 x 76 1/2 | 455 | 805 | 23.5 | 19.1 | 710 | 20.7 | 16.5 | 640 | 18.6 | 13.6 |
| | 80 | VR5-8 | | VPL5-8 | | 33 x 24 x 77 | 535 | | | | | | | | | |
| | 120 | VR5-12 | | VPL5-12 | | 42 1/2 x 30 x 82 | 765 | | | | | | | | | |
| 7 1/2 | 80 | VR7F-8 | | VPL7F-8 | | 33 x 24 x 77 | 570 | 1035 | 29.9 | 24.6 | 1035 | 29.9 | 23.5 | 940 | 27.4 | 19.4 |
| | 120 | VR7F-12 | | VPL7F-12 | | 42 1/2 x 30 x 82 | 800 | | | | | | | | | |
| | 80 | VR7-8 | R-30D | VPL7-8 | PL-30 | 42 1/2 x 30 x 82 | 665 | 670 | 39.6 | 30.0 | 575 | 33.5 | 25.8 | 520 | 30.2 | 21.3 |
| | 120 | VR7-12 | R-15B | VPL7-12 | | 46 3/8 x 30 x 82 | 800 | | | | | | | | | |
| 10 | 80 | VR10-8 | R-30D | VPL10-8 | | 42 1/2 x 30 x 66 3/4 | 860 | 810 | 48.5 | 37.3 | 740 | 43.1 | 34.8 | 640 | 37.1 | 27.5 |
| | 120 | VR10-12 | | VPL10-12 | | 46 3/8 x 30 x 80 3/4 | 890 | | | | | | | | | |
| 15 | 120 | VR15F-12 | PL-40 | — | — | 46 3/8 x 30 x 80 3/4 | 890 | 1045 | 63.5 | 50.2 | 1045 | 63.5 | 49.0 | 900 | 52.5 | 42.6 |

NOTE: Pressure lubricated units are capable of 250 PSIG operation.




**R-SERIES SPLASH LUBRICATED RECIPROCATING TWO-STAGE AIR COMPRESSORS**


## SPLASH & PRESSURE LUBRICATED — BASE MOUNT (ELECTRIC)

| Motor HP | Splash R-Series Model | Pump Comp. Model | Pressure PL-Series Model | Pump Comp. Model | L x W x H Dimensions inches | Aprox. Ship Wt. lbs. | 125 PSI Rating* | | | 175 PSI Rating* | | | 250 PSI Rating* | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | RPM | CFM Displ. | CFM Del'y | RPM | CFM Displ. | CFM Del'y | RPM | CFM Displ. | CFM Del'y |
| 1 1/2 | BR-1 | R-10D | — | — | 29 1/2 x 21 x 29 1/4 | 205 | 575 | 11.2 | 6.0 | 542 | 10.5 | 5.3 | — | — | — |
| 2 | BR-2 | | — | | | 205 | 765 | 14.9 | 8.3 | 725 | 14.1 | 7.5 | — | — | — |
| 3 | BR-3 | R-15B | BPL-3 | PL-15 | 30 1/2 x 21 x 29 1/4 | 230 | 485 | 14.1 | 10.9 | 440 | 12.8 | 9.7 | 380 | 11.0 | 8.0 |
| 5 | BR-5 | | BPL-5 | | | 280 | 805 | 23.5 | 19.1 | 710 | 20.7 | 16.5 | 640 | 18.6 | 13.6 |
| 7 1/2 | BRF-7 | | BPL-7F | | | 310 | 1035 | 29.9 | 24.6 | 1035 | 29.9 | 23.5 | 940 | 27.4 | 19.4 |
| | BR-7 | R-30D | BPL-7 | PL-30 | 42 3/4 x 22 1/8 x 28 9/16 | 430 | 670 | 39.6 | 30.0 | 575 | 33.5 | 25.8 | 520 | 30.2 | 21.3 |
| 10 | BR-10 | | BPL-10 | | | 540 | 810 | 48.5 | 37.3 | 740 | 43.1 | 34.8 | 640 | 37.1 | 27.5 |
| 15 | BRF-15 | | BPL-15F | | 49 1/2 x 26 1/4 x 38 | 550 | 1045 | 63.5 | 50.2 | 1045 | 63.5 | 49.0 | 900 | 52.5 | 42.6 |
| | BRA-15 | R-40A | BPL-15 | PL-40 | | 730 | 890 | 71.1 | 59.0 | 770 | 61.5 | 53.7 | 700 | 55.9 | 45.8 |
| 20 | BRA-20 | R-70A | BPL-20 | PL-70 | 53 x 27 1/2 x 39 1/2 | 1000 | 770 | 109.0 | 91.9 | 655 | 93.0 | 76.7 | 545 | 77.4 | 64.1 |
| 25 | BRA-25 | | BPL-25 | | | 1020 | 890 | 127.8 | 102.1 | 770 | 109.4 | 90.1 | 660 | 93.7 | 76.8 |
| 30 | BRA-30 | | BPL-30 | | | 1059 | 890 | 127.0 | 102.1 | 890 | 127.0 | 101.1 | 770 | 109.4 | 90.0 |

PARTS & SERVICING AVAILABLE

Ingersoll-Rand

PARTS & SERVICING AVAILABLE

# PROFESSIONAL AIR COMPRESSORS

Designed for the professional, our single stage air compressors are ideal for most anyone, from the do-it-yourselfer to the professional air compressor user. When performance is defined by maximum operating pressure, increased air flow, and extended duty cycles, Ingersoll-Rand is the product of choice.

- Maximum Air Power! More delivered air(cfm) to do the job right and in less time
- Built to last! Durable Cast Iron Construction
- 100% continuous duty for the toughest applications
- Extended Pump Life! 5,000+ hours, more than double the life of many low cost aluminum compressors

## SINGLE STAGE STATIONARY – ELECTRIC

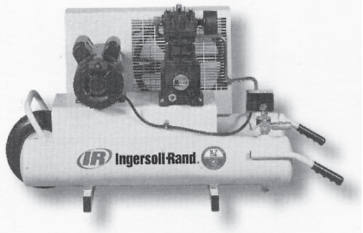
No starter required. Manual thermal overload protection of the motor. 230/1/60 Voltage.

| IR Model # | HP | Voltage | Tank | ACFM@ 90/135 PSIG | Max PSIG |
|---|---|---|---|---|---|
| SS3L3 | 3 | 230-1-60 | 60 Gallon Vertical | 11.3/10.3 | 135 |
| SS5L5 | 5 | 230-1-60 | 60 Gallon Vertical | 18.1/15.5 | 135 |

## PORTABLE POWER

### • SINGLE STAGE WHEELBARROW

Maximum maneuverability on the jobsite! Light weight, low profile design with convenient lifting handles.



#### GASOLINE ENGINE DRIVEN

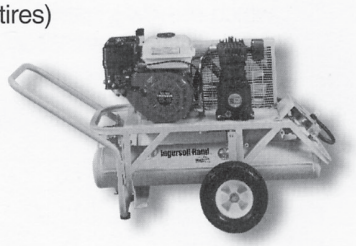
| IR Model # | HP | Engine | Tank | ACFM@ 90/135 PSIG | Max PSIG |
|---|---|---|---|---|---|
| SS3J5.5GB-WB | 5.5 | Briggs & Stratton | 8 Gallon Twin | 11.8/10.7 | 135 |
| SS3J5.5GH-WB | 5.5 | Honda | 8 Gallon Twin | 11.8/10.7 | 135 |

#### ELECTRIC

| IR Model # | HP | Voltage | Tank | ACFM@ 90/135 PSIG | Max PSIG |
|---|---|---|---|---|---|
| SS3J2-WB | 2 | 115/230-1-60 | 8 Gallon Twin | 5.7/4.9 | 135 |
| SS3J3-WB | 3 | 230-1-60 | 8 Gallon Twin | 11.3/10.3 | 135 |

### • SINGLE STAGE AIR SLED

Ergonomically designed, the Air Sled offers a rugged frame support to meet the rigorous demands of field handling. Available options include cart assembly (lifting handle and semi-pneumatic tires) providing balanced two wheel mobility, regulation panel, hose rack and weatherproof cover.



#### GASOLINE ENGINE DRIVEN

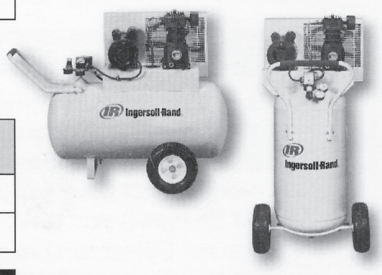
| IR Model # | HP | Engine | Tank | ACFM@ 90/135 PSIG | Max PSIG |
|---|---|---|---|---|---|
| SS3J5.5GH-AS | 5.5 | Honda | 8 Gallon Twin | 11.8/10.7 | 135 |

#### ELECTRIC

| IR Model # | HP | Voltage | Tank | ACFM@ 90/135 PSIG | Max PSIG |
|---|---|---|---|---|---|
| SS3J3-AS | 3 | 230-1-60 | 8 Gallon Twin | 11.3/10.3 | 135 |

### • SINGLE STAGE GARAGE MATE

Ideal for the home, shop or jobsite.



| IR Model # | HP | Voltage | Tank | ACFM@ 90/135 PSIG | Max PSIG |
|---|---|---|---|---|---|
| SS3R2-GM | 2 | 115-1-60 | 24 Gallon Vertical | 5.7/4.9 | 135 |
| SS3F2-GM | 2 | 115-1-60 | 30 Gallon Horizontal | 5.7/4.9 | 135 |

**Air Power (cfm), not Horsepower, defines Compressor Performance. Not all Horsepower is rated equally! Ingersoll-Rand rates motors at applied load or running HP while many competitors are rated at peak HP (higher HP, but not necessarily more delivered air-cfm.)**

PARTS & SERVICING AVAILABLE

# Ingersoll-Rand
## INDUSTRIAL AIR COMPRESSORS

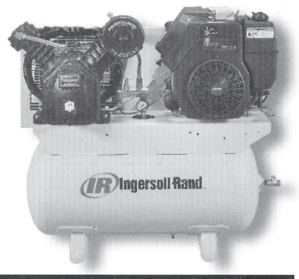
PARTS & SERVICING AVAILABLE

Designed for Heavy Shop Use and Light Industrial applications, our two-stage air compressors offer

- Superior Air Power – more delivered air (cfm) and higher pressure (psi) to power your air tools
- Durable 100% cast iron construction for the most demanding environment
- Extended pump life! 10,000+ hours

## TWO-STAGE GASOLINE ENGINE DRIVEN

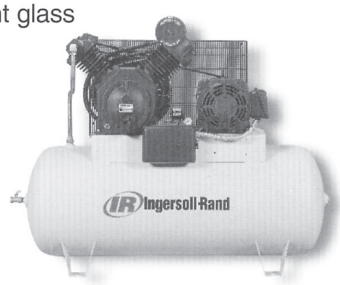
Ideal for fleet or field service applications with truck bed mounting design. Idle engine control and electronic ignition for easier starting. Powder coat paint finish to protect against outdoor elements. 30 gallon ASME receiver and OSHA fully enclosed belt guard for worker safety.




| IR Model # | HP | Engine | ACFM @ 175 PSIG | Tank |
|---|---|---|---|---|
| 2475F12.5G | 12.5 | Kohler | 24 | 30 Gallon Horizontal |
| 2475F11.5GKA | 11.5 | Kawasaki | 25 | 30 Gallon Horizontal |
| 2475F11GH | 11 | Honda | 19 | 30 Gallon Horizontal |

## TWO-STAGE ELECTRIC "VALUE PACKAGES"

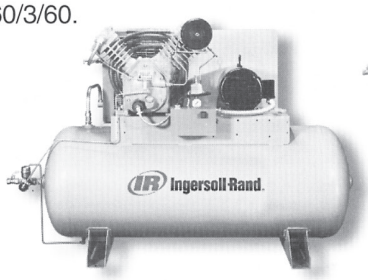
Priced right and designed for the most demanding applications where a dependable air supply is required. Each package includes a two-stage cast-iron compressor pump, ODP electric motor, magnetic motor starter (mounted and wired), automatic start and stop pressure switch control, mounted on an ASME rated receiver tank. Available voltages: 230/1/60 (5-7.5 HP), 200/3/60, 230/3/60, 460/3/60. Pressure up to 175 PSIG. Oil sight glass included on 10-15 HP Packages.


| IR Model # | HP | ACFM @ 175 PSIG | Tank |
|---|---|---|---|
| 2340L5 | 5 | 15 | 60 Gallon Vertical |
| 2475N5 | 5 | 16.8 | 80 Gallon Vertical |
| 2475N7.5 | 7.5 | 24 | 80 Gallon Vertical |
| 2545E10V | 10 | 35 | 120 Gallon Horizontal |
| 7100E15V | 15 | 50 | 120 Gallon Horizontal |

## TWO-STAGE ELECTRIC "FULLY PACKAGED"

Everything you need for a dependable air supply with minimal maintenance. Fully packaged compressors include magnetic motor starter, aircooled aftercooler and electric drain valve which removes harmful moisture, plus, the added protection of a low oil level shutdown switch. Available voltages: 230/1/60 (5-7.5 HP), 200/3/60, 230/3/60, 460/3/60.


| IR Model # | HP | ACFM @ 175 PSIG | Tank |
|---|---|---|---|
| 2475N5FP | 5 | 16.8 | 80 Gallon Vertical |
| 2475N7.5FP | 7.5 | 24 | 80 Gallon Vertical |
| 2545K10FP | 10 | 35 | 120 Gallon Vertical |
| 2545E10FP | 10 | 35 | 120 Gallon Horizontal |
| 7100E15FP | 15 | 50 | 120 Gallon Horizontal |

* Packages available through 30 HP.

## INGERSOLL-RAND START-UP MAINTENANCE KITS

All the parts needed to maintain your compressor for a full year, plus the added protection of extended warranty coverage – two very distinct advantages you'll gain with the All Season Select Start Up kit. Kits include All Season Select synthetic pump lubricant and replacement air filter elements. Kits for gasoline engine driven compressors also include engine air filter, oil filter and engine oil.

| IR Model # | Compressor HP |
|---|---|
| 32305580 | 5 & 7.5 |
| 32305898 | 10 & 15 |
| 32305906 | 20, 25 & 30 |
| 32305872 | 12.5 (Kohler) |
| 32498511 | 11.5 (Kawasaki) |
| 32312936 | 11 (Honda) |


**2 YEAR WARRANTY!**

**Only in America** ..... are there handicap parking places in front of a skating rink.

Ingersoll-Rand®

PARTS & SERVICING AVAILABLE

# 5-30 HP Fully Packaged Air Compressors

Ingersoll-Rand's high performance two-stage, Fully Packaged air compressors are designed for the most demanding applications where a dependable air supply is essential. Each fully packaged air compressor comes complete with pre-installed magnetic motor starter, aircooled aftercooler and electric drain valve to remove harmful moisture, plus, the added protection of a low oil level shutdown switch. Perfect for automotive, heavy duty commercial or industrial applications.

When performance is defined by maximum operating pressure, increased air flow, and extended duty cycles, Ingersoll-Rand is the product of choice.


## Powerful...

- Maximum Air Power!
- More delivered air(cfm) providing the power to do the job right and in less time
- 100 % continuous duty for the toughest applications
- 175 psi maximum operating pressure

## Durable...

- Built to Last! Durable cast iron construction
- Extended Pump Life! 10,000 + hours for years of trouble free service
- Industrial Quality Design

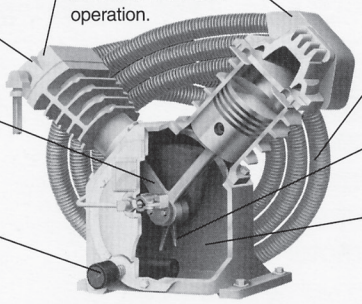
## Reliable...

- Designed and produced by Ingersoll-Rand, the world's leader in air compressor manufacturing, sales and service
- Precision engineered quality components
- Extended two year warranty offered with the use of Ingersoll-Rand's All Season Select synthetic lubricant

## LEGENDARY PERFORMANCE

Ingersoll-Rand®

# Technical Specification Guide




**100% Cast Iron**

## Standard Features

- Durable 100% cast iron construction
- 100% continuous duty cycle
- Factory mounted and wired motor starter
- Air-cooled aftercooler
- Automatic start/stop pressure switch control (5-7.5HP)
- Constant speed control (10-30HP)
- ASME code receiver tank
- Electric drain valve
- Low oil level shutdown switch
- Totally enclosed beltguard
- Splash lubrication
- All units are prewired and thoroughly tested prior to shipment
- Meets OSHA standards
- UL/CSA/ASME compliant

## Specifications

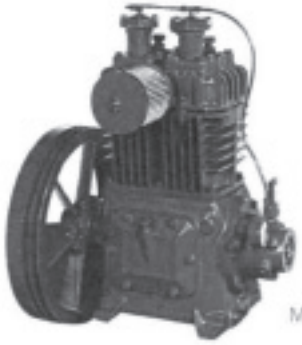
| Model | HP | Tank Size (gal.) | Capacity (cfm) @175psi | Maximum Pressure PSI | Package Dimensions L/W/H (in.) | Net Weight (lbs.) |
|---|---|---|---|---|---|---|
| 2475N5FP | 5 | 80 Vertical | 16.8 | 175 | 30"x37"x70" | 500 |
| 2475N7.5FP | 7.5 | 80 Vertical | 24.0 | 175 | 30"x37"x70" | 500 |
| 2545E10FP | 10 | 120 Horizontal | 35.0 | 175 | 75"x31"x56" | 1000 |
| 7100E15FP | 15 | 120 Horizontal | 50.0 | 175 | 78"x30"x56" | 1035 |
| 3000E20FP | 20 | 120 Horizontal | 72.0 | 175 | 75"x38"x61" | 1410 |
| 3000E25FP | 25 | 120 Horizontal | 82.0 | 175 | 75"x38"x61" | 1410 |
| 3000E30FP | 30 | 120 Horizontal | 100.0 | 175 | 75"x38"x61" | 1410 |

**SOBER SUE**

Background: One afternoon in 1908, the managers of Hammerstein's Victoria Theater on Broadway marched a woman onstage during intermission and offered $1,000 to anyone in the audience who could make the woman-introduced as "Sober Sue"-laugh. When no one in the audience succeeded in getting Sober Sue to even crack a smile, the theater managers upped the ante by inviting New York's top comedians to try.
Over the next several weeks, just about every headlining comedian in New York City performed their best material in front of Sober Sue, hoping to benefit from the publicity if they were first to get her to laugh. Everyone failed, but Sober Sue became one of Broadway's top theater attractions.

Exposed: It wasn't until after she left town that Sober Sue's secret finally leaked out: Her facial muscles were paralyzed-she couldn't have laughed even if she had wanted to. The Victoria Theater had cooked up the "contest" to trick New York's most famous-and most expensive—comedians into performing their routines for free.

Quincy COMPRESSOR

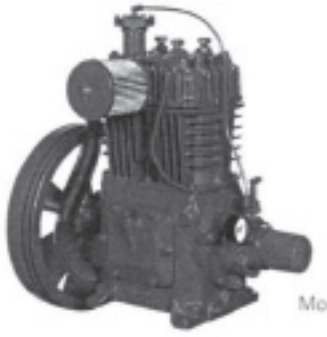


Model 240

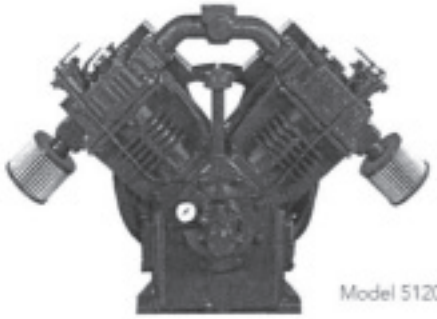
Model 4125

## QUINCY QR-25 SINGLE-STAGE BASIC COMPRESSOR

| Model | Typical HP Range @100 PSI | Bore (in) | Stroke (in) | No. Cyl. | Min. RPM | ACFM F.A.D. @100 PSIG Min. RPM | Max. RPM | ACFM @100 PSIG Max. RPM | Max. Cont. Pressure (PSIG) | Max. Intermit. Pressure (PSIG) | Approx. Shipping Weight (lb) | LxWxH (in) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 210 | 1-2 | 2.50 | 2.00 | 2 | 400 | 2.82 | 1000 | 6.34 | 100 | 150 | 71 | 13x7x15 |
| 216 | 1 1/2-5 | 3.00 | 2.50 | 2 | 400 | 4.74 | 900 | 10.70 | 100 | 100 | 165 | 17x13x21 |
| 240 | 3-7 1/2 | 4.00 | 3.00 | 2 | 400 | 10.47 | 900 | 23.56 | 100 | 100 | 247 | 23x16x25 |
| 270 | 5-10 | 4.50 | 4.00 | 2 | 400 | 15.61 | 900 | 35.12 | 100 | 100 | 430 | 25x20x30 |
| 4125 | 10-20 | 4.50 | 4.00 | V4 | 400 | 31.81 | 940 | 71.57 | 100 | 100 | 767 | 26x38x28 |



Model 325



Model 5120

## QUINCY QR-25 TWO-STAGE BASIC COMPRESSOR

| Model | Typical HP Range @175 PSI | Bore L.P. (in) | Bore H.P. (in) | Stroke (in) | No. Cyl. | Min. RPM | ACFM @ 175 PSIG Max RPM | Max. Cont. Pressure (PSIG) | Max. Intermit. Pressure** (PSIG) | Approx. Shipping Weight (lb) | LxWxH (in) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 310 | 2 | 3.50 | 2.00 | 2.50 | 2 | 628 | 6.30 | 200 | 500 | 175 | 21x10x21 |
| 325 | 3-5 | 4.50 | 2.50 | 3.00 | 2 | 400 | 18.64 | 200 | 500 | 255 | 22x17x25 |
| 340 | 5-10 | 5.25 | 3.00 | 3.50 | 2 | 400 | 29.64 | 200 | 500 | 452 | 27x16x30 |
| 350 | 5-15 | 6.00 | 3.25 | 3.50 | 2 | 400 | 36.60 | 200 | 350 | 480 | 28x16x31 |
| 370 | 5-15 | 6.00 | 3.25 | 4.00 | 2 | 400 | 49.72 | 200 | 250 | 481 | 28x16x31 |
| 390 | 7 1/2-20 | 7.50 | 4.00 | 4.00 | 2 | 400 | 69.21 | 200 | 250 | 739 | 33x16x34 |
| 5120 | 10-25 | 6.00 | 3.25 | 4.00 | V4 | 400 | 94.97 | 200 | 250 | 904 | 32x41x31 |

** High pressure basic required above 250 PSIG

**Darwin Award Winner**

March 1995, James Burns, 34, Alamo, Michigan was killed as he was trying to repair what police described as a “farm-type truck.” Burns got a friend to drive the truck on a highway while Burns hung underneath so that he could ascertain the source of a troubling noise. Burns’ clothes caught on something. The man that was driving found Burns “wrapped in the drive shaft.”

Quincy COMPRESSOR

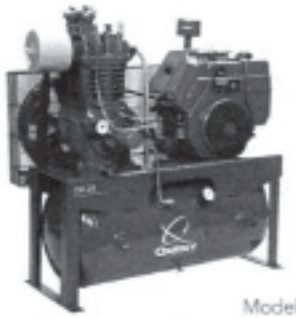
# QUINCY QR-25 SERIES


Model F5120

## QUINCY QR-25 TANK-MOUNTED INDUSTRIAL COMPRESSOR

| Model No. | Horse Power | Bore L.P. (in) | Bore H.P. (in) | Stroke (in) | No. Cyl. | RPM ** | CFM Piston Disp. | †ACFM ** | Std. Press. Switch Set (PSIG) | Tank Size (Gallons) | Approx. Shipping Weight (lb) | LxWxH (in) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F210* | 1 | 2.50 | — | 2.00 | 2 | 440 | 5.00 | 3.30 | 80-100 | 30 | 290 | 42x16x37 |
| | 1 1/2 | | | | | 691 | 7.90 | 4.80 | | 60 | 480 | 53x22x42 |
| V210* | 1 | 2.50 | — | 2.00 | 2 | 481 | 5.50 | 3.30 | 80-100 | 30 | 275 | 27x10x47 |
| | 1 1/2 | | | | | 691 | 7.90 | 4.80 | | | | |
| F310 | 2 | 3.50 | 2.00 | 2.50 | 2 | 628 | 8.70 | 6.30 | 135-175 | 60 | 560 | 53x22x48 |
| V310 | | | | | | | | | | 80 | 600 | 31x24x75 |
| F325 | 3 | 4.50 | 2.50 | 3.00 | 2 | 459 | 13.60 | 10.40 | 135-175 | 60 | 710 | 53x26x51 |
| | 5 | | | | | 796 | 22.00 | 17.40 | | 80 | 770 | 68x26x50 |
| | | | | | | | | | | 120 | 975 | 73x26x56 |
| V325 | 3 | 4.50 | 2.50 | 3.00 | 2 | 492 | 13.60 | 10.40 | 135-175 | 60 | 675 | 36x26x78 |
| | 5 | | | | | 796 | 22.00 | 17.40 | | 80 | 775 | 36x26x78 |
| F340 | 7 1/2 | 5.25 | 3.00 | 3.50 | 2 | 786 | 34.50 | 26.00 | 135-175 | 80 | 1095 | 68x28x56 |
| | | | | | | | | | | 120 | 1120 | 73x28x61 |
| F350 | 10 | 6.00 | 3.25 | 3.50 | 2 | 859 | 49.20 | 33.40 | 135-175 | 120 | 1225 | 73x30x62 |
| F370 | 15 | 6.00 | 3.25 | 4.00 | 2 | 1060 | 69.40 | 49.30 | 135-175 | 120 | 1285 | 73x30x62 |
| F390 | 20 | 7.50 | 4.00 | 4.00 | 2 | 877 | 95.80 | 64.00 | 135-175 | 120 | 1680 | 73x35x66 |
| | | | | | | | | | | 200 | 2010 | 77x35x72 |
| F5120 | 25 | 6.00 | 3.25 | 4.00 | V4 | 951 | 124.50 | 87.00 | 135-175 | 120 | 2140 | 73x34x72 |
| | | | | | | | | | | 200 | 2140 | 77x34x72 |

* Single-stage model
** RPM and ACFM shown at 100 PSI for single-stage models, 175 PSI for two-stage models
† All compressor performance data is rated with 230/460, 60Hz, 3ph, EPAct high efficiency motors.




Model HT325

## QUINCY QR-25 TWO-STAGE TANK-MOUNTED MOBILE COMPRESSOR

| Model No. | Horse Power | Bore L.P. (in) | Bore L.P. (in) | Stroke (in) | No. Cyl. | RPM ** | CFM Piston Disp. | ACFM @ 175 PSI ** | Pilot Valve Setting PSI | Tank Size (Gallons) | Approx. Shipping Weight (lb) | LxWxH (in) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HT325 | 11 Eng. | 4.50 | 2.50 | 3.00 | 2 | 900 | 24.80 | 18.70 | 165-175 | 30 | 695 | 41x27x44 |
| HT325LS-10Y | 10 Diesel | 4.50 | 2.50 | 3.00 | 2 | 900 | 24.80 | 18.70 | 165-175 | 30 | 530 | 41x27x44 |
| HT350 | 18 Eng. | 6.00 | 3.25 | 3.50 | 2 | 900 | 51.50 | 34.50 | 165-175 | 60 | 1670 | 49x31x54 |

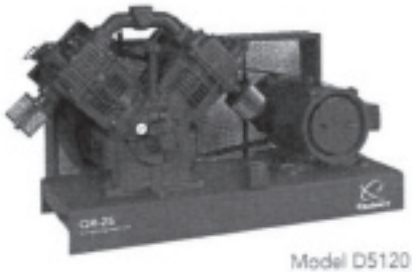
* Single-stage model
** RPM and ACFM shown at 100 PSI for single-stage models, 175 PSI for two-stage models
† All compressor performance data is rated with 230/460, 60Hz, 3ph, EPAct high efficiency motors.

Quincy COMPRESSOR

## QUINCY QR-25 BASE-MOUNTED INDUSTRIAL COMPRESSOR

| Model No. | Horse Power | Bore L.P. (in) | Bore H.P. (in) | Stroke (in) | No. Cyl. | RPM ** | CFM Piston Disp. | †ACFM ** | Approx. Shipping Weight (lb) | LxWxH (in) |
|---|---|---|---|---|---|---|---|---|---|---|
| D210* | 1 | 2.50 | — | 2.00 | 2 | 440 | 5.00 | 3.30 | 185 | 27x16x20 |
| | 1 1/2 | | | | | 691 | 7.90 | 4.80 | 190 | |
| D310 | 2 | 3.50 | 2.00 | 2.50 | 2 | 628 | 8.70 | 6.30 | 415 | 34x22x14 |
| D325 | 3 | 4.50 | 2.50 | 3.00 | 2 | 459 | 13.60 | 10.40 | 455 | |
| | 5 | | | | | 796 | 22.00 | 17.40 | 510 | 37x26x31 |
| | 10 HP Diesel | | | | | 900 | 24.80 | 18.70 | 480 | 41x25x29 |
| | 11 ENG. | | | | | 900 | 24.80 | 18.70 | 455 | 41x25x29 |
| D340 | 7-1/2 | 5.25 | 3.00 | 3.50 | 2 | 786 | 34.50 | 26.00 | 770 | 40x28x36 |
| D350 | 10 | 6.00 | 3.25 | 3.50 | 2 | 859 | 49.20 | 33.40 | 980 | 41x30x37 |
| | 18 ENG. | | | | | 900 | 51.50 | 34.50 | 1065 | 44x30x37 |
| D370 | 15 | 6.00 | 3.25 | 4.00 | 2 | 1060 | 69.40 | 49.30 | 1045 | 41x30x37 |
| D390 | 20 | 7.50 | 4.00 | 4.00 | 2 | 877 | 95.80 | 64.00 | 1320 | 48x35x41 |
| D5120 | 25 | 6.00 | 3.25 | 4.00 | V4 | 951 | 124.50 | 87.00 | 1530 | 63x34x38 |

* Single-stage model
** RPM and ACFM shown at 100 PSI for single-stage models, 175 PSI for two-stage models
† All compressor performance data is rated with 230/460, 60Hz, 3ph, EPAct high efficiency motors.



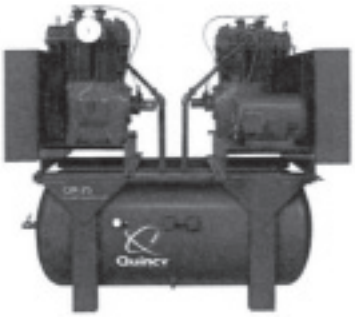
Model D5120

## QUINCY QR-25 DUPLEX TANK-MOUNTED INDUSTRIAL COMPRESSOR

| Model No. | Horse Power 2X | Bore L.P. (in) | Bore H.P. (in) | Stroke (in) | No. Cyl. | RPM ** | CFM Piston Disp. 2X | †ACFM 2X ** | Std. Press. Switch Set (PSIG) | Tank Size (Gallons) | Approx. Shipping Weight (lb) | LxWxH (in) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FF210* | 1-1/2 | 2.50 | * | 2.00 | 2 | 691 | 7.90 | 4.80 | 80-100 | 60 | 590 | 52x29x43 |
| FF310 | 2 | 3.50 | 2.00 | 2.50 | 2 | 628 | 9.10 | 6.64 | 135-175 | 80 | 890 | 70x27x47 |
| FF325 | 3 | 4.50 | 2.50 | 3.00 | 2 | 459 | 13.60 | 10.40 | 135-175 | 80 | 1050 | 72x28x51 |
| | 5 | | | | | 796 | 22.00 | 17.40 | | 120 | 1280 | 77x30x56 |
| FF340 | 7-1/2 | 5.25 | 3.00 | 3.50 | 2 | 786 | 34.50 | 26.00 | 135-175 | 120 | 1675 | 78x30x61 |
| | | | | | | | | | | 200 | 2250 | 79x30x69 |
| FF350 | 10 | 6.00 | 3.25 | 3.50 | 2 | 859 | 49.20 | 33.40 | 135-175 | 120 | 2345 | 78x30x62 |
| | | | | | | | | | | 200 | 1965 | 79x30x69 |
| FF370 | 15 | 6.00 | 3.25 | 4.00 | 2 | 1060 | 69.40 | 49.30 | 135-175 | 200 | 2430 | 79x30x69 |
| FF390 | 20 | 7.50 | 4.00 | 4.00 | 2 | 877 | 95.80 | 64.00 | 135-175 | 240 | 3300 | 89x53x53 |
| FF5120 | 25 | 6.00 | 3.25 | 4.00 | V4 | 951 | 124.50 | 87.00 | 135-175 | 240 | 3750 | 90x75x72 |

* Single-stage model
** RPM and ACFM shown at 100 PSI for single-stage models, 175 PSI for two-stage models
† All compressor performance data is rated with 230/460, 60Hz, 3ph, EPAct high efficiency motors.

*All performance data meets CAGI/PNEUROP PN2CPTC2 and PN2CPTC3 acceptance test codes for electrically and I.C. engine-driven packaged displacement air compressors.*

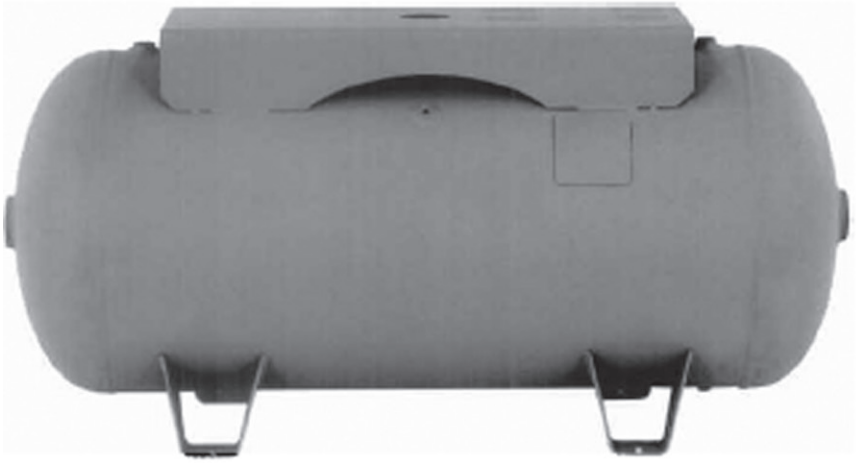


Model FF390

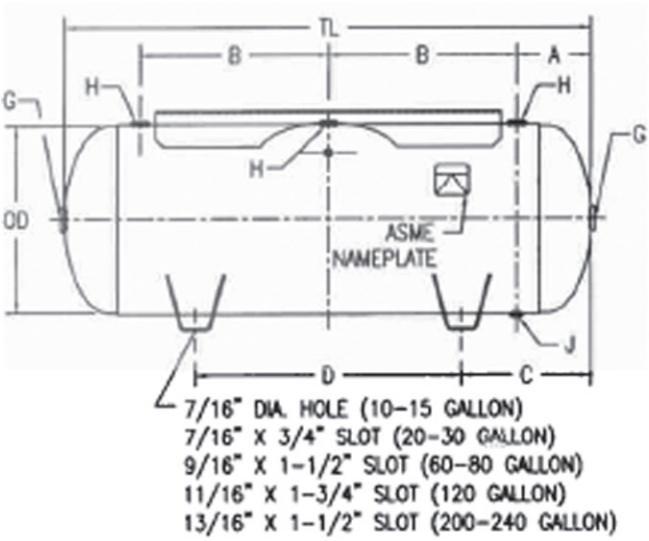
**Prodigy**
**An infant prodigy is a young child whose parents are highly imaginative.**

**Profit**
**It is a socialist idea that making profits is a vice; I consider that the real vice is making losses. Winston Churchill**

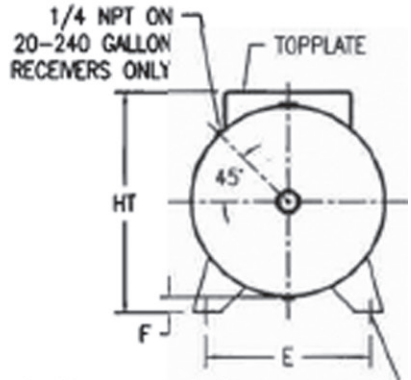
# HORIZONTAL AIR RECEIVERS
# 10-240 GALLONS



Wing Feet




7/16" DIA. HOLE (10-15 GALLON)
7/16" X 3/4" SLOT (20-30 GALLON)
9/16" X 1-1/2" SLOT (60-80 GALLON)
11/16" X 1-3/4" SLOT (120 GALLON)
13/16" X 1-1/2" SLOT (200-240 GALLON)




PRESSED STEEL FEET (10-15 GALLON)
WING FEET (20-120 GALLON)
SADDLES (200-240 GALLON)

**10-240 GALLON M-3050**

| NOM. CAP. | | PART | | TOP | | DIMENSIONS IN INCHES | | | | | | | | | N.P.T. OPENINGS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GAL. | CU.FT. | NO. | MAWP | PLATE | T.W. | OD | TL | HT | A | B | C | D | E | F | G | H | J |
| 10 | 1.34 | 302460 | 200 | NONE | 32 | 10.00 | 30.00 | 11.56 | 5.50 | 9.50 | 6.00 | 18.00 | 9.25 | 1.56 | 3/4 | 1/2 | 1/4 |
| 10 | 1.34 | 302461 | 200 | .13X9X16 | 43 | 10.00 | 30.00 | 13.06 | 5.50 | 9.50 | 6.00 | 18.00 | 9.25 | 1.56 | 3/4 | 1/2 | 1/4 |
| 10 | 1.34 | 302462 | 300 | .13X9X16 | 46 | 10.00 | 30.00 | 13.06 | 5.50 | 9.50 | 6.00 | 18.00 | 9.25 | 1.56 | 3/4 | 1/2 | 1/4 |
| 15 | 2.01 | 302463 | 200 | NONE | 51 | 12.00 | 33.00 | 13.06 | 5.50 | 11.00 | 6.50 | 20.00 | 11.00 | 1.06 | 3/4 | 1/2 | 1/4 |
| 15 | 2.01 | 302464 | 200 | .13X9X18 | 51 | 12.00 | 33.00 | 14.56 | 5.50 | 11.00 | 6.50 | 20.00 | 11.00 | 1.06 | 3/4 | 1/2 | 1/4 |
| 15 | 2.01 | 302465 | 300 | .13X9X18 | 66 | 12.00 | 33.00 | 14.56 | 5.50 | 11.00 | 6.50 | 20.00 | 11.00 | 1.06 | 3/4 | 1/2 | 1/4 |
| 20 | 2.67 | 302466 | 200 | NONE | 66 | 14.00 | 33.00 | 16.00 | 5.88 | 10.63 | 8.50 | 16.00 | 11.69 | 2.00 | 1-1/2 | 1/2 | 1/2 |
| 20 | 2.67 | 302467 | 200 | .13X9X20 | 79 | 14.00 | 33.00 | 18.00 | 5.88 | 10.63 | 8.50 | 16.00 | 11.69 | 2.00 | 1-1/2 | 1/2 | 1/2 |
| 20 | 2.67 | 302468 | 300 | .13X9X20 | 95 | 14.00 | 33.00 | 18.00 | 5.88 | 10.63 | 8.50 | 16.00 | 11.69 | 2.00 | 1-1/2 | 1/2 | 1/2 |
| 30 | 4.01 | 302469 | 200 | NONE | 89 | 16.00 | 38.00 | 18.00 | 5.75 | 13.25 | 9.00 | 20.00 | 12.81 | 2.00 | 1-1/2 | 3/4 | 1/2 |
| 30 | 4.01 | 302470 | 200 | .18X10X24 | 111 | 16.00 | 38.00 | 20.63 | 5.75 | 13.25 | 9.00 | 20.00 | 12.81 | 2.00 | 1-1/2 | 3/4 | 1/2 |
| 30 | 4.01 | 302471 | 300 | .18X10X24 | 140 | 16.00 | 38.00 | 20.63 | 5.75 | 13.25 | 9.00 | 20.00 | 12.81 | 2.00 | 1-1/2 | 3/4 | 1/2 |
| 60 | 8.02 | 302473 | 200 | NONE | 170 | 20.00 | 48.00 | 22.31 | 7.75 | 16.25 | 12.00 | 24.00 | 16.50 | 2.31 | 2 | 3/4 | 1/2 |
| 60 | 8.02 | 302474 | 200 | .18X13.5X30 | 204 | 20.00 | 48.00 | 24.44 | 7.75 | 16.25 | 12.00 | 24.00 | 16.50 | 2.31 | 2 | 3/4 | 1/2 |
| 60 | 8.02 | 302475 | 300 | .18X13.5X30 | 225 | 20.00 | 48.00 | 24.44 | 7.75 | 16.25 | 12.00 | 24.00 | 16.50 | 2.31 | 2 | 3/4 | 1/2 |
| 80 | 10.70 | 302476 | 200 | NONE | 214 | 20.00 | 63.00 | 22.31 | 9.00 | 22.50 | 15.50 | 32.00 | 16.50 | 2.31 | 2 | 1 | 1/2 |
| 80 | 10.70 | 302477 | 200 | .25X15X40 | 263 | 20.00 | 63.00 | 24.06 | 9.00 | 22.50 | 15.50 | 32.00 | 16.50 | 2.31 | 2 | 1 | 1/2 |
| 80 | 10.70 | 302478 | 300 | .25X15X40 | 350 | 20.00 | 63.00 | 24.06 | 9.00 | 22.50 | 15.50 | 32.00 | 16.50 | 2.31 | 2 | 1 | 1/2 |
| 120 | 16.04 | 302479 | 200 | NONE | 311 | 24.00 | 67.00 | 26.25 | 9.50 | 24.00 | 16.50 | 34.00 | 20.63 | 2.25 | 2 | 1-1/2 | 3/4 |
| 120 | 16.04 | 302480 | 200 | .25X16X44 | 382 | 24.00 | 67.00 | 27.94 | 9.50 | 24.00 | 16.50 | 34.00 | 20.63 | 2.25 | 2 | 1-1/2 | 3/4 |
| 200 | 26.74 | 302482 | 200 | NONE | 538 | 30.00 | 72.00 | 33.00 | 11.63 | 24.38 | 17.00 | 38.00 | 23.50 | 3.00 | 2 | 2 | 1 |
| 200 | 26.74 | 302483 | 200 | .25X19X48 | 632 | 30.00 | 72.00 | 35.69 | 11.63 | 24.38 | 17.00 | 38.00 | 23.50 | 3.00 | 2 | 2 | 1 |
| 240 | 32.09 | 302484 | 200 | NONE | 618 | 30.00 | 84.00 | 33.00 | 11.63 | 30.38 | 20.00 | 44.00 | 23.50 | 3.00 | 2 | 2 | 1 |
| 240 | 32.09 | 302485 | 200 | .25X19X48 | 716 | 30.00 | 84.00 | 35.69 | 11.63 | 30.38 | 20.00 | 44.00 | 23.50 | 3.00 | 2 | 2 | 1 |

# MARINE MUFFLER FIBERGLASS SYSTEMS

## Making the Right Selection

Matching the correct silencer to any given application requires the consideration of many factors. Available space, type of engine, accessibility, location, and the engine manufacturer's recommended maximum back pressure-are but a few of the numerous variables. Therefore, it is vitally important that all factors be considered prior to making a final selection. A special manufacturing feature of all Marine Muffler Corporation exhaust components is that they are engineered to compensate for back pressure requirements. The range of styles and configurations make product selection easy. For convenience, the chart (right) can begin to answer your selection questions.

NOTE: For "V" type cylinder block applications, where two exhaust systems per engine are used (dual exhaust), divide total H.P. by two (2), then select appropriate silencer size. For "V" applications where exhaust is routed to one silencer (single exhaust), use total H.P. to make selection.

For intermediate horsepower applications, use the next larger size silencer.

All Marine Muffler exhaust system components are factory "certified" for use in marine wet exhaust applications.

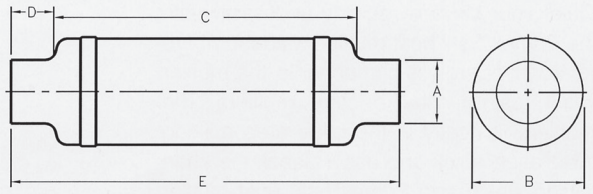
| O.D. | GAS | DIESEL |
|---|---|---|
| 1 1/2" | 35 | N/A |
| 2" | 50 | N/A |
| 2 1/2" | 100 | 25 |
| 3" | 150 | 50 |
| 3 1/2" | 200 | 75 |
| 4" | 250 | 100 |
| 5" | 350 | 200 |
| 6" | 400 | 300 |
| 8" | N/A | 500 |
| 10" | N/A | 700 |
| 12" | N/A | 1000 |

### Resin Standards

Resins used in the construction of Marine Muffler Corporation products are carefully selected to meet or exceed the following criteria for heat resistance and fire retardancy.

| | |
|---|---|
| U.S. NAVY/USCG | MIL-R-21607 |
| U.S. NAVY/USCG | MIL-R-7575 |
| Dept. of Transportation | ASTM-E-162 |

## Primex™ Round Silencers


Primex™ Silencers

| PART # | "A" | "B" | "C" | "D" | "E" |
|---|---|---|---|---|---|
| MC-015 | 1½" | 6" | 15½" | 4" | 23½" |
| MC-020 | 2 | 6 | 15½ | 2 | 19½ |
| MC-025 | 2½ | 6 | 17 | 3 | 23 |
| MC-030 | 3 | 6 | 17 | 3 | 23 |
| MC-035 | 3½ | 8 | 19 | 4 | 27 |
| MC-040 | 4 | 8 | 19 | 4 | 27 |
| MC-045 | 4½ | 10 | 25 | 5 | 35 |
| MC-050 | 5 | 10 | 25 | 5 | 35 |
| MC-060 | 6 | 12 | 29½ | 6 | 41½ |
| MC-080 | 8 | 14 | 43½ | 6 | 55½ |
| MC-100 | 10 | 18 | 53 | 6 | 71 |
| MC-120 | 12 | 24 | 64 | 10 | 84 |

For over two decades Marine Muffler has been quieting boats with round silencers made from fiberglass composites. Designed-in back pressure compensation and corrosion resistant properties make Marine Muffler products the choice of more OEM's than any other brand. To determine the size you need, refer to the chart on the inside cover. Actual product dimensions are listed above.

# MAXIM

## OVERVIEW

### Better Chamber Type Silencer: Expected Attenuation is 20 to 24 dBA

Use a model M31 in residential areas where background noise is present but not objectionable. In these areas, installation of an M31 on an engine exhaust is intended to bring the noise level down to match the ambient noise levels.

Example: In a quieter residential area off main traffic areas and away from constant noise sources.

## FEATURES

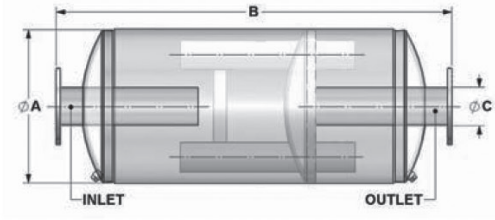
- Advanced acoustical design
- Heavy duty, all welded construction and long service life
- Easily installed in any position
- Prime coated exterior finish

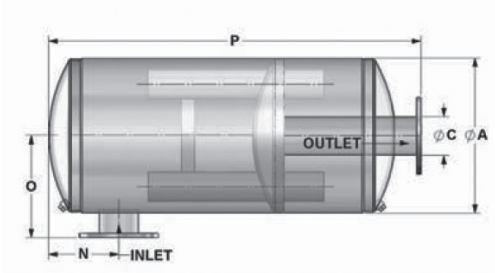
## TYPICAL APPLICATIONS

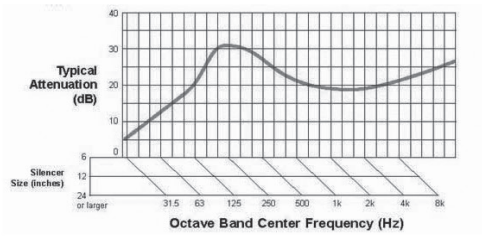
- Internal combustion engine intakes and exhausts
- Blower intakes and discharges
- Vacuum pump discharges

## OPTIONAL ACCESSORIES

- Explosion relief cover
- Flexible connectors
- Companion flanges
- Cleanout openings
- Side inlet(s)
- Side outlet
- Horizontal or vertical support arrangements
- Special paint
- Stainless steel construction




| Size | A | B | C | N | | O | P | Est. Wt. |
|---|---|---|---|---|---|---|---|---|
| | | | | Min. | Max. | | | |
| 4" | 14 | 48 | 4 | 5 ½ | 22 | 10 | 45 3/16 | 110 |
| 5" | 16 | 55 | 5 | 6 ½ | 25 | 11 | 52 3/16 | 120 |
| 6" | 18 | 63 | 6 | 7 | 29 ½ | 12 | 60 5/16 | 170 |
| 8" | 22 | 76 | 8 | 8 ½ | 36 ½ | 14 | 73 3/8 | 285 |
| 10" | 26 | 91 | 10 | 10 ½ | 43 | 16 ½ | 88 | 460 |
| 12" | 30 | 109 | 12 | 12 | 53 | 18 ½ | 106 1/8 | 745 |
| 14" | 36 | 102 | 14 | 14 | 48 | 21 ½ | 99 ¼ | 965 |
| 16" | 40 | 119 | 16 | 17 | 56 | 23 ½ | 116 3/8 | 1340 |
| 18" | 45 | 127 | 18 | 19 | 60 | 26 ½ | 124 | 1850 |
| 20" | 50 | 144 | 20 | 21 | 69 | 29 | 141 ¼ | 2175 |
| 22" | 54 | 161 | 22 | 22 | 78 | 31 | 158 ¼ | 2650 |
| 24" | 60 | 165 | 24 | 24 | 79 | 34 | 162 ¼ | 3400 |
| 26" | 64 | 183 | 26 | 26 | 89 | 36 | 180 ½ | 3850 |
| 28" | 68 | 200 | 28 | 27 | 98 | 38 | 197 ¾ | 4840 |
| 30" | 72 | 216 | 30 | 29 | 107 | 40 | 213 ¾ | 5150 |

Note: Dimensions are in inches, weights are in pounds.

# MAXIM

## OVERVIEW

### Critical Chamber Type Silencer: Expected Attenuation is 25 to 32 dBA

Use a model M32 in residential areas where background noise is present but not objectionable. In these areas, installation of an M32 on an engine exhaust is intended to bring the noise level down to match the ambient noise levels.

Example: In a quieter residential area off main traffic areas and away from constant noise sources.

## FEATURES

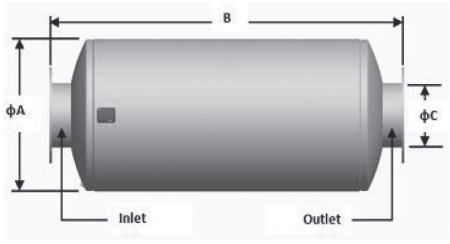
- Advanced acoustical design
- Heavy duty, all welded construction and long service life
- Easily installed in any position
- High heat silicone black finish
- Sizes 1″ to 3 ½″ have MNPT connections
- Two chambers
- Drain connections

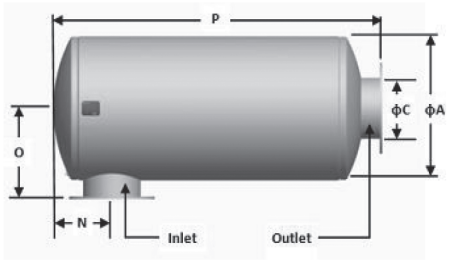
## TYPICAL APPLICATIONS

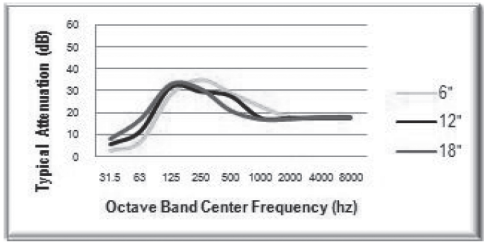
- Internal combustion engine intakes and exhausts
- Blower intakes and discharges
- Vacuum pump discharges

## OPTIONAL ACCESSORIESS

- Explosion relief cover
- Flexible connectors
- Companion flanges
- Cleanout openings
- Side inlet
- Dual inlets
- Side oulet
- Horizontal or vertical support arrangements
- Special paint
- Stainless steel construction: 304, 316 & 321
- Complete range of exhaust accessories




| Size | A | B | C | N | | O | P | Est Wt. |
|---|---|---|---|---|---|---|---|---|
| | | | | Min | Max | | | |
| 1″ | 6 | 20 | 1 | 3 | 5 | 6 | 17 | 10 |
| 1 ½″ | 9 | 30 | 1 ½ | 4 | 11 | 7 ½ | 27 | 23 |
| 2″ | 9 | 30 | 2 | 4 ½ | 11 | 7 ½ | 27 | 24 |
| 2 ½″ | 10 | 34 | 2 ½ | 5 | 12 | 8 | 31 | 33 |
| 3 | 12 | 38 | 3 | 5 ½ | 15 | 9 | 35 | 50 |
| 3 ½″ | 14 | 42 | 3 ½ | 6 | 16 | 10 | 39 | 65 |
| 4″ | 14 | 48 | 4 | 6 | 17 | 11 | 44 | 75 |
| 5″ | 16 | 57 | 5 | 7 | 23 | 12 | 53 | 100 |
| 6″ | 18 | 63 | 6 | 8 | 25 | 13 | 59 | 126 |
| 8″ | 22 | 74 | 8 | 9 ½ | 32 | 15 | 70 | 203 |
| 10″ | 26 | 87 | 10 | 11 ½ | 39 | 17 | 83 | 352 |
| 12″ | 30 | 102 | 12 | 13 | 45 | 19 | 98 | 519 |
| 14″ | 36 | 109 | 14 | 15 ½ | 46 | 23 | 104 | 674 |
| 16″ | 40 | 119 | 16 | 16 ½ | 51 | 25 | 114 | 973 |
| 18″ | 45 | 127 | 18 | 18 | 56 | 27 ½ | 122 | 1165 |
| 20″ | 50 | 137 | 20 | 20 ½ | 61 | 30 | 132 | 1656 |
| 22″ | 54 | 149 | 22 | 22 ½ | 67 | 32 | 144 | 2107 |
| 24″ | 60 | 162 | 24 | 24 | 74 | 35 | 157 | 2566 |
| 26″ | 64 | 183 | 26 | 25 ½ | 85 | 37 | 178 | 3031 |
| 28″ | 68 | 200 | 28 | 26 ½ | 93 | 39 | 195 | 3468 |
| 30″ | 72 | 216 | 30 | 28 | 102 | 41 | 211 | 3992 |

Note: Dimensions are in inches, weights are in pounds

# MAXIM

## OVERVIEW

### Residential Chamber Type Spark Arresting: Expected Attenuation is 20 to 25 dBA

Usa a model MSA11 in residential and light industrial areas for spark arresting capability where background noise is relatively high and constant and the need for higher degrees of silencing is minimal.

Example: In residential neightborhoods having high traffic or light industry with relatively constant background noise. Residents in these areas are typically accustomed to the noise or make some efforts to shield themselves from the ever present background noise. Use of an MSA11 can keep engine exhaust noise within existing noise levels.

## FEATURES

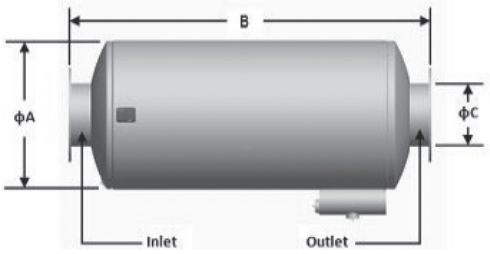
- Advanced acoustical design
- Heavy duty, all welded construction and long service life
- Easily installed in any position
- High heat silicone black finish
- Sizes 1½" to 3½" have MNPT connections
- Two chambers
- Efficient spark arresting
- Drain connections

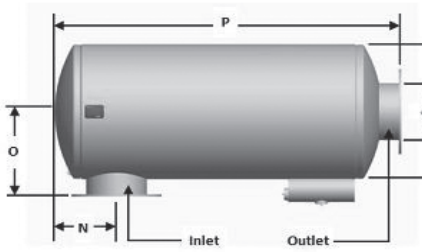
## TYPICAL APPLICATIONS

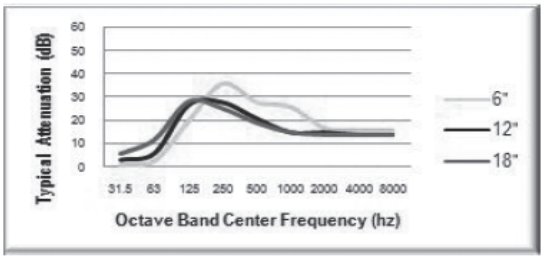
- Internal combustion engine exhausts
- Marine service
- Refinaries / Hazardous environments
- Offshore drilling / Production platforms

## OPTIONAL ACCESSORIESS

- Explosion relief cover
- Flexible connectors
- Companion flanges
- Cleanout openings
- Side inlet
- Horizontal or vertical support arrangements
- Special paint
- Stainless steel construction: 304, 316 & 321
- Complete range of exhaust accessories
- Spark arresting efficiency certification




| Size | A | B | C | N | O | P | Est Wt. |
|---|---|---|---|---|---|---|---|
| 1 ½" | 9 | 20 | 1 ½ | 3 ½ | 7 ½ | 17 | 20 |
| 2" | 9 | 20 | 2 | 4 | 7 ½ | 17 | 21 |
| 2 ½" | 10 | 24 | 2 ½ | 4 ½ | 8 | 21 | 28 |
| 3 | 12 | 26 | 3 | 5 | 9 | 23 | 41 |
| 3 ½" | 14 | 30 | 3 ½ | 5 ½ | 10 | 27 | 55 |
| 4" | 14 | 36 | 4 | 6 | 11 | 32 | 64 |
| 5" | 16 | 43 | 5 | 7 | 12 | 39 | 88 |
| 6" | 18 | 49 | 6 | 7 ½ | 13 | 45 | 110 |
| 8" | 22 | 59 | 8 | 9 ½ | 15 | 55 | 178 |
| 10" | 26 | 64 | 10 | 11 ½ | 17 | 60 | 280 |
| 12" | 30 | 77 | 12 | 13 | 19 | 73 | 416 |
| 14" | 36 | 83 | 14 | 15 ½ | 23 | 78 | 558 |
| 16" | 40 | 90 | 16 | 16 ½ | 25 | 85 | 793 |
| 18" | 45 | 96 | 18 | 18 | 27 ½ | 91 | 950 |
| 20" | 50 | 109 | 20 | 20 ½ | 30 | 104 | 1392 |
| 22" | 54 | 119 | 22 | 22 ½ | 32 | 114 | 1806 |
| 24" | 60 | 125 | 24 | 24 | 35 | 123 | 2187 |
| 26" | 64 | 140 | 26 | 25 ½ | 37 | 135 | 2586 |
| 28" | 68 | 155 | 28 | 26 ½ | 39 | 150 | 2984 |
| 30" | 72 | 166 | 30 | 28 | 41 | 161 | 3445 |

Note: Dimensions are in inches, weights are in pounds

# SEPARATOR
## SPARES & EQUIPMENT

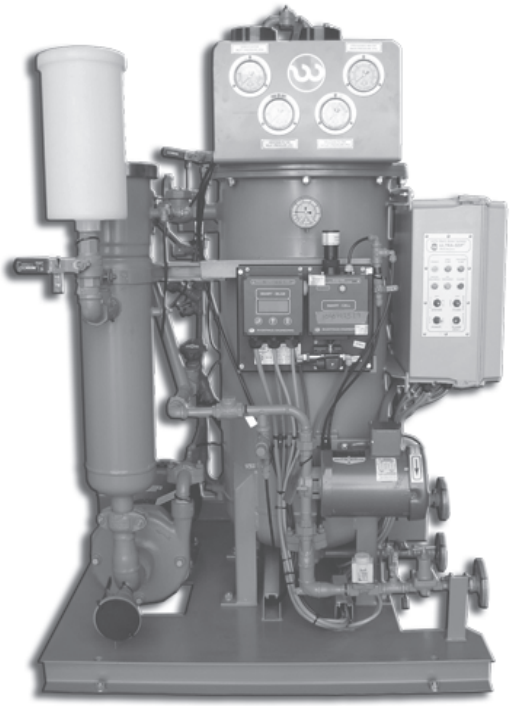
# ULTRA-SEP™ Bilge Water Separator

## Compact Design

The Compact ULTRA-SEP Bilge Water Separators meets your needs for a small unit with a lower capital cost. Ideal for engine rooms where bilge conditions are lighter and installation space tight. Compact units provide the same positive physical barrier and continous 5ppm discharge as Coffin World Water Systems larger ULTRA-SEP systems but in a more compact dimension.

### Here's the difference:

- Superior separation of emulsions with SPIR-O-LATOR® Membrane Technology. The Positive Physical Barrier to oil reduces risk of accidental overboard discharge.
- Continuously discharge with less than 5ppm oil content. Capable of operating in enviromentally sensitive areas.
- ULTRA-SEP has low maintenance, fewer consumables and no waste disposal.
- Small footprint allows easy retrofit installation.
- Manual controls are simple and easy to operate.
- All units are pre-wired and pre-piped to facilitate easy installation and operation. IMO MEPC.107(49) / EC-MED type approved by USCG & ABS and Russian Maritime Register of Shipping.



Dual Membrane ULTRA-SEP 1000-C

## Specifications for ULTRA-SEP Compact Bilge Water Separators

| Model No. | Capacity<br>$m^3/h$<br>GPM | Length<br>mm<br>IN | Width<br>mm<br>IN | Height<br>mm<br>IN | Weight<br>kg<br>LBS | Oily Water Inlet<br>mm IN | Processed Water Outlet Discharge<br>mm IN | Processed Water Outlet Recirculate<br>mm IN | Power<br>kW |
|---|---|---|---|---|---|---|---|---|---|
| US500-C | 0.5<br>2.2 | 890<br>35 | 760<br>30 | 1550<br>61 | 350<br>770 | 25 1.0 | 25 1.0 | 25 1.0 | 3 |
| US1000-C | 1.0<br>4.4 | 965<br>38 | 890<br>35 | 1550<br>61 | 390<br>858 | 25 1.0 | 25 1.0 | 25 1.0 | 4 |

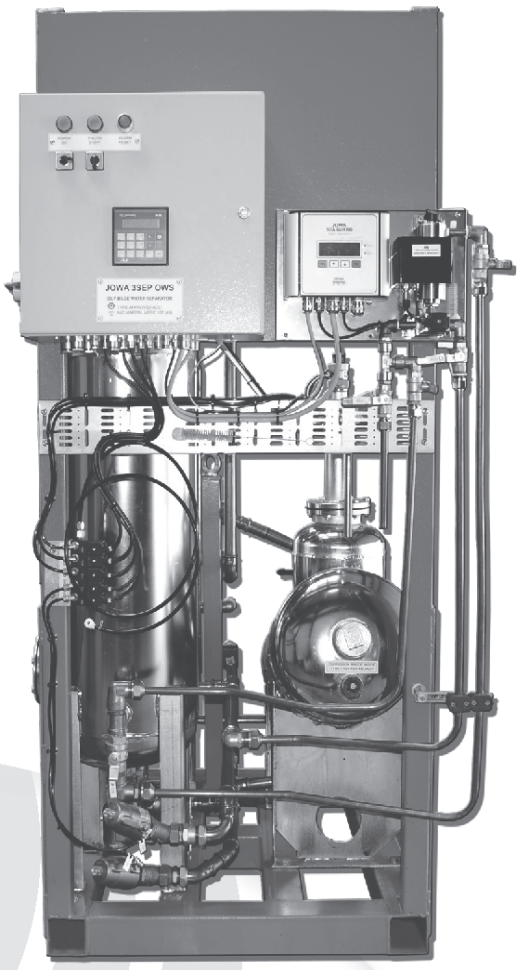
# SEPARATOR SPARES & EQUIPMENT

## JOWA Bilge Water Separator

The 3SEP OWS is a dual stage bilge water separation system utilizing differential specific gravity, coalescence plates and filtration to separate and remove free and emulsified oil. The skid layout is optimized so ensure a small footprint, the 1.0m$^3$/h unit shown below as a footprint of 950 x 760mm. The unit is available in five different capacities: 0.5m$^3$/h, 1.0m$^3$/h, 2.5m$^3$/h, 5.0m$^3$/h and 10.0m$^3$/h.

**Main features:**

- MEPC 107 (49).
- Treated water below 15ppm.
- Separates free and emulsified oil.
- Continuous flow with automatic operation.
- No chemicals required.
- "Plug and play", easy installation.
- Skid design, small footprint.
- High quality materials and parts.
- Tanks made of stainless steel, AISI 316L.
- Can easily be connected to an Emulsion breaking unit for less than 5ppm applications.
- Capacity range 0.5m – 10m$^3$/h.
- Approvals; DNV, CCS, USCG & RMRS.




**Addtional water treatment and environmental protection systems available from Separator Spares & Equipment, LLC:**

- Emulsion breaking unit
- Water discharge monitor
- Fresh water filter
- Silver ion sterilizer
- Hydrophore
- Calorifier
- UV sterilizer
- Fresh water unit
- Sewage treatment plant
- Oil discharge monitor

## MORE STRANGE LAWSUITS

THE PLAINTIFF: Larry W. Bryant
THE DEFENDANT: Gov. James Gilmore of Virginia
THE LAWSUIT: In June 2000, Bryant filed suit to get Gilmore to call a grand jury to look into alien abductions, and to make sure the National Guard knew how to deal with alien attacks. Bryant was quoted as saying he was especially concerned about some "dark, silently floating triangles," which Gilmore had done nothing about.
THE VERDICT: Case dismissed

# SEPARATOR
## SPARES & EQUIPMENT

# MAB 103
# High Speed Disc Stack Centrifuge

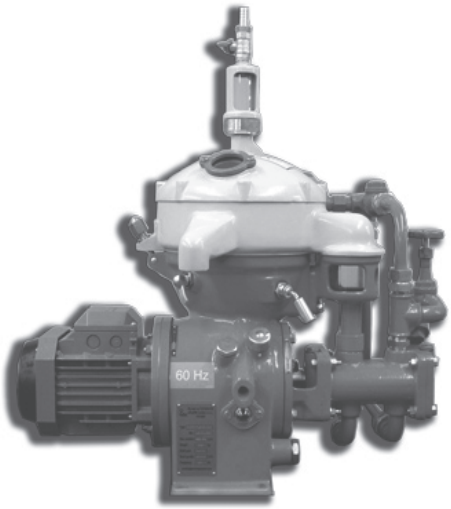
### Machine Application

The MAB 103 high speed disc stack centrifuge is designed for purification or clarification of fuel oils, engine oils, lubricating oils, and various mineral oils used on board marine installations and in industrial applications.

### Separator Design

The MAB 103 is driven by a horizontal driveshaft, friction clutch, worm wheel gear and vertical drive shaft. This is all housed within the separator frame, the worm wheel gear is situated in an oil bath to ensure smooth running. The brake is situated on the top part of the frame; braking directly onto the bowl.

The bowl is fixed onto the vertical drive shaft situated in the top part of the frame. The frame hood is hinged to enable easy access when cleaning or carrying out maintenance.



MAB 103 with motor and pump

### Standard Equipment

- MAB 103 centrifugal separator
- Double pump with fittings
- Motor - 208-230/460 volt, 60 Hz
- Complete set of gravity disks
- Water supply device
- Complete set of tools
- Set of spare parts for extended use
- Set of instruction manuals

### Optional Equipment

- 50 Hz motor
- Water seal alarm
- Electric pre-heater
- Control Panel
- Starter
- Skid

### Separator Throughputs and Capacities

The MAB 103 is suitable for the separation of marine diesel, biodiesel, distillate, lubricating and hydraulic oils. (Throughputs may vary depending on temperature and viscosity of liquids)

Expected Throughput:

- Marine diesel oil: 238 g/h
- Biodiesel: 238 g/h
- Lubricating oil: 145 g/h
- Distillate: 304 g/h
- Hydraulic oil: 251 g/h

**probably from Louisiana if...**

When you're in Baton Rouge you know the difference between the old bridge & the new bridge.

SEPARATOR
SPARES & EQUIPMENT

SEPARATOR SPARES & EQUIPMENT, LLC.

TECHNICAL DATA SHEET
MODEL MAB-103

**Weight:**
(According to Standard Equipment w/ motor and Complete Bowl)
Approx. 225 lbs

**Electric Power Comsumption:**
Idling: 0.40 kW
Running @ Max Capacity: 0.60 kW

**Built-On Inlet Pump:**
Suction Lift: 13 feet
(depending on flow and viscosity)

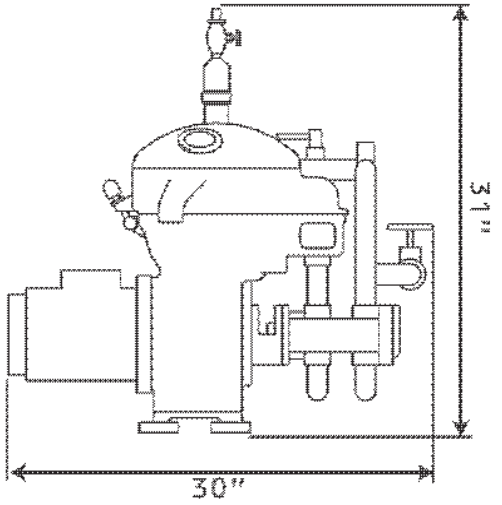
**Built-On Outlet Pump:**
Delivery Head: 49 - 82 feet
(depending on flow and viscosity)

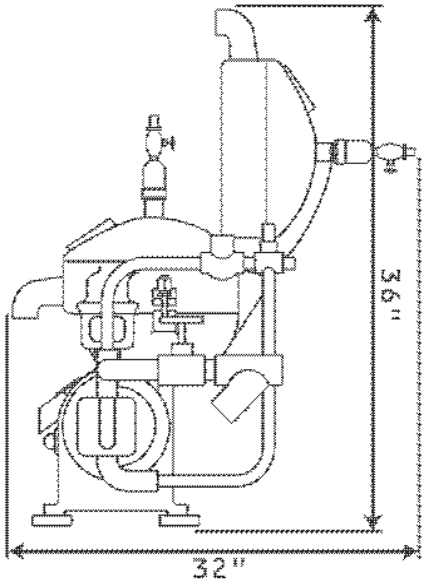
**Dimensions:**
* See Dimensional Drawing for approximate measurements

* Allow additional room for hose connections and machine maintenance

**Notes:**
* Complete instruction manual and documentation ships with each separator

* Manufacturer can change specifications without notice




## MORE STRANGE LAWSUITS

THE PLAINTIFF: S, a California lawyer
THE DEFENDANT: R, his next-door neighbor-also a lawyer THE LAWSUIT: In 1991, R asked S, whose family was playing basketball, to quiet down. S refused ... so R sprayed the family and their basketball court with a hose. S sued, claiming emotional distress. Then R countersued, saying S had reduced the value of his home. And to prove it, he introduced “scientific testimony from acoustical engineers, architects, and real-estate appraisers.”
THE VERDICT: At first the court restricted S to six hours of basketball a day ... But an appeals court ruled that R should just close his window.

# SEPARATOR
## SPARES & EQUIPMENT

# MAB 104
# High Speed Disc Stack Centrifuge

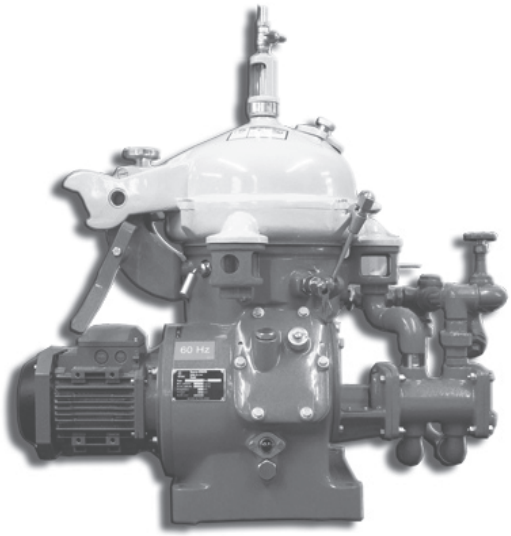
### Machine Application

The MAB 104 high speed disc stack centrifuge is designed for purification or clarification of fuel oils, engine oils, lubricating oils, and various mineral oils used on board marine installations and in industrial applications.

### Separator Design

The MAB 104 is driven by a horizontal driveshaft, friction clutch, worm wheel gear and vertical drive shaft. This is all housed within the separator frame, the worm wheel gear is situated in an oil bath to ensure smooth running. The brake is situated on the top part of the frame; braking directly onto the bowl.

The bowl is fixed onto the vertical drive shaft situated in the top part of the frame. The frame hood is hinged to enable easy access when cleaning or carrying out maintenance.



MAB 104 with motor and pump

### Standard Equipment

- MAB 104 centrifugal separator
- Double pump with fittings
- Motor - 208-230/460 volt, 60 Hz
- Complete set of gravity disks
- Water supply device
- Complete set of tools
- Set of spare parts for extended use
- Set of instruction manuals

### Optional Equipment

- 50 Hz motor
- MAWA Water seal alarm
- Electric pre-heater
- Control Panel
- Starter
- Skid

### Separator Throughputs and Capacities

The MAB 104 is suitable for the separation of marine diesel, biodiesel, distillate, lubricating and hydraulic oils. (Throughputs may vary depending on temperature and viscosity of liquids)

Expected Throughput:

- Marine diesel oil: 396 g/h
- Biodiesel: 396 g/h
- Lubricating oil: 251 g/h
- Distillate: 515 g/h
- Hydraulic oil: 423 g/h

SEPARATOR
SPARES & EQUIPMENT

## SEPARATOR SPARES & EQUIPMENT, LLC.

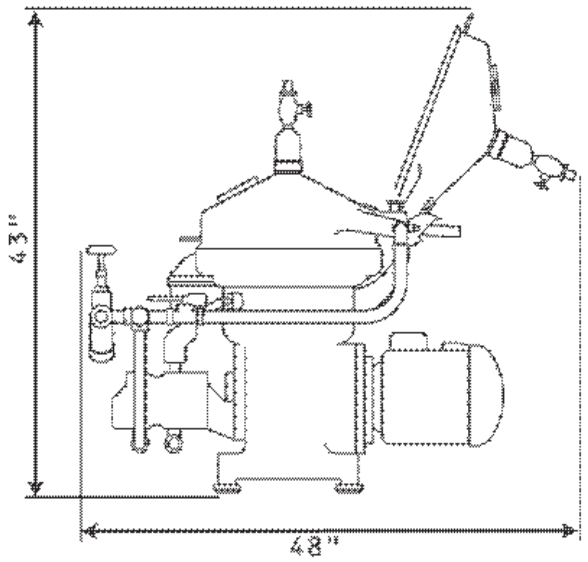
TECHNICAL DATA SHEET
MODEL MAB-104

**Weight:**
(According to Standard Equipment w/ motor and Complete Bowl)
Approx. 421 lbs

**Electric Power Comsumption:**
Idling: 0.50 kW
Running @ Max Capacity: 1.8 kW

**Built-On Inlet Pump:**
Suction Lift: 13 feet
(depending on flow and viscosity)

**Built-On Outlet Pump:**
Delivery Head: 49 - 82 feet
(depending on flow and viscosity)

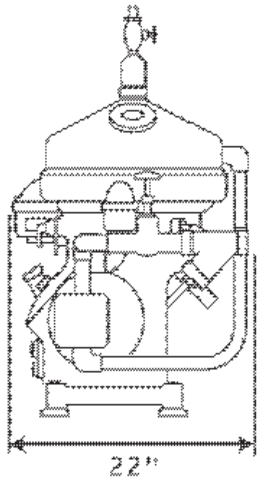



**Dimensions:**
* See Dimensional Drawing for approximate measurements

* Allow additional room for hose connections and machine maintenance

**Notes:**
* Complete instruction manual and documentation ships with each separator

* Manufacturer can change specifications without notice



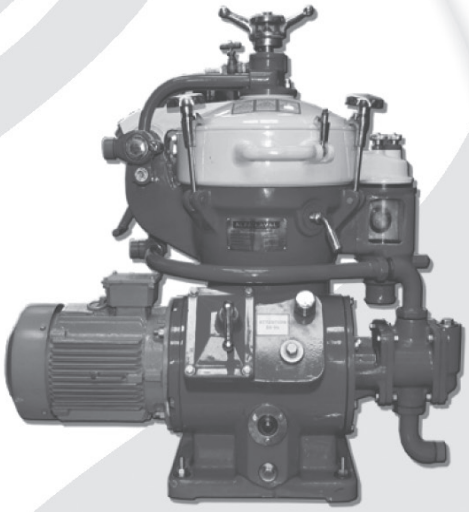

**Dare are only tree directions in Sout' Louisiana.**
When you axe for directions in Sout' Louisiana dare is only tree answers:
1. Down de bayou
2. Up de bayou
3. Cross de bayou
(Dis is specially true in Houma, Louisiana.)

# SEPARATOR
## SPARES & EQUIPMENT

ALFA-LAVAL

### High Quality Replacement Parts

- MAB 102, 103, 104, 204, 205, 206, 207, 209
- MMB 304, 305
- MAPX 204, 205, 207, 209, 309, 313
- MOPX 205, 207, 209, 210, 213 , 306, 309, 310, 313
- FOPX 605, 607, 609, 610, 611, 613, 614
- MSPX 303
- LOPX 705, 707, 709, 710, 713, 714
- MMPX 303, 304, 403, 404
- WHPX 405, 407, 409, 410, 413, 505, 507, 508, 510, 513
- SA/SU 200, 300, 400, 500, 600, 700, 800, 820, 825, 830, 835, 840, 845, 850, 855, 860, 865, 870, 875
- PA/PU 100, 150, 600, 605, 610, 615, 620
- UVPX 507, 510



**Boudreaux is still sick**

A few- days later, Boudreaux goes back to ole Doc Thibodeaux wit a bad cold.
De good Doc gives heem some pills to help relieve de symptoms. mais dev don't do any good. so Boudreaux goes back a couple of days later, still suffering wit' de cold.
Doc Thibodeaux tells him, "Go home. take a hot bath, and den open all de doors and windows. and stand nekked in de draft for about a half hour."
Boudreaux says. "Mais Doe, I'll catch pnewmonia, for sure, if I do dat."
Doc Thibodeaux tells him, "Mais. yeh. mais I know how to cure pnewmonia!"

**Doya know who dat is?**

Boudreaux and Marie were mad at each udder. Dey drove several miles down de road wit'out saying a word after de argument dey had earlier.

Neider one of dem waz gonna give in to de udder an' admit dat dey might be wrong.

As dey passed a barnyard wit a bunch of mules and pigs standin' aroun'.
Marie sarcastically axed Boudreaux. "Ees dat relatives of yours?"

Boudreaux answered. "Yep, dats ma in-laws"

# SEPARATOR SPARES & EQUIPMENT

## PLATE HEAT EXCHANGERS

Whether a traditional plate heat exchanger, brazed plate heat exchanger or a shall and tube heater, Separator Spares & Equipment, LLC can provide a heater to suit your specific project requirements.

SSE offers new and refurbished replacement units for the following brands:

- ALFA LAVAL
- GEA
- SONDEX
- APV
- SWEP
- NIREX
- Many other brands available upon request

**Spare Parts:**

**Plates**

SSE offers both new and reconditioned plates in both stainless steel and titanium.

**Gaskets**

SSE can supply the following materials:

- NBR
- EPDM
- HNBR
- BUTYL
- NEOPRENE

**Heat Exchanger Applications:**

| | |
|---|---|
| **Marine** | Seawater isolation exchanger, central cooling, jacket fresh water cooling, lube oil cooling |
| **Power** | Lubrication oil cooling, diesel engine cooling, heat recovery, auxiliary cooling circuit isolation, geothermal applications |
| **Oil & Gas** | Sea water coolers, crude oil heat treatment |
| **Refinery** | Brine cooling, crude oil/water interchanger, treated/untreated crude oil interchanger |

SEPARATOR
SPARES & EQUIPMENT

## Plate Heat Exchanger Servicing:

### Frame Handling

After shipping your entire heat exchanger assembly to SSE, plates will be removed, cleaned, tested and regasketed. The frame and other components can also be reconditioned. After reassembly, the unit will be hydro-tested. The completed unit can be quickly reinstalled and put into service with the assurance of leak-free operation.

### Cleaning

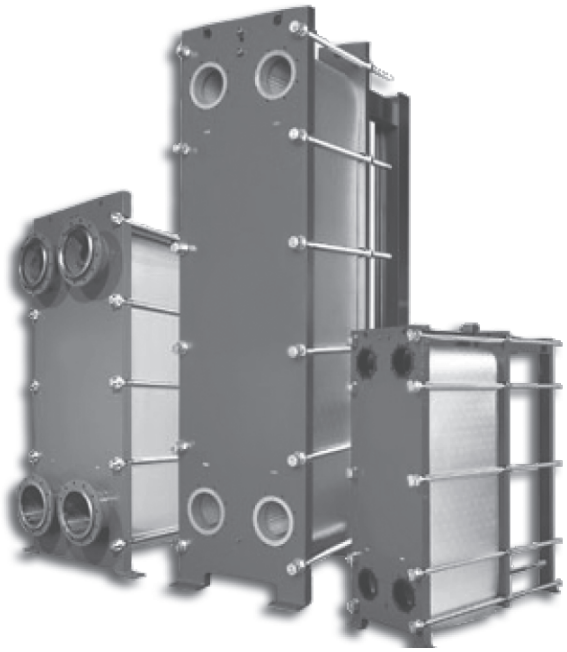
After examing the plates, our engineers will determine the required cleaning and treatment process, this will vary as different cleaning techniques are used. A carefully selected cleaning solution will then be applied to the plastes to ensure the quickest and highest quality refurbishment.

### Dye Penetrant Testing

Every plate is tested with our dye penetrant system to ensure there are no cracks or pinholes. Early detection of plate defects eliminates cross-contamination concerns and saves you costly down-time later.

### Regasketing

The proper adhesives are selected for your gasket and service conditions. Each gasket is cleaned and the plate groove is prepared just prior to bonding.



# SEPARATOR
## SPARES & EQUIPMENT

MITSUBISHI

### High Quality OEM Replacement Parts

- SJ 10F, 15F, 30F, 40F, 50F, 80F, 100F, 120F
- SJ 700 , 2000, 3000, 4000, 6000, 8000
- SJ 10T, 11T, 15T, 16T, 20T, 25T, 30T, 40T, 60T (T/P/EH)
- SJ 20G, 30G, 40G, 50G, 80G, 100G
- OP 1000, 3000, 5000

**Bad Day?**

Two animal rights defenders were protesting the cruelty of sending pigs to a slaughterhouse in Bonn, Germany.
Suddenly, all two thousand pigs broke loose and escaped through a broken fence, stampeding madly.
The two helpless protesters were trampled to death.

## Liquid Controls Features

The LC Meter consists of a housing in which three rotors turn in synchronized relationship within three cylindrical bores with no metal-to-metal contact within the meter element. Each rotor is supported on either end by a bearing plate through which the rotor shafts protrude.

The bladed displacement rotors, alternately move through the two half-cylinder bores of the meter element, while the single blocking rotor rotates within its bore in such a way as to produce a continuous capillary seal between the unmetered, upstream product and the metered, downstream product.

At one end of each rotor shaft is a timing gear. The blocking rotor gear, having twice the number of teeth of each of the displacement rotor gears, rotates at half the RPM of the displacement rotors.

Throughout the meter element the mating surfaces are either flat surfaces or cylindrical faces and sections that are most accurately machined. No oscillating or reciprocating motion within the device permits extremely close and consistent tolerances within the LC meter.

Because the dynamic force exerted by the product flowing through the meter is at right angles to the faces of the displacement rotors, and because the meter is designed so that the rotor shafts are always in horizontal plane, *there is no axial thrust*. Therefore, the rotors automatically seek the center of the stream between the two bearing plates thereby eliminating wear between the ends of the rotors and the bearing plates.

The oversize design of the sleeve bearings, as well as the specially selected materials from which they are made, assure maximum throughput before bearing replacement is required.

As a result the LC Meter provides unequaled accuracy, long operating life and exceptional dependability.

## Accuracy/Performance

### Mechanical Registration


REPEATABILITY: .05% of reading over entire range and beyond.

LINEARITY: Capable of ±.125% or better over a 5:1 range from maximum nominal meter capacity.
LINEARITY: Capable of ±.22% or better over a 10:1 range from maximum nominal meter capacity.
LINEARITY: Capable of ±.5% or better over a 40:1 range from maximum nominal meter capacity.

### Electronic Registration


REPEATABILITY: Capable of .03% of reading over entire range.

LINEARITY: Capable of ±0.10% or better over a 5:1 range from maximum nominal meter capacity.
LINEARITY: Capable of ±0.10% or better over a 10:1 range from maximum nominal meter capacity.
LINEARITY: Capable of ±0.15% or better over a 40:1 range from maximum nominal meter capacity.

Due to the capabilities of multi-point calibration for meters equipped with LectroCount Electronic Registration, superior accuracy (linearity) can be provided as indicated above. For additional details ask for Bulletin #500045.

Note: Accuracy obtainable when all variables remain constant.
Reading/measurements must be equal to a minimum of one minute of flow at selected rate(s).
All accuracy statements based on metering Stoddard Solvent, approximate viscosity 1 CPS.
On higher viscosity products, the average deviation in accuracy will be even less.

- **Superior Accuracy at constant flow:** *With all other conditions being constant,* the LC Meter does not vary more than 0.05% in repeatability over entire range and beyond.
- **Accuracy over the widest range of flow:** The LC Meter has a most ideal *combination of minimum seal or slippage area with lowest pressure differential across this seal.* This results in better accuracy over a wide range of flow than available in any other commercially produced, positive displacement meter.
- **Sustained accuracy:** There is no metal-to-metal contact within the meter element...and *no contact* means *no wear*...no wear means no increase in clearances...no increase in clearances means no increase in slippage...and *no increase in slippage means no deterioration in accuracy*.
- **Accuracy regardless of pressure fluctuations:** Because of the LC Meter's unique dual-case design, the bearing surfaces of the meter element are internally and externally subjected to the same system pressure. Therefore, *the meter element cannot be stretched or distorted,* causing changes in seal area that would adversely affect accuracy.
- **Accuracy regardless of temperature variation:** Due to the *common coefficients of expansion of the critical parts* of the LC Meter element, products can be metered accurately from -40°F (-40°C) to +160°F (+71°C).
- **Accuracy regardless of viscosity:** Due to the minimum area in shear and the smooth flowing characteristics of the LC Meter (no compression or vacuum exerted on the product), the standard LC design has accurately metered product from 150 SSU (25 centipoise) to 1,500,000 SSU (325,000 centipoise) *without calibration change.*
- **Regulatory:** Meets NIST and other international weights & measures accuracy requirements. Meets performance requirements of USA Military Specifications.

# Meter Models

Listed in order of Maximum Nominal Flow Rates. Consult LC Publication #195 for product application and material class recommendations. Maximum Non-Shock Working Pressure (PSI) ratings are based on products at temperatures below 160°F (71°C).

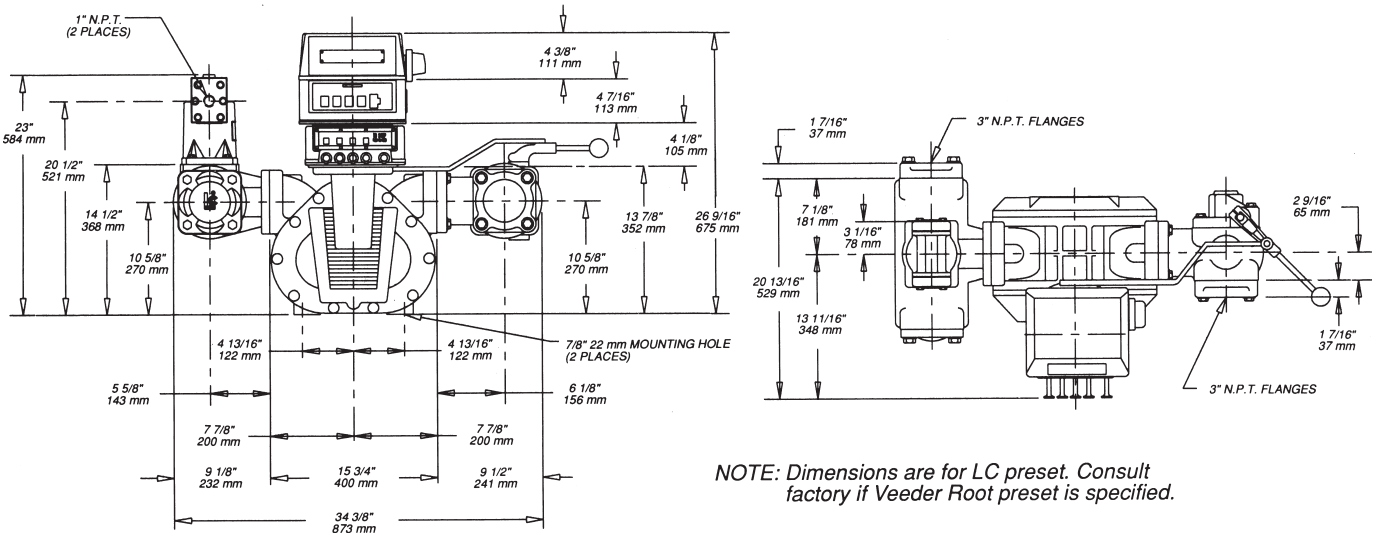
| Maximum Nominal Flow Rate | Standard Flange Size* | Primary Material | Material Classes Available | 150 PSI 10.5 BAR 1034 kPa | 275 PSI 19 BAR 1896 kPa | 300 PSI 19 BAR 2068 kPa | 350 PSI 21 BAR 2068 kPa | 720 PSI 25 BAR 2413 kPa | 1,440 PSI 100 BAR 9927 kPa |
|---|---|---|---|---|---|---|---|---|---|
| 30 GPM (113 L/min.) | 1 1/2″ NPT | Aluminum | 10 | | | | MA-4+ | | |
| 60GPM (227 L/min.) | 1 1/2″ | Aluminum | 1, 2, 3, 4, 10, 14, 16, & 30 | M-5 | M-5** | | MA-5+ | | |
| | 2″ Optional | Stainless Steel | 8 | M-5 | | | | | |
| 100 GPM (380 L/min.) | 2″ | Aluminum | 1, 2, 3, 4, 10, 14, 15 & 16 | M-7 | M-7** | | MA-7+ | | |
| | 1 1/2″ Optional | Stainless Steel | 8 | M-7 | | | | | |
| | | Cast Iron | 7, 27 &37 | M-7 | M-7** | | | | |
| | 2″ | Brass | 20 | M-7 | M-7** | | | | |
| | 2″ | Steel | 1, 2, 7, 10, 14, 16 & 37 | MS-7 | MSAA-7 | MSA-7 | | MSB-7 | MSC-7 |
| 150 GPM (550 L/min.) | 2″ | Aluminum | 1 & 2 | M-10 | M-10** | | | | |
| 200 GPM (757 L/min.) | 3″ | Aluminum | 1, 2, 3, 4, 10, 14, 15 & 16 | M-15 | M-15** | | MA-15+ | | |
| | 3″ | Steel | 1, 2, 10, 14 & 16 | MS-15 | MSAA-15 | MSA-15 | | MSB-15 | MSC-15 |
| | 3″ | Stainless Steel | 8 | | MSAA-15 | | | | |
| 300 GPM (1,136 L/min.) | 3″ | Aluminum | 1 & 2 | M-25 | M-25** | | | | |
| 350 GPM (1,325 L/min.) | 4″ | | | | | | | | |
| | 3″ Optional | Aluminum | 1, 2, 3, 4, 14, 15 & 16 | M-30 | | | | | |
| | 3″ | Cast Iron | 7, 27, 37 & 47 | M-30 | | | | | |
| | 3″ | Steel | 1, 2, 10, 14 & 16 | MS-30 | MSAA-30 | MSA-30 | | MSB-30 | MSC-30 |
| | 3″ | Stainless Steel | 8 | | MSAA-30 | | | | |
| 450 GPM (1,700 L/min.) | 4″ | Aluminum | 1 & 2 | M-40 | | | | | |
| | 3″ | Steel | 1 & 2 | MS-40 | | | | | |
| 600 GPM (2,271 L/min.) | 4″ | | | | | | | | |
| | 6″ Optional | Aluminum | 1, 2, 3, 14 & 15 | M-60 | M-60** | | | | |
| 700 GPM (2,650 L/min.) | 4″ | Steel | 1, 2, 10 & 14 | MS-75 | MSAA-75 | MSA-75 | | MSB75 | MSC-75 |
| 800 GPM (3,000 L/min.) | 6″ | | | | | | | | |
| | 4″ Optional | Aluminum | 2 | M-80 | M-80* | | | | |
| 1,000 GPM (3,785 L/min.) | 6″ | Steel | 1, 2, 10 & 14 | MS-120 | MSAA-120 | MSA-120 | | MSB-120 | MSC-120 |
| | 6″ | Stainless Steel | 8 | | MSAA-120 | | | | |

*Flanges: All standard M-Series Meters are supplied with choice of threaded NPT and BSPT companion flanges...or slip-on welding companion flanges.
MA-Series Meters are supplied with threaded NPT companion flanges.

**275 PSI working pressure available for meter only.
All MS-Series steel case Meters are supplied standard with ANSI flanged connections. DIN Optional. Reducing flanges are available for all steel case Meters.

+MA-Series Meters are all UL Listed for LPG.

## Meter Dimensions




*NOTE: Dimensions are for LC preset. Consult factory if Veeder Root preset is specified.*

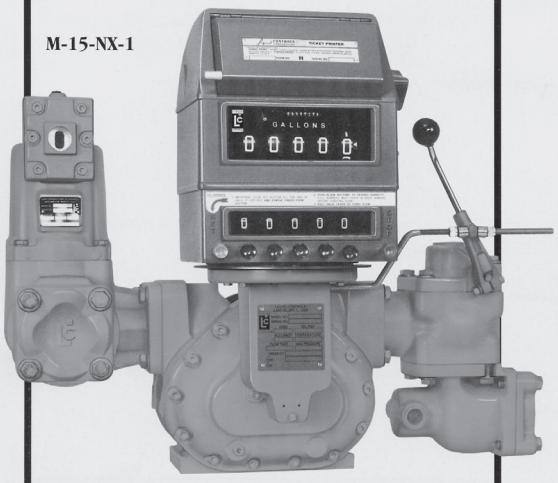
THE LATE MR. KOTIADIS

On November 21, 2000, a Greek businessman named Nikita Kotiadis was arrested at Athens airport after phoning in a bomb threat on his own flight. Reason: Kotiadis was running late, and he wanted to delay the flight from taking off until he could get to the airport. He might have gotten away with it if he'd placed the call himself. But he had his secretary call, and she identified him by name before putting him on the line. Kotiadis made his threat and then raced for the airport, where he was arrested on the spot. He was later sentenced to seven months in prison for "obstructing transportation."

## M™-Series Meters

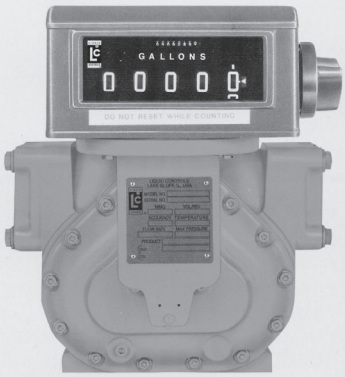
**M-15™**
- Capacity: 200 GPM (760 L/min.)
- Case made of aluminum with meter element components of various materials as required for Classes 1, 2, 3, 4, 14, 15 and 16 construction.
- Choice of 3″ NPT and 3″ BSPT connections. Also 3″ aluminum or steel welded flanges.

M-15-NX-1

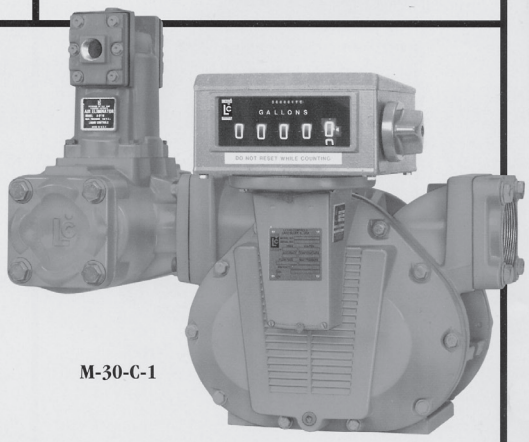



**M-25™**
- Capacity: 300 GPM (1,135 L/min.)
- Case made of aluminum with meter element components of various materials as required for Class 1 & 2 construction for metering refined petroleum products including aviation fuels.
- Supplied in choice of 3″ NPT and 3″ BSPT companion flanges. Also 3″ aluminum or steel welding flanges.

M-25-A-2




**M-30™**
- Capacity: 350 GPM (1,325 L/min.)
- Case made of aluminum with meter element components of various materials as required for Classes 1, 2, 3, 4, 14, 15 and 16 construction.
- Choice of companion flanges with 4″ standard and 3″ optional...NPT or BSPT threads...also aluminum or steel welding flanges.
- Case made of cast iron with meter element components of various materials as required for Classes 7, 27, 37 and 47 construction. Meter flanged 3″ ANSI FF.




M-30-C-1

**Only in America** ..... do we leave cars worth thousands of dollars in the driveway and put our useless junk in the garage.
**Only in America** ..... do we use answering machines to screen calls and then have call waiting so we won't miss a call from someone we didn't want to talk to in the first place.

## ORDERING INFORMATION

PRODUCT:
RATES: MAX. _____ NORMAL _____ MIN._____
OPERATING TEMPERATURES: MAX. _____ NORMAL _____ MIN._____
MAXIMUM NON-SHOCK OPERATING PRESSURE: _____
MAXIMUM VISCOSITY: _____@_____ (TEMP.)
SPECIFIC GRAVITY: _____@_____(TEMP.)
CONSTRUCTION CLASS: _____(1,2,3, ETC.)
ACCESSORY CONFIGURATION: _____ (A,B,C, ETC.)
SEAL MATERIAL: _____ STANDARD BUNA/VITON _____ ALL VITON _____ ALL TEFLON _____
DIRECTION OF FLOW: _____ L TO R _____ R TO L
READ OUT: _____ (GALLONS, DECALITERS, POUNDS, ETC.)
COUNTER AND PRINTER: _____ ZERO/FACE UP _____ ZERO/FACE DOWN _____ ACCUM.
STRAINER BASKET: _____ 40M _____ 80M _____ OTHER _____
FLANGE SIZE: _____
FLANGE TYPE: _____ NPT _____ BSPT _____ SLIP WELD _____ ANSI _____ DIN _____ OTHER
OPTIONS:_____
_____

# Roto-Molded Battery Boxes

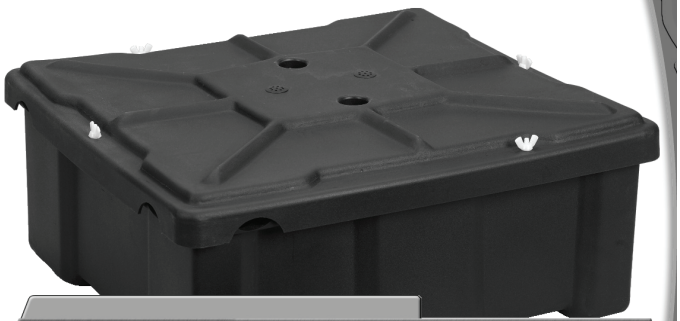
Moeller's complete line of roto-molded battery boxes come in 6 sizes, and are seamlessly designed to tackle the elements for long-life battery performance.

- Non-corrosive high-strength polyethylene construction resists chemicals and rust.
- Maintains tough properties with nominal 0.185" (4.7mm) wall thickness.
- Complies to industry requirements and meets Coast Guard regulations (E10).


042204 23.87"L x 12.50"W x 13.5"H
07252 606mmL x 317mmW x 342mmH
*Holds batteries up to 20.50"L x 9.25"W x 9.50"H / 520mmL x*

042212 17.50"L x 12.87"W x 11.25"H
07257 445mmL x 330mmW x 330mmH
*Holds batteries up to 13.75"L x 10.00"W x 8.50"H / 349mmL x*

042208 25.00"L x 14.87"W x 11.62"H - Low
07253 635mmL x 377mmW x 295mmH - Low
*Holds batteries up to 21.50"L x 11.50"W x 9.62"H / 546mmL x*



042210 27.50"L x 24.50"W x 11.62"H - Low
07255 698mmL x 622mmW x 295mmH - Low
*Holds batteries up to 24.00"L x 21.00"W x 9.50"H / 609mmL x*

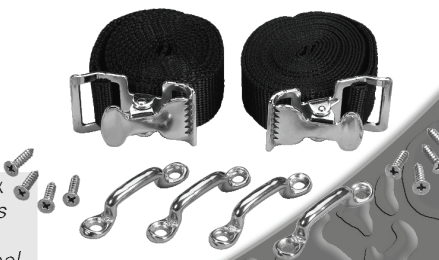
042209 24.37"L x 14.50"W x 14.12"H - High
07254 618mmL x 368mmW x 358mmH - High
*Holds batteries up to 21.00"L x 11.25"W x 9.75"H / 533mmL x*

042211 27.62"L x 24.62"W x 14.00"H - High
07256 701mmL x 625mmW x 355mmH - High
*Holds batteries up to 24.25"L x 21.25"W x 9.50"H / 615mmL x*

## Battery Box Hold Down Kit

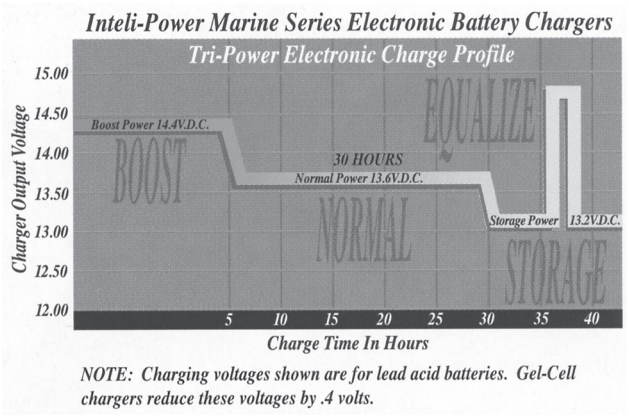
- Quick-release buckle
- Corrosion resistant stainless steel fasteners

| Part No. | | Description |
|---|---|---|
| 035711-10 | 07148 | Hold Down Kit for Topside Fuel Tank & Battery Box *(Kit includes two (2) universal nylon straps with quick-release buckle, four (4) stainless steel* |



**Only in America** ..... do we buy hot dogs in packages of ten and buns in packages of eight.

# Microprocessor-Controlled 3-Stage Battery Management System


Exclusive Tri-Power electronics continuously monitor battery charge status AUTOMATICALLY applying the proper charge voltage when needed:

BOOST MODE - for rapid recharge of dead batteries

NORMAL MODE - keeps batteries charged under normal operating conditions

STORAGE MODE - selects a lower charging voltage of 13.2 Volts to prevent battery gassing and water use during storage

Exclusive EQUALIZATION MODE - activates automatically every 21 hours for 15 minutes to prevent *electrolyte stratification and the beginning of sulfation* on the battery plates.

- Charge up to three separate battery banks simultaneously
- Gel-Cell models available
- Patented reverse battery protection  Intelligent cooling fan
- Regulated output voltage
- Electronic current limiting
- Automatic over temperature shutdown
- Lightweight design offers rugged performance
- Over voltage protection

Made in U.S.A.

Patent numbers: 5,982,643,  5,687,066, 5,600,550, 6,184,649

**Select from Lead Acid or Gel-Cell Battery models.**

**Model: PD2020** 20 Amp Converter/Charger for lead acid batteries Input: 105-130 VAC, 50/60 Hz, 350 Watts
Nominal Output: 13.6 VDC, 20 Amps Dimensions: 10.2”(L) x 7.8”(W) x 4.2”(H) Weight: 4.75 lbs.

**Model: PD2020G** 20 Amp Converter/Charger for Gel-Cel batteries Nominal Output: 13.2 VDC, 20 Amps - All other specifications are the same.

**Model: PD2030** 30 Amp Converter/Charger for lead acid batteries Input: 105-130 VAC, 50/60 Hz, 550 Watts
Nominal Output: 13.6 VDC, 30 Amps Dimensions: 10.2”(L) x 7.8”(W) x 4.2”(H) Weight: 5 lbs.

**Model: PD2030G** 30 Amp Converter/Charger for Gel-Cel batteries Nominal Output: 13.2 VDC, 30 Amps - All other specifications are the same.

**Model: PD2040** 40 Amp Converter/Charger for lead acid batteries Input: 105-130 VAC, 50/60 Hz, 650 Watts
Nominal Output: 13.6 VDC, 40 Amps Dimensions: 10.2”(L) x 7.8”(W) x 4.2”(H) Weight: 5 lbs.

**Model: PD2040G** 40 Amp Converter/Charger for Gel-Cel batteries Nominal Output: 13.2 VDC, 40 Amps -All other specifications are the same.

**Model: PD2050** 50 Amp Converter/Charger for lead acid batteries Input: 105-130 VAC, 50/60 Hz, 900 Watts
Nominal Output: 13.6 VDC, 50 Amps Dimensions: 10.2”(L) x 7.8”(W) x 4.2”(H) Weight: 5.25 lbs.

**Model: PD2050G** 50 Amp Converter/Charger for Gel-Cel batteries Nominal Output: 13.2 VDC, 50 Amps - All other specifications are the same.

# Battery Selector Switches

## FIG. 8603 - HEAVY DUTY BATTERY SELECTOR SWITCH

### Ignition Protected

Make Before Break Design, For Use With Two or More Batteries and Single or Dual Engines. Alternator Field Disconnect to Prevent Damage to Alternator if Accidentally Switched to the "OFF" Position While Engine is Running.

Fiber-Reinforced Polycarbonate Body 1/2 Inch Diameter Brass Battery Terminals
For Use With Systems Under 50 Volts.
Capacity - Rated 380 AMPS Continuous,
850 AMPS Intermittent (5 Minutes on, 5 Minutes Off).


Fig. 8603

### ORDERING INFORMATION

| Dimensions Face Inches | Depth Inches | Dealer Pkg. - 2 Pkgs. 1 Pc. per Pkg. | Weight Pounds |
|---|---|---|---|
| 5-1/4 x 5-1/4 | 3-3/8 | 8603 DP | 2-1/2 |

MARINE UL® LISTED CE

## FIG. 9703 - HEAVY DUTY BATTERY DISCONNECT SWITCH

### Ignition Protected

This Unit is the Same Basic Design and Construction as our 8603 Series, Except it is Offered as a Main Disconnect Switch with a Higher Capacity Rating.

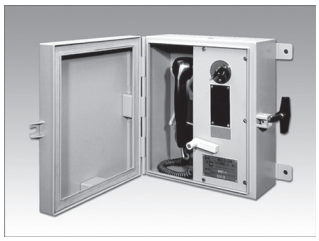
For Use With Systems Under 50 Volts.
Capacity - Rated 450 AMPS Continuous,
1200 AMPS Intermittent (15 seconds on, 5 minutes off).


Fig. 9703

### ORDERING INFORMATION

| Dimensions Face Inches | Depth Inches | Dealer Pkg. - 2 Pkgs. 1 Pc. per Pkg. | Weight Pounds |
|---|---|---|---|
| 5-1/4 x 5-1/4 | 3-3/8 | 9703 DP | 2-1/2 |

MARINE UL® LISTED CE



## MODEL MWTH
Watertight Sound-Powered Telephone

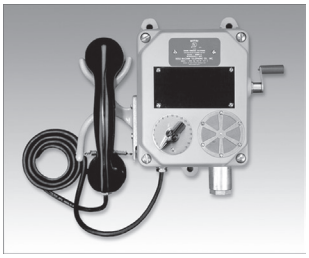
NOTE: Watertight models are housed in a stainless steel enclosure and include all the features of the Backlit System, thus enabling optimal reliability in any marine environment.

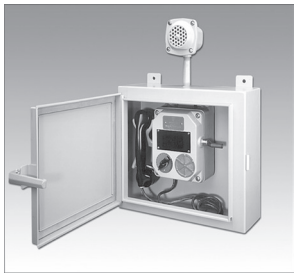
STANDARD FEATURES:

- 14 Gauge Stainless Steel
- Grey Baked Enamel Finish
- NEMA 4X Rated Enclosure
- Dimensions: H 14" X W 12" X D 6-5/8"
- Telephone Handset Equipped with a 1'- 6' Retractable Coiled Cord Furnished with 6" watertight Bell (not shown) as Standard Equipment
- Provisions Have Been Made for Mounting the Bell on Top of enclosure or at a Remote Location if Required.
- Internal Heaters
- US Coast Guard Accepted for Use in Outdoor Locations
- ABS Approved

OPTIONS:

Bell Gongs are also Available in 8" & 10"
Pedestal Mountings
12, 18, or 25 ft. Extended Length coiled cord





## MODELS 562-01 and 563-01
Intrinsically Safe Sound-Powered Telephones

FEATURES:

UL Listed, ABS Approved, USCG Accepted for Operation in Class 1 Group D Hazardous Areas
All Models Available With 8, 12, 19, & 24 Stations

DIMENSIONS:

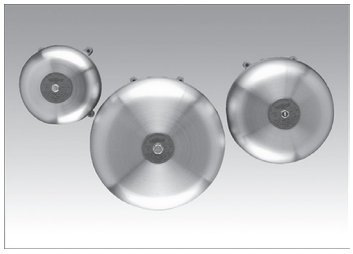
**562-01: Surface Mount Indoor**

| | |
|---|---|
| Height | 7.75" H (20.48cm*) |
| Width | 8.0625" W (66.04cm*) (including handle & handset) |
| Depth | 5.625" D (14.29cm*) |

**563-01: Surface Mount Outdoor (ext. box dimension)**

| | |
|---|---|
| Height | 14.0" (35.56cm) |
| Width | 16.75" (42.55cm*) |
| Depth | 8.25" (20.96cm*) |

NOTE:
Intrinsically-Safe Sound-Powered Telephones are not to be used in systems containing the standard (non-intrinsically-safe) sound-powered telephones.



## FEATURES:

12, 24, 115 VDC
UL listed Class 1, Division 2, Groups A,B,C & D
ABS type approved
6, 8 & 10 inch steel or brass gongs
To order, please specify the type of gong (steel or brass), gong size & voltage.

## EXPLOSION PROOF ALARM BELLS
General Alarm Equipment & Accessories

## DESCRIPTION:
The new Hose-McCann **HL Series Explosion Proof Bell** offers both energy efficiency and cost savings. It Is UL Listed for use in Class 1 , Division 2, Groups A,B,C, and D Hazardous Locations. The **HL Series Bells** are housed in a lightweight, high corrosion-resistant aluminum alloy (Almag-35), and available in three gong sizes: 6,8, and 10-inch diameters. Gongs are available in steel or brass. A wide selection of voltages is available in direct current. The low drain **HL Series Bell** has been designed to minimize the ampere capacity and physical dimensions of the batteries required to operate the general alarm system. The resulting energy savings will reduce the size and current capacity of the cable required for the ship's general alarm system.

## MODEL SW

Standard-Model Sound-Powered Telephone

Wall mounting with 3” internal ringer mounted near the louvered cover. All phones come with a coiled cord (not pictured).

| | |
|---|---|
| Suggested Locations: | Low noise areas |
| USCG Approval: | No. 161.005/51/0 |

Overall Dimensions:

| | |
|---|---|
| Length | 11” (27.94cm) |
| Width | 8.5” (21.59cm) |
| Depth | 7.0” (17.78cm) |
| Net Weight | 9.75 lb. (4.42kg*) |

Mounting Dimensions:

| | |
|---|---|
| Vertical | 4.875” (12.38cm*) |
| Horizontal | 7.0” (17.78 cm) |

Note: Metric measurements followed by an asterisk (*) have been rounded to the nearest hundredth.

- Why is it that doctors call what they do “practice”?
- Why is it that to stop Windows 98, you have to click on “Start”?
- Why is lemon juice made with artificial flavor, and dishwashing liquid made with real lemons?
- Why is the man who invests all your money called a broker?
- Why is the time of day with the slowest traffic called rush-hour?
- Why isn’t there mouse-flavored cat food?
- When dog food is new and improved tasting, who tests it?
- Why didn’t Noah swat those two mosquitoes?
- Why do they sterilize the needle for lethal injections?

## MODEL SE

Standard-Model Sound-Powered Telephone

Wall mounted with 6” external bell

| | |
|---|---|
| Suggested Locations: | Moderately Noisy Areas |
| USCG Approval: | No. 161.005/52/0 |

Overall Dimensions:

| | |
|---|---|
| Length | 11” (27.94cm) |
| Width | 8.5” (21.59cm) |
| Depth | 7.0” (17.78cm) |
| Net Weight | 10 lb. (4.54kg*) |

Mounting Dimensions:

| | |
|---|---|
| Vertical | 7.5” (19.05cm) |
| Horizontal | 4.875” (12.54cm*) |

## MODEL SE-R

Standard-Model Sound-Powered Telephone

Wall mounted with 6” external bell and non-latching relay

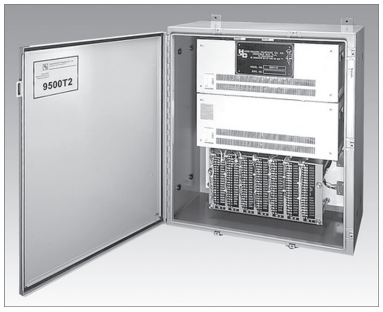
| | |
|---|---|
| Suggested Locations: | High Noise Areas that are not normally manned |
| USCG Approval: | No. 161.005/53/0 |

Overall Dimensions:

| | |
|---|---|
| Length | 11” (27.94cm) |
| Width | 8.5” (21.59cm) |
| Depth | 7.5” (19.05cm) |
| Net Weight | 10 lb. (4.54kg*) |

Mounting Dimensions:

| | |
|---|---|
| Vertical | 4.875” (12.38cm*) |
| Horizontal | 7.0” (17.78cm) |




## 9500T2 SWITCHBOARD

Automatic Dial Telephone Switchboard

DESCRIPTION:

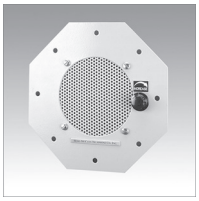
Since the 1990's, Hose-McCann has researched and developeda truly rugged and reliable automatic dial telephone system,especially designed for use on board commercial and military ocean going vessels. Hose-McCann now proudly introduces the 9500T2 Automatic Dial Telephone / Public Address System - a telecommunication system designed for the millenium. The 9500T2 is engineered with a clean, controlled, stable power supply which eliminates the possibility of fluctuating electrical power.

## STANDARD FEATURES:

- Digital / Analog port configuration
- Executive-Right-of-Way
- Call forwarding
- Call transfer
- 3-Digit automatic dialing
- Call conferencing
- 8-hour battery back-up
- Satellite communications interface
- Shore-line interface
- Cellular interface through exchange
- Public address interface for Allcall
- Handsfree talkback
- Programmable priority & access levels
- Built-in relays for audio visual indicators
- Toll restriction
- Selective call routing of incoming calls
- Simultaneous conversations unlimited as to the number of stations available
- Remote Diagnostic/Maintenance (Optional)
- Zone paging public address interface (Optional)
- Background music (Optional)

## CHARACTERISTICS:

- Self-contained unit with stand-alone capability.
- All telephone connections terminated are clearly marked
- All power input connections are clearly marked.
- All audible and visual alarms that are activated with a telephone call are either terminated at the switchboard, or parallel with the telephone and clearly marked.
- INMARSAT connections are terminated at the switchboard.
- Programming from laptop, PC, satellite or modem is accomplished through an RJ-11 plug in a modular jack clearly marked at the switchboard.
- Programming specific to the customer is supplied in three (3) forms: 1 Within the central processor of the switchboard 2 Within the spare processor (recommended spare part) 3 A 3.5" floppy diskette.
- Data ports (if required) are clearly marked at the switchboard.
- A battery back-up is supplied for the switchboard itself.
- Available with unlimited line capacity through modular architecture

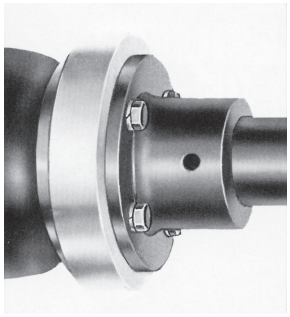


# THE DRIVESAVER

## Total Protection For Your Drive Train

**Absorbs vibration, reducing noise.** THE DRIVESAVER provides a flexible, non-metallic barrier between your transmission and shaft. This barrier reduces not only drive train vibration, but the transmission of vibration and noise to you, your crew and the water. Both you and your vessel are more efficient in this quieter environment.

**Absorbs shock.**
THE DRIVESAVER effectively absorbs thrust and torque from the propeller shaft, as well as excessive shock from changing gears and high speed planing. It also helps control damage and misalignment from torsional engine movement. And it keeps on working, under normal conditions, for the life of the drive train, with no lubrication or maintenance.

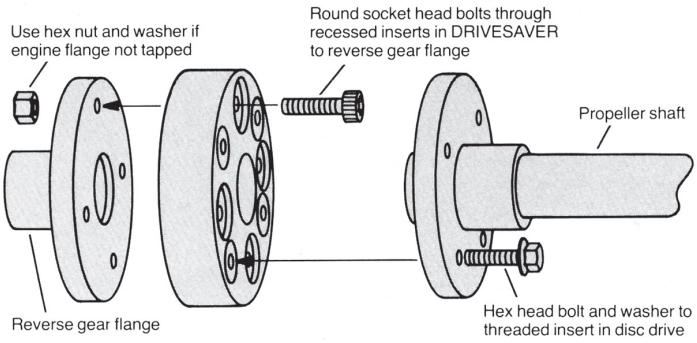


**Prevents electrolysis.**
THE DRIVESAVER provides an impervious barrier that blocks electrical currents from the water. Your engine and transmission are protected from damaging corrosion.

To determine torque rating use this formula:
Engine Horsepower x 5252 x Reduction Ratio
Engine R.P.M.

**Acts as a circuit breaker.**
Repeat users of THE DRIVESAVER install new ones not because an old one wore out, but because of a hidden log, line, or rock that destroyed the coupling. That's right, THE DRIVESAVER was destroyed, not the costly transmission and engine. By acting like a circuit breaker, THE DRIVESAVER absorbs the extreme shock and torque of collision, breaks apart, and leaves your transmission and engine intact. You're back in operation faster, at a minimum cost. That's the kind of total protection you can't afford to be without!

**Installs easily.**
THE DRIVESAVER installs simply and quickly. Without cutting or machining the shaft. And without hauling your boat out of the water. Just separate the drive flanges, insert the coupling, align and bolt.




## Globe Barco Resilient Impellers

**TRIPLE service life** at competitive prices, means less down time and less cost. That's what it's all about.

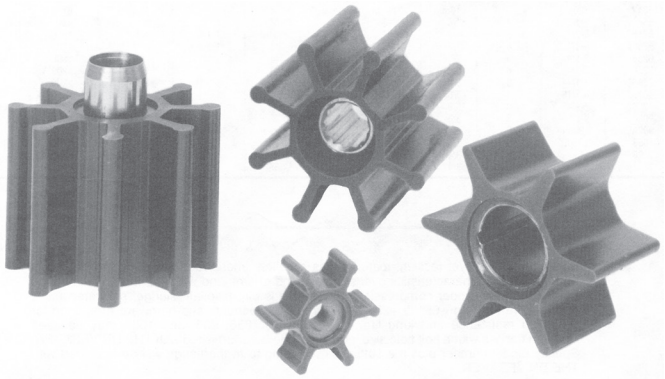
The only impeller in the world guaranteed to **RUN DRY FOR 15 MINUTES! GLOBE/BARCO** impellers are made of elastomer compounds, developed for optimum performance and self lubricating for run dry protection.

All **GLOBE/BARCO** impellers are made from elastomers giving them the combined characteristics and multiple properties of rubber, nitrile, viton and neoprene. This compound (NIPRENE) allows them to **PUMP DIESEL FUEL, ENGINE OIL, AND GASOLINE** without swelling.

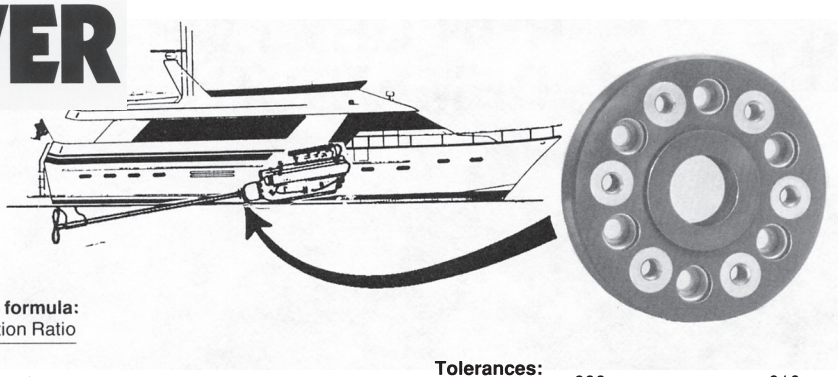
Additionally, **GLOBE/BARCO** impellers have **greater resistance to sand and dirt abrasion.**

**GLOBE/BARCO** manufactures most popular impellers: JABSCO, JOHNSON PUMPS, CATERPILLAR, CRUSADER, CUMMINS DIESEL, DETROIT DIESEL, KOHLER, MERCRUISER, MERLIN, NORTHERN LIGHTS, OBERDORFER, UNIVERSAL, VOLVO, WESTERBEKE, YANMAR and others.

**GLOBE/BARCO** impellers are used by the United States Navy and Coast Guard.



# THE DRIVESAVER



**To determine torque rating use this formula:**

$$\frac{\text{Engine Horsepower} \times 5252 \times \text{Reduction Ratio}}{\text{Engine R.P.M.}}$$

## DRIVESAVER SPECIFICATIONS

**Tolerances:**
Female Pilot: $^{+.000}_{-.010}$ Male Pilot: $^{+.010}_{-.000}$
Other Dimensions: ± 1/64"

| DRIVESAVER Model | Flange Dia. | Number of Bolts | Bolt Dia. | Bolt Circle | Pilot Dia. | Coupling Dia. | Coupling Thickness | Packaged Weight, Pounds | Torque Rating, Ft. Pounds | "Plus Rated," Ft. Pounds |
|---|---|---|---|---|---|---|---|---|---|---|
| 303 | 3 | 3 | 3/8 | 2-1/2 | 1-3/4 | 4 | 11/16 | 1 | 225 | |
| 353 | 3-1/2 | 3 | 3/8 | 2-3/4 | 1-7/8 | 4-5/16 | 11/16 | 1-1/4 | 250 | |
| 354 | 3-1/2 | 4 | 8mm | 2-15/16 | 1-9/16 | 4-1/4 | 1 | 1-1/2 | 300 | |
| 404 | 4 | 4 | 3/8 | 3-1/4 | 2 | 5 | 1 | 1-3/4 | 550 | |
| 404A | 4 | 4 | 3/8 | 3-1/4 | 2-1/2 | 5 | 1 | 1-3/4 | 550 | |
| 404AC | 4 | 4 | 3/8 | 3-1/4 | 2-5/8 | 5 | 1 | 1-3/4 | 550 | |
| 404V | 4 | 4 | 10mm | 8cm | 6cm | 5 | 1 | 1-3/4 | 550 | |
| 404S | 4 | 4 | 3/8 | 9cm | 6cm | 5-1/4 | 1 | 2-1/4 | 550 | |
| 424Y | 100mm | 4 | 10mm | 78mm | 50mm | 4-1/4 | 1 | 1-3/4 | 550 | |
| 454 | 4-1/2 | 4 | 3/8 | 3-3/4 | 2-5/8 | 5-3/8 | 1 | 2-1/4 | 570 | |
| 4756 | 4-3/4 | 6 | 7/16 | 3-7/8 | 2-1/2 | 6 | 1 | 2-3/4 | 675 | 1600 |
| 504 | 5 | 4 | 7/16 | 4-1/4 | 2-1/2 | 6 | 1 | 2-1/2 | 675 | 1600 |
| 504A | 5 | 4 | 3/8 | 4-1/8 | 2-3/4 | 6 | 1 | 2-1/2 | 675 | |
| 504AC | 5 | 4 | 7/16 | 4-1/8 | 2-7/8 | 6 | 1 | 2-1/2 | 675 | |
| 524Y | 120mm | 4 | 10mm | 100mm | 65mm | 5-1/4 | 1 | 2-1/4 | 675 | |
| 554 | 5-1/2 | 4 | 3/8 | 4-5/8 | 3-1/8 | 6-1/2 | 1 | 3 | 720 | |
| 5756 | 5-3/4 | 6 | 1/2 | 4-3/4 | 3 | 6-13/16 | 1-1/8 | 4-1/4 | 1800 | 3000 |
| 5756A | 5-3/4 | 6 | 1/2 | 4-3/4 | 3 | 6-3/8 | 1-1/8 | 4 | 1800 | 3000 |
| 6256 | 6-1/4 | 6 | 7/16 | 5-3/8 | 3-1/4 | 7-1/4 | 1-1/16 | 4-1/4 | 1900 | |
| 7256 | 7-1/4 | 6 | 5/8 | 6 | 3-3/4 | 8-3/8 | 1-3/16 | 8 | 3200 | 4400 |
| 7306Z | 7-1/4 | 6 | 5/8 | 6 | 3-3/4 | 7-1/4 | 1-3/16 | 8 | 2200 | 3200 |
| 8078Z | 8-1/16 | 8 | 5/8 | 6-11/16 | 5-1/2 | 8-1/16 | 1-3/4 | 7-1/2 | 3300 | 4800 |
| 7258Z | 7-1/4 | 8 | 5/8 | 6" | 3-3/4 | 7-1/4 | 1-3/16 | 9 | 2200 | 3200 |
| 908 | 9 | 8 | 5/8 | 7-1/2 | 6 | 11 | 1-3/8 | 12-1/2 | 3000 | 4900 |
| 908AC | 190mm | 8 | 15mm | 155mm | 100mm | 228mm | 1 | 9 | 3000 | 4900 |
| 1058 | 10-1/2 | 8 | 3/4 | 8-3/4 | 5 | 12-1/2 | 1-3/4 | 22 | 4200 | 6500 |
| 1108 | 11 | 8 | 3/4 | 9-1/2 | 6 | 13-1/4 | 1-13/16 | 23-1/2 | 4200 | 6500 |
| 1108A | 11 | 8 | 3/4 | 9 | 6 | 11-3/4 | 1-3/4 | 17-1/2 | 3000 | 4900 |

Elastomer, a stiff, yet resilient material, has excellent energy absorbing properties. It will retain its design characteristics over a long period of time and will return to original shape even after being under compression. It withstands oil, gasoline, sludge, saltwater and a temperature range of -65° to +225°F. All metal components and hardware are plated for corrosion resistance and long life. Model 5756, 7256, 908, and 1058 may be used between flanges with a bolt hole size larger than the bolts furnished with THE DRIVESAVER. Specify model number plus the suffix "B." Bushing to fit the flange will be furnished with THE DRIVESAVER.

**EVER WONDER:**

- Why the sun lightens our hair, but darkens our skin?
- Why women can't put on mascara with their mouth closed?
- Why don't you ever see the headline "Psychic Wins Lottery"?
- Why is "abbreviated" such a long word?
- You know that indestructible black box that is used on airplanes? Why don't they make the whole plane out of that stuff?
- Why don't sheep shrink when it rains?
- Why are they called apartments when they are all stuck together?
- If con is the opposite of pro, is Congress the opposite of progress?
- If flying is so safe, why do they call the airport the terminal?

# THE DRIVESAVER

## SELECTION GUIDE

### ALLISON

| Model | Reduction Ration | DRIVESAVER Model |
|---|---|---|
| M | | 7256 |
| MH | | 908B |
| HYH/HP7700 (9.00) | | 908A |

### CAPITOL

| Model | Reduction Ration | DRIVESAVER Model |
|---|---|---|
| 5HD, 200 | | 4756 |
| 10200, 11200 | | 5756A |
| 10700, 11700 | | 7256 |
| HP500, HP6900 | | 7256 |
| HP7700, HP9400, HP28000 | | 1108 |
| HY6900, HY22000, 4HE-10700 | | 7256 |
| HY24000, HY25000, 4HE-11700 | | 7256 |
| HY7700, HY28000 | | 1108 |
| M105, M125, 2HE/4HE-10200 | | 5756 |
| 2HE/4HE-11200 | | 5756 |

### CRUSADER

| Model | Reduction Ration | DRIVESAVER Model |
|---|---|---|
| V DRIVE 4500 | | 404A |

### HURTH

| Model | Reduction Ration | DRIVESAVER Model |
|---|---|---|
| HBW5, 10, 20, 50, 100, 125 | | 404A |
| HBW150, 150A, 150V, 220, 250, 150V | | 404A |
| HSW360, 360A, 400, 450 | | 504 |
| HSW600, 630, 630A, 630H, 630V | | 504 |
| HBW360, 360A, 400, 450, 600, 630 | | 504 |
| HSW800A, 800V | | 5756 |

### NEWAGE

| Model | Reduction Ration | DRIVESAVER Model |
|---|---|---|
| PRM DELTA | | 404A |
| PRM210/160 | | 504 |
| PRM60, 7.25 PRM 601, 601A | | 7256 |
| PRM602, 602s 5.75" | 1.19, 1.5, 2.0, 2.8 | 5756 |

### PARAGON

| Model | Reduction Ration | DRIVESAVER Model |
|---|---|---|
| | | 353 |
| HF, HB, RO | | 404 |
| P200, P300, P13, PV300 | | 404AC |
| RA, PV400 | | 454 |
| P400 | | 504A |
| PM, PMB, PL, P15 | | 504AC |
| RB | | 554 |
| RC | | 6256 |

### SABB

| Model | Reduction Ration | DRIVESAVER Model |
|---|---|---|
| G, H | | 354 |
| HG, 2HG, GG, 2H, 2GRG | | 404S |

### LOHMANN/STALTER

| Model | Reduction Ration | DRIVESAVER Model |
|---|---|---|
| GVV200A | | 908AC |

### TWIN DISC

| Model | Reduction Ration | DRIVESAVER Model |
|---|---|---|
| MG502-1, MG502 | | 4756 |
| MF5050, 5050A, 5050V | | 5756B |
| 5061, 5061A, 5061V | 1.1, 1.5, 2.0, 2.5, 3.0 | 5756B |
| MG506, 506-1, 506A | 1.1, 1.5, 2.0, 2.5, 3.0 | 5756B |
| MG507-1, 507A-1, 507-2, 507-A | 1.1, 1.5, 2.0 | 5756B |
| MG506, 0506-1, 506A | 4.0, 4.5 | 7256B |
| MG507-1, 507A | 2.5, 3.0 | 7256B |
| MG509 | 1.5, 2.0, 3.0 | 7256B |
| MG5091SC | | 7256B |
| MG5111SC, MG510 | 1.5,. 2.0,. 2.5, 3.0 | 908B |
| MG510A | 1.5, 2.0, 2.5 | 908B |
| MG5114CHP, 5101DC, 509, 510 | 4.0, 4.5 | 1058B |
| MG5111DC, 510 | 4.0, 5.1 | 1058B |
| MG516 | | 1108 |
| GM518-1DC | | 1108A |
| MG5111 (9" flange) | | 908BB |
| MG5111 (10-1/2" flange) | | 1058B |

### UNIVERSAL

| Model | Reduction Ration | DRIVESAVER Model |
|---|---|---|
| ATOMIC 4 | | 353 |

### VOLVO

| Model | Reduction Ration | DRIVESAVER Model |
|---|---|---|
| MB10A, MD38, MD7A, MD11C | | 404V |
| MS, MS3, MS4, A | | 504 |

### WARNER

| Model | Reduction Ration | DRIVESAVER Model |
|---|---|---|
| 71C, INLINE, DIRECT DRIVE, 500 | | 404A |
| 1000, 1500, 70C, 1017, 1029, 2301 | | 404A |
| 71C, 72C, IN LINE, DROP | | 504 |
| CENTER/V DRIVE 5000, 72C, 1004, 1005 | | 504 |
| 1013, 1014, 1017, 1018, 2001 | | 504 |
| 73C, 1006, 1026, 7000 | | 5756 |

### YANMAR

| Model | Reduction Ration | DRIVESAVER Model |
|---|---|---|
| 20M, 20H/G | | 424Y |
| 30M, 30H/G | | 524Y |

### ZF

| Model | Reduction Ration | DRIVESAVER Model |
|---|---|---|
| IRM41A2, 41A3, 504A, 50A3, V2, V3 | | 504 |
| IRM301 A-1, 301P2-2 | | 5756A |
| IRM310 | | 7306Z |
| IRM350 | | 8078Z |
| IRM2201, V, 225A | | 4756 |
| IRM320 | | 1058B |
| IRM220A-1 | | 6068Z |

- **Only in America** ..... do we buy hot dogs in packages of ten and buns in packages of eight.
- **Only in America** ..... do we use the word 'politics' to describe the process so well: 'Poli' in Latin meaning 'many' and 'tics' meaning 'bloodsucking creatures'.
- **Only in America** ..... do they have drive-up ATM machines with Braille lettering.

MARATHON® ELECTRIC

# General Purpose, Three Phase

## Totally Enclosed, Rigid Base

| HP | RPM | VOLTS | FRAME | BRGS. | CAT. NO. | MODEL NO. | MULT. SYMB. | NOM. EFF. | F.L. AMPS | WGHT. LBS. | "C" DIM. | FOOT NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 1/2 | 3600 | 200 | 143T | BALL | **E831** | 143TTTN4003 | E1 | 86.5 | 4.5 | 59 | 10.43 | N |
| | 3600 | 200 | 143T | BALL | **E830** | 143TTFR4003 | E8 | 82.5 | 4.6 | 34 | 12.87 | |
| | 3600 | 208-230/460 | 56 | BALL | G383 | 56T34F5331 | F1 | 80.0 | 4.7-4.6/2.3 | 34 | 11.82 | 20 |
| | 3600 | 208-230/460 | 143T | BALL | **E833**☆ | 143TTTN4001 | E1 | 82.5 | 4.4-4.0/2.0 | 54 | 10.43 | N,20 |
| | 3600 | 208-230/460 | 143T | BALL | **E832**☆ | 143TTFR4001 | E8 | 82.5 | 4.4-4.0/2.0 | 34 | 12.87 | 20 |
| | 3600 | 230/460 | 143T | BALL | **E351**☆ | 143TTTN6001 | E9 | 86.5 | 4.0/2.0 | 54 | 10.43 | N,X |
| | 3600 | 575 | 56 | BALL | G363 | 56T34F5336 | F1 | 80.0 | 1.8 | 30 | 11.82 | |
| | 3600 | 575 | 143T | BALL | **E834** | 143TTFR4005 | E8 | 82.5 | 1.6 | 34 | 12.87 | |
| | 3600 | 575 | 143T | BALL | **E835**☆ | 143TTTN4005 | E1 | 86.5 | 1.6 | 42 | 10.43 | N |
| | 1800 | 200 | 145T | BALL | **E836** | 145TTFR4029 | E8 | 84.0 | 5.1 | 44 | 14.37 | |
| | 1800 | 200 | 145T | BALL | **U601** | 145TTTN4032 | E1 | 84.0 | 5.1 | 63 | 11.43 | N |
| | 1800 | 200-208 | 145T | BALL | H665☆ | 145TTFR5328 | E6 | 80.0 | 5.5-5.9 | 31 | 12.37 | |
| | 1800 | 208-230/460 | 56H | BALL | G365☆ | 56T17F5303 | F1 | 80.0 | 4.8-4.8/2.4 | 30 | 12.32 | 5,20 |
| | 1800 | 230/460 | 145T | BALL | **E352**☆ | 145TTTN6026 | E9 | 84.0 | 4.4/2.2 | 63 | 11.43 | N,X,20 |
| | 1800 | 208-230/460 | 145T | BALL | **E951**☆ | 145TTFR4026 | E8 | 84.0 | 4.6-4.0/2.2 | 45 | 14.37 | 20 |
| | 1800 | 208-230/460 | 145T | BALL | **E837**☆ | 145TTTC4026 | E1 | 84.0 | 4.6-4.2/2.1 | 58 | 11.43 | DS,N,20 |
| | 1800 | 575 | 145T | BALL | **E838**☆ | 145TTFR4038 | E8 | 84.0 | 1.8 | 45 | 14.37 | |
| | 1800 | 575 | 145T | BALL | **E839** | 145TTTN4035 | E1 | 84.0 | 1.8 | 62 | 11.43 | N |
| | 1800 | 575 | 145T | BALL | **E301** | 145TTTN6031 | E9 | 84.0 | 1.8 | 63 | 11.43 | N,X |
| | 1200 | 230/460 | 182T | BALL | **E231**☆ | 182TTTS6076 | E9 | 87.5 | 5.0/2.5 | 112 | 12.71 | N,X,20 |
| | 1200 | 230/460 | 182T | BALL | **E982**☆ | 182TTFR4076 | E8 | 85.5 | 5.0/2.5 | 64 | 14.97 | 20 |
| | 1200 | 230/460 | 182T | BALL | **E823**☆ | 182TTFS4076 | E1 | 85.5 | 5.0/2.5 | 89 | 14.81 | 20 |
| | 900 | 230/460 | 184T | BALL | L410☆ | 184TTFS8102 | E6 | 74.0 | 5.8/2.9 | 94 | 15.81 | 20 |
| 2 | 3600 | 200 | 145T | BALL | **E840** | 145TTFR4005 | E8 | 84.0 | 6.0 | 31 | 13.37 | |
| | 3600 | 200 | 145T | BALL | **E841** | 145TTTN4003 | E1 | 86.5 | 6.0 | 68 | 11.43 | N |
| | 3600 | 208-230/460 | 56H | BALL | G384 | ------ | F1 | 80.0 | 6.6-6.6/3.3 | 39 | 12.32 | 5,20 |
| | 3600 | 208-230/460 | 145T | BALL | **E994**☆ | 145TTFR4001 | E8 | 84.0 | 5.7-5.2/2.6 | 35 | 13.37 | 20 |
| | 3600 | 230/460 | 145T | BALL | **E353**☆ | 145TTTN6001 | E9 | 86.5 | 5.4/2.7 | 64 | 11.43 | N,X,20 |
| | 3600 | 208-230/460 | 145T | BALL | **E842**☆ | 145TTTN4001 | E1 | 84.0 | 5.8-5.4/2.7 | 64 | 11.43 | N,20 |
| | 3600 | 575 | 56H | BALL | G368 | 56T34F5337 | F1 | 80.0 | 2.4 | 26 | 12.32 | 5 |
| | 3600 | 575 | 145T | BALL | **E843** | 145TTFR4007 | E8 | 84.0 | 2.1 | 38 | 13.37 | |
| | 3600 | 575 | 145T | BALL | **E844** | 145TTTN4005 | E1 | 86.5 | 2.1 | 66 | 11.43 | N |
| | 1800 | 200 | 145T | BALL | **E845** | 145TTFR4032 | E8 | 84.0 | 6.4 | 46 | 13.87 | |
| | 1800 | 200 | 145T | BALL | **U606** | 145TTTN4030 | E1 | 85.5 | 6.6 | 67 | 11.43 | N |
| | 1800 | 200-208 | 145T | BALL | H666☆ | 145TTFR5330 | E6 | 82.5 | 6.8-6.8 | 40 | 13.87 | |
| | 1800 | 208-230/460 | 56H | BALL | G369 | 56T17F5326 | F1 | 82.5 | 6.0-5.8/2.9 | 40 | 13.82 | 5,20 |
| | 1800 | 208-230/460 | 145T | BALL | **E952**☆ | 145TTFR4027 | E8 | 84.0 | 6.0-5.6/2.8 | 42 | 13.87 | 20 |
| | 1800 | 230/460 | 145T | BALL | **E354**☆ | 145TTTN6027 | E9 | 85.5 | 6.0/3.0 | 64 | 11.43 | N,X |
| | 1800 | 208-230/460 | 145T | BALL | **E846**☆ | 145TTTC4027 | E1 | 84.0 | 6.0-5.6/2.8 | 63 | 11.43 | DS,N,20 |
| | 1800 | 575 | 145T | BALL | **E847**☆ | 145TTFR4039 | E8 | 84.0 | 2.2 | 42 | 13.87 | |
| | 1800 | 575 | 145T | BALL | **E848**☆ | 145TTTN4040 | E1 | 85.5 | 2.4 | 65 | 11.43 | N |
| | 1800 | 575 | 145T | BALL | **E302**☆ | 145TTTN6030 | E9 | 85.5 | 2.4 | 64 | 11.43 | N,X |
| | 1200 | 230/460 | 184T | BALL | **E232**☆ | 184TTTS6076 | E9 | 88.5 | 6.0/3.0 | 126 | 13.71 | N,X,20 |
| | 1200 | 230/460 | 184T | BALL | **E995**☆ | 184TTFR4076 | E8 | 87.5 | 5.8/2.9 | 72 | 15.97 | 20 |
| | 1200 | 230/460 | 184T | BALL | **E849**☆ | 184TTFS4076 | E1 | 86.5 | 6.0/3.0 | 98 | 15.81 | 20 |
| | 900 | 230/460 | 213T | BALL | L411☆ | 213TTFS8103 | E6 | 75.5 | 8.2/4.1 | 153 | 18.22 | 20 |
| 3 | 3600 | 200 | 182T | BALL | **U600** | ------ | E8 | 85.5 | 8.5 | 64 | 14.97 | |
| | 3600 | 208-230/460 | 56H | BALL | G385 | 56T34F5338 | F1 | 84.0 | 8.4-7.6/3.8 | 51 | 13.52 | 5,20 |
| | 3600 | 208-230/460 | 182T | BALL | **U602**☆ | 182TTFS4001 | E1 | 85.5 | 8.6-7.4/3.7 | 91 | 14.81 | 20 |
| | 3600 | 208-230/460 | 182T | BALL | **E967**☆ | 182TTFR4001 | E8 | 85.5 | 8.2-7.4/3.7 | 65 | 14.97 | 20 |
| | 3600 | 230/460 | 182T | BALL | **E216**☆ | 182TTTS6001 | E9 | 89.5 | 7.6/3.8 | 107 | 12.71 | N,X,20 |
| | 3600 | 575 | 56H | BALL | G386 | ------ | F1 | 84.0 | 3.1 | 41 | 13.52 | 5 |
| | 3600 | 575 | 182T | BALL | **U603** | ------ | E8 | 85.5 | 3.0 | 67 | 14.97 | |
| | 3600 | 575 | 182T | BALL | **U604** | 182TTFS4005 | E1 | 85.5 | 3.0 | 81 | 14.81 | |

Blue shaded areas are Cast Iron Frames ☆ **Stock Model**

Catalog numbers (Cat No.) highlighted in bold blue have efficiency levels that meet or exceed U.S. EPAct and/or NRCan Canadian standards.

**Footnotes:**

DS Dual Source Product: If a Kit is required, contact your Marathon Electric representative for correct kit selection
N Totally Enclosed, Non-Ventilated
X XRI, Ultra High Efficiency Design
5 56H, 143T, and 145T Combination Base with 12 mounting holes
20 Rated 60/50 hertz, 190/380 or 380 volt at next lower horsepower

Continued on next page.

# General Purpose, Three Phase

## Totally Enclosed, Rigid Base

| HP | RPM | VOLTS | FRAME | BRGS. | CAT. NO. | MODEL NO. | MULT. SYMB. | NOM. EFF. | F.L. AMPS | WGHT. LBS. | "C" DIM. | FOOT NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 1800 | 200 | 182T | BALL | L633 ★ | 182TTFR5327 | E6 | 84.0 | 9.9 | 51 | 15.65 | |
| | 1800 | 200 | 182T | BALL | **U605** | 182TTFR4038 | E8 | 87.5 | 9.7 | 77 | 14.97 | |
| | 1800 | 208-230/460 | 182T | BALL | H710 ★ | 182TTFR7726 | E6 | 82.5 | 9.0-8.4/4.2 | 79 | 14.97 | C,20 |
| | 1800 | 230/460 | 56H | BALL | G387 | 56T17F5327 | F1 | 84.0 | 8.6/4.3 | 55 | 14.82 | 20 |
| | 1800 | 208-230/460 | 182T | BALL | **E953** ★ | 182TTFR4026 | E8 | 87.5 | 8.8-8.0/4.0 | 77 | 14.97 | 20 |
| | 1800 | 230/460 | 182T | BALL | **E201** ★ | 182TTTS6026 | E9 | 90.2 | 8.0/4.0 | 82 | 12.71 | N,X |
| | 1800 | 208-230/460 | 182T | BALL | **U607** ★ | 182TTFC4026 | E1 | 87.5 | 8.2-7.6/3.8 | 105 | 14.81 | DS,20 |
| | 1800 | 575 | 182T | BALL | **U608** ★ | 182TTFR4040 | E8 | 87.5 | 3.4 | 77 | 14.97 | |
| | 1800 | 575 | 182T | BALL | **U609** ★ | 182TTFS4030 | E1 | 87.5 | 3.4 | 98 | 14.81 | |
| | 1800 | 575 | 182T | BALL | **E303** ★ | 182TTTS6030 | E9 | 90.2 | 3.2 | 100 | 12.71 | N,X |
| | 1200 | 230/460 | 213T | BALL | **U610** ★ | 213TTFS4076 | E1 | 87.5 | 8.8/4.4 | 155 | 18.20 | 20 |
| | 1200 | 230/460 | 213T | BALL | **E980** ★ | 213TTFW4076 | E8 | 87.5 | 9.2/4.6 | 106 | 18.73 | 20 |
| | 1200 | 230/460 | 213T | BALL | **E233** ★ | 213TTFS6076 | E9 | 89.5 | 8.8/4.4 | 173 | 18.20 | X |
| | 900 | 230/460 | 215T | BALL | L421 ★ | 215TTFS8101 | E6 | 81.5 | 11.4/5.7 | 151 | 19.72 | 20 |
| 5 | 3600 | 200 | 184T | BALL | **U611** | ------ | E8 | 87.5 | 14.3 | 86 | 15.97 | |
| | 3600 | 208-230/460 | 184T | BALL | **U613** ★ | 184TTFS4001 | E1 | 87.5 | 13.0-12.4/6.2 | 107 | 15.81 | 20 |
| | 3600 | 230/460 | 184T | BALL | **E217** ★ | 184TTFS6001 | E9 | 89.5 | 11.8/5.9 | 108 | 15.81 | X |
| | 3600 | 208-230/460 | 184T | BALL | **E963** ★ | 184TTFR4001 | E8 | 87.5 | 13.0-12.4/6.2 | 81 | 15.97 | 20 |
| | 3600 | 575 | 184T | BALL | **U614** | 184TTFR4005 | E8 | 87.5 | 5.0 | 89 | 15.97 | |
| | 3600 | 575 | 184T | BALL | **U615** ★ | 184TTFS4005 | E1 | 87.5 | 5.0 | 106 | 15.81 | |
| | 1800 | 200 | 184T | BALL | **U616** | 184TTFR4038 | E8 | 87.5 | 14.7 | 82 | 15.97 | |
| | 1800 | 200 | 184T | BALL | H668 ★ | 184TTFR7727 | E6 | 84.0 | 15.2 | 76 | 16.97 | |
| | 1800 | 208-230/460 | 184T | BALL | L909 ★ | 184TTFR9339 | E6 | 84.0 | 14.8-13.6/6.8 | 87 | 16.47 | C,20 |
| | 1800 | 208-230/460 | 184T | BALL | **E954** ★ | 184TTFR4026 | E8 | 87.5 | 14.0-12.6/6.3 | 87 | 15.97 | 20 |
| | 1800 | 230/460 | 184T | BALL | **E202** ★ | 184TTFS6026 | E9 | 90.2 | 12.2/6.1 | 117 | 15.81 | X |
| | 1800 | 208-230/460 | 184T | BALL | **U618** ★ | 184TTFC4026 | E1 | 87.5 | 14.0-13.0/6.5 | 112 | 15.81 | DS,20 |
| | 1800 | 575 | 184T | BALL | **U619** ★ | 184TTFR4040 | E8 | 87.5 | 5.1 | 78 | 15.97 | |
| | 1800 | 575 | 184T | BALL | **U620** ★ | 184TTFS4030 | E1 | 87.5 | 5.2 | 89 | 15.81 | |
| | 1800 | 575 | 184T | BALL | **E304** ★ | 184TTFS6030 | E9 | 90.2 | 5.0 | 117 | 15.81 | X |
| | 1200 | 230/460 | 215T | BALL | **E970** ★ | 215TTFW4076 | E8 | 87.5 | 14.0/7.0 | 143 | 20.23 | 20 |
| | 1200 | 230/460 | 215T | BALL | **U621** ★ | 215TTFS4076 | E1 | 88.5 | 13.8/6.9 | 175 | 19.70 | 20 |
| | 1200 | 230/460 | 215T | BALL | **E234** ★ | 215TTFS6076 | E9 | 89.5 | 13.8/6.9 | 203 | 19.70 | X |
| | 900 | 230/460 | 254T | BALL | L412 ★ | 254TTFPA8102 | E6 | 84.0 | 17.0/8.5 | 325 | 23.69 | 20 |
| 7 1/2 | 3600 | 200 | 213T | BALL | **U622** | 213TTFW4003 | E8 | 89.5 | 21.2 | 109 | 20.23 | |
| | 3600 | 230/460 | 213T | BALL | **E972** ★ | 213TTFW4001 | E8 | 89.5 | 18.4/9.2 | 114 | 20.23 | 20 |
| | 3600 | 230/460 | 213T | BALL | **E218** ★ | 213TTTS6001 | E9 | 91.7 | 17.8/8.9 | 192 | 15.69 | N,X |
| | 3600 | 230/460 | 213T | BALL | **U624** ★ | 213TTFS4001 | E1 | 88.5 | 19.0/9.5 | 149 | 18.20 | 20 |
| | 3600 | 575 | 213T | BALL | **U625** | 213TTFW4005 | E8 | 89.5 | 7.4 | 128 | 20.23 | |
| | 3600 | 575 | 213T | BALL | **U671** ★ | 213TTFS4005 | E1 | 88.5 | 7.2 | 197 | 18.20 | |
| | 1800 | 200 | 213T | BALL | **U627** | 213TTFW4028 | E8 | 89.5 | 23.0 | 125 | 18.73 | |
| | 1800 | 200 | 213T | BALL | H669 ★ | 213TTFW7028 | E8 | 87.5 | 22.3 | 103 | 18.73 | |
| | 1800 | 230/460 | 213T | BALL | **E203** ★ | 213TTFS6026 | E9 | 91.7 | 19.2/9.6 | 194 | 18.20 | X |
| | 1800 | 208-230/460 | 213T | BALL | **U629** ★ | 213TTFC4026 | E1 | 89.5 | 21.0-19.6/9.8 | 160 | 18.20 | DS,20 |
| | 1800 | 208-230/460 | 213T | BALL | **E955** ★ | 213TTFW4026 | E8 | 89.5 | 21.6-20.0/10.0 | 112 | 18.73 | 20 |
| | 1800 | 208-230/460 | 213T | BALL | L910 ★ | 213TTFW7326 | E6 | 86.5 | 22.0-21.0/10.5 | 103 | 18.73 | C,20 |
| | 1800 | 575 | 213T | BALL | **U630** ★ | 213TTFW4030 | E8 | 89.5 | 8.0 | 135 | 18.73 | |
| | 1800 | 575 | 213T | BALL | **U631** ★ | 213TTFS4030 | E1 | 89.5 | 8.0 | 220 | 18.20 | |
| | 1800 | 575 | 213T | BALL | **E305** ★ | 213TTFS6030 | E9 | 91.7 | 7.7 | 192 | 19.70 | X |
| | 1200 | 230/460 | 254T | BALL | **U632** ★ | 254TTFL4076 | E8 | 89.5 | 22.0/11.0 | 166 | 22.99 | AL,20 |
| | 1200 | 230/460 | 254T | BALL | **E235** ★ | 254TTFNA6076 | E9 | 91.0 | 19.8/9.9 | 223 | 23.52 | X |
| | 1200 | 230/460 | 254T | BALL | **U633** ★ | 254TTFNA4076 | E1 | 89.5 | 20.4/10.2 | 300 | 23.52 | A,20 |
| | 900 | 230/460 | 256T | BALL | L413 ★ | 256TTFPA8102 | E6 | 85.0 | 24.0/12.0 | 415 | 25.44 | 20 |

Blue shaded areas are Cast Iron Frames

★ **Stock Model**

Catalog numbers (Cat No.) highlighted in bold blue have efficiency levels that meet or exceed U.S. EPAct and/or NRCan Canadian standards.

**Footnotes:**

A NEMA Design A
AL Aluminum Frame Construction
C NEMA Design C torques
DS Dual Source Product: If a Kit is required, contact your Marathon Electric representative for correct kit selection
N Totally Enclosed, Non-Ventilated
X XRI, Ultra High Efficiency Design
20 Rated 60/50 hertz, 190/380 or 380 volt at next lower horsepower

Continued on next page.

MARATHON® ELECTRIC

# General Purpose, Three Phase

## Totally Enclosed, Rigid Base

| HP | RPM | VOLTS | FRAME | BRGS. | CAT. NO. | MODEL NO. | MULT. SYMB. | NOM. EFF. | F.L. AMPS | WGHT. LBS. | "C" DIM. | FOOT NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **10** | 3600 | 200 | 215T | BALL | **U634** | 215TTFW4003 | E8 | 89.5 | 27.6 | 152 | 20.23 | |
| | 3600 | 230/460 | 215T | BALL | **U636**★ | 215TTFS4001 | E1 | 89.5 | 24.0/12.0 | 165 | 19.70 | 20 |
| | 3600 | 230/460 | 215T | BALL | **E969**★ | 215TTFW4001 | E8 | 89.5 | 24.0/12.0 | 128 | 20.23 | 20 |
| | 3600 | 230/460 | 215T | BALL | **E219**★ | 215TTFS6001 | E9 | 91.7 | 23.6/11.8 | 218 | 19.70 | X |
| | 3600 | 575 | 215T | BALL | **U637** | 215TTFS4005 | E1 | 89.5 | 9.6 | 184 | 19.70 | |
| | 3600 | 575 | 215T | BALL | **E821**★ | 215TTFW4005 | E8 | 89.5 | 9.6 | 145 | 20.23 | |
| | 1800 | 200 | 215T | BALL | H670★ | 215TTFW7028 | E6 | 88.5 | 28.8 | 130 | 20.23 | |
| | 1800 | 200 | 215T | BALL | **E822** | 215TTFW4028 | E8 | 89.5 | 29.9 | 125 | 20.23 | |
| | 1800 | 208-230/460 | 215T | BALL | L911★ | 215TTFW7326 | E6 | 87.5 | 29.0-26.0/13.0 | 123 | 20.23 | C,20 |
| | 1800 | 230/460 | 215T | BALL | **E204**★ | 215TTFS6026 | E9 | 91.7 | 25.0/12.5 | 213 | 19.70 | X |
| | 1800 | 208-230/460 | 215T | BALL | **U639**★ | 215TTFC4026 | E1 | 89.5 | 28.4-25.6/12.8 | 180 | 19.70 | DS,20 |
| | 1800 | 208-230/460 | 215T | BALL | **E956**★ | 215TTFW4026 | E8 | 89.5 | 28.0-26.0/13.0 | 130 | 20.23 | 20 |
| | 1800 | 575 | 215T | BALL | **E306** | 215TTFS6030 | E9 | 91.7 | 10.0 | 213 | 19.70 | X |
| | 1800 | 575 | 215T | BALL | **U640**★ | 215TTFW4030 | E8 | 89.5 | 10.4 | 138 | 20.23 | |
| | 1800 | 575 | 215T | BALL | **U641**★ | 215TTFS4030 | E1 | 89.5 | 10.0 | 197 | 19.70 | |
| | 1200 | 230/460 | 256T | BALL | **E236**★ | 256TTFNA6076 | E9 | 91.0 | 26.2/13.1 | 368 | 25.27 | X |
| | 1200 | 230/460 | 256T | BALL | **U642**★ | 256TTFNA4076 | E1 | 89.5 | 26.0/13.0 | 365 | 25.27 | 20 |
| | 1200 | 230/460 | 256T | BALL | **E973**★ | 256TTFL4076 | E8 | 89.5 | 26.0/13.0 | 212 | 26.24 | AL,20 |
| | 900 | 230/460 | 284T | BALL | L414★ | 284TTFP8102 | E6 | 85.5 | 31.0/15.5 | 360 | 26.26 | 20 |
| **15** | 3600 | 200 | 254T | BALL | **U643** | ----- | E8 | 91.0 | 40.3 | 164 | 22.99 | AL |
| | 3600 | 230/460 | 215T | BALL | **U670**★ | 215TTFW4007 | E8 | 90.2 | 36.0/18.0 | 140 | 20.23 | 20 |
| | 3600 | 230/460 | 254T | BALL | **U644**★ | 254TTFPA4001 | E1 | 90.2 | 36.0/18.0 | 370 | 23.69 | 20 |
| | 3600 | 230/460 | 254T | BALL | **E220**★ | 254TTFNA6001 | E9 | 91.7 | 35.0/17.5 | 384 | 23.52 | X |
| | 3600 | 230/460 | 254T | BALL | **E977**★ | 254TTFL4001 | E8 | 91.0 | 35.0/17.5 | 265 | 22.99 | AL,20 |
| | 3600 | 575 | 254T | BALL | **U645** | 254TTFL4005 | E8 | 91.0 | 14.0 | 196 | 22.99 | AL |
| | 3600 | 575 | 254T | BALL | **U638** | 254TTFPA4005 | E1 | 90.2 | 14.4 | 270 | 23.69 | |
| | 1800 | 200 | 254T | BALL | H623★ | 254TTFL5747 | E6 | 88.5 | 44.4 | 178 | 22.99 | AL |
| | 1800 | 200 | 254T | BALL | **U646** | 254TTFL4027 | E8 | 91.0 | 46.0 | 190 | 22.99 | AL |
| | 1800 | 208-230/460 | 254T | BALL | L912★ | 254TTFL5772 | E6 | 88.5 | 42.0-39.0/19.5 | 190 | 24.74 | AL,C,20 |
| | 1800 | 208-230/460 | 254T | BALL | **E996**★ | 254TTFL4026 | E8 | 91.0 | 42.0-40.0/20.0 | 178 | 22.99 | AL,20 |
| | 1800 | 230/460 | 254T | BALL | **E205**★ | 254TTFNA6026 | E9 | 92.4 | 37.6/18.8 | 322 | 23.52 | X |
| | 1800 | 208-230/460 | 254T | BALL | **U647**★ | 254TTFC4026 | E1 | 91.0 | 41.0-38.0/19.0 | 324 | 23.69 | DS,20 |
| | 1800 | 575 | 254T | BALL | **U648**★ | 254TTFNA4030 | E1 | 91.0 | 15.6 | 341 | 23.52 | |
| | 1800 | 575 | 254T | BALL | **E307**★ | 254TTFNA6030 | E9 | 92.4 | 15.0 | 326 | 23.52 | X |
| | 1800 | 575 | 254T | BALL | **E997**★ | 254TTFL4030 | E8 | 91.0 | 16.0 | 198 | 22.99 | AL |
| | 1200 | 230/460 | 284T | BALL | **E237**★ | 284TTFN6076 | E9 | 91.7 | 40.8/20.4 | 483 | 27.82 | X |
| | 1200 | 230/460 | 284T | BALL | **E978**★ | 284TTFN4076 | E1 | 90.2 | 40.0/20.0 | 568 | 27.88 | |
| | 900 | 230/460 | 286T | BALL | L415★ | 286TTFP8102 | E6 | 86.5 | 45.0/22.5 | 453 | 27.76 | 20 |
| **20** | 3600 | 230/460 | 256T | BALL | **E221**★ | 256TTFNA6001 | E9 | 92.4 | 46.8/23.4 | 385 | 25.27 | X |
| | 3600 | 230/460 | 256T | BALL | **E974**★ | 256TTFL4001 | E8 | 90.2 | 47.0/23.5 | 198 | 24.74 | AL,20 |
| | 3600 | 230/460 | 256T | BALL | **U649**★ | 256TTFNA4001 | E1 | 90.2 | 47.0/23.5 | 334 | 25.27 | 20 |
| | 3600 | 575 | 256T | BALL | **U650** | 256TTFNA4005 | E1 | 90.2 | 18.8 | 300 | 25.27 | |
| | 1800 | 200 | 256T | BALL | **U651** | 256TTFL4027 | E8 | 91.0 | 58.7 | 181 | 26.24 | AL |
| | 1800 | 200 | 256T | BALL | H274 | 256TTFL5027 | E6 | 88.5 | 60.0 | 190 | 24.74 | AL |
| | 1800 | 208-230/460 | 256T | BALL | **E965**★ | 256TTFL4026 | E8 | 91.0 | 55.0-51.0/25.5 | 178 | 26.24 | AL,20 |
| | 1800 | 208-230/460 | 256T | BALL | L913★ | 256TTFL5043 | E6 | 88.5 | 56.0-52.0/26.0 | 172 | 24.74 | AL,C,20 |
| | 1800 | 230/460 | 256T | BALL | **E206**★ | 256TTFNA6026 | E9 | 93.0 | 48.2/24.1 | 368 | 25.27 | X |
| | 1800 | 208-230/460 | 256T | BALL | **U652**★ | 256TTFC4026 | E1 | 91.0 | 55.0-51.0/25.5 | 376 | 25.44 | DS,20 |
| | 1800 | 575 | 256T | BALL | **E308**★ | 256TTFNA6030 | E9 | 93.0 | 19.3 | 368 | 25.27 | X |
| | 1800 | 575 | 256T | BALL | **E998**★ | 256TTFL4030 | E8 | 91.0 | 20.4 | 201 | 26.24 | AL |
| | 1800 | 575 | 256T | BALL | **U653**★ | 256TTFNA4030 | E1 | 91.0 | 20.0 | 341 | 25.27 | |
| | 1200 | 230/460 | 286T | BALL | **E238**★ | 286TTFN6076 | E9 | 91.7 | 53.6/26.8 | 515 | 27.88 | X |
| | 1200 | 230/460 | 286T | BALL | **E968**★ | 286TTFN4076 | E1 | 90.2 | 54.0/27.0 | 425 | 27.88 | 20 |
| | 900 | 230/460 | 324T | BALL | L416★ | 324TTFP8104 | E6 | 87.5 | 64.0/32.0 | 586 | 28.82 | 20 |

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**Footnotes:**

AL Aluminum Frame Construction
C NEMA Design C torques
DS Dual Source Product: If a Kit is required, contact your Marathon Electric representative for correct kit selection
X XRI, Ultra High Efficiency Design
20 Rated 60/50 hertz, 190/380 or 380 volt at next lower horsepower

Continued on next page.

## LARGER MOTORS AVAILABLE

**“The scientific racism of Nazi Germany killed forty million and attempted genocide against Europe’s Jews. The scientific socialism of the Communist countries killed a hundred million (and still counting) people around the globe. As the Soviet dissident Vladimir Bukovsky has noted, people in the West routinely invoke the Spanish Inquisition as an example of religious horror. And they are right to do so. But the Inquisition, in the course of three centuries, and after legal procedures of a sort, killed fewer people- probably around three thousand- than the Soviet Union killed on an average day.”**

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**“We make men without chests and we expect of them virtue and enterprise,” C. S. Lewis writes. “We laugh at honor and we are shocked to find traitors in our midst. We castrate and bid the geldings be fruitful.”**