Three Phase Modifiable Motors Vertical Solid Shaft Normal Thrust - "P" Base Weather Protected Type I (WPI) 10 Pole, 720 RPM

VSS-NT WPI 720 RPM 460V

#### **APPLICATIONS:**

For use on Turbine, Mix Flow and Propeller Pumps

# **FEATURES:**

- \* Class F Insulation, Class B Rise at Full Load (Sine Wave Power)
- \* 1.15 Service Factor (Sine Wave Power)
- \* Maximum 40 Deg. C. Ambient, 3,300 Feet Altitude

- \* NEMA Design "B"
- \* 3 Phase 60 Hz
- \* Both HP & VP Shaft Extension Available on 447 Frames and Smaller

#### 200, 230/460, 575 Volts (&)

HP	Down Thrust		Standard Efficient			Premium Efficient		Disc.
İ	(lbs)	Frame	List	Туре	Frame	List	Туре	Sym
1.5	780	215HP	\$2,221	AV	215HP	\$2,881	AVS	7NM
2	780	215HP	\$2,523	AV	215HP	\$3,293	AVS	7NM
3	890	254HP	\$3,178	AV	254HP	\$4,149	AVS	7NM
5	890	256HP	\$4,146	AV	256HP	\$5,469	AVS	7NM
7.5	890	284HP*	\$5,556	AV	284HP*	\$7,301	AVS	7NM
10	960	324HP	\$6,514	RV	324HP	\$8,610	RVS	7NM
15	960	326HP	\$8,007	RV	326HP	\$11,319	RVS	7NM
20	960	364HP*	\$9,967	RV	364HP*	\$14,007	RVS	7NM
25	960	365HP*	\$11,333	RV	365HP*	\$16,023	RVS	7NM
30	1240	404HP*	\$13,343	RV	404HP*	\$18,711	RVS	7NM
40	1240	405HP*	\$15,826	RV	405HP*	\$22,378	RVS	7NM
50	1230	444HP	\$18,981	RV	444HP	\$26,695	RVS	7NM
60	1230	445HP	\$21,246	RV	445HP	\$30,038	RVS	7NM
75	1230	445HP	\$23,441	RV	445HP	\$33,279	RVS	7NM
100	1230	447HP@	\$31,606	RV	447HP@	\$36,347	RVS	7NM
125	1230	447HP@	\$38,261	RV	447HP@	\$44,025	RVS	7NM
150	3700	5008VP	\$44,481	RV	5008VP	\$51,153	RVS	9VM
200	3700	5008VP	\$57,580	RV	5008VP	\$66,217	RVE	9VM
250	3700	5012VP	\$62,683	RV	5012VP	\$72,085	RVE	9VM
300	3700	5012VP	\$67,784	RV	5012VP	\$77,953	RVE	9VM
350	3700	5012VP	\$77,805	RV	5012VP	\$89,477	RVE	9VM
400	4100	5813VPA	\$122,148	RV	5813VPA	\$140,469	RVE	9VM
450	4100	5813VPA	\$134,627	RV	5813VPA	\$154,822	RVE	9VM
500	4100	5813VPA	\$137,754	RV	5813VPA	\$158,413	RVE	9VM
600	4100	5813VPA	\$164,789	RV	5813VPA	\$189,507	RVE	9VM

<sup>&</sup>amp; Standard Voltages Thru 405 Frame; 444 Frame & Larger, Single Voltage 460 or 575 is standard

See Page M-83 For Available And Alternate BD Dimensions



<sup>\*</sup> Alternate "Z" option available for shaft. See Dimension Pages for Detail.

 $<sup>@</sup> Contact\ your\ Nidec\ Motor\ Corporation\ Technical\ Representative\ for\ WPII\ frame\ size\ confirmation\ prior\ to\ quoting.$ 

Three Phase Modifiable Motors Vertical Solid Shaft Normal Thrust - "P" Base Weather Protected Type I (WPI) 12 Pole, 600 RPM

VSS-NT WPI 600 RPM 460V

## **APPLICATIONS:**

For use on Turbine, Mix Flow and Propeller Pumps

#### **FEATURES:**

- \* Class F Insulation, Class B Rise at Full Load (Sine Wave Power)
- \* 1.15 Service Factor (Sine Wave Power)
- \* Maximum 40 Deg. C. Ambient, 3,300 Feet Altitude
- \* NEMA Design "B"
- \* 3 Phase 60 Hz
- \* Both HP & VP Shaft Extension Available on 447 Frames and Smaller

#### 460 or 575 Volt

НР	Down Thrust		Standard Efficient			Disc.		
	(lbs)	Frame	List	Туре	Frame	List	Туре	Sym
7.5	1020	324HP	\$6,425	RV	324HP	\$8,486	RVS	7NM
10	1020	326HP	\$7,279	RV	326HP	\$10,244	RVS	7NM
15	1020	364HP*	\$9,678	RV	364HP*	\$13,582	RVS	7NM
20	1020	365HP*	\$11,648	RV	365HP*	\$16,491	RVS	7NM
25	1330	404HP*	\$14,120	RV	404HP*	\$19,859	RVS	7NM
30	1330	405HP*	\$15,937	RV	405HP*	\$22,540	RVS	7NM
40	1330	444HP	\$20,378	RV	444HP	\$28,756	RVS	7NM
50	1330	445HP	\$23,563	RV	445HP	\$33,460	RVS	7NM
60	1330	447HP@	\$32,317	RV	447HP@	\$37,167	RVS	7NM
75	1330	447HP@	\$36,369	RV	447HP@	\$41,822	RVS	7NM
100	4100	5008VP	\$41,427	RV	5008VP	\$47,683	RVE	8VM
125	4100	5008VP	\$46,549	RV	5008VP	\$53,533	RVE	8VM
150	4100	5008VP	\$53,507	RV	5008VP	\$61,533	RVE	8VM
200	4100	5012VP	\$67,953	RV	5012VP	\$78,146	RVE	8VM
250	4100	5012VP	\$69,554	RV	5012VP	\$79,988	RVE	8VM
300	4100	5012VP	\$81,340	RV	5012VP	\$93,542	RVE	8VM
350	5200	5813VPA	\$119,695	RV	5813VPA	\$137,650	RVE	8VM
400	5200	5813VPA	\$136,359	RV	5813VPA	\$156,812	RVE	8VM
450	5200	5813VPA	\$150,751	RV	5813VPA	\$173,364	RVE	8VM

<sup>\*</sup> Contact your Nidec Motor Corporation Technical Representative for WPII frame size confirmation prior to quoting.

See Page M-83 For Available And Alternate BD Dimensions



 $<sup>^{\</sup>star}$  Alternate "Z" option available for shaft. See Dimension Pages for Detail.

Three Phase Modifiable Motors Vertical Solid Shaft Normal Thrust - "P" Base Weather Protected Type I (WPI) 14 Pole, 514 RPM

VSS-NT WPI 514 RPM 460V

#### **APPLICATIONS:**

For use on Turbine, Mix Flow and Propeller Pumps

# **FEATURES:**

- \* Class F Insulation, Class B Rise at Full Load (Sine Wave Power)
- \* 1.15 Service Factor (Sine Wave Power)
- \* Maximum 40 Deg. C. Ambient, 3,300 Feet Altitude

- \* NEMA Design "B"
- \* 3 Phase 60 Hz

# 480 or 575 Volts (&)

НР	Down Thrust		Stan Effic			Premium Efficient					
	(lbs)	Frame	BD (in)	List	Туре	Frame	BD (in)	List	Туре	Sym	
100	4400	5008VP	24.5	\$66,329	RV	5008VP	24.5	\$76,279	RVE	8VM	
125	4400	5012VP	24.5	\$70,230	RV	5012VP	24.5	\$80,763	RVE	8VM	
150	4400	5012VP	24.5	\$76,901	RV	5012VP	24.5	\$88,437	RVE	8VM	
200	4400	5012VP	24.5	\$87,749	RV	5012VP	24.5	\$100,911	RVE	8VM	
250	6000	5813VPA	30.5	\$103,716	RV	5813VPA	30.5	\$119,272	RVE	8VM	
300	6000	5813VPA	30.5	\$114,399	RV	5813VPA	30.5	\$131,559	RVE	8VM	
350	6000	5813VPA	30.5	\$136,000	RV	5813VPA	30.5	\$156,401	RVE	8VM	
400	6000	5813VPA	30.5	\$149,599	RV	5813VPA	30.5	\$172,038	RVE	8VM	
450	6000	5813VPA	30.5	\$164,556	RV	5813VPA	30.5	\$189,239	RVE	8VM	

See Page M-83 For Available And Alternate BD Dimensions



Three Phase Modifiable Motors
Vertical Solid Shaft
Normal Thrust - "P" Base
Hazardous Location
2 Pole, 3600 RPM

VSS-NT Hazardous Location 3600 RPM 460V

## **APPLICATIONS:**

For use on Turbine, Mix Flow and Propeller Pumps

## **FEATURES:**

- \* UL Listed Division 1, Class 1, Group D
- \* Class F Insulation, Class B Rise at Full Load (Sine Wave Power)
- \* 1.00 Service Factor (Sine Wave Power)
- \* Maximum 40 Deg. C. Ambient, 3,300 Feet Altitude

- \* NEMA Design "B"
- \* 3 Phase 60 Hz
- Both HP & VP Shaft Extension Available on 447 Frames and Smaller

# 200, 230/460, 575 Volts (&)

НР	Down Thrust		Standard Efficient			Energy Efficient			Premium Efficient		Disc.
	(lbs)	Frame	List	Туре	Frame	List	Туре	Frame	List	Туре	Sym
1.5	220				143HP	\$2,312	LVE	143HP	\$2,488	LVS	7NM
2	220				145HP	\$2,406	LVE	145HP	\$2,591	LVS	7NM
3	300				182HP	\$2,986	LVE	182HP	\$3,108	LVS	7NM
5	300				184HP	\$4,031	LVE	184HP	\$4,200	LVS	7NM
7.5	460				213HP	\$4,557	LVE	213HP	\$4,754	LVS	7NM
10	460				215HP	\$5,094	LVE	215HP	\$5,308	LVS	7NM
15	800				254HP	\$5,564	LVE	254HP	\$5,801	LVS	7NM
20	800				256HP	\$6,690	LVE	256HP	\$6,950	LVS	7NM
25	940				284HP*	\$7,617	LVE	284HP*	\$7,880	LVS	7NM
30	940				286HP*	\$8,164	LVE	286HP*	\$8,455	LVS	7NM
40	1090				324HP	\$10,561	LVE	324HP	\$10,929	LVS	7NM
50	1090				326HP	\$11,687	LVE	326HP	\$12,112	LVS	7NM
60	1360				364HP*	\$14,633	LVE	364HP*	\$15,155	LVS	7NM
75	1360				365HP*	\$17,930	LVE	365HP*	\$18,580	LVS	7NM
100	1825				405HP*	\$23,653	LVE	405HP*	\$24,587	LVS	7NM
125	1210				444HP	\$38,007	LVE	444HP	\$39,603	LVS	7NM
150	1210				447HP	\$44,929	LVE	447HP	\$46,871	LVS	7NM
200	1210				5008P	\$66,507	EV	5008P	\$70,007	EVE	8VM
250	1210	5008P	\$68,040	EV	5008P	\$72,410	EV	5008P	\$76,221	EVE	8VM
300	1210	5008P	\$87,592	EV	5008P	\$93,772	EV	5008P	\$98,707	EVE	8VM
350	1210	5008P	\$102,632	EV	5008P	\$110,205	EV	5008P	\$116,005	EVE	8VM
400	1210	5807P	\$127,033	EV	5807P	\$135,941	EV	5807P	\$143,096	EVE	8VM
450	1210	5809P	\$140,554	EV	5809P	\$149,959	EV	5809P	\$157,852	EVE	8VM
500	1210	5811P	\$156,744	EV	5811P	\$167,166	EV	5811P	\$175,964	EVE	8VM
600	1210	5811P	\$182,373	EV				5811P	\$205,436	EVE	8VM

<sup>&</sup>amp; Standard Voltages Thru 405 Frame; 444 Frame & Larger, Single Voltage 460 or 575 is Standard

See Page M-84 For Available And Alternate BD Dimensions

<sup>\* 60</sup>Hz 3600, 1800, 1200 & 900 RPM motors comply with U.S. D.O.E.'s Efficiency regulation 10 CFR Section 431 Subpart B – electric motors (See Page M-80 - M-81 for Nominal Efficiency Table)



<sup>\*</sup>Alternate "Z" Option Available for Shaft. See Dimension Pages for Details

<sup>\*\*</sup>Alternate C-Face and D-Flange Options Available on 449 and 5800 Frames

Three Phase Modifiable Motors
Vertical Solid Shaft
Normal Thrust - "P" Base
Hazardous Location
4 Pole, 1800 RPM

VSS-NT
Hazardous Location
1800 RPM
460V

#### **APPLICATIONS:**

For use on Turbine, Mix Flow and Propeller Pumps

# **FEATURES:**

- \* UL Listed Division 1, Class 1, Group D
- \* Class F Insulation, Class B Rise at Full Load (Sine Wave Power)
- \* 1.00 Service Factor (Sine Wave Power)
- \* Maximum 40 Deg. C. Ambient, 3,300 Feet Altitude

- \* NEMA Design "B"
- \* 3 Phase 60 Hz
- \* Both HP & VP Shaft Extension Available on 447 Frame and Smaller

#### 200, 230/460 575 Volts (&)

HP	Down Thrust		Standard Efficient			Energy Efficient			Premium Efficient		Disc.
	(lbs)	Frame	List	Туре	Frame	List	Туре	Frame	List	Туре	Sym
1	300				143HP	\$1,925	LVE	143HP	\$2,061	LVS	7NM
1.5	300				145HP	\$2,136	LVE	145HP	\$2,293	LVS	7NM
2	300				145HP	\$2,347	LVE	145HP	\$2,525	LVS	7NM
3	420				182HP	\$2,758	LVE	182HP	\$2,864	LVS	7NM
5	420				184HP	\$3,608	LVE	184HP	\$3,756	LVS	7NM
7.5	635				213HP	\$4,618	LVE	213HP	\$4,808	LVS	7NM
10	635				215HP	\$5,094	LVE	215HP	\$5,308	LVS	7NM
15	1110				254HP	\$6,415	LVE	254HP	\$6,662	LVS	7NM
20	1110				256HP	\$7,105	LVE	256HP	\$7,385	LVS	7NM
25	1295				284HP*	\$8,352	LVE	284HP*	\$8,652	LVS	7NM
30	1295				286HP*	\$9,103	LVE	286HP*	\$9,441	LVS	7NM
40	1395				324HP	\$10,915	LVE	324HP	\$11,302	LVS	7NM
50	1395				326HP	\$12,352	LVE	326HP	\$12,809	LVS	7NM
60	1800				364HP*	\$15,089	LVE	364HP*	\$15,631	LVS	7NM
75	1800				365HP*	\$18,162	LVE	365HP*	\$18,824	LVS	7NM
100	2300				405HP*	\$22,759	LVE	405HP*	\$23,651	LVS	7NM
125	1530				444HP	\$29,244	LVE	444HP	\$30,401	LVS	7NM
150	1530				447HP	\$34,368	LVE	447HP	\$35,781	LVS	7NM
200	1530				447HP	\$46,542	LVE	447HP	\$48,516	LVS	7NM
250	1530	5008P	\$60,336	EV	5008P	\$63,992	EV	5008P	\$67,360	EVE	8VM
300	1530	5008P	\$69,695	EV	5008P	\$74,219	EV	5008P	\$78,125	EVE	8VM
350	1530	5008P	\$79,881	EV	5008P	\$85,344	EV	5008P	\$89,836	EVE	8VM
400	1530	5807P	\$95,129	EV	5807P	\$101,086	EV	5807P	\$106,406	EVE	8VM
450	1530	5807P	\$104,425	EV	5807P	\$111,241	EV	5807P	\$117,096	EVE	8VM
500	1530	5809P	\$118,747	EV	5809P	\$126,134	EV	5809P	\$132,773	EVE	8VM
600	1530	5811P	\$164,544	EV				5811P	\$184,934	EVE	8VM

<sup>&</sup>amp; Standard Voltages Thru 404 Frame; 405 Frame & Larger, Single Voltage 460 or 575 standard

See Page M-84 For Available And Alternate BD Dimensions

<sup>\* 60</sup>Hz 3600, 1800, 1200 & 900 RPM motors comply with U.S. D.O.E.'s Efficiency regulation 10 CFR Section 431 Subpart B – electric motors (See Page M-80 - M-81 for Nominal Efficiency Table)



<sup>\*</sup> Alternate "Z" Option Available for Shaft. See Dimension Pages for Detail

<sup>\*\*</sup>Alternate C-Face and D-Flange Options Available on 449 and 5800 Frames

# Three Phase Modifiable Motors Vertical Solid Shaft Normal Thrust - "P" Base Hazardous Location 6 Pole, 1200 RPM

**VSS-NT** 

Hazardous Location 1200 RPM 460V

#### **APPLICATIONS:**

For use on Turbine, Mix Flow and Propeller Pumps

# **FEATURES:**

- \* UL Listed Division 1, Class 1, Group D
- \* Class F Insulation, Class B Rise at Full Load (Sine Wave Power)
- \* 1.00 Service Factor (Sine Wave Power)
- \* Maximum 40 Deg. C. Ambient, 3,300 Feet Altitude

- \* NEMA Design "B"
- \* 3 Phase 60 Hz
- \* Both HP & VP Shaft Extension Available on 447 Frames and Smaller

#### 200, 230/460 575 Volts (&)

НР	Down Thrust	Standard Efficient				Energy Efficient			Premium Efficient		Disc.
	(lbs)	Frame	List	Туре	Frame	List	Туре	Frame	List	Туре	Sym
1	360				145HP	\$2,408	LVE	145HP	\$2,594	LVS	7NM
1.5	500				182HP	\$2,605	LVE	182HP	\$2,709	LVS	7NM
2	500				184HP	\$3,146	LVE	184HP	\$3,334	LVS	7NM
3	775				213HP	\$3,721	LVE	213HP	\$3,876	LVS	7NM
5	775				215HP	\$5,169	LVE	215HP	\$5,388	LVS	7NM
7.5	1350				254HP	\$5,813	LVE	254HP	\$6,061	LVS	7NM
10	1350				256HP	\$7,140	LVE	256HP	\$7,422	LVS	7NM
15	1570				284HP*	\$8,669	LVE	284HP*	\$8,985	LVS	7NM
20	1570				286HP*	\$10,030	LVE	286HP*	\$10,415	LVS	7NM
25	1750				324HP	\$11,772	LVE	324HP	\$12,201	LVS	7NM
30	1750				326HP	\$13,035	LVE	326HP	\$13,528	LVS	7NM
40	2200				364HP*	\$16,589	LVE	364HP*	\$17,206	LVS	7NM
50	2200				365HP*	\$18,802	LVE	365HP*	\$19,533	LVS	7NM
60	2825				404HP*	\$22,688	LVE	404HP*	\$23,576	LVS	7NM
75	2825				405HP*	\$25,813	LVE	405HP*	\$26,857	LVS	7NM
100	1930				444HP	\$33,941	LVE	444HP	\$35,333	LVS	7NM
125	1930				447HP	\$39,756	LVE	447HP	\$41,439	LVS	7NM
150	1930				447HP	\$48,859	LVE	447HP	\$50,950	LVS	7NM
200	1930				5008P	\$83,458	EV	5008P	\$87,850	EVE	8VM
250	1930	5008P	\$81,822	EV	5008P	\$87,469	EV	5008P	\$92,073	EVE	8VM
300	1930	5008P	\$94,604	EV	5008P	\$101,432	EV	5008P	\$106,770	EVE	8VM
350	1930	5807P	\$114,451	EV	5807P	\$122,196	EV	5807P	\$128,627	EVE	8VM
400	1930	5807P	\$129,040	EV	5807P	\$138,136	EV	5807P	\$145,406	EVE	8VM
450	1930	5809P	\$146,808	EV	5809P	\$156,793	EV	5809P	\$165,045	EVE	8VM
500	1930	5809P	\$160,315	EV	5809P	\$171,546	EV	5809P	\$180,575	EVE	8VM
600	1930	5811P	\$190,706	EV				5811P	\$215,018	EVE	8VM

<sup>&</sup>amp; Standard Voltages Thru 404 Frame; 405 Frame & Larger, Single Voltage 460 or 575 standard

See Page M-84 For Available And Alternate BD Dimensions

<sup>\* 60</sup>Hz 3600, 1800, 1200 & 900 RPM motors comply with U.S. D.O.E.'s Efficiency regulation 10 CFR Section 431 Subpart B – electric motors (See Page M-80 - M-81 for Nominal Efficiency Table)



<sup>\*</sup> Alternate "Z" Option Available for Shaft. See Dimension Pages for Detail

<sup>\*\*</sup>Alternate C-Face and D-Flange Options Available on 449 and 5800 Frames

Three Phase Modifiable Motors
Vertical Solid Shaft
Normal Thrust - "P" Base
Hazardous Location
8 Pole, 900 RPM

**VSS-NT** 

Hazardous Location 900 RPM 460V

#### **APPLICATIONS:**

For use on Turbine, Mix Flow and Propeller Pumps

# **FEATURES:**

- \* UL Listed Division 1, Class 1, Group D
- \* Class F Insulation, Class B Rise at Full Load (Sine Wave Power)
- \* 1.00 Service Factor (Sine Wave Power)
- \* Maximum 40 Deg. C. Ambient, 3,300 Feet Altitude

- \* NEMA Design "B"
- \* 3 Phase 60 Hz
- \* Both HP & VP Shaft Extension Available on 447 Frames and Smaller

#### 200, 230/460, 575 Volts (&)

НР	Down Thrust		Standard Efficient			Energy Efficient			Premium Efficient		Disc.
	(lbs)	Frame	List	Туре	Frame	List	Туре	Frame	List	Туре	Sym
1.5	570				184HP	\$3,608	LVE				7NM
2	860				213HP	\$3,956	LVE	213HP	\$4,122	LVS	7NM
3	860				215HP	\$5,094	LVE	215HP	\$5,308	LVS	7NM
5	1540				254HP	\$5,857	LVE	254HP	\$6,108	LVS	7NM
7.5	1540				256HP	\$7,288	LVE	256HP	\$7,577	LVS	7NM
10	1740				284HP*	\$8,387	LVE	284HP*	\$8,732	LVS	7NM
15	1740				286HP*	\$10,176	LVE	286HP*	\$10,568	LVS	7NM
20	1945				324HP	\$12,133	LVE	324HP	\$12,579	LVS	7NM
25	1945				326HP	\$13,485	LVE	326HP	\$14,000	LVS	7NM
30	2515				364HP*	\$16,087	LVE	364HP*	\$16,680	LVS	7NM
40	2515				365HP*	\$18,521	LVE	365HP*	\$19,237	LVS	7NM
50	3230				404HP*	\$22,303	LVE	404HP*	\$23,172	LVS	7NM
60	3230				405HP*	\$24,977	LVE	405HP*	\$25,979	LVS	7NM
75	2240				444HP	\$31,241	LVE	444HP	\$32,497	LVS	7NM
100	2240				447HP	\$39,835	LVE	447HP	\$41,523	LVS	7NM
125	2240				447HP	\$54,943	LVE	447HP	\$57,338	LVS	7NM
150	2240				5008P	\$83,259	EV	5008P	\$87,641	EVE	8VM
200	2240				5008P	\$94,710	EV	5008P	\$99,695	EVE	8VM
250	2240	5008P	\$97,662	EV	5008P	\$104,773	EV	5008P	\$110,287	EVE	8VM
300	2240	5807P	\$120,009	EV	5807P	\$128,268	EV	5807P	\$135,019	EVE	8VM
350	2240	5807P	\$136,807	EV	5807P	\$146,619	EV	5807P	\$154,336	EVE	8VM
400	2240	5809P	\$158,787	EV	5809P	\$169,879	EV	5809P	\$178,820	EVE	8VM
450	2240	5809P	\$172,594	EV	5809P	\$184,962	EV	5809P	\$194,697	EVE	8VM
500	2240	5811P	\$195,556	EV	5811P	\$209,568	EV	5811P	\$220,598	EVE	8VM

<sup>&</sup>amp; Standard Voltages Thru 405 Frame; 444 Frame & Larger, Single Voltage 460 or 575 is Standard

<sup>\* 60</sup>Hz 3600, 1800, 1200 & 900 RPM motors comply with U.S. D.O.E.'s Efficiency regulation 10 CFR Section 431 Subpart B – electric motors (See Page M-80 - M-81 for Nominal Efficiency Table)



<sup>\*</sup>Alternate "Z" Option Available for Shaft. See Dimension Pages for Details

<sup>\*\*</sup>Alternate C-Face and D-Flange Options Available on 449 and 5800 Frames

See Page M-84 For Available And Alternate BD Dimensions