

## BIG GUNS FOR TRAVELING SYSTEMS

### General Information

Traveling sprinklers were developed as a means of significantly reducing irrigation labor with a low-cost initial expenditure. Consisting basically of a Big Gun® sprinkler mounted on a powered chassis which pulls a flexible irrigation drag hose and continuously moves down selected travel lanes, the traveler is capable of irrigating a rectangular strip as long as 1/2 mile unattended. Traveling sprinklers with Big Guns are capable of producing a high degree of water distribution uniformity when the proper sprinkler gallonage, operating pressure and travel lane spacings are selected.

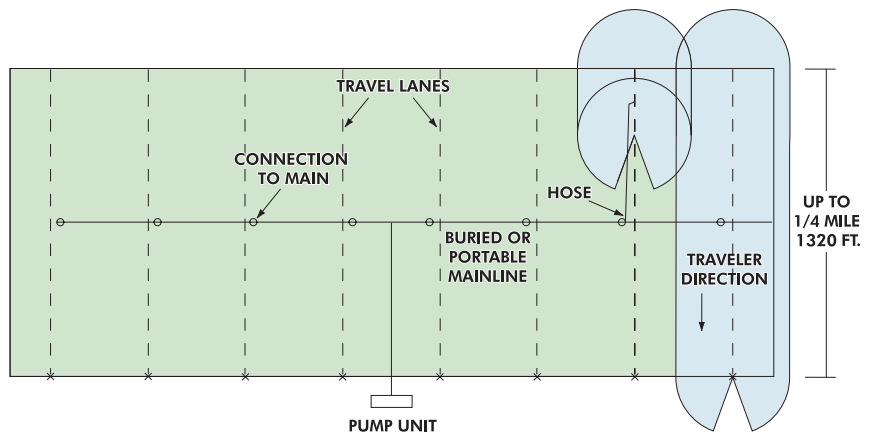
### Features

- **Low Labor Requirement** — The traveler is easily operated by one man with almost all labor required for operation being "tractor seat" labor. Initial set-up of system is easiest of all mechanical systems.
- **Low Initial Cost** — The low first cost of the traveler makes it one of the lowest cost-per-acre mechanical systems available.
- **Irrigates Wide Range of Crops** — Travelers are successfully being used to irrigate a very wide range of crops including corn, soybeans, pasture, alfalfa, grain crops, tree crops, potatoes, vegetables and many other crops. Travelers are also becoming significant for use in waste disposal.
- **Adaptability to Irregular Fields** — Travelers are small and compact units, and can operate successfully where such obstructions as utility poles, trees and buildings exist. Travelers will also operate well in irregular shaped fields and on extremely undulating terrain.
- **High Degree of Portability** — Travelers are ideal for irrigating widely scattered tracts, and can be towed from field to field at highway speeds. The extreme portability of travelers lends the unit to easy storage and off-season maintenance in the shop rather than in the field.
- **Low-Acreage Loss** — The acreage left idle by the traveler due to travel lanes is very minimal and in the case of such crops as pasture and tree crops there is virtually no loss.
- **High Degree of Uniformity** — The continuous movement of the traveling sprinkler provides a high uniformity of water application. Nelson Big Guns are especially designed to provide a distribution curve during stationary operation that will result in even water distribution when traveling.

### Typical Layout for a Traveling System

The distance the machine can travel usually is two times the length of the hose and is determined by field size and shape. The distance between travel lanes is determined by the sprinkler performance, the wind conditions, and the field dimensions and will generally vary from 150 feet to 360 feet.

As the traveler operates, the hose is wound on a hose reel. The traveler is then repositioned for the next travel sequence.



#### Warranty and Disclaimer

Nelson Big Gun® Sprinklers are warranted for one year from date of original sale to be free of defective materials and workmanship when used within the working specifications for which the products were designed and under normal use and service. The manufacturer assumes no responsibility for installation, removal or unauthorized repair of defective parts. The manufacturer's liability under this warranty is limited solely to replacement or repair of defective parts and the manufacturer will not be liable for any crop or other consequential damages resulting from defects or breach of warranty. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSES AND OF ALL OTHER OBLIGATIONS OR LIABILITIES OF MANUFACTURER. No agent, employee or representative of the manufacturer has authority to waive, alter or add to the provisions of this warranty, nor to make any representations or warranty not contained herein.

## Depth of Water Applied for Traveling Sprinklers, Inches

*G.P.M.	Spacing Between Traveler Lanes, Ft.	Traveler Speed, Feet Per Minute								
		0.4	0.5	1	2	4	6	8	10	
100	165	2.4	1.9	1.0	0.49	0.24	0.16	0.12	0.10	
200	180	4.5	3.6	1.8	0.89	0.45	0.30	0.22	0.18	
	200	4.0	3.2	1.6	0.81	0.40	0.27	0.20	0.16	
300	200	6.0	4.8	2.4	1.20	0.60	0.40	0.30	0.24	
	270	4.5	3.6	1.8	0.89	0.45	0.30	0.22	0.18	
400	240	6.7	5.4	2.7	1.34	0.67	0.45	0.33	0.27	
	300	5.4	4.3	2.1	1.07	0.54	0.36	0.27	0.21	
500	270	7.4	5.9	3.0	1.49	0.74	0.50	0.37	0.30	
	330	6.1	4.9	2.4	1.22	0.61	0.41	0.30	0.24	
600	270	8.9	7.1	3.6	1.8	0.89	0.59	0.45	0.36	
	330	7.3	5.8	2.9	1.46	0.73	0.49	0.36	0.29	
700	270	10.4	8.3	4.2	2.1	1.04	0.69	0.52	0.42	
	330	8.5	6.8	3.4	1.70	0.85	0.57	0.43	0.34	
800	300	10.7	8.6	4.3	2.1	1.07	0.71	0.54	0.43	
	360	8.9	7.1	3.6	1.78	0.89	0.59	0.45	0.36	
900	300	12.0	9.6	4.8	2.4	1.20	0.80	0.60	0.48	
	360	10.0	8.0	4.0	2.0	1.00	0.67	0.50	0.40	
1000	330	12.2	9.7	4.9	2.4	1.22	0.81	0.61	0.49	
	360	11.1	8.9	4.5	2.2	1.11	0.74	0.56	0.45	

\* See the Big Gun Catalog for Gun performance information.

$$\text{Formula: Average Water Depth Applied Inches} = \frac{1.605 \times \text{Sprinkler G.P.M.}}{\text{Lane Spacing, Ft.} \times \text{Travel Speed, Ft./Min}}$$

## Irrigation Rate for Traveling Sprinklers

Travel Speed Ft./Min.	Acres Irrigated per Hour								Hours Required for 1/4 Mile Travel
	Travel Lane Spacing, Ft.								
	165	200	240	270	300	330	360	400	
0.4	0.09	0.10	0.13	0.15	0.16	0.18	0.20	0.22	55
0.5	0.11	0.14	0.16	0.19	0.21	0.23	0.25	0.28	44
1	0.22	0.27	0.33	0.37	0.41	0.45	0.49	0.55	22
2	0.45	0.54	0.66	0.75	0.82	0.90	0.99	1.10	11
4	0.90	1.10	1.32	1.49	1.65	1.81	1.98	2.20	5.5
6	1.36	1.65	1.98	2.23	2.48	2.72	2.98	3.30	3.7
8	1.81	2.20	2.64	2.97	3.30	3.63	3.96	4.40	2.7
10	2.27	2.75	3.30	3.72	4.13	4.54	4.95	5.50	2.2
Acres Irrigated in 1/4 mile travel	5.0	6.0	7.3	8.2	9.1	10.0	10.9	12.1	

$$\text{Formula: Acres Irrigated per hour} = \frac{\text{Travel Speed, Ft./Min.} \times \text{Spacing Between Runs, Ft.}}{726}$$

$$\text{Acres Irrigated per 1/4 mile travel} = \frac{\text{Spacing Ft.}}{33} \quad \text{Hours Required per 1/4 mile travel} = \frac{22}{\text{Travel Speed, Ft./Min.}}$$

### TRAVEL LANE SPACING

The distance between travel lanes for any given sprinkler size is largely determined by local wind conditions. High winds tend to distort or modify the sprinkler pattern into an egg-shaped coverage patter. Therefore, if possible, direction of travel should be at right angles to the prevailing wind. While the continuous movement of this irregular pattern is very effective in evening out the travel pattern, it is essential to use closer spacings between travel lanes to obtain adequate overlap.

### FULL OR PART CIRCLE OPERATION

A part circle sprinkler should be used when it is desirable to leave a dry path in front of the traveler, to water ends of the field without overthrow of the boundary and to adjust the arc of the sprinkler to compensate for wind. A full circle sprinkler should be used if the above are not important and when the lowest possible application rate is desired.

When using a part circle sprinkler to maintain a dry travel path, adjust the area of the circle not watered to the smallest possible arc. This will provide nearly as low an application rate as with a full circle sprinkler at the same performance.

The application rate of a part circle sprinkler is greater than for a full circle sprinkler of the same capacity, increasing according to the proportion of circle covered. For example, the application rate of a sprinkler covering a one-half circle is double that of a full circle sprinkler.

### PRESSURE REQUIREMENTS

As the pressure at the Big Gun® nozzle increases, the stream velocity increases, causing the stream to be broken into finer droplets and enabling the stream to be carried further. Because of the continuous traveling movement, a relatively constant distribution uniformity is maintained over a broad range of pressures. Therefore selecting the proper operating pressures, like trajectory angles is mostly a consideration of providing droplet conditions that are suitable for the crop and soil to be irrigated.

General recommendations for pressure at the Big Gun® nozzle to achieve the most desirable droplet conditions are:

Gallonge Range	Minimum Pressure Recommendation
100 to 200	60 to 80 psi
200 to 300	70 to 90 psi
300 to 500	80 to 100 psi
over 500	85 to 110 psi

### TRAJECTORY ANGLE

Nelson Big Guns® are available in various trajectory angles (21°, 24°, 27°, and the new 15-45° adjustable). The higher trajectories maximize the distance of throw and allow the stream droplets to reach a nearly zero horizontal velocity before descending to the ground. The lower trajectories tend to fight the wind better, but they do not provide the desirable droplet conditions that are characteristic of the higher angles. Lower trajectory guns should always be used at higher operating pressures.

### NOZZLE TYPE SELECTION

Nelson Big Gun® Sprinklers come with either ring, taper ring or taper bore nozzles. Ring nozzles provide better stream breakup and more close-in water and are easier to change than taper bore nozzles. Taper bore nozzles give greater distance of throw and the stream better withstands windy conditions. A small secondary nozzle tap is provided with Nelson Big Gun Sprinklers that can be used if more close-in water is desired.

### FOR BEST RESULTS, CONTACT YOUR TRAVELER DEALER

The key to the successful use of Big Guns® on travelers is the proper planning of the system for your acreage, lay of the land, shape of the fields, crop, soil, water supply, and pumping conditions. Your traveler dealer can best recommend the proper combination of Big Gun® sprinkler, traveler, hose, reel, main line and pumping unit based upon his experience with the operating conditions in your area and the performance characteristics of the system components.