



## INDUCTION VOLTAGE REGULATORS OF SERIES NT (BOOSTERS)



### General

Induction voltage regulators are electric machines destined for continuous voltage regulation.

They are a source of the continuously changeable voltage. They are used as sources of changeable voltage at test rooms, for maintaining voltage at the line voltage fluctuation, for temperature control on resistor furnaces, etc.

Applications: at test rooms, TV transmitters, radiocommunication, research and project institutes, high schools and universities, resistor furnaces etc.

The main features of these machines are:

- output source of regulable voltage,
- they do not produce interference signals
- sinusoidal voltage
- reliability, long life, easy maintenance, resistant against electromagnetic attacks.

They are manufactured in these types:

1. Single three-phase induction voltage regulators type NTA with the wide or small rated range of voltage regulation.
2. Double three-phase induction voltage regulators type NTB in delta or star connection, or in autotransformer connection.
3. Single induction voltage regulators in a special connection of Pensabene type NTP destined for single-phase or three-phase load feeding.

There is named the rated range of the no-load output voltage (V) on the rating plate. The rated output (kVA) is given as a type output, i.e. the product of the effective phase values of the highest no-load output voltage, the rated output current, and the number of phases (separated winding connection), irrespective of an existing connection.

$$N = 3 \times U_{2fo} \times I_2 \times 10^{-3} [\text{kVA}]$$

The output voltage drop at the rated input voltage and the rated loading, and the 80-percent output lagging power factor of an induction voltage regulator with a separated winding must not exceed 15 % of the highest no-load output voltage.

# 1. Technical Parameters

## 1.1. Single Three-Phase Induction Voltage Regulators Type NTA

TYPE	Apparent input $N_1$ [kVA]	Apparent output $N_2$ [kVA]	Type output $N_3$ [kVA]	INPUT		OUTPUT		Weight [kg]
				Voltage $U_{15}$ [V]	Current $I_1$ [A]	No-load voltage $U_{25}$ [V]	Current $I_2$ [A]	
NTA 62 - 2	30	27	14	380	46	30 - 780	20	275
NTA 64 - 2	44	40	21	380	67	30 - 780	30	300
NTA 72 - 2	58	53	28	380	88	45 - 800	38	350
NTA 74 - 2	91	83	44	380	139	50 - 800	60	400
NTA 82 - 2	107	104	53	380	163	30 - 780	77	550
NTA 84 - 2	150	142	76	380	228	70 - 820	100	610
NTA 92 - 2	234	222	116	380	355	50 - 800	160	890
NTA 94 - 2	291	277	145	380	443	50 - 800	200	980

NTA 62 - 2	70	66	14	380	106	280 - 480	80	275
NTA 64 - 2	104	100	21	380	158	280 - 480	120	300
NTA 72 - 2	132	126	26	380	201	275 - 480	152	350
NTA 74 - 2	201	191	40	380	305	280 - 480	230	400
NTA 82 - 2	256	250	46	380	388	300 - 465	310	550
NTA 84 - 2	344	336	73	380	522	300 - 485	400	610
NTA 92 - 2	515	504	109	380	783	270 - 485	600	890
NTA 94 - 2	635	621	135	380	965	270 - 485	740	980
NTA 102 - 2	423	390	205	380	643	20 - 750	300	1420
NTA 104 - 2	515	493	250	380	783	15 - 770	370	1510

$$N_1 = \sqrt{3} \cdot U_{15} \cdot I_{15} \cdot 10^{-3} \text{ [kVA]} \quad N_2 = \sqrt{3} \cdot U_{25} \cdot I_2 \cdot 10^{-3} \text{ [kVA]} \quad N_3 = \sqrt{3} \cdot U_{20} \cdot I_2 \cdot 10^{-3} \text{ [kVA]} \quad (U_{20} = \vec{U}_{15} + \vec{U}_{25})$$

## 1.2. Double Three-Phase Induction Voltage Regulators Type NTB

TYPE	Apparent input $N_1$ [kVA]	Apparent output $N_2$ [kVA]	Type output $N_3$ [kVA]	INPUT		OUTPUT		Weight [kg]
				Voltage $U_{15}$ [V]	Current $I_1$ [A]	No-load voltage $U_{25}$ [V]	Current $I_2$ [A]	

**Delta connection**  $N_1 = \sqrt{3} \cdot U_{15} \cdot I_{15} \cdot 10^{-3} \text{ [kVA]}, N_2 = N_3 = \sqrt{3} \cdot U_{25} \cdot I_2 \cdot 10^{-3} \text{ [kVA]}$

NTB 66 - 2	66	51	51	380	100	0 - 124	240	620
NTB 76 - 2	97	79	79	380	148	0 - 104	440	880
NTB 84 - 2	125	104	104	380	190	0 - 116	520	1300
NTB 86 - 2	184	162	162	380	280	0 - 123	760	1450
NTB 94 - 2	293	253	253	380	445	0 - 154	950	1900
NTB 104 - 2	448	404	404	380	680	0 - 135	1730	3520
NTB 132 - 2	1439	1394	1395	380	2186	0 - 166	4850	8650

**Star connection**  $N_1 = \sqrt{3} \cdot U_{15} \cdot I_{15} \cdot 10^{-3} \text{ [kVA]}, N_2 = N_3 = \sqrt{3} \cdot U_{25} \cdot I_2 \cdot 10^{-3} \text{ [kVA]}$

NTB 66 - 2	66	53	53	380	100	0 - 218	140	620
NTB 76 - 2	97	79	79	380	148	0 - 178	255	880
NTB 84 - 2	125	104	104	380	190	0 - 200	300	1300
NTB 86 - 2	184	164	164	380	280	0 - 215	440	1450
NTB 94 - 2	293	248	248	380	445	0 - 260	550	1900
NTB 104 - 2	448	405	405	380	680	0 - 234	1000	3520
NTB 132 - 2	1439	1382	1395	380	2186	0 - 285	2800	8650

**Autotransformer connection**  $N_1 = \sqrt{3} \cdot U_{15} \cdot I_{15} \cdot 10^{-3} \text{ [kVA]}, N_2 = N_3 = \sqrt{3} \cdot U_{25} \cdot I_2 \cdot 10^{-3} \text{ [kVA]}, N_3 = \sqrt{3} \cdot U_{20} \cdot I_2 \cdot 10^{-3} \text{ [kVA]}, (U_{20} = \vec{U}_{15} + \vec{U}_{25})$

NTB 66 - 2	156	145	53	380	238	165 - 600	140	620
NTB 76 - 2	263	247	79	380	400	205 - 560	255	880
NTB 84 - 2	321	301	104	380	488	180 - 580	300	1300
NTB 86 - 2	472	453	164	380	718	166 - 598	440	1450
NTB 94 - 2	652	610	247	380	990	120 - 640	550	1900
NTB 104 - 2	1104	1056	398	380	1678	150 - 610	1000	3520
NTB 132 - 2	3282	3255	1395	380	4986	95 - 665	2800	8650

## 1.3. Induction Voltage Regulators Type NTP - Pensabene's Connection

TYPE	Apparent input [kVA]	INPUT		OUTPUT		Weight [kg]
		Voltage $U_{15}$ [V]	Current $I_1$ [A]	No-load voltage $U_{25}$ [V]	Current $I_2$ [A]	

**Rated values for three-phase demand**  $N = \sqrt{3} \cdot U_{25} \cdot I_2 \cdot 10^{-3} \text{ [kVA]}$

NTP 64 - 2	31	380	58	0 - 500	36	310
NTP 74 - 2	63	380	126	0 - 500	73	415
NTP 84 - 2	100	380	195	0 - 500	115	640
NTP 94 - 2	200	380	366	0 - 500	230	1010
NTP 104 - 2	350	380	615	0 - 500	406	1540
NTP 132 - 2	1000	380	1607	0 - 500	1155	3900

**Rated values for single-phase demand**  $N = U_{25} \cdot I_2 \cdot 10^{-3} \text{ [kVA]}$

NTP 64 - 2	18	380	58	0 - 500	36	310
NTP 74 - 2	36,5	380	126	0 - 500	73	415
NTP 84 - 2	57,5	380	195	0 - 500	115	640
NTP 94 - 2	115	380	366	0 - 500	230	1010
NTP 104 - 2	202	380	615	0 - 500	404	1540
NTP 132 - 2	578	380	1607	0 - 500	1155	3900