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SELF-FEED DRILL UNITS

**MK III BROOMATIC
SALES/ENGINEERING
FEATURES**



THE BUILDING BLOCKS
OF LOW COST DRILLING AND
TAPPING AUTOMATION

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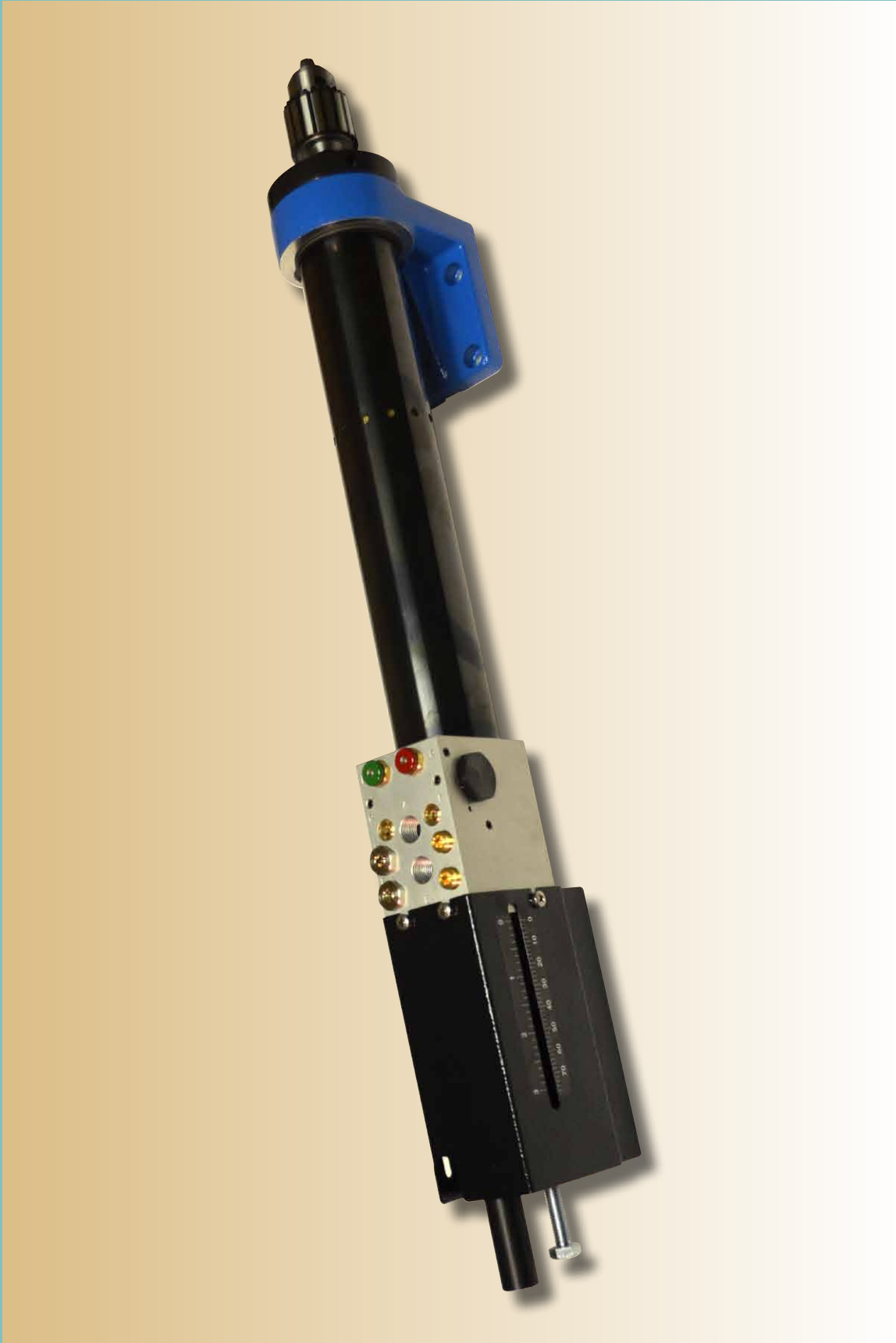


FIG. 1

PNEUMATIC MK III WITH STANDARD 3/8" CAPACITY DRILL CHUCK AND OPTIONAL FOOT MOUNTING BRACKET.



FIG. 2
ELECTRIC MK III WITH TYPE 650 MULTI-SPINDLE DRILLING HEAD AND OPTIONAL FOOT MOUNTING BRACKET.



- (A) BAYONET NOSE HOUSING ADAPTOR
- (B) TYPE 650 ADJUSTABLE TWIN SPINDLE DRILLING HEAD
- (C) TYPE 950 ADJUSTABLE TWIN SPINDLE DRILLING HEAD
- (D) SINGLE SPINDLE TAPPING HEAD
- (E) EXHAUST COLLECTOR WITH MUFFLERS
- (F) ADJUSTABLE HYDRAULIC FEED CONTROL UNIT
- (G) SCREWDRIVER ATTACHMENT

FIG. 3
OPTIONAL EQUIPMENT THAT CAN BE FITTED TO THE MK III UNIT

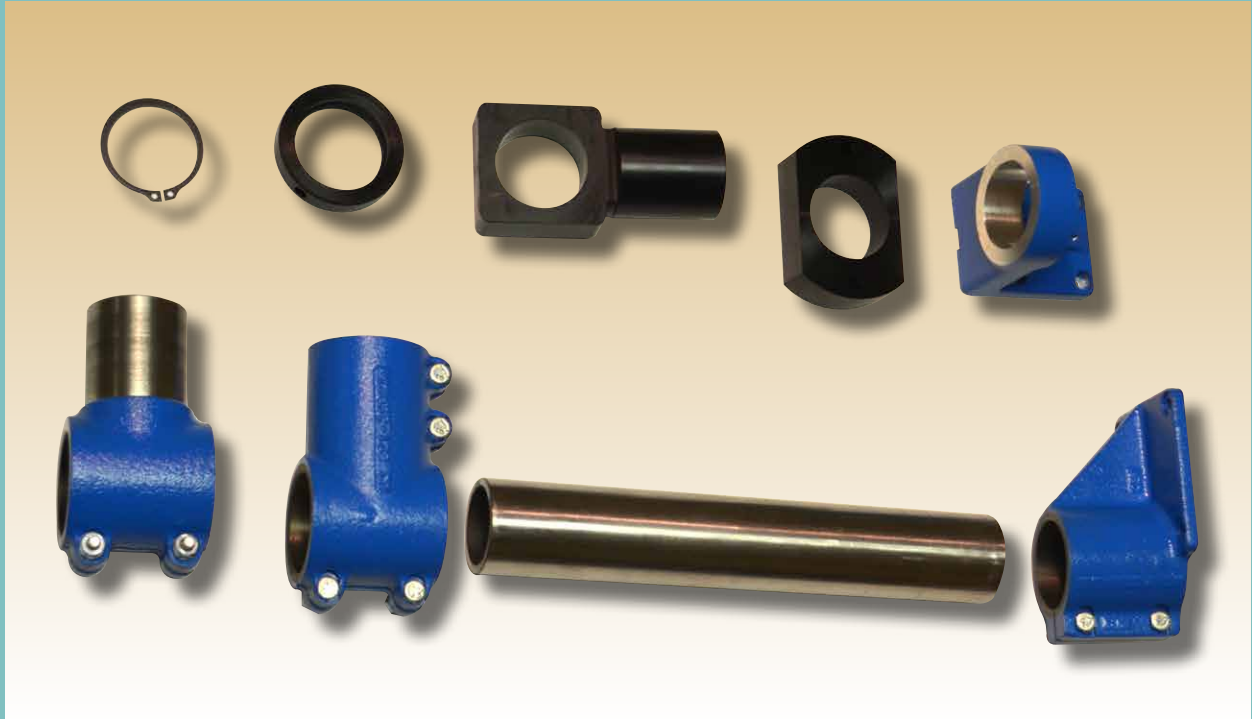


FIG. 4

RANGE OF MOUNTING CLAMPS THAT ARE OFFERED FOR USE WITH THE MK III UNIT

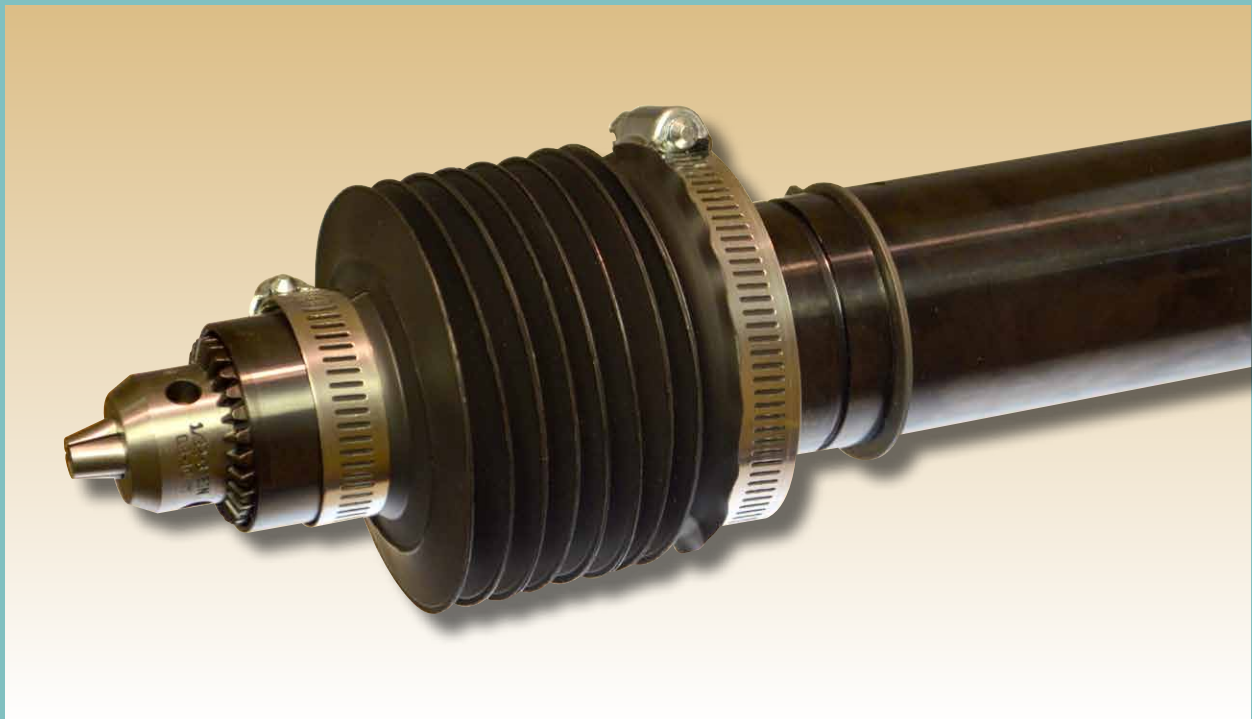


FIG. 5

MK III DRILL UNIT WITH THE SWARF EXCLUSION KIT FITTED.

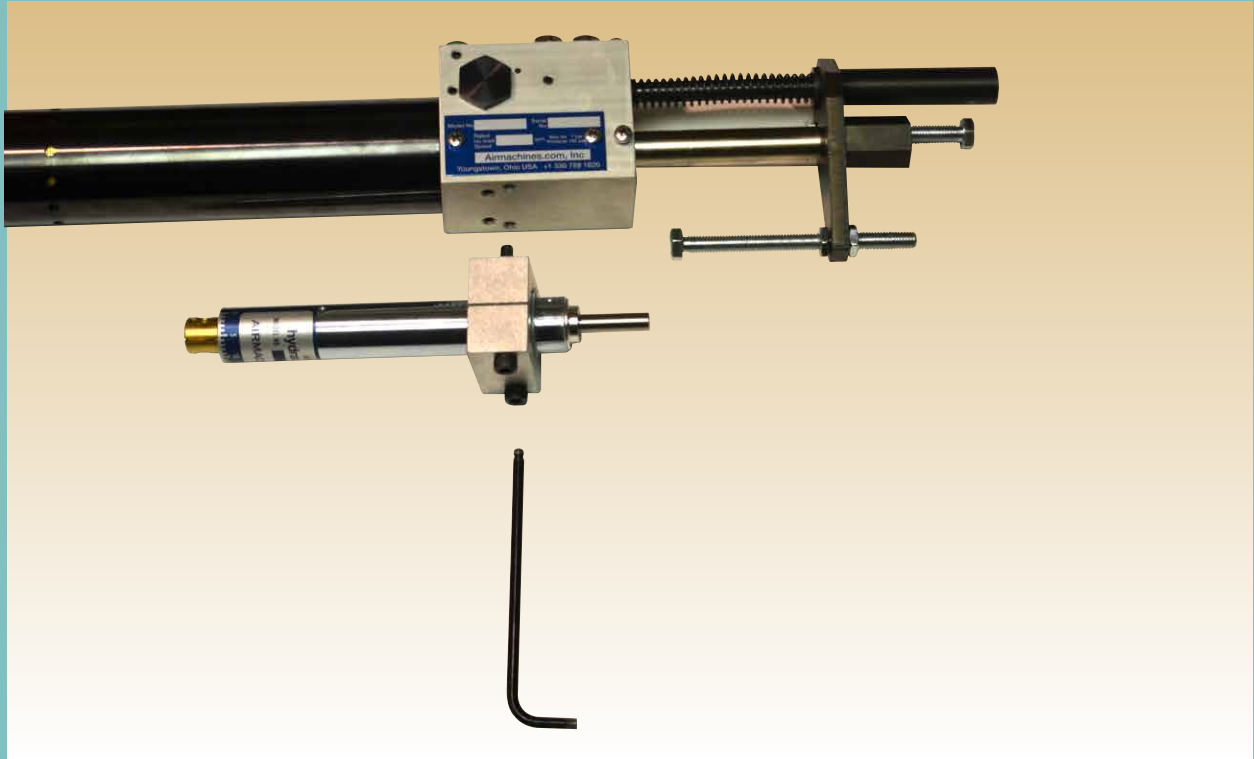


FIG. 6

METHOD OF ATTACHING THE HYDRAULIC FEED CONTROL UNIT ONTO THE MK III CONTROL HEAD.



FIG. 7

METHOD FOR ADJUSTING THE HYDRAULIC FEED CONTROL RATE.



FIG. 8

PNEUMATIC CONTROL HEAD ASSEMBLY SHOWING THE SEPARATE INLET PORTS FOR THE FEED CYLINDER AND MOTOR AIR SUPPLY. PNEUMATIC UNITS ARE SHIPPED WITH DUAL PORTING UNLESS SINGLE AIR SUPPLY IS SPECIFIED. ELECTRIC UNITS REQUIRE ONLY ONE CONNECTION FOR THE FEED CYLINDER. PORTS ARE SHOWN FITTED WITH 1/4" NPT PORT ADAPTORS.



FIG. 9

PNEUMATIC CONTROL HEAD SHOWING HOW THE UNIT CAN BE ADAPTED FOR SINGLE AIR CONNECTION FEEDING BOTH THE FEED CYLINDER AND MOTOR.
NOTE SEAL BODY AND FILTER PLUG.



FIG. 10

PNEUMATIC CONTROL HEAD ASSEMBLY SHOWING THE NON-RETURN VALVES (CHECK VALVES) FITTED IN POSITION FOR THE REMOTE FORWARD AND RETURN PORTS. THREADED 1/8" NPT.

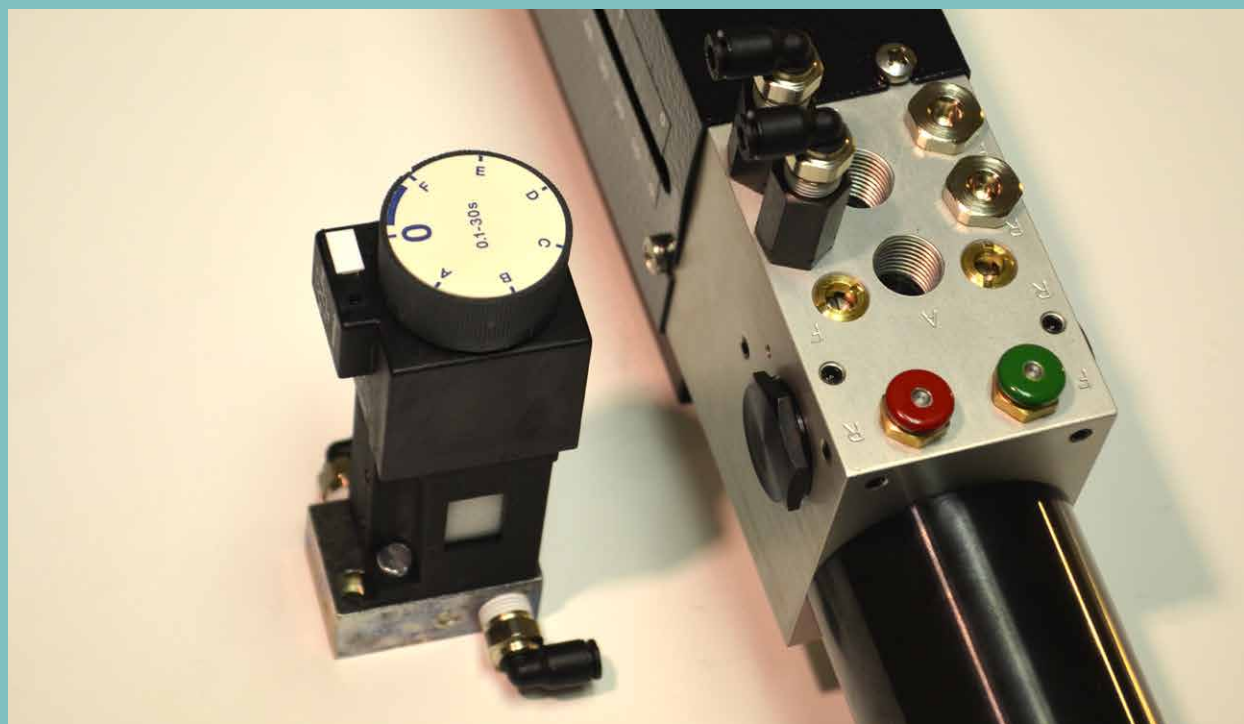


FIG. 11

PNEUMATIC CONTROL HEAD ASSEMBLY SHOWING PORT ADAPTERS FITTED IN THE DWELL PORTS SO THAT A PNEUMATIC TIMER CAN BE USED TO DELAY THE RETURN STROKE FOR CONTROLLED DEPTH DRILLING. THREADED 1/8" NPT.



FIG. 12

PNEUMATIC CONTROL HEAD ASSEMBLY SHOWING THE METHOD OF ADJUSTING THE FORWARD FEED RATE. CLOCKWISE ROTATION REDUCES THE FEED RATE AND COUNTER CLOCKWISE ROTATION INCREASES THE FEED RATE.

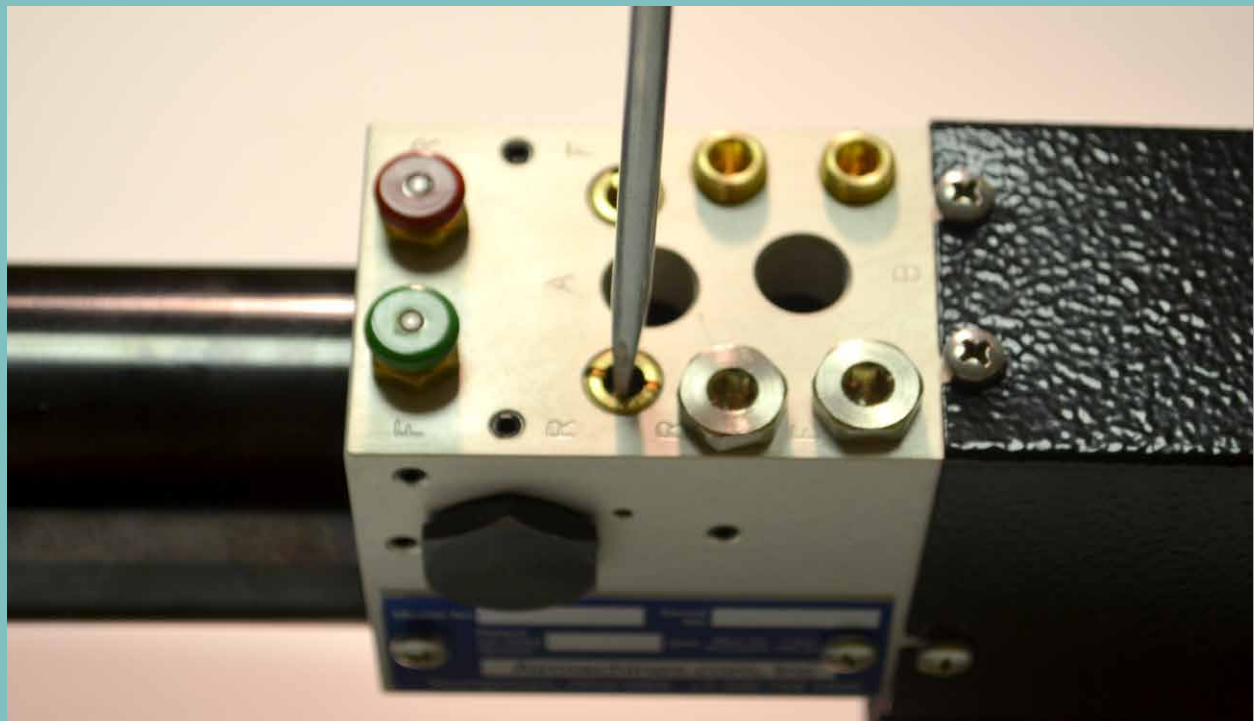


FIG. 13

PNEUMATIC CONTROL HEAD ASSEMBLY SHOWING THE METHOD OF ADJUSTING THE RETURN FEED RATE. CLOCKWISE ROTATION REDUCES THE FEED RATE AND COUNTER CLOCKWISE ROTATION INCREASES THE FEED RATE.

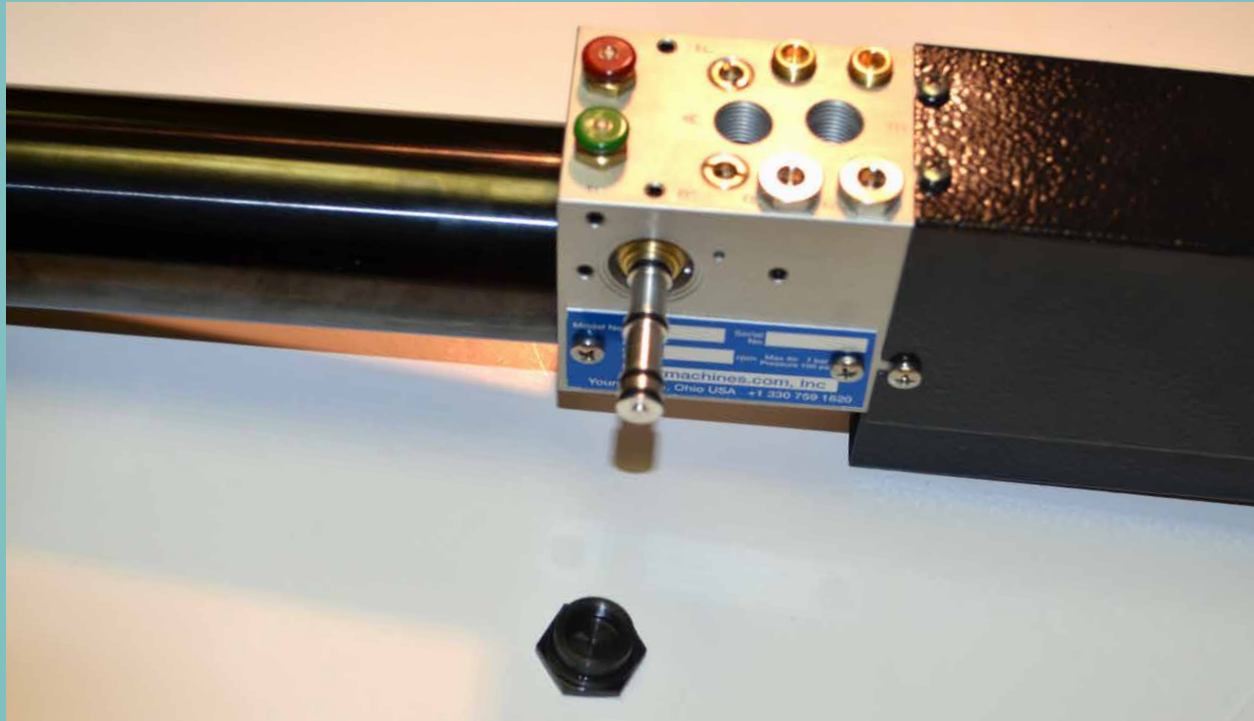


FIG. 14

PNEUMATIC CONTROL HEAD ASSEMBLY WITH THE SPOOL VALVE PARTIALLY REMOVED FROM THE BRASS BUSH. (NOTE: THE SPOOL VALVE IS THE ONLY MOVING PART IN THE CONTROL HEAD ASSEMBLY AND IT IS MOUNTED ON "O" RINGS.

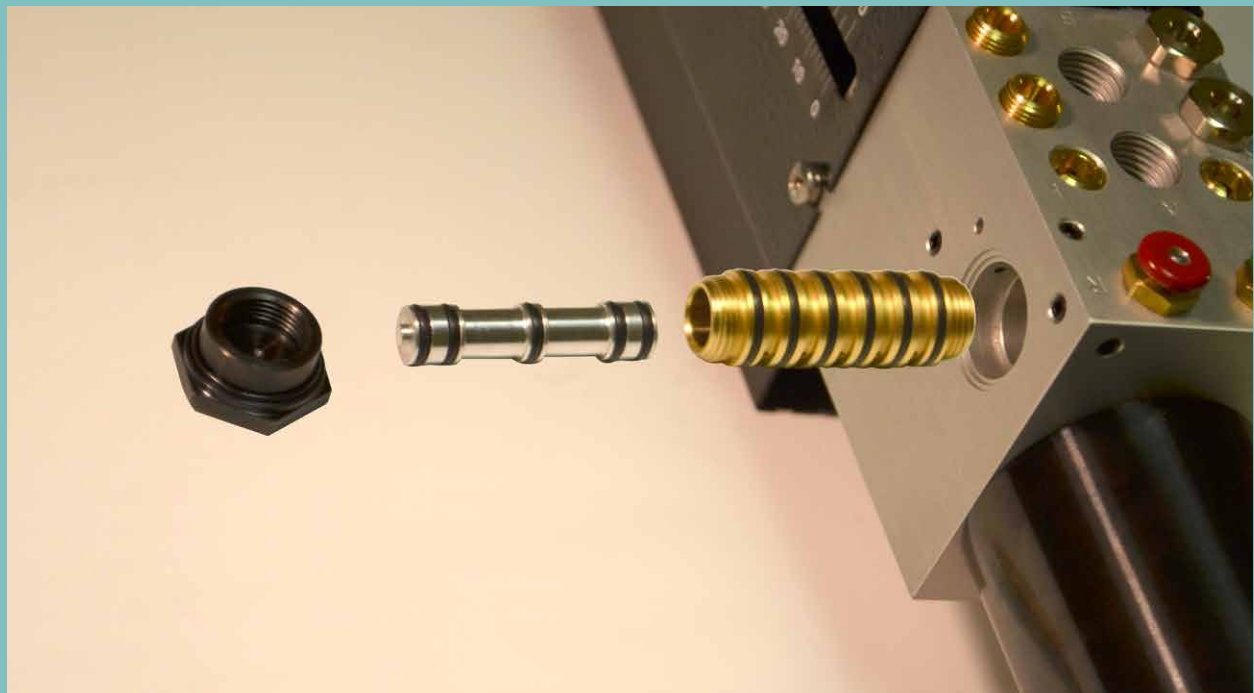


FIG. 15

PNEUMATIC CONTROL HEAD ASSEMBLY WITH THE SPOOL VALVE AND BRASS BUSH REMOVED. (NOTE: THE BRASS BUSH IS ALSO MOUNTED ON "O" RINGS AND CAN BE EASILY REPLACED AS A SPARE PART. TO REPLACE THE BUSH ON COMPETITIVE TOOLS REQUIRES THAT THE EXPENSIVE CONTROL HEAD IS ALSO REPLACED.



FIG. 16

PNEUMATIC CONTROL HEAD ASSEMBLY WITH THE TWO NEEDLE VALVE CARTRIDGES REMOVED SHOWING THEIR COMPONENT PARTS. (NOTE: IF NEEDLE VALVE SEAT IS DAMAGED, ONLY THE CARTRIDGE REQUIRES REPLACEMENT — NOT THE WHOLE CONTROL HEAD AS ON COMPETITIVE TOOLS.



FIG. 17

MK III UNIT WITH THE QUILL PULLED FORWARD TO SHOW THE METHOD OF CHANGING THE SPEED OF TOOLS WITHOUT STRIPPING DOWN THE COMPLETE UNIT.

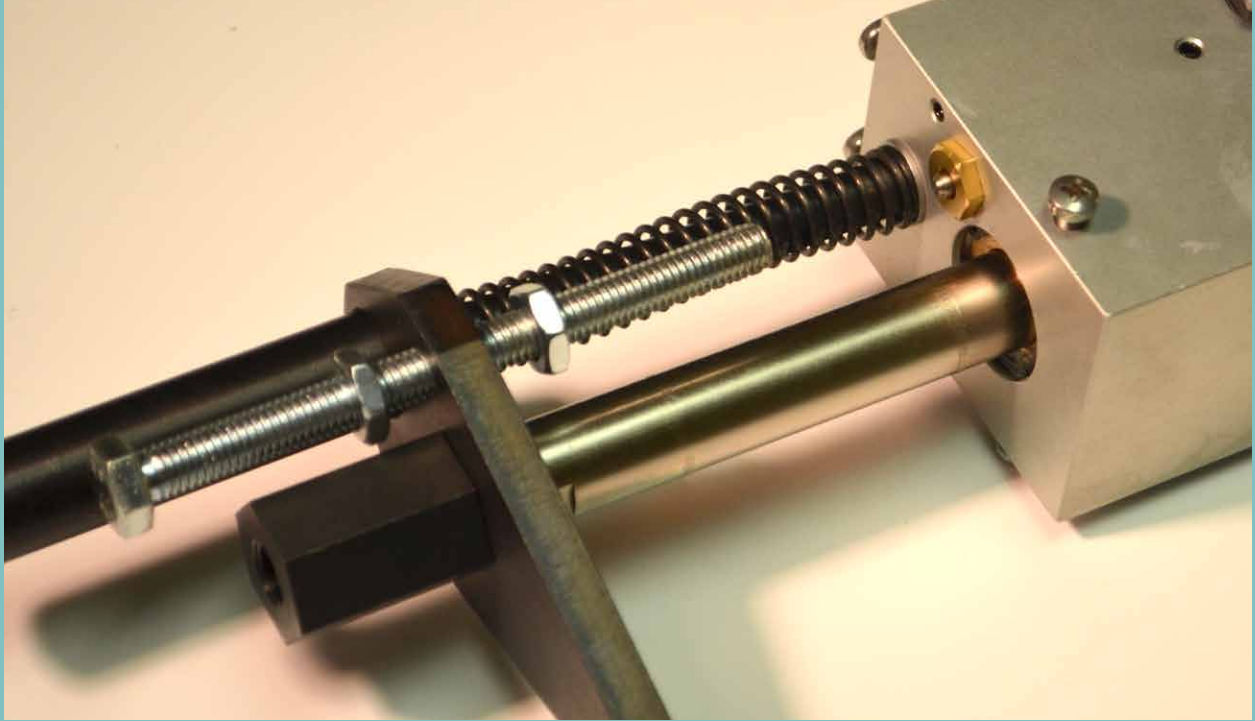


FIG. 18

FEED STROKE ADJUSTMENT SCREW POSITIONED ABOVE AUTO RETURN VALVE. STROKE RANGE 5/16" THRU 3" (8MM - 75MM). NOTE: THE FIRST 5/16" OF STROKE IS USED BY THE SOFT START CONTROL FOR THE AIR MOTOR. SEE DETAIL BELOW.

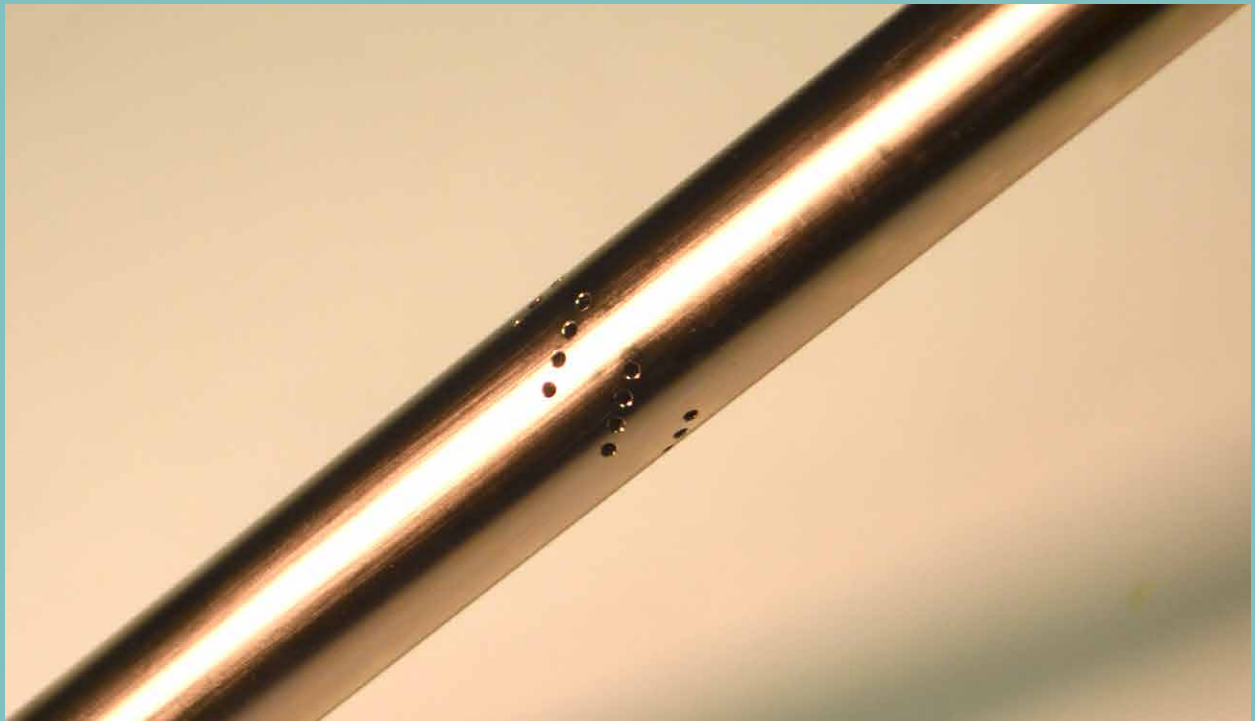


FIG. 19

BUILT IN SOFT START FEATURE INCORPORATES FOUR ROWS OF HOLES WITHIN THE FEED TUBE TO GRADUALLY SUPPLY AIR TO THE MOTOR OVER THE FIRST 5/16" OF STROKE. THIS PROTECTS ROTOR BLADES AND GEAR BOXES FROM SUDDEN SHOCK LOADS, EXTENDING THE LIFE OF THE TOOL.



FIG. 20

STRIP DOWN OF THE PNEUMATIC MK III BROOMATIC INTO SUB-ASSEMBLIES SHOWING THE SIMPLICITY OF CONSTRUCTION.

SELECTING AVERAGE DRILLING FEEDS AND SPEEDS

Material ↓	Drill Diameter →	1/16	3/32	1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16
Aluminum	RPM	12224	8489	6112	4075	3056	2445	2037	1746	1528	1358	1222	1111	1018	940
	FEED/IPR	.001	.001	.002	.003	.003	.004	.005	.006	.007	.007	.008	.008	.010	.011
	HP	.03	.04	.06	.17	.22	.32	.44	.57	.71	.87	1.07	1.23	1.42	1.68
Brass	THRUST (LBS)	11	17	25	35	45	65	96	135	180	238	238	300	365	440
	SFM	200	200	200	200	200	200	200	200	200	200	200	200	200	200
Cast Iron/ Mild Steel	RPM	9168	6367	4584	3056	2292	1834	1528	1309	1146	1013	917	834	764	705
	FEED/IPR	.001	.001	.002	.003	.004	.005	.005	.006	.007	.008	.009	.010	.011	.011
	HP	.03	.03	.04	.09	.18	.27	.34	.46	.52	.78	.94	1.18	1.28	1.45
Cast Iron/ Mild Steel	THRUST (LBS)	6	11	17	33	55	80	105	134	167	200	245	290	330	380
	SFM	150	150	150	150	150	150	150	150	150	150	150	150	150	150
Steel Medium Carbon (250 BHN)	RPM	4456	2971	2139	1425	1070	856	713	611	535	475	428	389	357	329
	FEED/IPR	.001	.002	.002	.004	.005	.006	.007	.008	0.10	0.10	.012	.013	.014	.015
	HP	.04	.04	.06	.12	.21	.28	.36	.43	.55	.76	.90	1.05	1.20	1.40
Steel Medium Carbon (250 BHN)	THRUST (LBS)	12	24	39	69	135	165	225	295	345	430	570	650	700	795
	SFM	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Steel Medium Carbon (250 BHN)	RPM	3667	2546	1835	1220	917	733	611	524	458	408	367	334	310	290
	FEED/IPR	.001	.002	.002	.003	.004	.006	.006	.008	.008	.010	.011	.012	.013	.013
	HP	.05	.09	.13	.24	.43	.48	.66	.99	1.24	1.50	1.85	2.10	2.25	2.45
Steel Medium Carbon (250 BHN)	THRUST (LBS)	19	35	62	105	150	198	260	333	395	460	615	765	880	1050
	SFM	60	60	60	60	60	60	60	60	60	60	60	60	60	60
Stainless Steel 304	RPM	3183	2122	1528	1018	764	611	509	436	382	340	305	278	255	235
	FEED/IPR	.001	.001	.002	.002	.003	.004	.005	.005	.006	.007	.007	.008	.009	.009
	HP	.03	.05	.08	.10	.14	.23	.35	.41	.56	.74	.82	1.0	1.3	1.4
Stainless Steel 304	THRUST (LBS)	15	29	54	105	255	342	435	540	650	774	900	1035	1139	1240
	SFM	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Plastic / Wood	RPM	6366	4244	3056	2037	1528	1224	1018	873	764	679	611	555	509	470
	FEED/IPR	.001	.002	.002	.003	.004	.004	.005	.006	.007	.008	.009	.010	.011	.012
	HP	.03	.03	.03	.03	.05	.06	.08	.12	.16	.20	.25	.31	.37	.44
Plastic / Wood	THRUST (LBS)	9	14	20	40	58	68	89	112	142	160	176	188	219	231
	SFM	100	100	100	100	100	100	100	100	100	100	100	100	100	100

NOTE: Table shows average settings and is intended as a guide only. Adjust for tool life, production rate, hardness of material, and type of tool used.
The cutting tool manufacturer should be able to provide guidelines for a specific application.



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