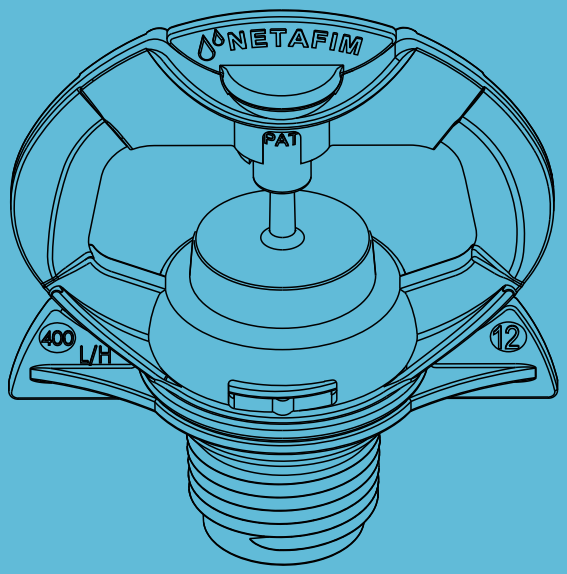
GYRONET™ TURBO MIDI-SPRINKLER

USER MANUAL



V 002.01 - JULY 2017

NETAFIM™
GROW MORE WITH LESS

NOTE

All the drawings in this document are for the purpose of illustration only. The actual product details and infrastructure condition may differ in any actual application.

FOREIGN LANGUAGES

If you are reading this manual in a language other than the English language, you acknowledge and agree that the English language version shall prevail in any case of inconsistency or contradiction in interpretation or translation.

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INTRODUCTION

Use of symbols

The symbols used in this manual refer to the following:

WARNING
The following text contains instructions aimed at preventing bodily injury or direct damage to the crops, the product and/or the infrastructure.

CAUTION
The following text contains instructions aimed at preventing unwanted system operation, installation or conditions that, if not followed, might void the warranty.

ATTENTION
The following text contains instructions aimed at enhancing the effective use of the instructions in the manual.

NOTE
The following text contains instructions aimed at emphasizing certain aspects of the installation or operation of the product.

SAFETY FOOTWEAR
The following text contains instructions aimed at preventing foot injury.

TIP
The following text provides clarification, tips or useful information.

Aim of this manual

The aim of this manual is to guide the user in setting up, installation, operaton and maintenance of the GyroNet™ Turbo midi-sprinkler in its various applications.

Safety instructions

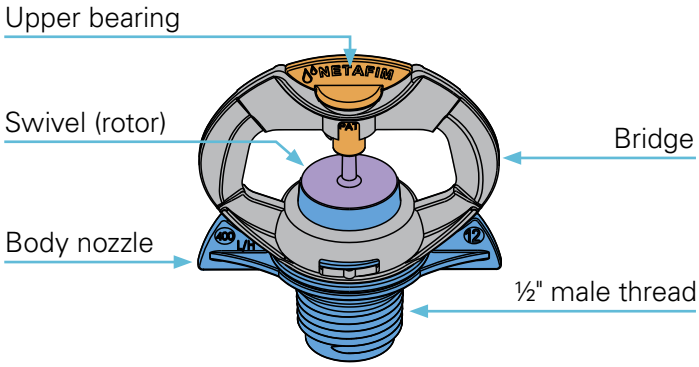
- All applicable safety instructions and regulations must be observed and applied.
- The effectiveness of the equipment may be jeopardized or impaired if the equipment is used in a manner other than that specified by the manufacturer.

WARNING
In an agricultural environment - always wear protective footwear.

CAUTION
When opening or closing any manual valve, always do so gradually, to prevent damage to the system by water hammer.

GYRONET™ TURBO MIDI-SPRINKLER

Description



Applications

Protected and open-air nurseries; intensive field crops; overhead cooling; frost mitigation; cooling irrigation; roof and tunnel cooling and dust cleaning.

Features and benefits

Higher and better yields

- The GyroNet™ Turbo has a unique design of the sprinkler's rotor water channel, and a special shape of the bridge, that provides very high water distribution uniformity

Saves labor cost and multiple expenses on maintenance

- Higher reliability
  The GyroNet™ Turbo is made of a superior raw material composition resistant the chemicals, fertilizers, and sun exposure.
- Guarantees lower maintenance and repair cost.
  The GyroNet™ Turbo has anti-insect mechanism that is opened only during irrigation, and protects the nozzle.

Specifications

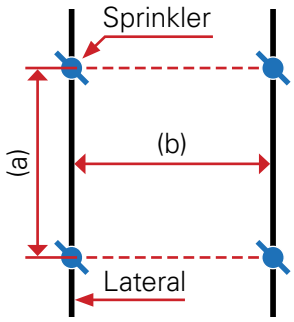
- Very robust midi-sprinkler.
- Midi-sprinkler, 5 different flow rates: 200, 250, 300, 400, 500 l/h.
  Nominal flow rates at 2.2 bar pressure.
- Maximum recommended working pressure: 3.0 bar.
- Inlet connector: 1/2" threaded male.
- Purple rotor.
- Recommended filtration : 200 micron / 80 mesh.
  Selection of the filtration method should be based on the kind and concentration of dirt particles in the water.

ATTENTION

- For water containing over 2 ppm of sand, a hydrocyclone sand separator must be installed upstream from the main filter.
- For water containing over 100 ppm of sand/silt/clay solids, pretreatment must be performed according to the instructions of the Netafim™ expert team.

TECHNICAL DATA

Performance



Rectangular spacing

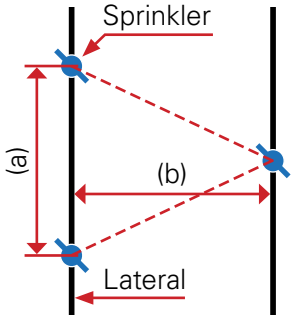
Nozzle size (mm)	Color code	Working pressure (bar)	Flow rate (l/h)	Wetted diameter* (m)	Spacing - rectangular (m x m)				
					4 x 6	5 x 6	6 x 6	7 x 6	7 x 7
					Precipitation rate (mm/h)				
1.89	Yellow	2.0	190	9.5	8.0	6.4	5.3	4.6	3.9
		2.5	213	10.0	9.0	7.2	6.0	5.1	4.4
		3.0	233	10.0	9.8	7.8	6.5	5.6	4.8
2.14	Purple	2.0	244	10.0	10.3	8.2	6.8	5.9	5.0
		2.5	273	10.0	11.5	9.2	7.7	6.6	5.6
		3.0	299	10.0	12.5	10.0	8.3	7.1	6.1
2.31	Green	2.0	287	10.0	12.0	9.6	8.0	6.9	5.9
		2.5	321	11.0	13.5	10.8	9.0	7.7	6.6
		3.0	351	11.0	14.8	11.8	9.8	8.4	7.2
2.67	Blue	2.0	388	12.0	16.5	13.2	11.0	9.4	8.1
		2.5	434	12.0	18.5	14.8	12.3	10.6	9.1
		3.0	475	12.0	20.3	16.2	13.5	11.6	9.9
3.00	Brown	2.0	485	12.0	20.3	16.2	13.5	11.6	9.9
		2.5	543	12.5	22.8	18.2	15.2	13.0	11.1
		3.0	594	12.5	24.8	19.8	16.5	14.1	12.1

* Performance table prepared under laboratory conditions, sprinkler head 1.0 meter above ground. At least 0.5 mm/h.

%CU	≥ 92%	≥ 88% and < 92%	≥ 86% and < 88%	< 86%

TECHNICAL DATA

Performance (cont'd)



Triangular spacing - isosceles**

Nozzle size (mm)	Color code	Working pressure (bar)	Flow rate (l/h)	Wetted diameter* (m)	Spacing - triangular (m x m)				
					4 x 6	5 x 6	6 x 6	7 x 6	7 x 7
					Precipitation rate (mm/h)				
1.89	Yellow	2.0	190	9.5	8.0	6.4	5.3	4.6	3.9
		2.5	213	10.0	9.0	7.2	6.0	5.1	4.4
		3.0	233	10.0	9.8	7.8	6.5	5.6	4.8
2.14	Purple	2.0	244	10.0	10.3	8.2	6.8	5.9	5.0
		2.5	273	10.0	11.5	9.2	7.7	6.6	5.6
		3.0	299	10.0	12.5	10.0	8.3	7.1	6.1
2.31	Green	2.0	287	10.0	12.0	9.6	8.0	6.9	5.9
		2.5	321	11.0	13.5	10.8	9.0	7.7	6.6
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		2.5	543	12.5	22.8	18.2	15.2	13.0	11.1
		3.0	594	12.5	24.8	19.8	16.5	14.1	12.1

* Performance table prepared under laboratory conditions, sprinkler head 1.0 meter above ground. At least 0.5 mm/h.

%CU	≥ 92%	≥ 88% and < 92%	≥ 86% and < 88%	< 86%

**Do not confound isosceles with equilateral:

- An isosceles triangle is a triangle in which two sides are of equal length. The distance between 2 adjacent sprinklers on the same lateral (a) is not equal to the distance between 2 sprinklers on adjacent laterals. The height of the triangle represents the distance between adjacent laterals (b). Isosceles is usually referred to in open-field applications.
- An equilateral triangle is a triangle in which all three sides are equal. The distance between 2 adjacent sprinklers on the same lateral is equal to the distance between 2 sprinklers on adjacent laterals. Equilateral is occasionally referred to in orchards due to the tree planting pattern.

TECHNICAL DATA

Max. lateral length - 10% flow variation

Inlet pressure: 2.5 bar

Lateral: 32 mm ID: 27.2 mm

Nominal flow rate: 200 l/h*	Slope	Distance between sprinklers (m)			
		4	5	6	7
		Max. lateral length (m)			
Uphill	2%	80	90	96	105
	1%	84	95	108	119
Flat terrain	0	88	105	120	133
Downhill	-1%	96	110	126	140
	-2%	100	115	132	147

Nominal flow rate: 250 l/h*	Slope	Distance between sprinklers (m)			
		4	5	6	7
		Max. lateral length (m)			
Uphill	2%	68	80	84	91
	1%	72	85	96	105
Flat terrain	0	76	90	102	112
Downhill	-1%	80	95	108	119
	-2%	84	100	114	126

Nominal flow rate: 300 l/h*	Slope	Distance between sprinklers (m)			
		4	5	6	7
		Max. lateral length (m)			
Uphill	2%	64	70	78	84
	1%	68	75	84	91
Flat terrain	0	68	80	90	98
Downhill	-1%	72	85	96	105
	-2%	76	90	102	112

Nominal flow rate: 400 l/h*	Slope	Distance between sprinklers (m)			
		4	5	6	7
		Max. lateral length (m)			
Uphill	2%	52	60	66	77
	1%	56	65	72	77
Flat terrain	0	60	70	78	84
Downhill	-1%	60	70	78	91
	-2%	64	75	84	91

Nominal flow rate: 500 l/h*	Slope	Distance between sprinklers (m)			
		4	5	6	7
		Max. lateral length (m)			
Uphill	2%	48	55	60	70
	1%	48	55	66	70
Flat terrain	0	52	60	66	77
Downhill	-1%	52	60	72	77
	-2%	56	65	72	84

Lateral: 40 mm ID: 36.8 mm

Nominal flow rate: 200 l/h*	Slope	Distance between sprinklers (m)			
		4	5	6	7
		Max. lateral length (m)			
Uphill	2%	116	130	144	154
	1%	132	150	168	182
Flat terrain	0	148	170	192	217
Downhill	-1%	164	190	216	238
	-2%	176	205	234	266

Nominal flow rate: 250 l/h*	Slope	Distance between sprinklers (m)			
		4	5	6	7
		Max. lateral length (m)			
Uphill	2%	104	115	126	140
	1%	116	130	144	161
Flat terrain	0	128	145	168	182
Downhill	-1%	136	160	180	203
	-2%	148	170	198	224

Nominal flow rate: 300 l/h*	Slope	Distance between sprinklers (m)			
		4	5	6	7
		Max. lateral length (m)			
Uphill	2%	96	110	120	126
	1%	104	120	132	147
Flat terrain	0	116	135	150	168
Downhill	-1%	124	145	162	182
	-2%	132	155	174	196

Nominal flow rate: 400 l/h*	Slope	Distance between sprinklers (m)			
		4	5	6	7
		Max. lateral length (m)			
Uphill	2%	84	95	102	112
	1%	88	100	114	126
Flat terrain	0	96	110	126	140
Downhill	-1%	100	120	132	147
	-2%	108	125	144	161

Nominal flow rate: 500 l/h*	Slope	Distance between sprinklers (m)			
		4	5	6	7
		Max. lateral length (m)			
Uphill	2%	72	85	90	98
	1%	80	90	102	112
Flat terrain	0	84	95	108	119
Downhill	-1%	88	105	114	133
	-2%	92	110	120	140

*Nominal flow rate at 2.2 bar working pressure.

TECHNICAL DATA

Max. lateral length - 10% flow variation (cont'd)

Inlet pressure: 2.5 bar

Lateral: 50 mm ID: 45.4 mm

Nominal flow rate: 200 l/h*	Slope	Distance between sprinklers (m)			
		4	5	6	7
		Max. lateral length (m)			
Uphill	2%	148	165	174	182
	1%	180	200	222	238
Flat terrain	0	212	245	276	301
Downhill	-1%	240	280	318	357
	-2%	260	310	354	399

Nominal flow rate: 250 l/h*	Slope	Distance between sprinklers (m)			
		4	5	6	7
		Max. lateral length (m)			
Uphill	2%	136	150	162	168
	1%	156	175	198	210
Flat terrain	0	180	210	234	259
Downhill	-1%	200	235	270	301
	-2%	220	260	294	329

Nominal flow rate: 300 l/h*	Slope	Distance between sprinklers (m)			
		4	5	6	7
		Max. lateral length (m)			
Uphill	2%	124	140	150	161
	1%	144	165	180	196
Flat terrain	0	164	190	210	238
Downhill	-1%	180	210	240	266
	-2%	196	230	264	294

Nominal flow rate: 400 l/h*	Slope	Distance between sprinklers (m)			
		4	5	6	7
		Max. lateral length (m)			
Uphill	2%	108	120	132	140
	1%	124	140	156	168
Flat terrain	0	136	155	174	196
Downhill	-1%	148	170	198	217
	-2%	156	185	210	238

Nominal flow rate: 500 l/h*	Slope	Distance between sprinklers (m)			
		4	5	6	7
		Max. lateral length (m)			
Uphill	2%	100	110	120	133
	1%	108	125	138	147
Flat terrain	0	120	135	156	168
Downhill	-1%	128	150	168	189
	-2%	136	160	180	203

Lateral: FlexNet™ 2" ID: 51.5 mm

Nominal flow rate: 200 l/h*	Slope	Distance between sprinklers (m)			
		4	5	6	7
		Max. lateral length (m)			
Uphill	2%	168	180	192	203
	1%	208	230	252	273
Flat terrain	0	252	290	330	364
Downhill	-1%	292	340	390	441
	-2%	320	380	438	490

Nominal flow rate: 250 l/h*	Slope	Distance between sprinklers (m)			
		4	5	6	7
		Max. lateral length (m)			
Uphill	2%	152	165	180	189
	1%	180	205	222	245
Flat terrain	0	216	250	282	308
Downhill	-1%	244	285	330	364
	-2%	268	315	366	406

Nominal flow rate: 300 l/h*	Slope	Distance between sprinklers (m)			
		4	5	6	7
		Max. lateral length (m)			
Uphill	2%	144	155	168	175
	1%	168	190	210	224
Flat terrain	0	196	225	252	280
Downhill	-1%	220	255	294	329
	-2%	240	280	324	364

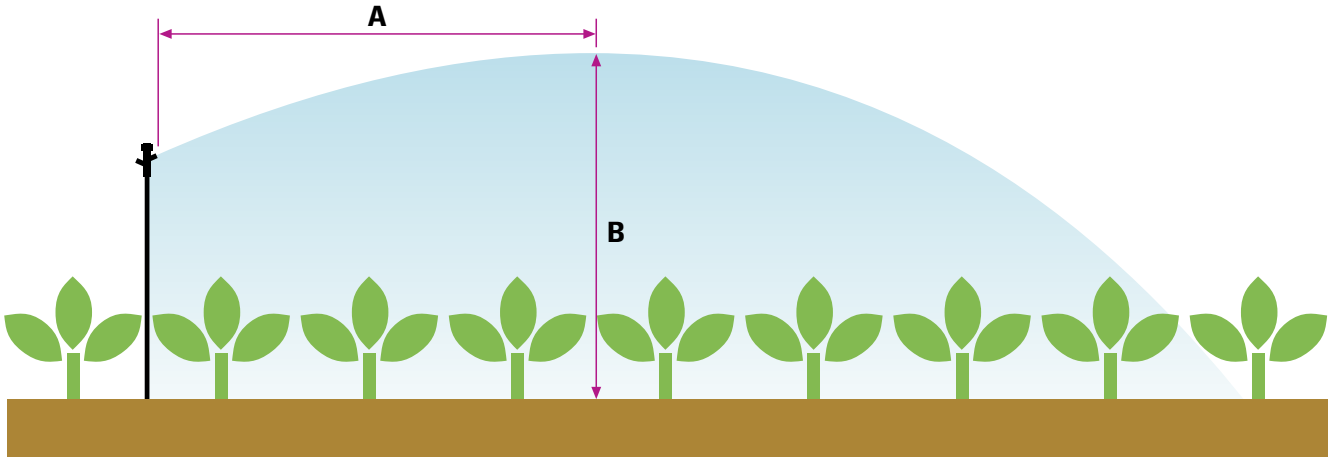
Nominal flow rate: 400 l/h*	Slope	Distance between sprinklers (m)			
		4	5	6	7
		Max. lateral length (m)			
Uphill	2%	124	140	150	161
	1%	144	160	180	196
Flat terrain	0	160	185	210	231
Downhill	-1%	180	210	240	266
	-2%	192	225	258	294

Nominal flow rate: 500 l/h*	Slope	Distance between sprinklers (m)			
		4	5	6	7
		Max. lateral length (m)			
Uphill	2%	112	125	138	147
	1%	128	145	156	175
Flat terrain	0	140	165	186	203
Downhill	-1%	152	180	204	224
	-2%	164	195	222	245

*Nominal flow rate at 2.2 bar working pressure.

TECHNICAL DATA

Sprinkler water trajectory



A. Distance - Distance of max. trajectory height from sprinkler nozzle.
B. height - Elevation of max. trajectory height above ground.

Trajectory height above sprinkler nozzle

The maximum trajectory height above the sprinkler nozzle is relevant in the following cases:

- When sprinklers are used under the canopy to prevent wetting the foliage.
- When sprinklers are used in a net-house or inside a roofed structure such as a glasshouse, to prevent wetting the net or the ceiling.

Water trajectory angle: 30 degrees

Flow rate* (l/h)	Nozzle size (mm)	Color code	Working pressure (bar)	Trajectory (m)	
				Height	Distance
200	1.89	Yellow	2.0	0.65	3.14
			2.5	0.71	3.25
			3.0	0.77	3.25
250	2.14	Purple	2.0	0.80	3.31
			2.5	0.88	3.50
			3.0	0.90	3.55
300	2.31	Green	2.0	0.83	3.27
			2.5	0.92	3.50
			3.0	2.95	3.54
400	2.67	Blue	2.0	0.87	3.37
			2.5	0.92	3.56
			3.0	0.98	3.65
500	3.00	Brown	2.0	0.92	3.58
			2.5	1.02	3.72
			3.0	1.02	3.90

Head loss in riser tube

Riser tube: OD 12.0 mm, ID 9.0 mm

Riser tube length (m)	Flow rate* (l/h)				
	200	250	300	400	500
	Head loss (bar)				
1.2	0.017	0.025	0.034	0.057	0.084

Riser tube: ½", ID 15.0 mm

Riser tube length (m)	Flow rate* (l/h)				
	200	250	300	400	500
	Head loss (bar)				
0.4	0.000	0.001	0.001	0.002	0.002
0.8	0.001	0.001	0.002	0.003	0.005
1.2	0.001	0.002	0.003	0.005	0.007

Riser tube: ¾", ID 20.5 mm

Riser tube length (m)	Flow rate* (l/h)				
	200	250	300	400	500
	Head loss (bar)				
0.4	0.000	0.000	0.000	0.000	0.001
0.8	0.000	0.000	0.000	0.001	0.001
1.2	0.000	0.000	0.001	0.001	0.002

*Nominal flow rate at 2.5 bar working pressure.

INSTALLATION

Introduction

CAUTION
Assembly must be done gently. Do not overtighten or use excessive force.

Various installation configurations

Netafim™ sprinklers can be installed at a convenient height in different configurations, to suit the needs of various crops and field conditions.

Among the various installation options:

- **Mega Stand™** - a ½" diameter robust and durable modular sprinkler stand suitable for a variety of agriculture and mining irrigation applications.
- **IMP SPR stand™** - a ½" diameter stand, satisfactorily used by farmers all over the globe for many years. It became a classic in open field and orchard irrigation due to its durability, simplicity and versatility. It can accommodate any type of ½" sprinkler.
- **Solid set** - Netafim™ offers a comprehensive range of sockets and reducer couplings dedicated to the proper connection of sprinklers to solid-set riser pipes (PVC or other rigid pipes). Usage of these accessories ensures appropriate, safe operation and longevity of the sprinklers.

See the installation manual for each one of the above installation options at
http://www.netafim.com/irrigation-products-technical-materials

MAINTENANCE

To assure proper operation of the sprinkler, a simple inspection and maintenance procedure should be carried out regularly.

Checking the swivel (rotor) pin for wear

Frequency: Before the beginning of each growing season

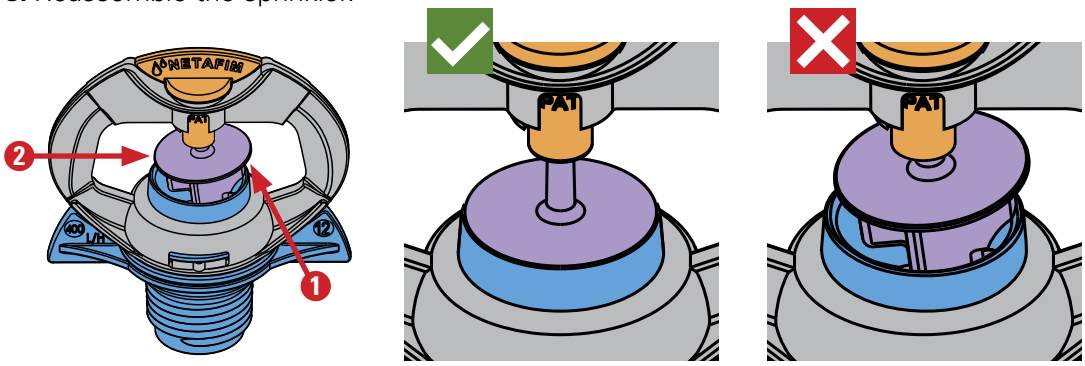
Action:

1. Gently pull the swivel (rotor) up with your fingernail or with a small screwdriver and hold it.

2. Push the swivel (rotor) sideways and release it.
The swivel (rotor) should fall back to its original location.

If the swivel (rotor) remains clamped in a skewed position, it means that its pin is worn.
- If the emitter has a black upper bearing, replace the swivel (rotor) and the upper bearing.
- If the emitter has an orange upper bearing (EverSpin™) replace only the swivel.

3. Reassemble the sprinkler.



If the swivel (rotor) does not rotate

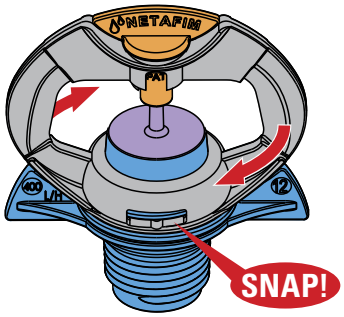
Action:

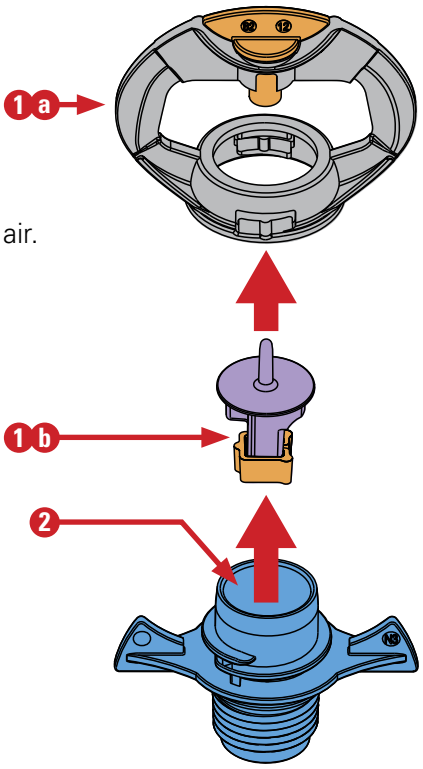
1. Dismantle the sprinkler:
a. Remove the bridge by unscrewing it from the body nozzle.
b. Remove the swivel (rotor).

2. Clean the body nozzle from its top side with a water jet or pressurized air.

3. Reassemble the sprinkler.

NOTE
Screw the bridge to the body nozzle until you feel it snap closed.

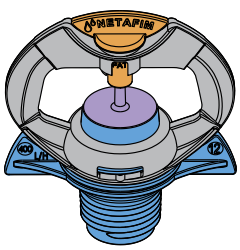




PARTS

GyroNet™ Turbo - head only

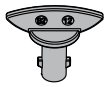
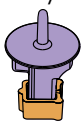
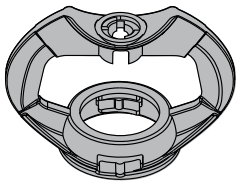
Model	1 unit	25 units/bag	100 units/bag
200	64100-002040	64100-002010	64100-002070
250	64100-003050		64100-003080
300	64100-004040	64100-004050	64100-004070
400	64100-004940		
500	64100-006000		



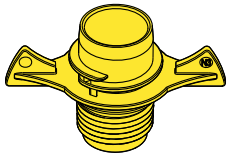
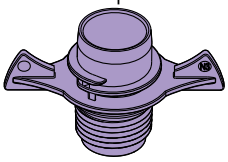
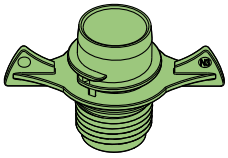
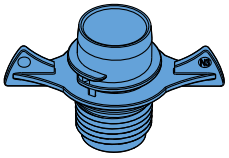
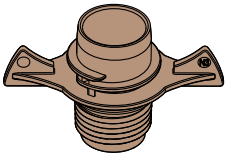
Packaging data

GyroNet™ Turbo	Units p/box	Box size (cm)	Box weight (Kg)	Boxes p/pallet	Total units p/pallet	Pallet weight (Kg)
Head only	500	18 x 34 x 79	10.4	20	10000	220
Complete stand (120 cm) w/o stake	75	17 x 26 x 139	9.5	15	1125	153

GyroNet™ Turbo components

Part description	Upper bearing	EverSpin™ upper bearing	Swivel (rotor) + assembly sleeve	Bridge
				
Catalog number	64120-001750	64120-001760	64120-001575	64120-002000

GyroNet™ Turbo body nozzles

Model	200	250	300	400	500
Color code	Yellow 	Purple 	Green 	Blue 	Brown 
Catalog number	64120-001000	64120-001100	64120-001200	64120-001280	64120-001350

WARRANTY

Netafim™ warrants all the components of the GyroNet™ Turbo midi-sprinkler to be free of substantial defects in material and workmanship for a period of 1 (one) year from the date of purchase.

If a defect is discovered during the applicable warranty period, Netafim™ will repair or replace, at its discretion, the product or the defective part.

This warranty does not extend to repairs or replacements of a GyroNet™ Turbo midi-sprinkler or part resulting from misuse, negligence, alteration, force majeure, lightning, improper installation or improper maintenance, including any maltreatment of the GyroNet™ Turbo midi-sprinkler or any part of the irrigation systems.

If a defect arises in your Netafim™ product during the warranty period, contact your Netafim™ supplier.

Limited warranty

This warranty is subject to the terms and conditions contained in Netafim's official warranty statement in force at the time of application.
For the full text of Netafim's official warranty statement, go to:
http://www.netafim.com/irrigation-products-technical-materials

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