Generating Significant Inertial-Pneumatic Compression.

Figure 15 on page 95 illustrates how inertial-pneumatic compression occurs in the Inertial-Pneumatic Electric Power System. The orbiting or rotating body of matter is the typical pneumatic particle B , which is only one of millions of such particles in the Pneumatic Mass within the Rotor Assembly . Its center of gravity describes the orbital circle E in space as it orbits or rotates about the center O on the radius r in the critical time period (t) . The direction of rotation is counter-clockwise as indicated at D .

The center of rotation O is actually the centerline of the hollow Shaft which suspends the Rotor Assembly. The circle A illustrates the inner surface of the Restraining Agent which is the outermost part of the Rotor Assembly. The Restraining Agent is rigidly secured to the Shaft by two other parts of the Rotor Assembly called End Closures , thereby fixing the radius r at its specified operational length.

The typical pneumatic particle B , along with the millions of other particles in the Pneumatic Mass, is forced to rotate in precise unison with Restraining Agent surface A by the Impellor which is another central part of the Rotor Assembly which is mounted through a slot in the Shaft and interfaces to surface A of the Restraining Agent at its outer ends.

System forces that tend to sustain orbital or rotational velocity and the critical time period (t) at their specified constant operational level are: 1) the forward motion inertia,or first inertial image, of the particle B and the millions of other particles in the Pneumatic Mass, 2) the forward motion inertia , or first inertial image, of the Rotor Assembly and 3) the rotational thrust power delivered by the two

Thrusters of the Rotor Assembly. They all apply their respective forces tangentially in the direction of rotation as indicated at L.

System forces that tend to reduce orbital or rotational velocity and to increase critical time period (t), are: 1) acceleration of replacement particles to the Pneumatic Mass and 2) system friction and 3) the product electrical load on the system Generator Assemblies. They all apply their respective forces tangentialy against rotation as indicated at M.

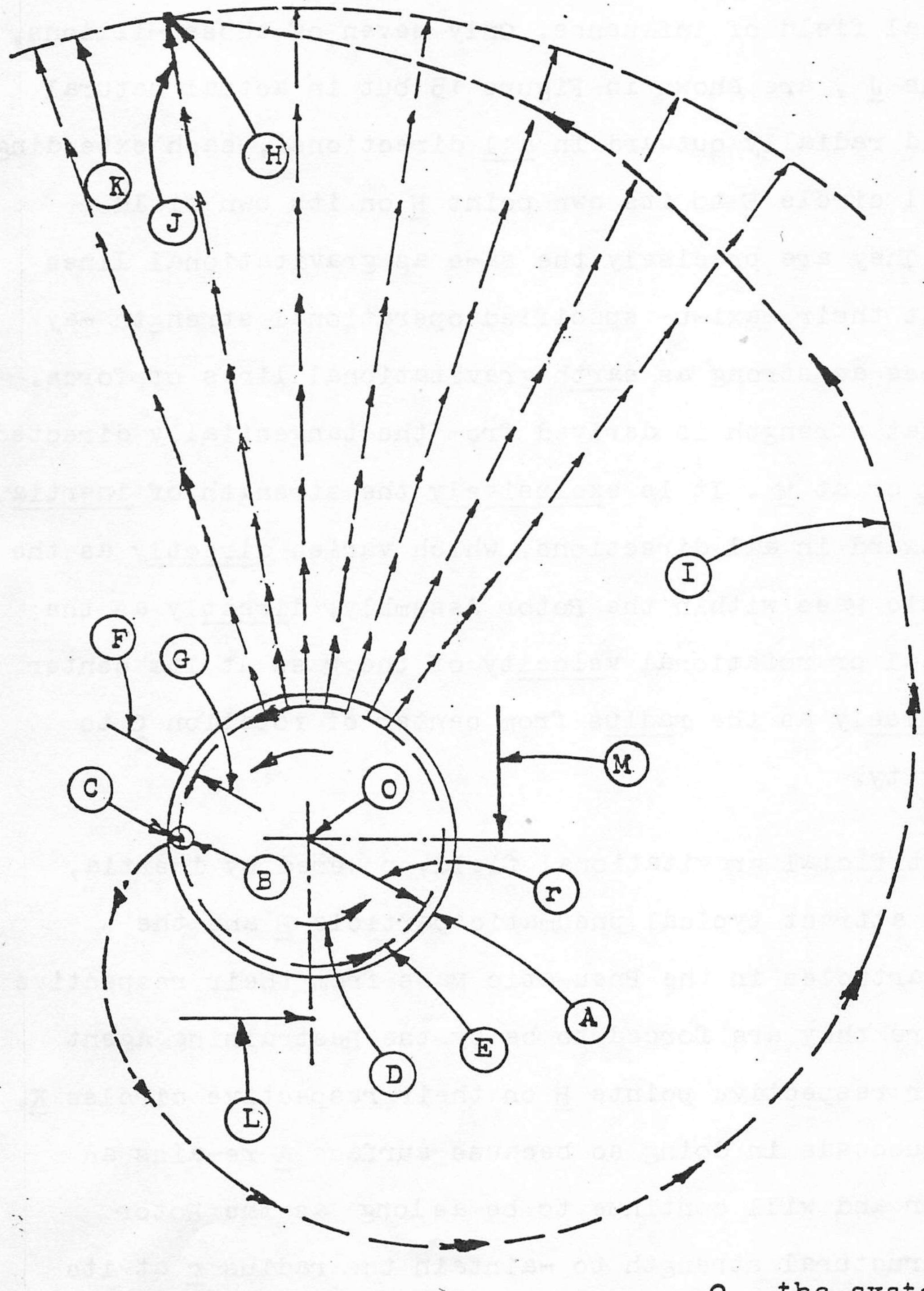


Figure 15

In accordance with information presented in Chapter Two of this work, during the first revolution about center O, the system's inertial field of influence is clearly defined and its outer extremity is illustrated by the circle segment K which is described in space on the radius OH. Millions of inertial lines of force ,which may also be correctly identified as artificial gravitational lines of force,acting radially outward between orbital circle E and field boundary circle K , comprise the inertial field of influence. Only seven of those millions, typified by the line J , are shown in Figure 15 but in actual natural practice they extend radially outward in all directions , each extending from its own orbital circle E to its own point H on its own field boundary circle K. They are precisely the same as gravitational lines of force except that their maximum specified operational strength may be over 500,000 times as strong as earth gravitational lines of force. Not one ounce of that strength is derived from the tangentially directed forces applied at L or at M. It is exclusively the strength of inertia, acting radially outward in all directions, which varies directly as the mass of the Pneumatic Mass within the Rotor Assembly, directly as the square of the orbital or rotational velocity of the Mass at its center of gravity and inversely as the radius from center of rotation O to Mass center of gravity.

This very strong artificial gravitational field, powered by inertia, constantly seeks to attract typical pneumatic particle B and the millions of other particles in the Pneumatic Mass from their respective orbital circles,where they are forced to be by the Restraining Agent surface A , to their respective points H on their respective circles K. However, it never succeeds in doing so because surface A remains an impenetrable barrier and will continue to be as long as the Rotor Assembly has the structural strength to maintain the radius r at its constant specified operational level. Consequently, particle B and the other particles in the Pneumatic Mass are constantly drawn with great force toward surface A, one particle on top of the other. Naturally, each particle senses great pressure on it from adjacent particles from all sides and this is the essence of Inertial-Pneumatic Compression.

Naturally, millions of second inertial images are constantly being accelerated from their respective points C to their respective points H through their respective involute curve paths of motion as typified by path I. However, this is important only to equation derivation analysis such as that in Chapter Two of this work and will not be considered further in this Chapter Three. Suffice to state in this chapter that the size, configuration and strength of the inertial field was clearly defined in Chapter Two and this chapter will confine itself to analysis of the effects of that field on the Pneumatic Mass within the Rotor Assembly of a typical Inertial-Pneumatic Electric Power System, which is a compressible fluid medium.

In accordance with Newton's third law of motion regarding action and reaction, the Restraining Agent surface A reacts to the radially outward directed inertial-pneumatic pressure, as indicated at G, with its statically directed holding force Fr, as indicated at F in Figure 15. This interface of surface A to the exterior surface of the Pneumatic Mass within the Rotor Assembly is where the maximum inertial-pneumatic pressure is developed, at zero cost in external input energy and zero effect on the tangentially directed forces indicated at L and M. It is this maximum pneumatic pressure increase developed by the field of inertial influence that is utilized by the Thrusters of the Rotor Assembly as the pressure differential across each of them for their conversion of pneumatic pressure power to rotational power, the second of the three energy conversions in the system. Thruster entrance reservoirs are radially outward openings in Restraining Agent surface A.

Figure 16, below left, illustrates to an approximate scale of one-eighth inch equals one inch, the Pneumatic Mass within the Rotor Assembly of a proposed 400 kilowatt prototype Inertial-Pneumatic Electric Power System and the operational field of inertial influence surrounding it. Item 1 is the inertial or artificial gravitional field, item 2 is the Pneumatic Mass within the Rotor Assembly and item 3 is one of millions of inertial or gravitational lines of force in the field.

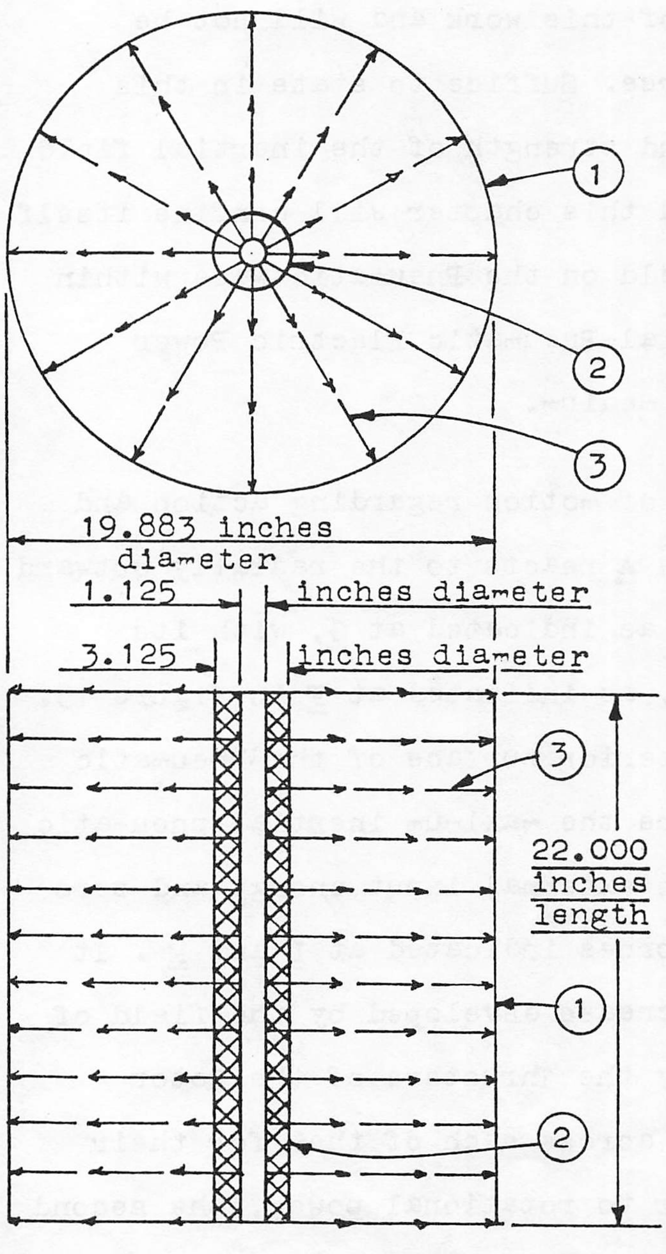


Figure 16

This proposed prototype is a two-Thruster system and the reader might be wondering why the configuration of the Pneumatic Mass is so long compared to its relatively small inside and outside diameters.

Extensive design, fabrication and testing of experimental Rotor Assemblies has clearly indicated that the diameters must be as small as practically possible to provide the best opportunity for system finalizing designers to design a Rotor Assembly that will successfully withstand the enormous inertial bursting forces atacking its weakest section as it rotates at perhaps as high a rate as 120,000 RPM. It has further clearly indicated that a certain minimum standard air volume of Pneumatic Mass per Thruster is essential for maximum inertial-pneumatic compression efficiency. The standard air volume of the Mass in Figure 16 is 146.868 cubic inches which provides 73.434 cubic inches of Pneumatic Mass for each of its two Thrusters. This will result in an inertial-pneumatic compression operational efficiency of approximately 95% . This subject matter will be explored and explained comprehensively in Chapter Five which addresses the effect of pneumatic flow on system efficiencies and productivity. The other dimension of the Pneumatic Mass that is important to this Chapter Three is its exterior surface area which is 215.985 square inches.

If the finalizing designers of the proposed 400 kilowatt prototype system should specify that the maximum safe operational rate of Rotor Assembly rotation is 120,000 RPM, what would the maximum possible increase in pneumatic pressure from Pneumatic Mass inner surface to its outer surface be if the maximum safe Rotor Assembly environmental pressure was specified at 2000 psig at 52°F. temperature? The maximum possible increase in pressure from inertial-pneumatic compression can occur only with zero pneumatic flow through the system, since this provides for 100% efficient inertial-pneumatic compression, and the spiral factor ,which will be fully explained in subsequent chapters, will have a value of one.

The fundamental inertial-pneumatic compression equation is as follows:

$$Pi = \frac{.000028416 \; Sf \; W \; r \; N^2}{A}$$, in which:

Pi = the pneumatic pressure increase , in psig ,that is , pounds per square inch guage , as distinguished from absolute pressure, from Pneumatic Mass inner surface to its outer surface.

Sf = the spiral factor, which is the measure of inertial-pneumatic compression efficiency as affected by pneumatic flow rate through the system. In the operational mode it will always have a value of less than one.

W = the earth gravity weight in pounds of the Pneumatic Mass within the Rotor Assembly.

r = the radius in inches from the center of rotation, which is the axial centerline of the Shaft, to the center of gravity of the Pneumatic Mass, which is an imaginary cylindrical plane passed through the length of the Mass which divides the Mass into two equal parts by earth gravity weight.

N = the number of revolutions about the axial centerline, completed by the Pneumatic Mass and the Rotor Assembly that houses and governs it, in a one minute time period.

= RPM.

A = the area in square inches of the exterior surface of the Pneumatic Mass within the Rotor Assembly.

.000028416 = a constant lifted intact from published and accepted equations for the value of centrifugal force. It is derived from the conversion of rotational velocity from feet per second to revolutions per minute when the radius of rotation is in inches.

The compression equation, above, must be applied in a series of effects, because each effect produces an increase in the W and r factors which in turn produces an increase in the pressure increase, Pi. However extensive analysis experience has clearly indicated that **for most** accurate results the effects should be repeated until an increase in the value of Pi from one effect to the next is less than one per cent. The reader will note that as each effect increases Pi ,the average density of the Pneumatic Mass also increases thereby increasing the W factor and its center of gravity moves radially outward increasing r.

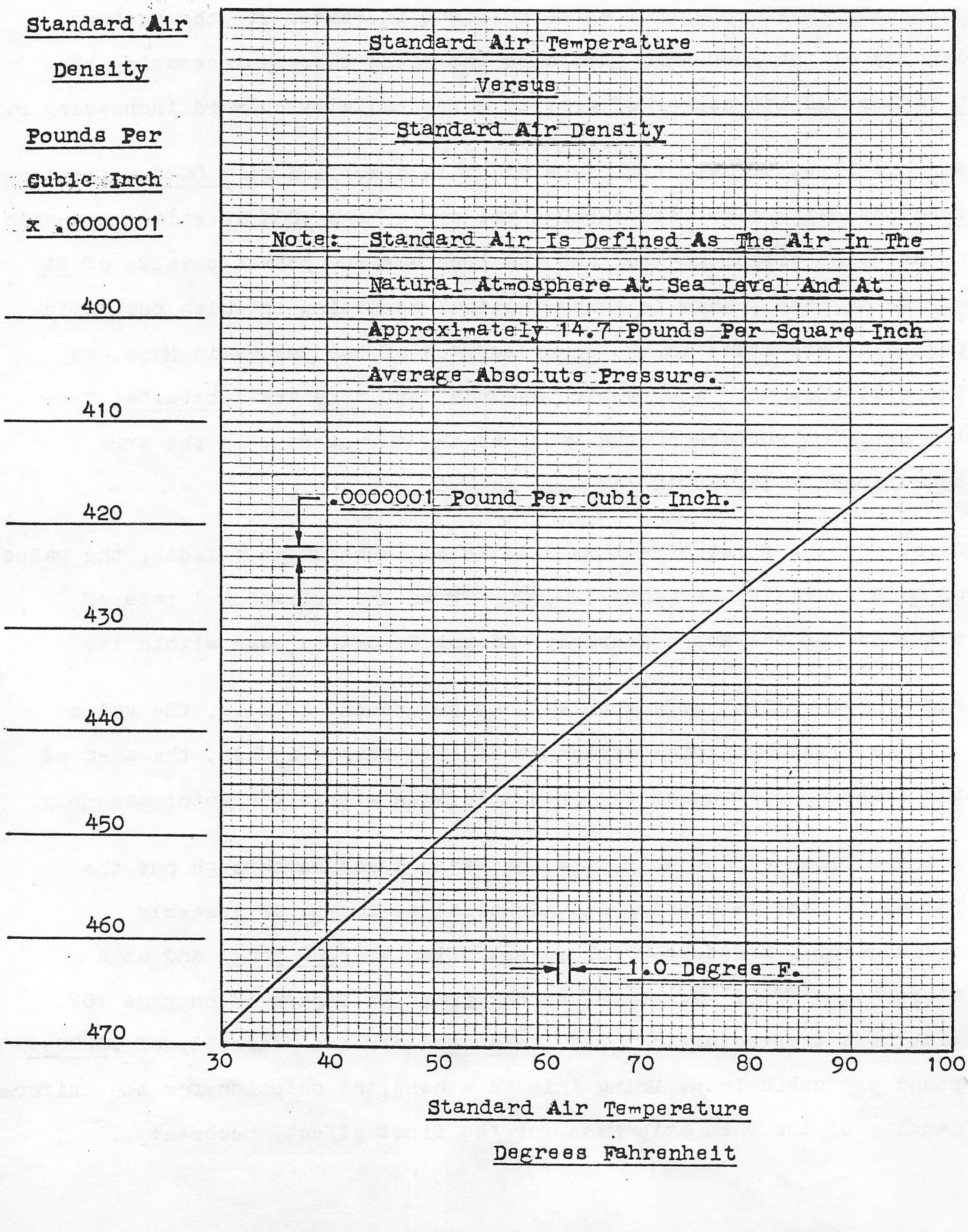
For the first effect, the value of Sf is specified at 1.0000 reflecting zero pneumatic flow rate through the system and 100% inertial-pneumatic compression efficiency so that the true maximum possible value of Pi may be defined . This is a hypothetical condition in which pneumatic particles are added to the inner surface of the Pneumatic Mass, as inertial-pneumatic compression demands, but none are subtracted from the exterior surface of the Mass, as the Thrusters , in the true operational mode, would normally demand.

Also, for the first effect as well as all subsequent effects, the value of N is specified as being 120,000 RPM as the operational rate of rotation for the Rotor Assembly and the Pneumatic Mass within it.

Also for the first effect as well as subsequent effects, the value of A is fixed by system design at 215.985 square inches, the area of the exterior surface of the Pneumatic Mass within the Rotor Assembly.

For the first effect only, the pneumatic pressure through out the Pneumatic Mass is uniform and identical to the Rotor Assembly environmental pressure which is specified at 2000 psig and at a temperature of 52^{o} F. Note, on the graph in Figure 17 on page 102, that at a temperature of 52^{o} F., standard air has a density of .0000449 pound per cubic inch. Using this as a base,the solution for the uniform density of the Pneumatic Mass,for the first effect, becomes:

Figure 17


Standard Air Density
Pounds Per
Cubic Inch
x .0000001
400
410
420
430
440
450
460
470
Standard Air Temperature
Versus
Standard Air Density
Note: Standard Air Is Defined As The Air In The Natural Atmosphere At Sea Level And At Approximately 14.7 Pounds Per Square Inch Average Absolute Pressure.
.0000001 Pound Per Cubic Inch.
1.0 Degree F.
30
40
50
60
70
80
90
100
Standard Air Temperature
Degrees Fahrenheit

$$D\ avg = \frac{2000 + 14.7}{14.7} \times .0000449 = \underline{.0061537} \text{ pound per cubic inch.}$$

Note that pressure in psig is converted to pressure in atmospheres, (atms) and then multiplied by the standard air density at 52° F.

The standard air volume of the Pneumatic Mass is fixed by system design at 146.868 cubic inches. Then the solution for the value of W for the first effect becomes: W = 146.868 x .0061537 = .904 pound.

Since density through out the Pneumatic Mass is uniform, the radius r from center of rotation to Mass center of gravity is identical to that to the center of Mass volume, for the first effect only. Thus the solution for r for the first effect becomes:

$$\frac{146.868}{2} = ((3.1416 \times r^2) \times 22.000) - (3.1416 \times .5625^2 \times 22.000)$$

$$\text{and } 3.1416\ r^2 = \frac{73.434 + 21.868}{22.000} \text{ and } r^2 = \frac{73.434 + 21.868}{3.1416 \times 22.000}$$

$$\text{Then } r = \sqrt{\frac{73.434 + 21.868}{69.115}} = \sqrt{1.379} = \underline{1.174} \text{ inches.}$$

In subsequent solutions for r for second and other effects, the values 21.868 and 69.115 will remain constant since they are fixed by system design. Since the value 73.434 , however, represents the standard air volume of the inner half of the Pneumatic Mass, it will increase from one effect to the next as Mass pressure and density is redistributed.

Then the solution for the first effect value of Pi becomes:

$$Pi = \frac{.000028416 \times 1 \times .904 \times 1.174 \times 120{,}000 \times 120{,}000}{215.985}$$

$$= \underline{2011} \text{ psig.}$$

The solution for second effect value of W becomes:

$$D\ min = \frac{2000 + 14.7}{14.7} \times .0000449 = \underline{.0061537} \text{ lb / cu in}$$

$$D\ max = \frac{4011 + 14.7}{14.7} \times .0000449 = .0122961 \text{ lb /cu in}$$

$$D\ avg = \frac{.0122961 + .0061537}{2} = .0092249 \text{ lb /cu in}$$

Then second effect $W = 146.868 \times .0092249 = 1.355$ lbs.

$$\frac{W}{2} = \frac{1.355}{2} = .6775 \text{ lb.}$$

The solution for second effect r becomes:

$$D\ avg\ inner\ half = \frac{.0061537 + .0092249}{2} = .0076893 \text{ lb /cu in}$$

$$Volume\ inner\ half = \frac{.6775}{.0076893} = 88.109 \text{ cubic inches}$$

$$Second\ effect\ r = \sqrt{\frac{88.109 + 21.868}{69.115}} = \sqrt{1.591} = 1.261 \text{ inches}$$

The solution for the second effect value of Pi becomes:

$$Pi = \frac{.000028416 \times 1 \times 1.355 \times 1.261 \times 120,000 \times 120,000}{215.985}$$

$$= 3237 \text{ psig.}$$

The solution for third effect W becomes:

$$D\ min = \frac{2000 + 14.7}{14.7} \times .0000449 = .0061537 \text{ lb /cu in}$$

$$D\ max = \frac{5237 + 14.7}{14.7} \times .0000449 = .0160409 \text{ lb /cu in}$$

$$D\ avg = \frac{.0160409 + .0061537}{2} = .0110973 \text{ lb /cu in}$$

Third effect $W = 146.868 \times .0110973 = 1.630$ lbs

$$\frac{W}{2} = \frac{1.630}{2} = .815 \text{ lb.}$$

The solution for third effect r becomes:

$$D\ avg\ inner\ half = \frac{.0061537 + .0110973}{2} = .0086255 \text{ lb /cu in}$$

Volume inner half $= \frac{.815}{.0086255} = \underline{94.487}$ cubic inches

Third effect r $= \sqrt{\frac{94.487 + 21.868}{69.115}} = \sqrt{1.683} = \underline{1.297}$ inches

---

The solution for third effect value of Pi becomes:

$$Pi = \frac{.000028416 \times 1 \times 1.630 \times 1.297 \times 120{,}000 \times 120{,}000}{215.985}$$

$= \underline{4005}$ psig.

The solution for fourth effect value of W becomes:

D min $=$ .0061537 lb /cu in.

D max $= \frac{6005 + 14.7}{14.7} \times .0000449 = \underline{.0183867}$ lb /cu in

D avg $= \frac{.0183867 + .0061537}{2} = \underline{.0122702}$ lb /cu in

Fourth effect W $= 146.868 \times .0122702 = \underline{1.802}$ lbs

$\frac{W}{2} = \frac{1.802}{2} = \underline{.901}$ lb.

The solution for fourth effect value of r becomes:

D avg inner half $= \frac{.0061537 + .0122702}{2} = \underline{.0092119}$ lb /cu in

Volume inner half $= \frac{.901}{.0092119} = \underline{97.808}$ cubic inches

Fourth effect r $= \sqrt{\frac{97.808 + 21.868}{69.115}} = \sqrt{1.731} = \underline{1.316}$ inches

---

The solution for fourth effect value of Pi becomes:

$$Pi = \frac{.000028416 \times 1 \times 1.802 \times 1.316 \times 120{,}000 \times 120{,}000}{215.985}$$

$= \underline{4493}$ psig

The solution for fifth effect value of W becomes:

$$D\ min = .0061537 \text{ lb /cu in}$$

$$D\ max = \frac{6493 + 14.7}{14.7} \times .0000449 = .0198772 \text{ lb /cu in}$$

$$D\ avg = \frac{.0198772 + .0061537}{2} = .0130154 \text{ lb /cu in}$$

$$\text{Fifth effect } W = 146.868 \times .0130154 = 1.912 \text{ lbs}$$

$$\frac{W}{2} = \frac{1.912}{2} = .956 \text{ lb.}$$

The solution for the fifth effect value of r becomes:

$$D\ avg \text{ inner half} = \frac{.0061537 + .0130154}{2} = .0095845 \text{ lb /cu in}$$

$$\text{Volume inner half} = \frac{.956}{.0095845} = 99.744 \text{ cubic inches}$$

$$\text{Fifth effect } r = \sqrt{\frac{99.744 + 21.868}{69.115}} = \sqrt{1.760} = 1.327 \text{ inches}$$

The solution for fifth effect value of Pi becomes:

$$Pi = \frac{.000028416 \times 1 \times 1.912 \times 1.327 \times 120{,}000 \times 120{,}000}{215.985}$$

$$= 4807 \text{ psig}$$

The solution for sixth effect value of W becomes:

$$D\ min = .0061537 \text{ lb /cu in}$$

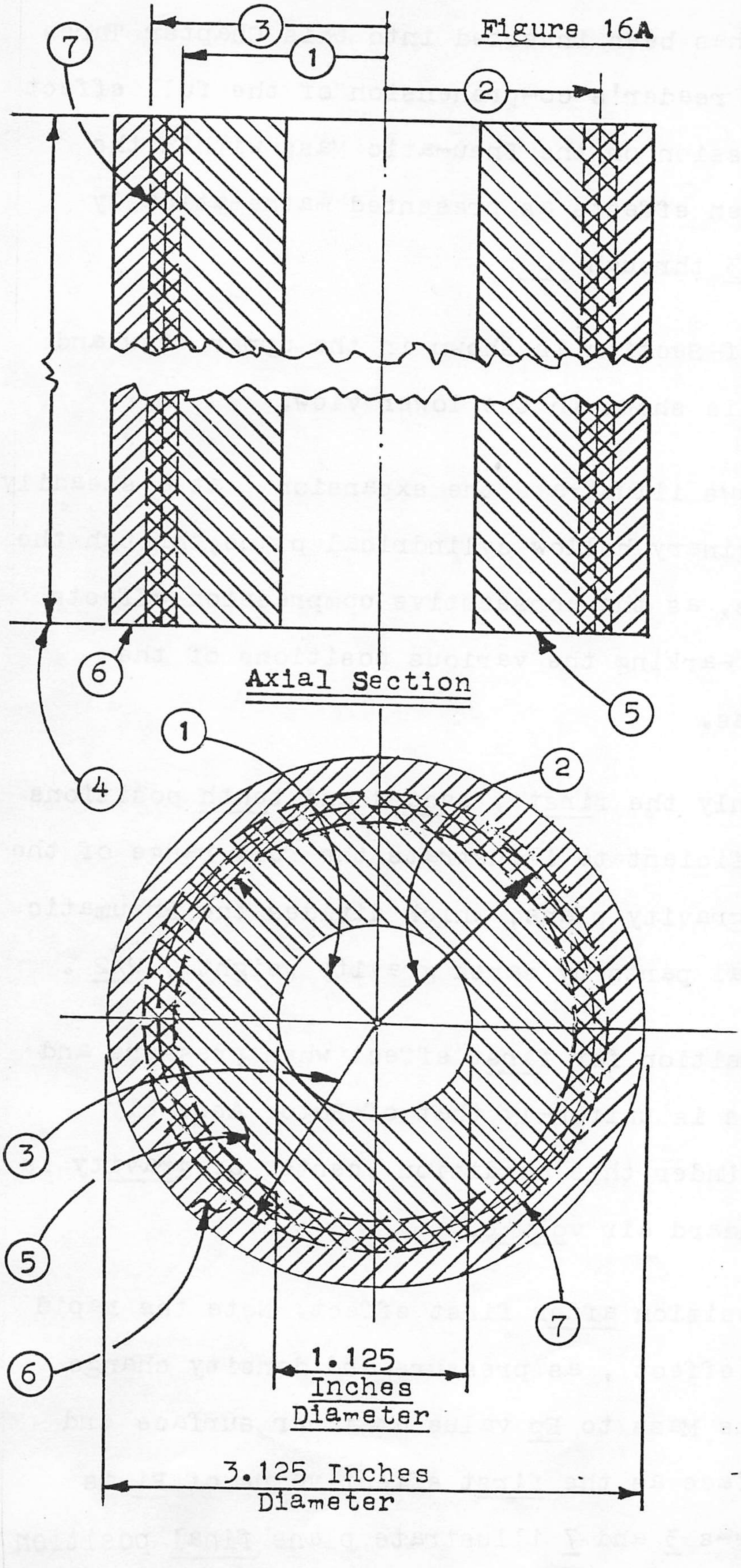
$$D\ max = \frac{6807 + 14.7}{14.7} \times .0000449 = .0208363 \text{ lb /cu in}$$

$$D\ avg = \frac{.0208363 + .0061537}{2} = .0134950 \text{ lb /cu in}$$

$$\text{Sixth effect value of } W = 146.868 \times .0134950 = 1.982 \text{ lbs}$$

$$\frac{W}{2} = \frac{1.982}{2} = .991 \text{ lb.}$$

Figure 16A



Axial Section

Lateral Section

Pneumatic Mass

Ten Effects Compression.

LEGEND:

1) First Effect (r)

= 1.174 Inches.

2) Second Effect (r)

= 1.261 Inches.

3) Tenth Effect (r)

= 1.341 Inches.

4) Pneumatic Mass

Length = 22.000 Inches.

5) Inner Half By

Weight W/2.

6) Outer Half By

Weight W/2.

7) Imaginary Hollow

Cylindrical Plane

Through The Length Of

The Pneumatic Mass At

Its Center Of Gravity.

Figure 16A , on page 106 A, has been inserted into this Chapter Three at this point to enhance the reader's comprehension of the full effect of Inertial-Pneumatic Compression on the Pneumatic Mass within the Rotor Assembly through the ten effects as presented mathematically and analytically on pages 103 through 109.

A broken full size Axial Half-Section is shown in the upper view and a full size Lateral Section is shown in the lower view.

The broken lines in both views illustrate the expansion , at a steadily decreasing rate, of the imaginary hollow cylindrical plane,through the length of the Pneumatic Mass, as the consecutive compression effects are developed analytically, marking the various positions of the center of gravity of the Mass.

For the sake of clarity , only the first , second and tenth positions are shown but these are sufficient to illustrate the full range of the expansion of the center of gravity plane, which divides the Pneumatic Mass into two precisely equal parts by earth gravity weight , W/2 .

Item 1 illustrates plane position for first effect when pressure and density through out the Mass is uniformly that of Rotor Assembly Environmental Pressure Ep. Under this condition ,center of gravity is identical to center of standard air volume.

Item 2 illustrates plane position after first effect. Note the rapid plane expansion from first effect , as pressure and density change from uniform through out the Mass to Ep value at inner surface and maximum value at outer surface as the first effect value of Pi is developed analytically. Items 3 and 7 illustrate plane final position as defined by tenth effect compression.

The solution for sixth effect value of r becomes:

$$D\ avg\ inner\ half = \frac{.0061537 + .0134950}{2} = .0098243\ lb/cu\ in$$

$$Volume\ inner\ half = \frac{.991}{.0098243} = 100.872\ cubic\ inches$$

$$Sixth\ effect\ r = \sqrt{\frac{100.872 + 21.868}{69.115}} = \sqrt{1.776} = 1.333\ inches$$

The solution for sixth effect value of Pi becomes:

$$Pi = \frac{.000028416 \times 1 \times 1.982 \times 1.333 \times 120{,}000 \times 120{,}000}{215.985}$$

$$= 5005\ psig.$$

The solution for seventh effect value of W becomes:

$$D\ min = .0061537\ lb/cu\ in$$

$$D\ max = \frac{7005 + 14.7}{14.7} \times .0000449 = .0214411\ lb/cu\ in$$

$$D\ avg = \frac{.0214411 + .0061537}{2} = .0137974\ lb/cu\ in$$

$$Seventh\ effect\ value\ of\ W = 146.868 \times .0137974 = 2.026\ lbs$$

$$\frac{W}{2} = \frac{2.026}{2} = 1.013\ lbs$$

The solution for seventh effect value of r becomes:

$$D\ avg\ inner\ half = \frac{.0061537 + .0137974}{2} = .0099755\ lb/cu\ in$$

$$Volume\ inner\ half = \frac{1.013}{.0099755} = 101.549\ cubic\ inches$$

$$Seventh\ effect\ r = \sqrt{\frac{101.549 + 21.868}{69.115}} = \sqrt{1.786} = 1.336\ inches$$

The solution for the seventh effect value of Pi becomes:

$$Pi = \frac{.000028416 \times 1 \times 2.026 \times 1.336 \times 120{,}000 \times 120{,}000}{215.985}$$

$$= 5128\ psig.$$

The solution for eighth effect value of W becomes:

D min = .0061537 lb /cu in

$$D\ max = \frac{7128 + 14.7}{14.7} \times .0000449 = .0218168 \text{ lb /cu in}$$

$$D\ avg = \frac{.0218168 + .0061537}{2} = .0139852 \text{ lb /cu in}$$

Eighth effect value of W = 146.868 x .0139852 = 2.054 lbs

$$\frac{W}{2} = \frac{2.054}{2} = 1.027 \text{ lbs}$$

The solution for eighth effect value of r becomes:

$$D\ avg\ inner\ half = \frac{.0061537 + .0139852}{2} = .0100694 \text{ lb /cu in}$$

$$Volume\ inner\ half = \frac{1.027}{.0100694} = 101.992 \text{ cubic inches}$$

$$Eighth\ effect\ r = \sqrt{\frac{101.992 + 21.868}{69.115}} = \sqrt{1.792} = 1.339 \text{ inches}$$

The solution for eighth effect value of Pi becomes:

$$Pi = \frac{.000028416 \times 1 \times 2.054 \times 1.339 \times 120{,}000 \times 120{,}000}{215.985}$$

= 5211 psig.

The solution for ninth effect value of W becomes:

D min = .0061537 lb /cu in

$$D\ max = \frac{7211 + 14.7}{14.7} \times .0000449 = .0220703 \text{ lb /cu in}$$

$$D\ avg = \frac{.0220703 + .0061537}{2} = .0141120 \text{ lb /cu in}$$

Ninth effect value of W = 146.868 x .0141120 = 2.073 lbs

$$\frac{W}{2} = \frac{2.073}{2} = 1.036 \text{ lbs}$$

The solution for ninth effect value of r becomes:

D avg inner half = $\frac{.0061537 + .0141120}{2}$ = .0101328 lb /cu in

Volume inner half = $\frac{1.036}{.0101328}$ = 102.242 cubic inches

Ninth effect r = $\sqrt{\frac{102.242 + 21.868}{69.115}}$ = $\sqrt{1.796}$ = 1.340 inches

---

The solution for the ninth effect value of Pi becomes:

Pi = $\frac{.000028416 \times 1 \times 2.073 \times 1.340 \times 120,000 \times 120,000}{215.985}$

= 5263 psig.

The solution for the tenth effect value of W becomes:

D min = .0061537 lb /cu in

D max = $\frac{7263 + 14.7}{14.7}$ x .0000449 = .0222291 lb /cu in

D avg = $\frac{.0222291 + .0061537}{2}$ = .0141914 lb /cu in

Tenth effect W = 146.868 x .0141914 = 2.084 lbs

$\frac{W}{2}$ = $\frac{2.084}{2}$ = 1.042 lbs

The solution for tenth effect value of r becomes:

D avg inner half = $\frac{.0061537 + .0141914}{2}$ = .0101725 lb /cu in

Volume inner half = $\frac{1.042}{.0101725}$ = 102.433 cubic inches

Tenth effect r = $\sqrt{\frac{102.433 + 21.868}{69.115}}$ = $\sqrt{1.798}$ = 1.341 inches

---

The solution for the tenth effect value of Pi becomes:

Pi = $\frac{.000028416 \times 1 \times 2.084 \times 1.341 \times 120,000 \times 120,000}{215.985}$

= 5295 psig.

Since the increase from the ninth effect value of Pi , 5263 psig, to the tenth effect value of Pi , 5295 psig , was only 32 psig , or 00.61% , sixty-one one-hundredths of one percent, this work accepts the tenth effect value as the final value of inertial-pneumatic compression pressure increase, Pi .

Thus, it appears to be certain that, if the prototype system finalizing designers can develop a Rotor Assembly design that will safely withstand the enormous inertial bursting forces attacking its weakest section when it is rotating at 120,000 RPM, and a pneumatic pressure containment and control system capable of functioning safely when the operational Rotor Assembly environmental pneumatic pressure is specified at 2000 psig, a maximum possible value of pressure increase Pi in excess of 5000 psig will be readily attainable, without cost in input energy from outside the system, courtesy of inertia .

Perhaps it has not escaped the attention of the reader that inertia is both friend and foe, in this dual function, of giant proportions. It provides an abundant and continuous supply of very high pressure pneumatic pressure power, for conversion to rotational power by the system Thrusters, while it simultaneously exerts incredible bursting forces against the weakest section of the Rotor Assembly in its unrelenting attempt to break free of the bondage imposed on it by the Restraining Agent.

The reader should also bear in mind that while this application of the format for defining the maximum possible value for pressure increase Pi required numerous mathematical solutions and consumed significant time and effort, in actual operational natural practice, inertia achieves Pi in an instant and effortlessly , faster than the author's eyes, mind and hand can co-ordinate to record the first letter or the first digit of the format application. This is because, at the instant when the tenth effect value of Pi was being achieved, the Pneumatic Mass within the Rotor Assembly, as shown in Figure 16 on page 98, was being attracted toward the inner surface of the Restraining Agent by an inertially-powered artificial gravity with a strength 548,724 times that of earth gravity. The total force at the interface of Pneumatic Mass to Restraining Agent inner surface was an incredible 1,143,541 pounds! Looking at it from another perspective, as tenth effect Pi was being developed, the earth gravity weight of the Pneumatic Mass increased from .904 pound to 2.084 pounds, while its artificial gravity weight increased from zero pounds to 1,143,541 pounds. This is the incredible power of inertia flexing its mighty muscles!

Naturally, in actual practice, the tenth effect value of Pi is not achieveable because of the negative effect of pneumatic flow rate through the system as demanded by the two system Thrusters in the course of their normal operational functions. However, approximately 95% of it is achieveable through appropriate system design. Thus, it appears probable that an actual operational value of Pi, under these same specified operational conditions, will be at, or very near, the 5000 psig level. In other words, inertial-pneumatic compression will deliver, free of charge and continuously, to the entrances of the two Thrusters, pneumatic pressure power at 5000 psig pressure differential across them and at whatever rate they demand, in pounds per second or standard cubic feet per minute.

The conversion of this limitless supply of pneumatic pressure power to Rotor Assembly rotational power by the proposed system's two Thrusters will be addressed comprehensively in Chapter Four.