

Installation Guide

DRAGON-LINE® HYBRID SYSTEM V1.01.2 FEB. 2023

DRAGON-LINE MOBILE DRIP IRRIGATION



PHONE 844-424-3724

WWW.DRAGONLINE.NET

TOOLS NEEDED FOR INSTALL

Make sure to have all tools ready before heading to the field!

Call your Dragon-Line Dealer for tools needed. NO tools are automatically included in a order!

*If time allows pre-cut tubing and install end caps at the shop before installation.

Available through Dragon-Line



43.

PINCH PLIERS
for Pinch Clamps



45.

M12 PROPEX
EXPANSION TOOL
5/8" HEAD



51.

DRAGON-LINE
TOOL BOX



44.

TWIST TIE TOOL



42.

HOSE CUTTER



46.

TUBING CART &
COUNTER



50.

V-JACK CABLE
TOOL



54.

BOLT CUTTERS
For Cable



MEASURING
TAPE



PERMANENT
MARKER



GLOVES



SOCKET WRENCH



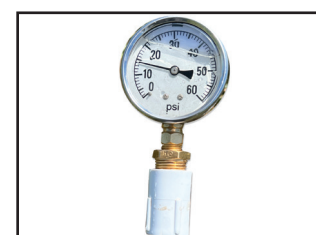
6' LADDER



18' EXTENSION
LADDER



1/4" IMPACT
WRENCH W/ 1/2"
DEEP SOCKET



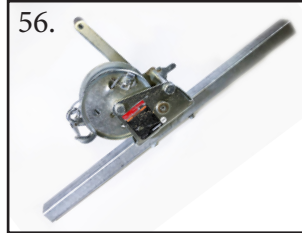
END OF LINE
PRESSURE GAUGE
ASSEMBLY

DRAGON-LINE PARTS

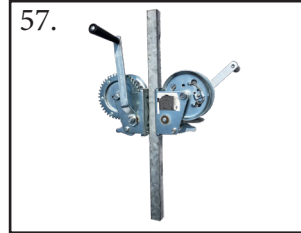
Each part has a simplified parts number at the top left corner



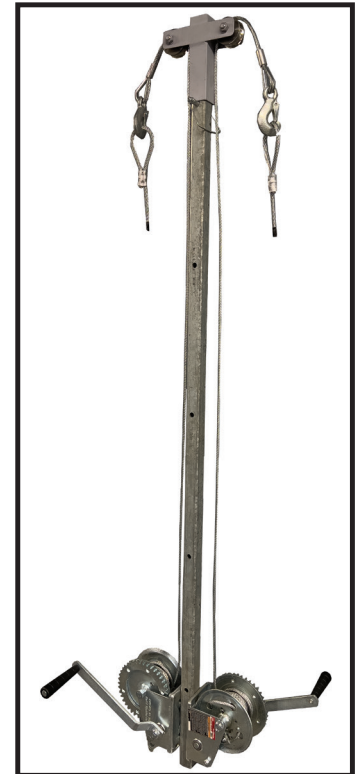
55.
CENTER LIFT
WINCH ASSY



56.
STARTER WINCH
ASSEMBLY



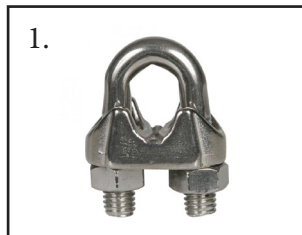
57.
DUAL WINCH
ASSEMBLY



DUAL HIGHLINE
WINCH



58.
SINGLE WINCH
ASSEMBLY



1.
1/4" CABLE CLAMP



2.
3/8" TURNBUCKLE
HOOK & EYE



59.
TOWER TERMINATION
KIT



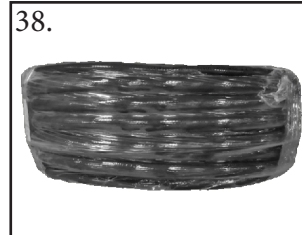
60.
V-JACK HOOK
SUPPORT CABLES



62.
SADDLE CLAMPS
4", 5", 5 9/16", 6",
6 5/8", 8" 8 5/8", 10"



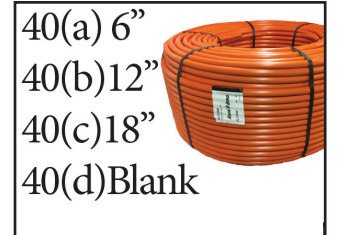
SPACING
(28) 20"
(29) 30"
(30) 40"
(31) 60"
DRAGON-LINE
50' MANIFOLD HOSE
ASSEMBLY



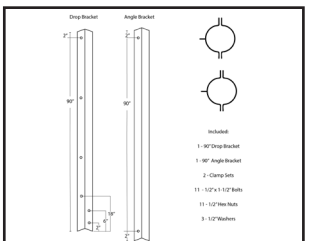
38.
3/4" DROP FLEX
HOSE 250' ROLL



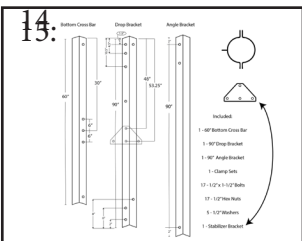
39.
1/2" DRAGON
FLEX HOSE 300' ROLL



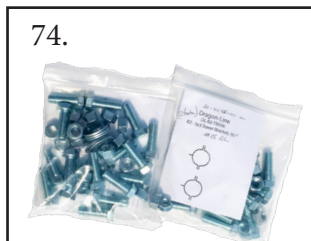
40(a) 6"
40(b) 12"
40(c) 18"
40(d) Blank
DRAGON-LINE® 17MM
EMITTER TUBING
1000' ROLL



14.
DROP DOWN
STARTER BRACKET



14.
DROP DOWN
END BRACKET KIT



74.
DROP DOWN BOLT KIT
5/8" NUT & BOLT



3.
1/4" GALVANIZED
AIRCRAFT CABLE

DRAGON-LINE PARTS

63.



J-TURBO-CPK 17MM
INSERT COUPLING

64.



J-TURBO-CPK 17MM
INSERT TEE

22.



HBxHBxHB 17MM
RB INSERT TEE

25.



RB INSERT COUPLING
17MM HB x 17MM HB

67.



3/4" MPT x MPT
J-CLOSE NIPPLE

68.



3/4" MPT x MPT x MPT
J-3 WAY TEE

81



TEE 3/4" MPT x 20MM x
20MM B

70.



3/4" HDPE FxFxF
3 WAY FEMALE TEE

24.



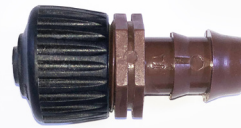
RB ELBOW
HB x HB 17MM

69.



3/4" HDPE STREET
ELBOW

41.



1/2" FPT END CAP WITH
1/2" MPTxHB 17MM ADPT

41B



J-1/2" FPT END CAP WITH
1/2" MPTxHB 17MM ADPT

65



J-(20MM) 3/4" B x B BARB
CPLR

66.



3/4" B x 3/4"
MALE PIPE ADAPTER

27.



3/4" MPT x 3/4" HB
MALE HOSE B ADPT.

26.



3/4" FPT x 3/4" HB
FEMALE HB ADPT

71.



.55 PL x 3/4" FPT x .55 PL
J-MANIFOLD TEE ADPT.

72.



.55 PL x 1/2" CAP
J-POWER LOCK PLUG

73.



.55 PL x 3/4" FPT x .55 PL
J-PL REPAIR COUPLING

21.



17MM B x 3/4"
MALE PIPE ADPT.

23.



17MM x 3/4" FPT x 17MM
MANIFOLD ADPT. TEE

23B



17MM x 3/4" FPT x 17MM
J-MANIFOLD ADPT. TEE

11.



12.



PINCH CLAMPS

61.

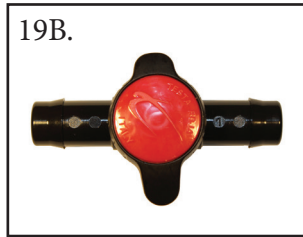


1/4" STEEL CHAIN
W/HOOK

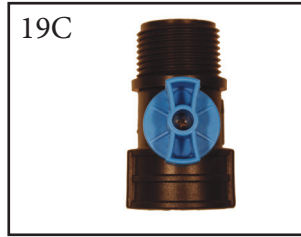
DRAGON-LINE PARTS



19.
3/4" FPT x 3/4" MPT
SENN. BALL VALVE



19B.
17Mx17M RED ROUND
SHUTOFF VALVE



19C
JAIN SH BLACK ON
BLUE



19D
JAIN LH BLUE



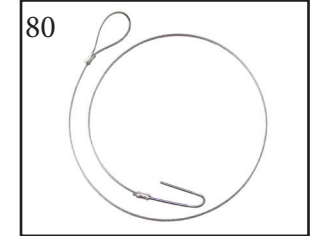
79
SENNINGER LDN UP3
HEAD NOZZLE PAD



76.A
UP3 LDN 22 GROOVE
DLC CARRIER PAD



77.
3/4" BLACK SCREWCAP
SWIVEL 3/4" FTP x 17M BARB



80
30" TIE UP ASSY
PACK OF TEN



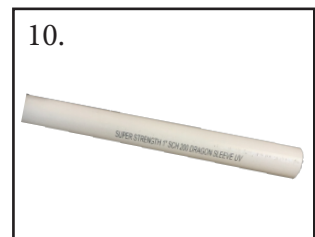
76.B
LDN 33 GROOVE D-L
CARRIER PAD



75.
UP3 LDN
D-L ADAPTOR



76.
3/4" THREADED CPLR
FPTxFT



10.
UVR PVC SLEEVE
1" x 24"



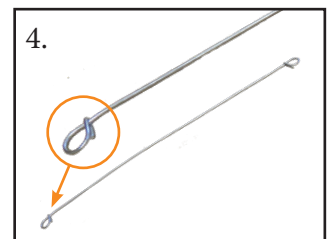
78.
3/4" WYE MPT x 17M x
17M



20.
DUAL VALVE ASSY



20D
DUAL VALVE ASSY
J LH VALVE



4.
STAINLESS WIRE TIE
16 GAUGE x 10-1/2"



20C
DUAL VALVE ASSY J SH
VALVE



20G
HIGHLINE DUAL VALVE ASSEMBLY
w/ SHORT HANDLE VALVES

1

UNPACK DRAGON-LINE HYBRID WINCH SYSTEM KIT.



Begin unpacking the Dragon-Line kit and start identifying the different parts and materials that you will use before installation. When out in the field be sure to check for any obstructions, wells, or anything that can disrupt or catch the Dragon-Line manifold system that could cause possible damage to pivot system.

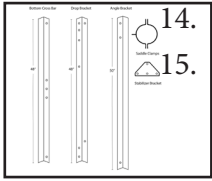
Lay out the Dragon-Line Kit in a visible area.



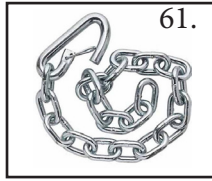
2

Identify Drop Downs & Install Clamps, Bolts, Angle Iron

PARTS YOU WILL NEED:



DROP DOWN KITS



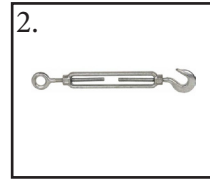
1/4" STEEL CHAIN W/ HOOK



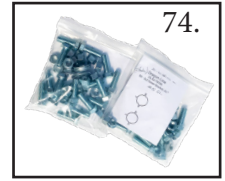
SINGLE WINCH ASSY



SADDLE CLAMPS



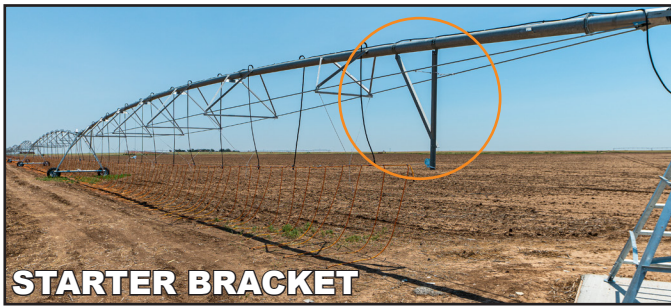
3/8" TURNBUCKLE HOOK & EYE



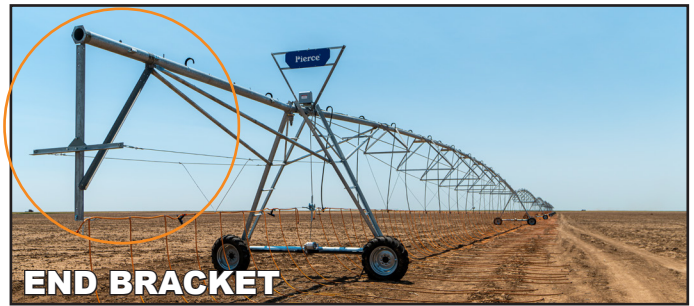
DROP DOWN BOLT KIT 5/8" NUT & BOLT

The First step to installing a Dragon-Line system is to start with the Starter Bracket. The starter and end bracket is important because it helps secure the Dragon-Line system while also allowing to move the drip line manifolds.

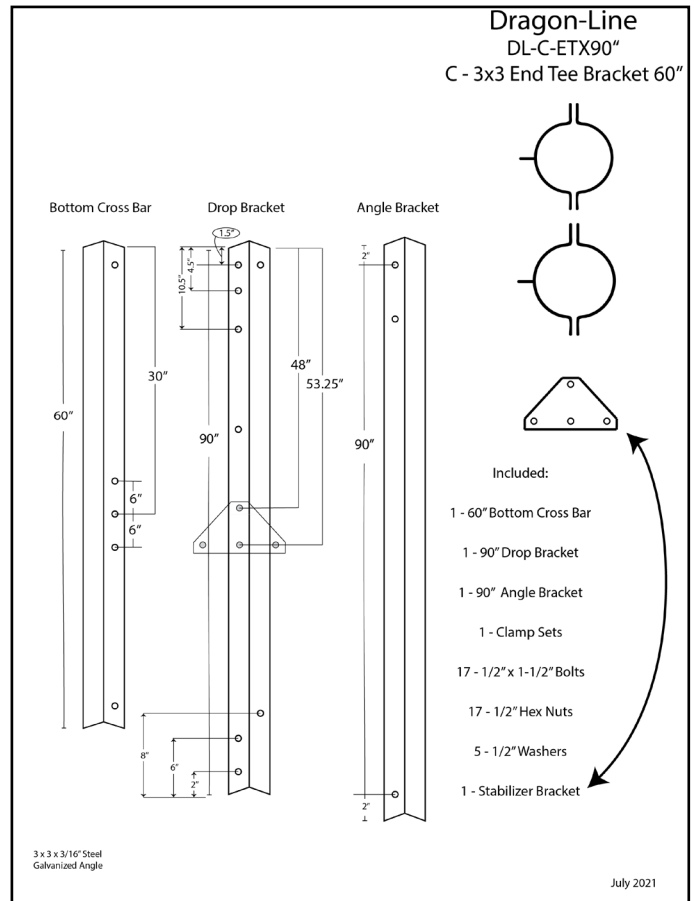
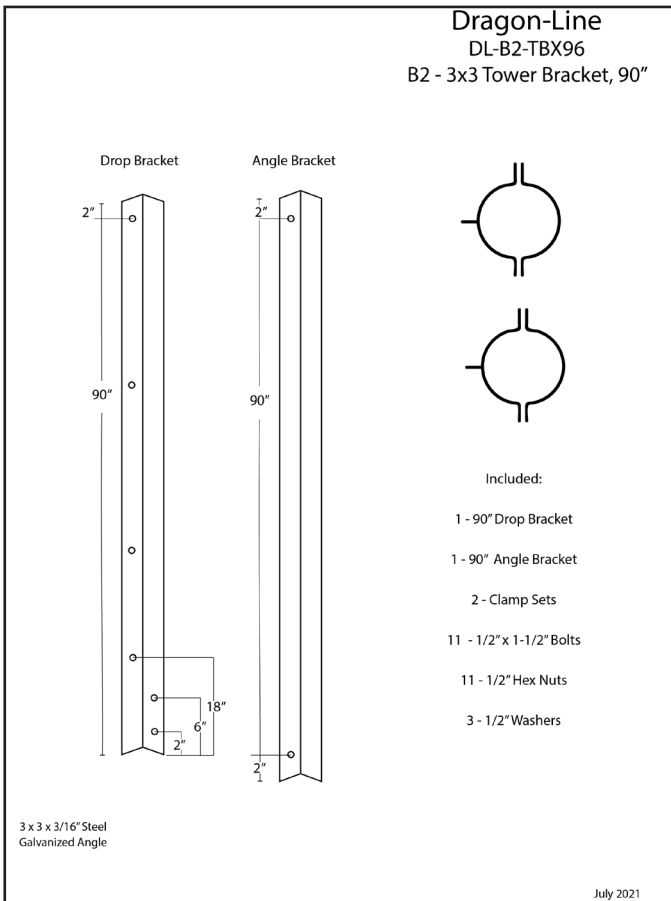
Below is what your end results should look like.



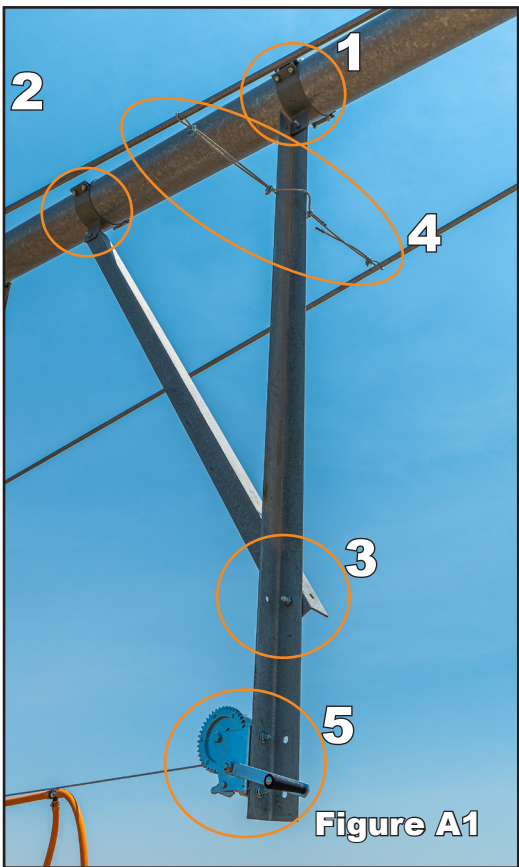
STARTER BRACKET



END BRACKET



2 Identify Drop Downs & Install Clamps, Bolts, Angle Iron



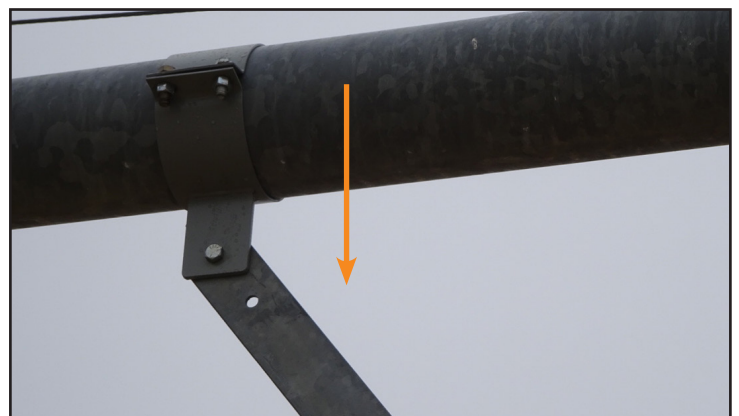
1. Start this process by placing the saddle clamps around the pivot pipe and tightening with bolts. These saddle clamps should be placed in way that both the drop-down angle iron and diagonal support can be connected. After attaching the drop down angle iron. You want the flush side of the angle iron facing the pivot for when you install the winch. (See picture for reference).

2. Attach the second saddle clamp. Do not tighten until angle is attached. Attach the other angle iron and line up the drilled holes and insert your bolt on "3" to hold angle iron in place.

3. Maintain a 90 degree angle and distance and tighten the entire frame. The drop down needs to be straight down.

4. Cable support "4". Cut a piece of cable and create a loop to secure one end of the truss rod using steel cable and cable clamps. Then loop around the other end while the drop down angle iron is in between. Using cable clamps, secure around the truss rods and in between the drop downs for a total of 4 clamps.

5. Bolt down the winch with the Locker facing down. It is important to ensure that the locker is facing down.



Mount Saddle clamp facing down.



Make sure winch locker is faced down

2

Identify Drop Downs & Install Clamps, Bolts, Angle Iron

OVERCOMING OBSTACLES IN THE FIELD.
OBSTACLE DROP DOWN KIT
(SOLD SEPARATELY)



THE DROP DOWN OBSTACLE KIT IS AVAILABLE FOR ANY FIELD OBSTRUCTIONS THAT
MAY GET IN THE WAY WHILE IN ROTATION.
THESE DROP DOWN KITS ARE SIMILAR TO INSTALLING A STARTER BRACKET.

2

IDENTIFY DROP DOWNS & INSTALL CLAMPS, BOLTS, ANGLE IRON

B) Install end bracket with Tee (Angle Iron) with chain and hook. (Only with overhang)

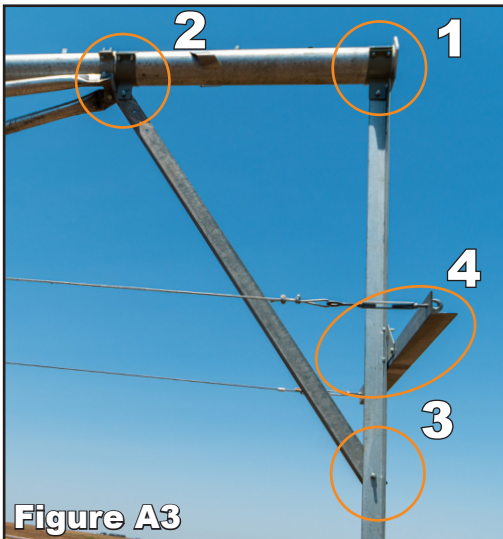


Figure A3

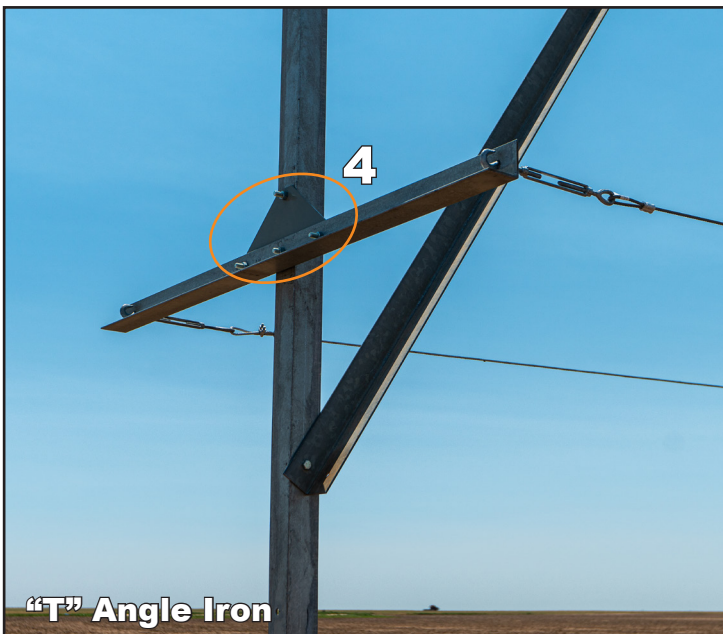
1. Dragon-Line recommends placing the end bracket no further than 40 feet from the start of the overhang. Attach saddle clamp at the end of the Pivot, then mount the drop down angle iron.

2. Attach second saddle clamp and use the drilled holes to give you the correct distance before tightening the second clamp. Achieve a 90 degree angle.

3. Securely tighten the entire system.

4. The "T" angle iron is attached next. Make sure you have the Triangle mounting plate that will be used to mount together the angle iron.

5. Attach Chain with 2 washers and 1/2" x 1 3/4" Long bolt with 2 washers as shown in Figure A4



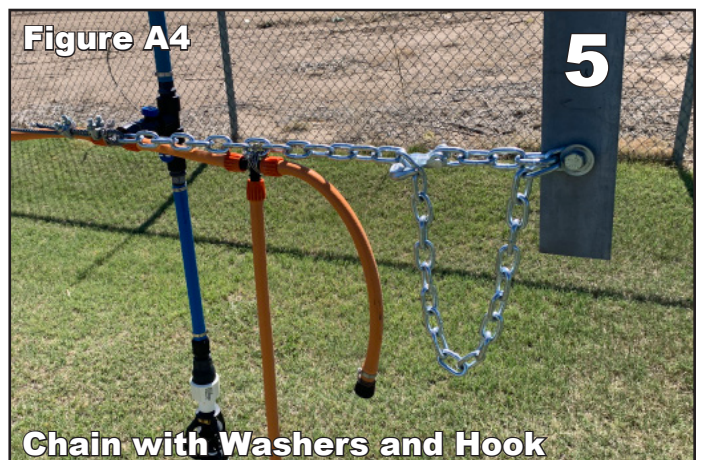
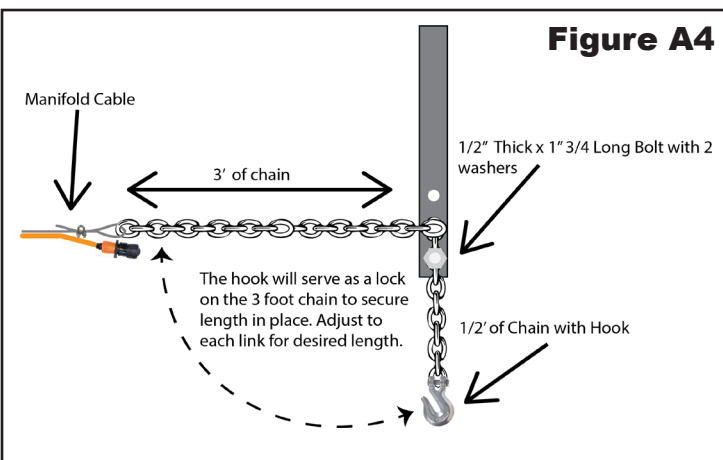
"T" Angle Iron



Install cables from tower legs to "T" bracket with Turnbuckles

1. Loop steal cable through the eye of the turnbuckle and tie using cable clamp.

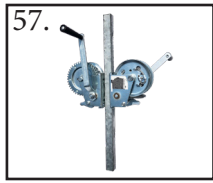
2. Unscrew hook end and insert through both ends of the "T". Tighten turnbuckle.



Chain with Washers and Hook

3 INSTALL TERMINATION CABLE AT ALL TOWERS WITH OPTIONAL DUAL WINCHES (This can be done at the same time as Step 2 if you have extra crew members)

PARTS YOU WILL NEED:



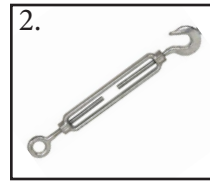
57. DUAL WINCH ASSY



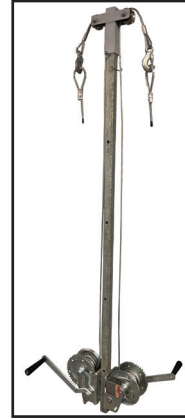
1. 1/4" Cable Clamp



59. TOWER TERMINATION CABLES



2. 3/8" TURNBUCKLE

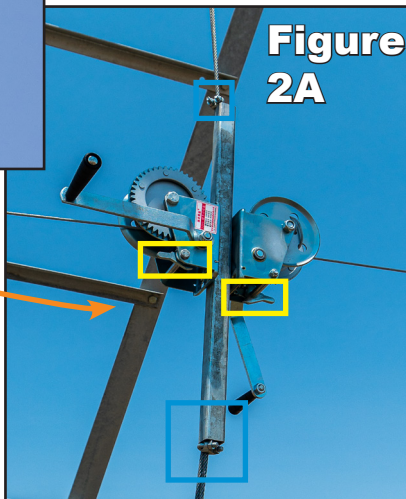
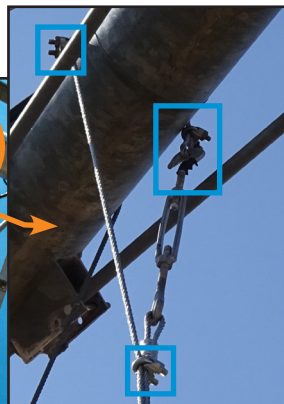


Optional High Line Dual Winch

Install the tower termination kits at each tower.

1. The first step to installing a tower termination kit is to take the attached turn buckle over the pivot tower pipe. The other end of the tower termination kit should then be threaded through the bracket of the dual winch assembly tubing (see figure 2A) of turnbuckle before being wrapped around center gear motor mounting bracket.
2. The first 1/4 inch cable clamp needs to be placed above the motor mounting bracket (1 1/2 or 2 feet high), leave this clamp loose, do not tighten. The second cable clamp placed directly underneath where the hook of the turnbuckle and loop connect. This will keep the cable straight and allow for more movement of the dual winch up and down the tower termination. This allows the height of the dual winch to become fully adjustable.
3. Slide 24' feet of cable steel through the winch terminal tubing with the winch lockers facing DOWN.
4. Using cable clamps to secure the winch terminal, measure from the ground, 5 feet or 5 1/2 (Optional) by tightening a cable clamp underneath the bracket to hold the winch at a set height above the ground and secured by tightening a second clamp above the bracket.

5. Attach pre-cut galvanized cable with pre-made loops on each end, to the winch cable hook (winch cable should be extended at the end of the span, leaving 10'-20' on the winch). **This will create the Manifold cable.**



Place Center of winch at 5 or 5 1/2 feet.

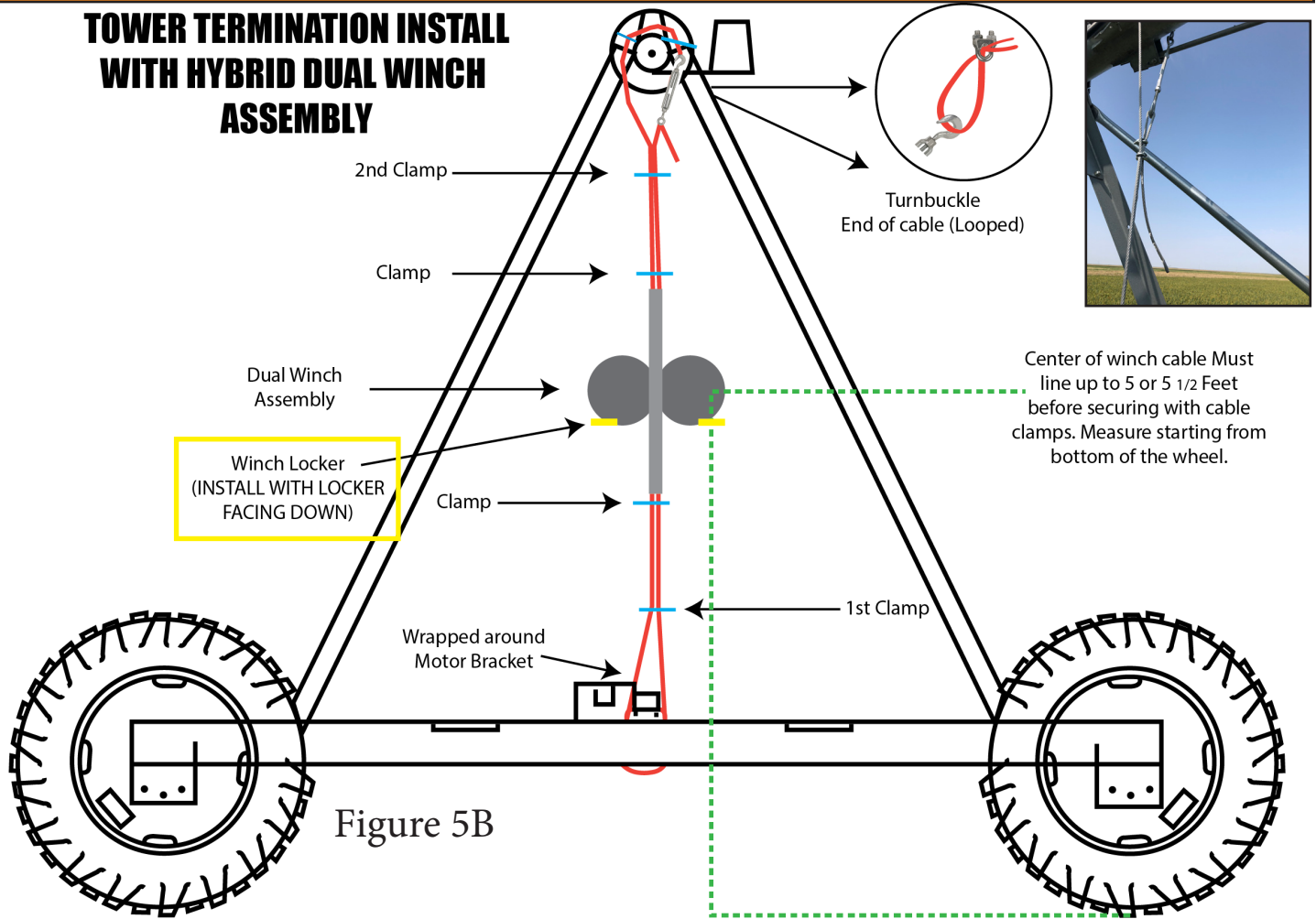


Highline Dual Winch Assy in the field

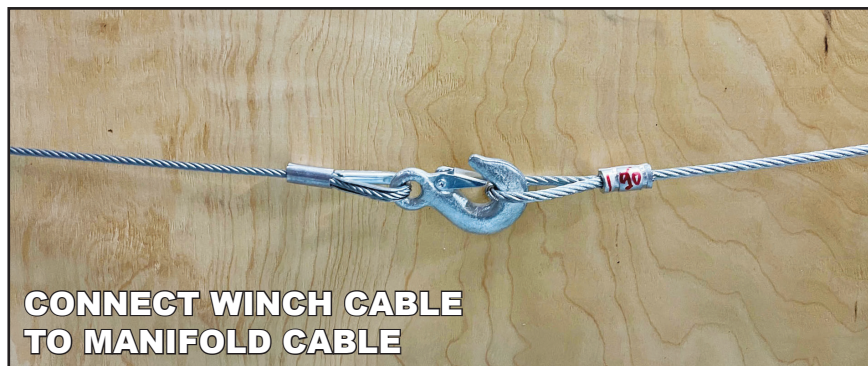
3

INSTALL TERMINATION CABLE AT ALL TOWERS WITH OPTIONAL DUAL WINCHES

TOWER TERMINATION INSTALL WITH HYBRID DUAL WINCH ASSEMBLY



MAKE A LOOP AT THE END OF THE MANIFOLD CABLE AND USING 1/4" CABLE CLAMPS TO SECURE LOOP.



1. With the two brackets and tower terminations in place, a cable can now be stretched to connect the two winches/turnbuckles at each end of a span. These cables should measure the length between the tower terminations or attach premade cables as in picture above. After being cut to length, the cable should then be attached to the hook of winch by creating a loop with the cable (be sure to use two cable clamps to create stronger loop). Tighten the winches until the center of the cable is roughly 6 to 12 inches off the ground. (Note, the process can be different when connecting cable to brackets as cable can be attached to a hook and chain or winch mounted directly to the bracket).

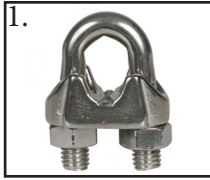
4

INSTALL V-JACK CABLES ASSEMBLY, MANIFOLD HOSE ASSEMBLY

PARTS YOU WILL NEED:



DRAGON-LINE
50' MANIFOLD HOSE
ASSEMBLY



1.
1/4" CABLE
CLAMP



60.
V- JACK HOOK
CABLES



72.
.55 PL x 1/2" CAP
J-POWER LOCK PLUG



V-JACK CABLE

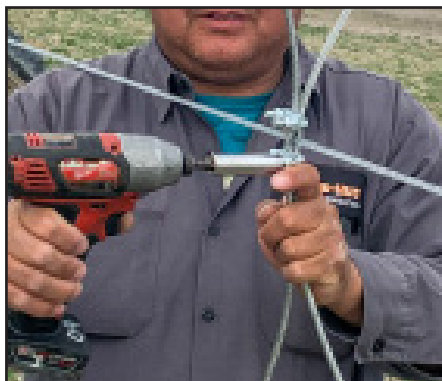
INSTALL V-JACK CABLE TIES WITH CABLE CLAMPS

1. With the Manifold cable now in place V-Jack cable hooks should be installed and attached to the cable across the systems length. The hook should rest in the V-Jack pocket or wrap around the junction of V-Jack.
2. The first V-Jack cable hook assembly in the center of the span should be installed first and set to the same desired height as the dual winches. From here the V-Jack hook assemblies should be installed from the center out to the towers to ensure the cable is evenly off the ground.

Note: The included 1/4 inch cable clamps should be on either side of the cable. This will create a loop under the main cable. This loop can either be left in place or tied to the main cable with twine/zip ties etc.

3. Once all V-Jack cable hooks are installed and the clamps below the cable connecting the tower terminations are tight, it should then be stretched using the winches/ turnbuckles until it is tight enough to eliminate sagging between V-Jack hook cable assemblies.

4. With the cable in place, the Dragon-Line 50' Manifold hose assembly should now be unrolled and attached to the manifold cable.



Two cable clamps are used to
secure the manifold cable to the
V-jack cable.



V-Jack Cable Open
Hook (use with
truss pocket)



V-Jack Cable
Spring Clip
Hook (use with
truss rods only)



Terminate manifold assembly
with #72. Power Lock Plug

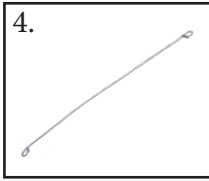
5

INSTALL MANIFOLD

PARTS YOU WILL NEED:



Twist Tie Tool



Stainless Wire Tie
16 Gauge x 10-1/2"



Marker



MEASURING
TAPE

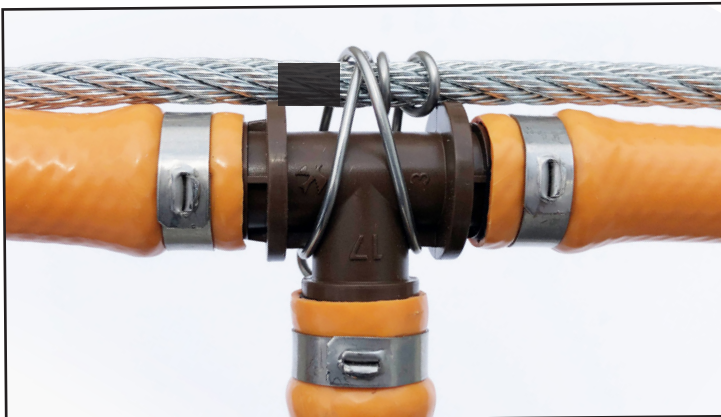


1. START MEASURING AT FIRST TOWER GOING TOWARDS THE PIVOT. Start measuring at the center drive motor or center of the wheel track. Manifold cable needs marked to match nozzle chart. Using a permanent marker and a measuring tape to help mark each exact location according to nozzle chart.

2. Tie Manifold Tee to match cable markings.

Hang the manifolds to the cable loosely with the stainless wire tie 16 gauge x 10-1/2" to allow for easier handling. Using the wire ties provided, the manifold should be tied to the cable at each tee and each adapter tee used to feed water to manifold. Wire ties should wrap around the cable three times before twisting them tight around the fitting. Each wire tie should be tight to prevent slipping as this will alter spacing of drip lines.

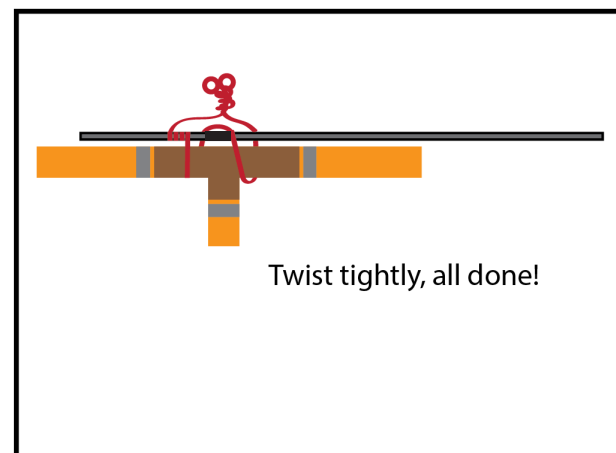
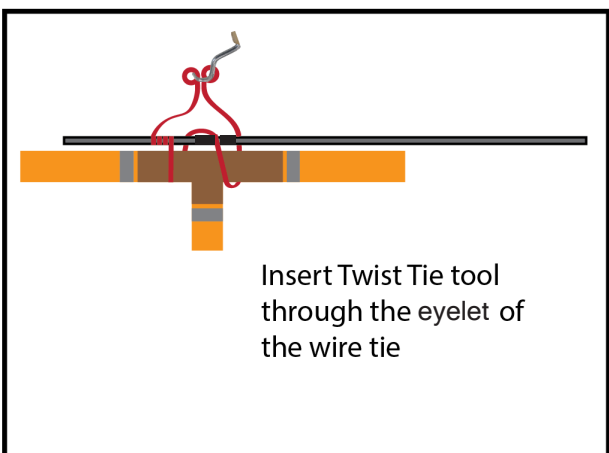
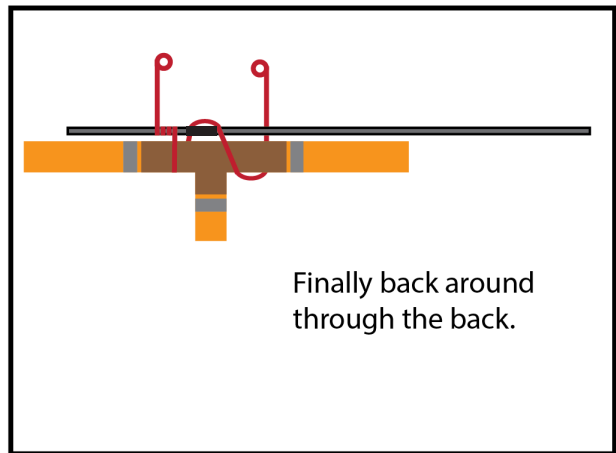
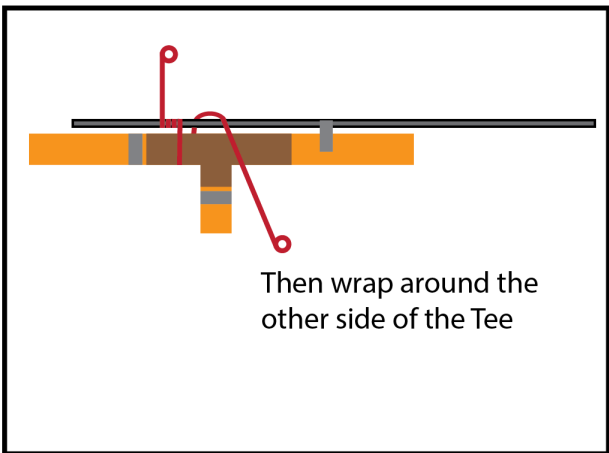
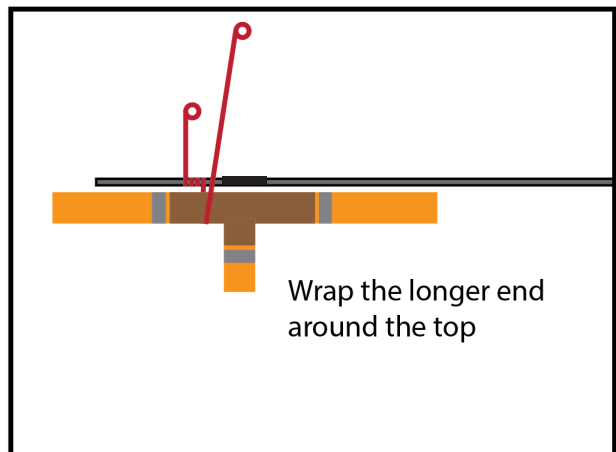
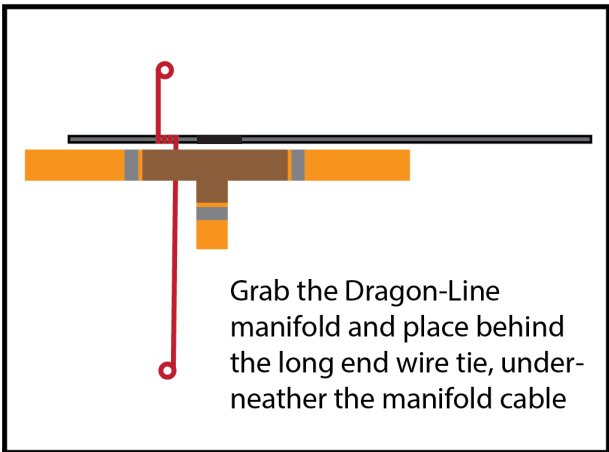
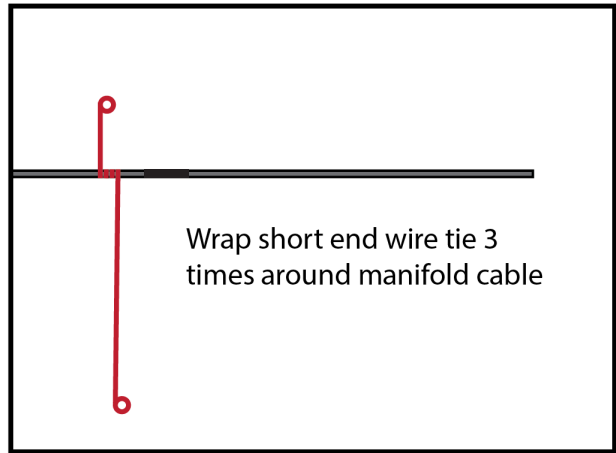
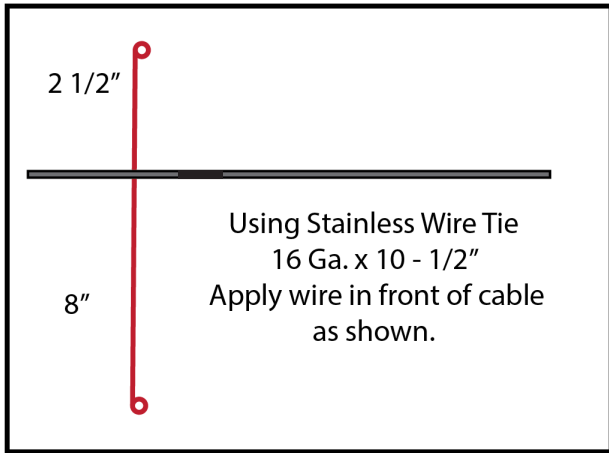
If you have enough crew members, one person walks ahead attaching the wire on the pre-marked locations wrapping around 3 times the short end. While one or two others follow along behind and attach the manifold and use the twist tie tool.



Watch a wire tying video on the Dragon-Line website to see best way to attach to cable. Scan QR code using smart phone camera. Click on the link as it appears up. Scroll down and press play!



WWW.DRAGONLINE.NET/INSTALL



6 INSTALL CENTER LIFT SPAN WINCH

PARTS YOU WILL NEED: Add Center Lift Span Winch



CENTER LIFT-WINCH ASSY

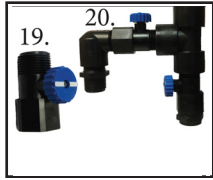
1. The Center Lift Winch is installed at the center of each span. The center lift span winch includes a short chain with a cable tie at the end. Attach the cable tie to the center of the manifold cable.
2. Unroll the winch cable and wrap around the top of the pivot, securing the hook around the cable.
3. Reel in the winch cable till center is at desired height.



7

INSTALL DUAL VALVES

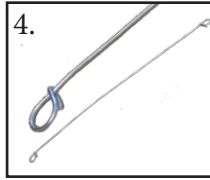
PARTS YOU WILL NEED:



19. SENN BALL VALVE
20. DUAL VALVE ASSEMBLY



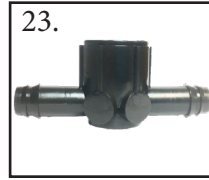
11. PINCH CLAMPS
12. 3/4"



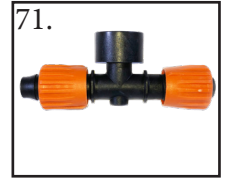
4. STAINLESS WIRE TIE
16 GAUGE x 10-1/2"



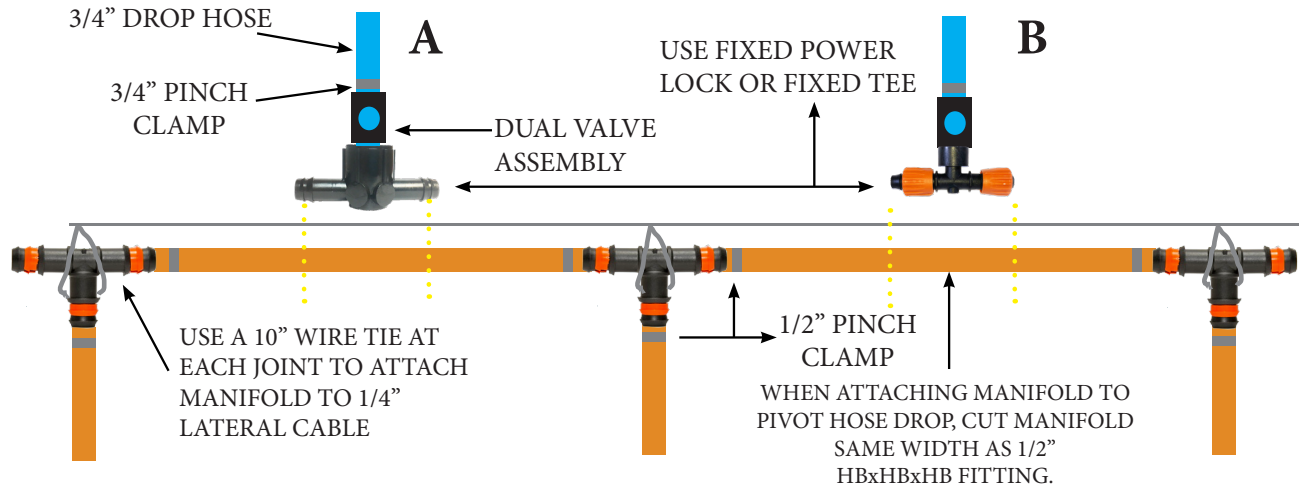
72. .55 PL x 1/2" CAP
POWER LOCK PLUG



23. 17MM x 3/4" FPT x 17MM
MANIFOLD ADPT. TEE



71. 3/4" FPT x PL x PL
TEE



A) Find location of existing drop hose and cut 1-2" on manifold spacing. (Cut length varies depending on the Tee fitting).



B) Install manifold hose into power-lock fittings and wire tie.



C) Cut to length 3/4" inch hose and connect to barb fitting on top of dual valves with 3/4 inch clamp



72. .55 POWER-LOCK X 1/2" PLUG

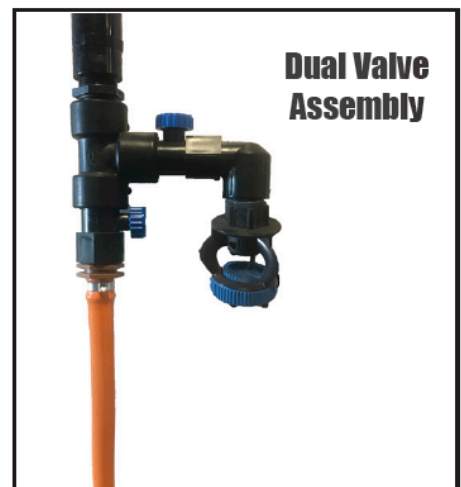
D) Install power-lock plug at end of manifold on each span.

DUAL VALVES & ADAPTERS

3 STYLES OF DUAL VALVES ADAPTERS



DRAGON-LINE CAN BE INSERTED INTO THREE DIFFERENT APPLICATIONS, DEPENDING ON FARMERS NEEDS.



Dragon-Line systems can be combined with a conventional irrigation application package to provide germination, chemigation and fertigation.

8

CONNECT DRAGON-LINE

Using nozzle chart provided, cut Dragon-Lines to length according to drop number and end plug can then be installed at the end of the drip line. For easier install (especially in colder weather) drip lines can be cut and end plugs can be installed in a shop to then be taken to the field.

A) Locate sprinkler Chart and match the nozzle chart.

OUTLET NO.	LAST OUTLET	DISTANCE TO PIVOT	GPM NEED	GPM DEL.	PIPE PSI	NOZZLE PSI	SPRINKLER LABEL AND NOZZLE SIZE	SPRK NO.	REG SIZE	PLUG NO.
333	2.50	859.14	0.44	0.47	8.78	15.02	JAIN DRAGON-LINE 7 FT	333		
334	2.50	861.64	0.44	0.47	8.82	15.06	JAIN DRAGON-LINE 7 FT	334		
335	2.50	864.14	0.45	0.47	8.86	14.89	JAIN DRAGON-LINE 7 FT	335		
336	2.50	866.64	0.45	0.47	8.91	14.93	JAIN DRAGON-LINE 7 FT	336		
337	2.50	869.14	0.45	0.47	8.95	14.98	JAIN DRAGON-LINE 7 FT	337		
338	2.50	871.64	0.45	0.47	9.00	15.03	JAIN DRAGON-LINE 7 FT	338		
339	2.50	874.14	0.45	0.47	9.05	15.08	JAIN DRAGON-LINE 7 FT	339		
340	2.50	876.64	0.45	0.47	9.11	14.91	JAIN DRAGON-LINE 7 FT	340		
341	2.50	879.14	0.45	0.47	9.16	14.97	JAIN DRAGON-LINE 7 FT	341		
342	2.50	881.64	0.45	0.47	9.22	15.02	JAIN DRAGON-LINE 7 FT	342		
343	2.50	884.14	0.46	0.47	9.28	15.08	JAIN DRAGON-LINE 7 FT	343		
344	2.50	886.64	0.46	0.47	9.34	14.93	JAIN DRAGON-LINE 7 FT	344		
345	2.50	889.14	0.46	0.47	9.40	14.99	JAIN DRAGON-LINE 7 FT	345		
346	2.50	891.64	0.46	0.47	9.47	15.05	JAIN DRAGON-LINE 7 FT	346		
347	2.50	894.14	0.46	0.47	9.47	14.84	JAIN DRAGON-LINE 7 FT	347		
348	2.50	896.64	0.46	0.47	9.47	14.84	JAIN DRAGON-LINE 7 FT	348		
349	2.50	899.14	0.48	0.47	9.47	14.84	JAIN DRAGON-LINE 7 FT	349		
TOWER 5	180.18	901.64								
350	2.70	901.84	0.48	0.47	9.47	7.28	LD NOZ UP3 5 BEIGE	350	SPSR2-06	
351	2.50	904.34	0.47	0.47	9.47	7.28	LD NOZ UP3 5 BEIGE	351	SPSR2-06	
352	2.50	906.84	0.47	0.47	9.46	7.28	LD NOZ UP3 5 BEIGE	352	SPSR2-06	

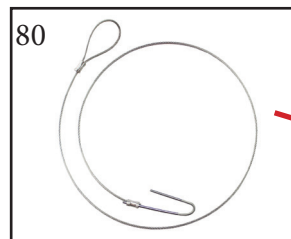
Length to cut Dragon-Line to designated placement.

B) Connect Dragon-Line drip tape to leader lines based off of sprinkler chart.



THE TIE UP CABLE ASSEMBLY

The tie up cable assembly is simply pulling the hook through the loop on the opposite end around the 1/4" Manifold cable every 7 ft. Leave it suspended during growing season, then in the off season, the tie up cable wraps around leader lines and tubing to protect system from varmints.



30" TIE UP ASSY
PACK OF TEN

