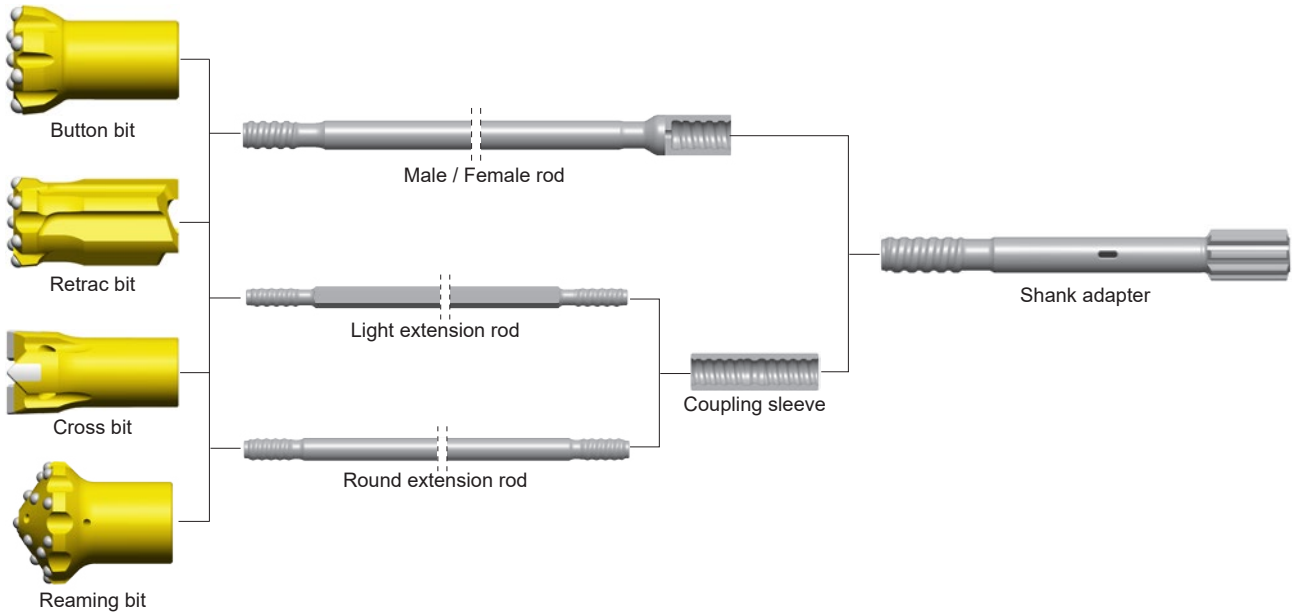


# BENCH & LONG HOLE DRILLING EQUIPMENT



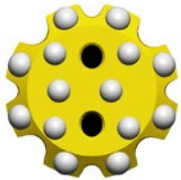
# BENCH & LONG HOLE DRILLING EQUIPMENT

## T38 (1 1/2") SERIES (Recommended gauge diameter Ø64 - Ø102)



Standard item list - CUSTOM BUTTONS AND FLUSHING CONFIGURATIONS ARE AVAILABLE UPON REQUEST  
For details of bit design, please refer to p.16

### Button bit Type 15



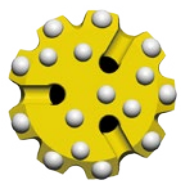
Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
64	2 1/2"	35	8×11	4×10	-	2	1.6	38MPVS64R15M
64	2 1/2"	40	8×10	5×10	-	2	1.6	38MPVS64R15H
70	2 3/4"	35	8×11	4×11	-	2	1.9	38MPVS70R15M
70	2 3/4"	40	8×11	5×10	-	2	1.9	38MPVS70R15H
76	3"	35	8×12	4×11	-	2	2.2	38MPVS76R15M
76	3"	40	8×11	5×11	-	2	2.2	38MPVS76R15H
89	3 1/2"	35	8×13	6×12	-	2	3.4	38MPVS89R15M
89	3 1/2"	40	8×12	6×12	-	2	3.4	38MPVS89R15H
102	4"	35	8×14	6×13	-	2	4.5	38MPVS102R15M
102	4"	40	8×13	6×13	-	2	4.5	38MPVS102R15H

### Button bit Type 25



Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
89	3 1/2"	35	8×13	6×12	-	2	3.3	38MPVS89R25M
102	4"	35	8×14	6×13	-	2	4.4	38MPVS102R25M

### Button bit Type 23



Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
89	3 1/2"	35	9×12	6×12	-	3	3.4	38MPVS89R23M
102	4"	35	9×13	6×13	-	3	4.5	38MPVS102R23M

## Button bit Type 53 & 55



Type 53 (Ø64-Ø89)



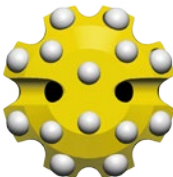
Type 55 (Ø76-Ø102)

Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
64	2 1/2"	35	6×10	4×10	-	3	1.6	<b>38MPVS64R53M</b>
70	2 3/4"	35	6×11	4×11	-	3	1.8	<b>38MPVS70R53M</b>
76	3"	35	6×12	4×11	-	3	2.1	<b>38MPVS76R53M</b>
76	3"	35	8×11	5×11	-	4	2.2	<b>38MPVS76R55M</b>
89	3 1/2"	35	6×13	5×12	-	3	3.3	<b>38MPVS89R53M</b>
89	3 1/2"	35	8×12	6×12	-	4	3.4	<b>38MPVS89R55M</b>
102	4"	35	8×14	6×14	-	4	4.4	<b>38MPVS102R55M</b>

## Button bit Type 83 & 85



Type 83 (Ø64-Ø76)



Type 85 (Ø76-Ø102)

Gauge diameter		* Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
64	2 1/2"	20-40	6×10	3×10, 2×9	1	1	1.6	<b>38MPWS64BB83H</b>
70	2 3/4"	20-40	6×11	5×10	1	1	1.8	<b>38MPWS70BB83H</b>
76	3"	20-40	6×11	3×11, 2×10	1	1	2.1	<b>38MPWS76BB83H</b>
76	3"	20-40	8×11	6×10	2	2	2.2	<b>38MPWS76BB85H</b>
89	3 1/2"	20-40	8×12	6×12	2	2	3.4	<b>38MPWS89BB85H</b>
102	4"	20-40	8×12	7×12	-	2	4.4	<b>38MPVS102BB85H</b>

\* Face angle 20°, Gauge angle 40°

## Button bit Type 14



Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
64	2 1/2"	35	7×11	4×10	-	3	1.6	<b>38MPVS64R14M</b>
70	2 3/4"	35	7×11	4×11	-	3	1.8	<b>38MPVS70R14M</b>
76	3"	35	7×12	4×11	-	3	2.2	<b>38MPVS76R14M</b>
89	3 1/2"	35	7×14	5×12	-	3	3.4	<b>38MPVS89R14M</b>
102	4"	35	7×14	5×13	-	3	4.4	<b>38MPVS102R14M</b>

## Cross bit

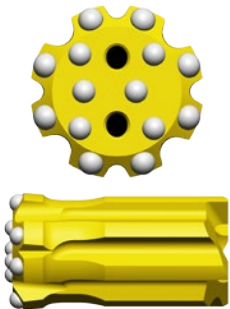


Gauge diameter		Carbide size W × H [mm]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
64	2 1/2"	13×22	-	-	4	1	1.8	<b>38MX64S</b>
76	3"	13×22	-	-	4	1	2.4	<b>38MX76S2</b>

# BENCH & LONG HOLE DRILLING EQUIPMENT

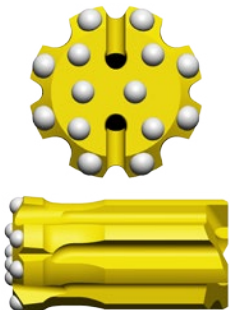
## T38 (1 1/2") SERIES (Recommended gauge diameter Ø64 - Ø102)

### Retrac Button bit Type 15



Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
64	2 1/2"	35	8×11	4×10	-	2	2.1	<b>38MPVR64R15M</b>
70	2 3/4"	35	8×11	4×11	-	2	2.6	<b>38MPVR70R15M</b>
76	3"	35	8×12	4×11	-	2	3.1	<b>38MPVR76R15M</b>
89	3 1/2"	35	8×13	6×12	-	2	4.4	<b>38MPVR89R15M</b>
102	4"	35	8×14	6×13	-	2	6.6	<b>38MPVR102R15M</b>

### Retrac Button bit Type 25



Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
89	3 1/2"	35	8×13	6×12	-	2	4.4	<b>38MPVR89R25M</b>
102	4"	35	8×14	6×13	-	2	6.5	<b>38MPVR102R25M</b>

### Retrac Button bit Type 53 & 55



Type 53 (Ø64-Ø89)

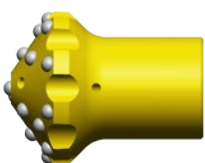


Type 55 (Ø76-Ø102)



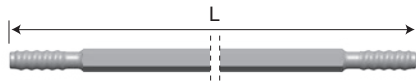
Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
64	2 1/2"	35	6×10	4×10	-	3	2.0	<b>38MPVR64R53M</b>
70	2 3/4"	35	6×11	4×11	-	3	2.5	<b>38MPVR70R53M</b>
76	3"	35	6×12	4×11	-	3	2.9	<b>38MPVR76R53M</b>
76	3"	35	8×11	5×11	-	4	3.0	<b>38MPVR76R55M</b>
89	3 1/2"	35	6×13	5×12	-	3	4.3	<b>38MPVR89R53M</b>
89	3 1/2"	35	8×12	6×12	-	4	4.4	<b>38MPVR89R55M</b>
102	4"	35	8×14	6×14	-	4	6.5	<b>38MPVR102R55M</b>

### Reaming bit integration model



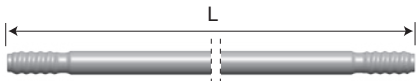
Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
127	5"	35	9×13	10×13	3	1	7.5	<b>WI38MPJ127R-D</b>
152	6"	35	9×14	11×14	3	1	10.5	<b>WI38MPJ152R-D</b>

### Light extension rod



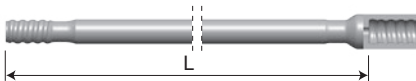
Thread	Hex		Length(L)		Weight [Kg]	Part number
	[mm]	[in]	[mm]	[ft/in]		
T38 - T38	32	1 1/4"	3050	10'	18.4	<b>EH32M38-3050</b>
			3660	12'	22.1	<b>EH32M38-3660</b>

### Round extension rod



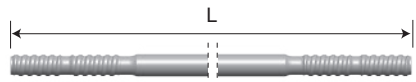
Thread	Outside diameter		Length(L)		Weight [Kg]	Part number
	[mm]	[in]	[mm]	[ft/in]		
T38 - T38	38	1 1/2"	3050	10'	24.7	<b>ER38M38-3050</b>
			3660	12'	29.4	<b>ER38M38-3660</b>
			4270	14'	34.7	<b>ER38M38-4270</b>
			4880	16'	39.7	<b>ER38M38-4880</b>
			5490	18'	44.6	<b>ER38M38-5490</b>

### Male / Female rod



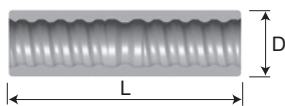
Thread	Outside diameter		Length(L)		Weight [Kg]	Part number
	[mm]	[in]	[mm]	[ft/in]		
T38 - T38	38	1 1/2"	900	3'	8.0	<b>ER38M38MF-900</b>
			1220	4'	9.7	<b>ER38M38MF-1220</b>
			1525	5'	13.3	<b>ER38M38MF-1525</b>
			1830	6'	16.0	<b>ER38M38MF-1830</b>
			2440	8'	21.3	<b>ER38M38MF-2440</b>
			3050	10'	25.9	<b>ER38M38MF-3050</b>
			3660	12'	30.7	<b>ER38M38MF-3660</b>

### Tandem rod



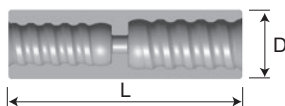
Thread	Outside diameter		Length(L)		Weight [Kg]	Part number
	[mm]	[in]	[mm]	[ft/in]		
T38 - T38	38	1 1/2"	3050	10'	24.4	<b>ER38M38T-3050</b>
			3660	12'	29.3	<b>ER38M38T-3660</b>

### Coupling sleeve



Thread	Outside diameter(D)		Length(L)		Weight [Kg]	Part number
	[mm]	[in]	[mm]	[in]		
T38 - T38	54	2 1/8"	190	7 1/2"	2.0	<b>CM38</b>

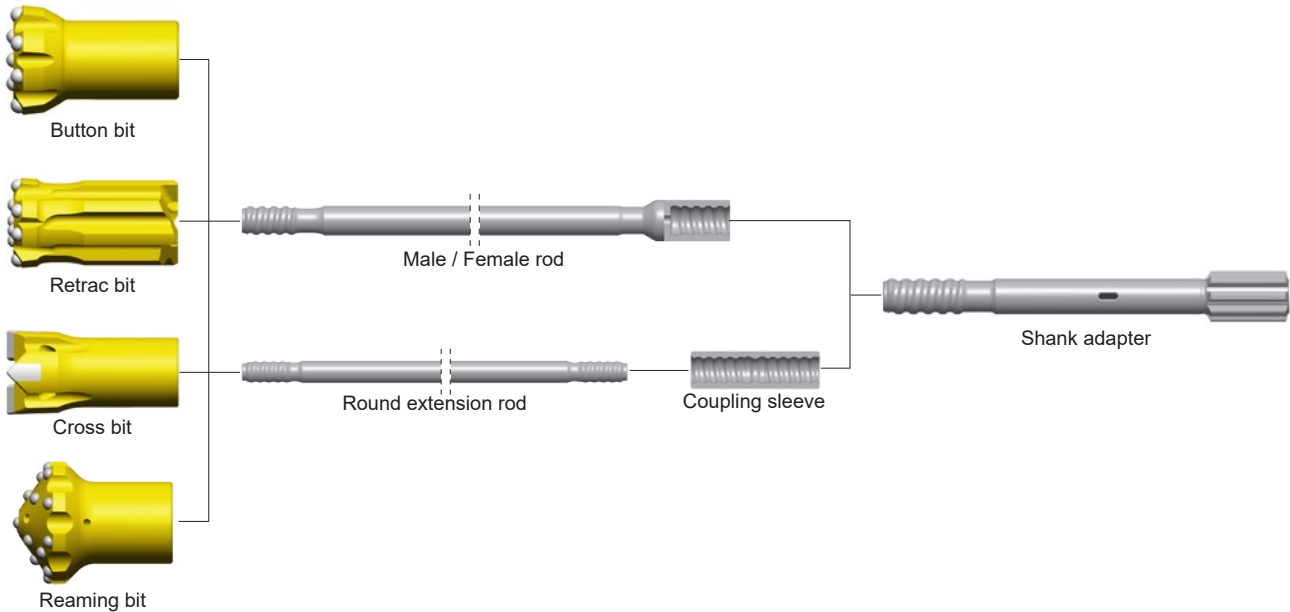
### Crossover coupling



Thread	Outside diameter(D)		Length(L)		Weight [Kg]	Part number
	[mm]	[in]	[mm]	[in]		
T38 - R32	54	2 1/8"	188	7 1/2"	2.2	<b>CM38R32</b>
T38 - T45	63	2 1/2"	215	8 1/2"	3.4	<b>CM45M38</b>

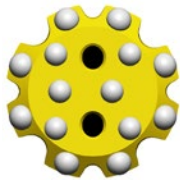
# BENCH & LONG HOLE DRILLING EQUIPMENT

## T45 (1 3/4") SERIES (Recommended gauge diameter Ø70 - Ø115)



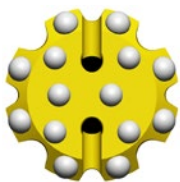
Standard item list - CUSTOM BUTTONS AND FLUSHING CONFIGURATIONS ARE AVAILABLE UPON REQUEST  
For details of bit design, please refer to p.16

### Button bit Type 15



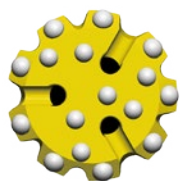
Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
70	2 3/4"	35	8×11	4×11	-	2	1.9	45MPVS70R15M
70	2 3/4"	40	8×11	5×10	-	2	1.9	45MPVS70R15H
76	3"	35	8×12	4×11	-	2	2.3	45MPVS76R15M
76	3"	40	8×11	5×11	-	2	2.3	45MPVS76R15H
89	3 1/2"	35	8×13	6×12	-	2	3.8	45MPVS89R15M
89	3 1/2"	40	8×12	6×12	-	2	3.8	45MPVS89R15H
102	4"	35	8×14	6×13	-	2	4.4	45MPVS102R15M
102	4"	40	8×13	6×13	-	2	4.4	45MPVS102R15H

### Button bit Type 25



Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
89	3 1/2"	35	8×13	6×12	-	2	3.7	45MPVS89R25M
102	4"	35	8×14	6×13	-	2	4.3	45MPVS102R25M
115	4 1/2"	35	8×14	7×13	-	2	6.3	45MPVS115R25M

### Button bit Type 23



Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
89	3 1/2"	35	9×12	6×12	-	3	3.8	45MPVS89R23M
102	4"	35	9×13	6×13	-	3	4.4	45MPVS102R23M
115	4 1/2"	35	9×13	7×13	-	3	6.4	45MPVS115R23MS

## Button bit Type 53 & 55



Type 53 (Ø70-Ø89)



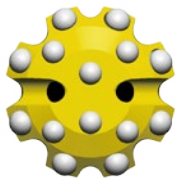
Type 55 (Ø76-Ø115)

Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
70	2 3/4"	35	6×11	4×11	-	3	1.8	45MPVS70R53M
76	3"	35	6×12	4×11	-	3	2.2	45MPVS76R53M
76	3"	35	8×11	5×11	-	4	2.3	45MPVS76R55M
89	3 1/2"	35	6×13	5×12	-	3	3.6	45MPVS89R53M
89	3 1/2"	35	8×12	6×12	-	4	3.7	45MPVS89R55M
102	4"	35	8×14	6×14	-	4	4.3	45MPVS102R55M
115	4 1/2"	35	8×14	8×14	-	4	6.3	45MPVS115R55M

## Button bit Type 83 & 85



Type 83 (Ø70-Ø76)



Type 85 (Ø76-Ø115)

Gauge diameter		* Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
70	2 3/4"	20-40	6×11	5×10	1	1	1.8	45MPWS70BB83H
76	3"	20-40	6×11	3×11, 2×10	1	1	2.2	45MPWS76BB83H
76	3"	20-40	8×11	6×10	2	2	2.3	45MPWS76BB85H
89	3 1/2"	20-40	8×12	6×12	2	2	3.6	45MPWS89BB85H
102	4"	20-40	8×12	7×12	-	2	4.3	45MPVS102BB85H
115	4 1/2"	20-40	8×14	8×12	-	2	6.3	45MPVS115BB85H

\* Face angle 20°, Gauge angle 40°

## Button bit Type 14



Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
70	2 3/4"	35	7×11	4×11	-	3	1.8	45MPVS70R14M
76	3"	35	7×12	4×11	-	3	2.3	45MPVS76R14M
89	3 1/2"	35	7×14	5×12	-	3	3.6	45MPVS89R14M
102	4"	35	7×14	5×13	-	3	4.3	45MPVS102R14M

## Cross bit

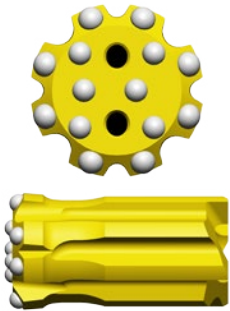


Gauge diameter		Carbide size W × H [mm]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
76	3"	13×22	-	-	4	1	2.5	45MX76S2
89	3 1/2"	13×22	-	-	4	1	4.0	45MX89S

# BENCH & LONG HOLE DRILLING EQUIPMENT

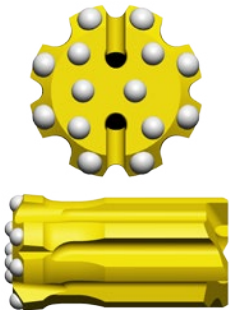
## T45 (1 3/4") SERIES (Recommended gauge diameter Ø76 - Ø115)

### Retrac Button bit Type 15



Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
76	3"	35	8×12	4×11	-	2	3.0	45MPVR76R15M
89	3 1/2"	35	8×13	6×12	-	2	4.5	45MPVR89R15M
102	4"	35	8×14	6×13	-	2	6.6	45MPVR102R15M

### Retrac Button bit Type 25



Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
89	3 1/2"	35	8×13	6×12	-	2	4.4	45MPVR89R25M
102	4"	35	8×14	6×13	-	2	6.5	45MPVR102R25M
115	4 1/2"	35	8×14	7×13	-	2	8.4	45MPVR115R25M

### Retrac Button bit Type 53 & 55



Type 53 (Ø76-Ø89)

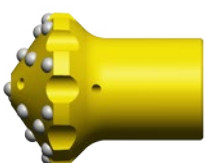


Type 55 (Ø76-Ø102)



Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
76	3"	35	6×12	4×11	-	3	2.9	45MPVR76R53M
76	3"	35	8×11	5×11	-	4	3.0	45MPVR76R55M
89	3 1/2"	35	6×13	5×12	-	3	4.2	45MPVR89R53M
89	3 1/2"	35	8×12	6×12	-	4	4.5	45MPVR89R55M
102	4"	35	8×14	6×14	-	4	6.5	45MPVR102R55M
115	4 1/2"	35	8×14	8×14	-	4	8.4	45MPVR115R55M

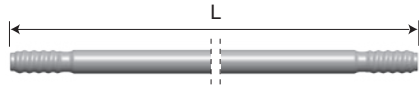
### Reaming bit integration model



Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
127	5"	35	9×13	10×13	3	1	7.5	WI45MPJ127R-D
152	6"	35	9×14	11×14	3	1	10.5	WI45MPJ152R-D

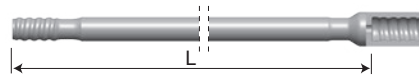


## Round extension rod



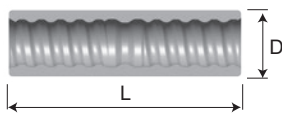
Thread	Outside diameter		Length(L)		Weight [Kg]	Part number
	[mm]	[in]	[mm]	[ft/in]		
T45 - T45	45	1 3/4"	3050	10'	34.1	<b>ER45M45-3050</b>
			3660	12'	41.0	<b>ER45M45-3660</b>
			4270	14'	48.1	<b>ER45M45-4270</b>
			4880	16'	54.9	<b>ER45M45-4880</b>
			6100	20'	68.9	<b>ER45M45-6100</b>

## Male / Female rod



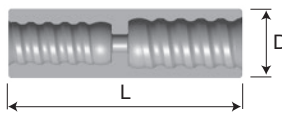
Thread	Outside diameter		Length(L)		Weight [Kg]	Part number
	[mm]	[in]	[mm]	[ft/in]		
T45 - T45	45	1 3/4"	1525	5'	18.4	<b>ER45M45MF-1525</b>
			1830	6'	22.1	<b>ER45M45MF-1830</b>
			3050	10'	36.1	<b>ER45M45MF-3050</b>
			3660	12'	43.3	<b>ER45M45MF-3660</b>
			4270	14'	50.2	<b>ER45M45MF-4270</b>

## Coupling sleeve



Thread	Outside diameter(D)		Length(L)		Weight [Kg]	Part number
	[mm]	[in]	[mm]	[in]		
T45 - T45	63	2 1/2"	210	8 1/4"	3.0	<b>CM45</b>
T45 - T45	66	2 5/8"	210	8 1/4"	3.5	<b>CM45-2</b>

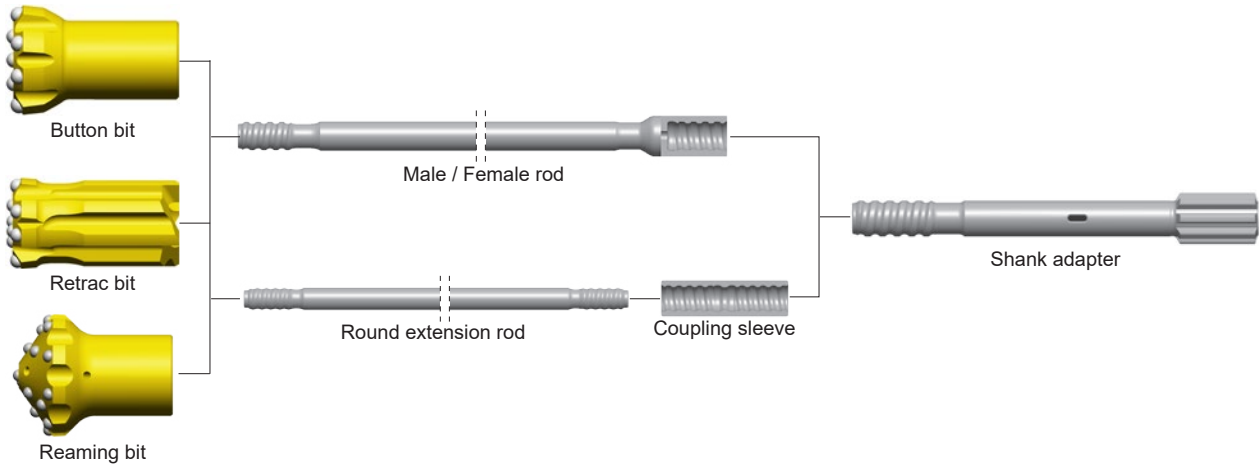
## Crossover coupling



Thread	Outside diameter(D)		Length(L)		Weight [Kg]	Part number
	[mm]	[in]	[mm]	[in]		
T45 - T38	63	2 1/2"	215	8 1/2"	3.4	<b>CM45M38</b>
T45 - T51	72	2 7/8"	240	9 1/2"	5.0	<b>CM51M45</b>

# BENCH & LONG HOLE DRILLING EQUIPMENT

## T51 (2") SERIES (Recommended gauge diameter Ø89 - Ø127)



Standard item list - CUSTOM BUTTONS AND FLUSHING CONFIGURATIONS ARE AVAILABLE UPON REQUEST  
For details of bit design, please refer to p.16

### Button bit Type 15



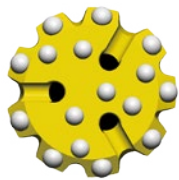
Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
89	3 1/2"	35	8×13	6×12	-	2	4.1	51MPVS89R15M
89	3 1/2"	40	8×12	6×12	-	2	4.1	51MPVS89R15H
102	4"	35	8×14	6×13	-	2	5.2	51MPVS102R15M
102	4"	40	8×13	6×13	-	2	5.2	51MPVS102R15H

### Button bit Type 25



Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
89	3 1/2"	35	8×13	6×12	-	2	4.0	51MPVS89R25M
102	4"	35	8×14	6×13	-	2	5.1	51MPVS102R25M
115	4 1/2"	35	8×14	7×13	-	2	6.6	51MPVS115R25M
127	5"	35	8×16	8×14	-	2	8.7	51MPVS127R25M

### Button bit Type 23



Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
89	3 1/2"	35	9×12	6×12	-	3	4.1	51MPVS89R23M
102	4"	35	9×13	6×13	-	3	5.2	51MPVS102R23M
115	4 1/2"	35	9×13	7×13	-	3	6.7	51MPVS115R23MS
115	4 1/2"	35	9×14	7×14	-	3	6.8	51MPVS115R23M
127	5"	35	9×14	7×14	-	3	8.8	51MPVS127R23MS
127	5"	35	9×16	7×16	-	3	8.9	51MPVS127R23M

## Button bit Type 53 & 55



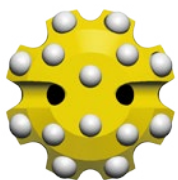
Type 53 (Ø89)



Type 55 (Ø89-Ø127)

Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
89	3 1/2"	35	6×13	5×12	-	3	3.9	<b>51MPVS89R53M</b>
89	3 1/2"	35	8×12	6×12	-	4	4.0	<b>51MPVS89R55M</b>
102	4"	35	8×14	6×14	-	4	5.1	<b>51MPVS102R55M</b>
115	4 1/2"	35	8×14	8×14	-	4	6.6	<b>51MPVS115R55M</b>
127	5"	35	8×16	4×16,4×14	-	4	8.7	<b>51MPVS127R55M</b>

## Button bit Type 85



Gauge diameter		* Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
89	3 1/2"	20-40	8×12	6×12	2	2	3.9	<b>51MPWS89BB85H</b>
102	4"	20-40	8×12	7×12	-	2	5.0	<b>51MPVS102BB85H</b>
115	4 1/2"	20-40	8×14	8×12	-	2	6.5	<b>51MPVS115BB85H</b>
127	5"	20-40	8×14	4×14, 4×12	-	2	8.6	<b>51MPVS127BB85H</b>

\* Face angle 20°, Gauge angle 40°

## Button bit Type 14

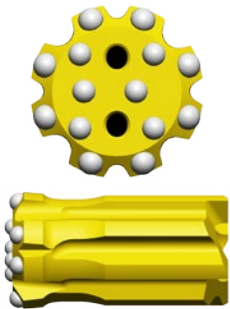


Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
89	3 1/2"	35	7×14	5×12	-	3	4.0	<b>51MPVS89R14M</b>
102	4"	35	7×14	5×13	-	3	5.1	<b>51MPVS102R14M</b>

# BENCH & LONG HOLE DRILLING EQUIPMENT

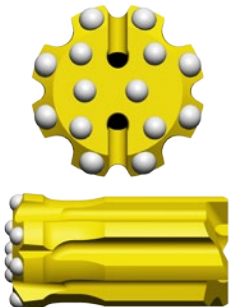
## T51 (2") SERIES (Recommended gauge diameter Ø89 - Ø127)

### Retrac Button bit Type 15



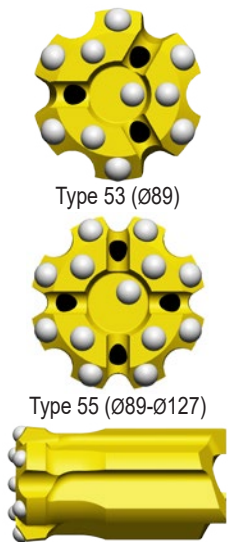
Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
89	3 1/2"	35	8×13	6×12	-	2	4.4	51MPVR89R15M
102	4"	35	8×14	6×13	-	2	6.5	51MPVR102R15M

### Retrac Button bit Type 25



Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
89	3 1/2"	35	8×13	6×12	-	2	4.3	51MPVR89R25M
102	4"	35	8×14	6×13	-	2	6.4	51MPVR102R25M
115	4 1/2"	35	8×14	7×13	-	2	8.3	51MPVR115R25M
127	5"	35	8×16	8×14	-	2	10.7	51MPVR127R25M

### Retrac Button bit Type 53 & 55

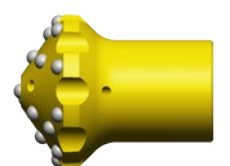


Type 53 (Ø89)

Type 55 (Ø89-Ø127)

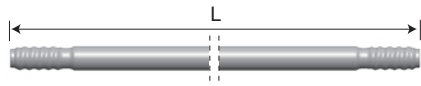
Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
89	3 1/2"	35	6×13	5×12	-	3	4.2	51MPVR89R53M
89	3 1/2"	35	8×12	6×12	-	4	4.3	51MPVR89R55M
102	4"	35	8×14	6×14	-	4	6.4	51MPVR102R55M
115	4 1/2"	35	8×14	8×14	-	4	8.3	51MPVR115R55M
127	5"	35	8×16	4×16, 4×14	-	4	10.7	51MPVR127R55M

### Reaming bit integration model



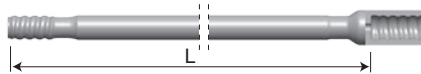
Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
152	6"	35	9×14	11×14	3	1	10.6	WI51MPJ152R-D

### Round extension rod



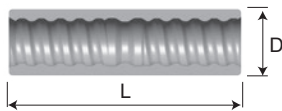
Thread	Outside diameter		Length(L)		Weight [Kg]	Part number
	[mm]	[in]	[mm]	[ft/in]		
T51 - T51	51	2"	3660	12'	49.6	<b>ER51M51-3660</b>
			4270	14'	58.1	<b>ER51M51-4270</b>
			6100	20'	82.9	<b>ER51M51-6100</b>

### Male / Female rod



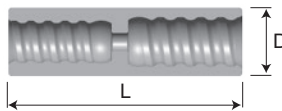
Thread	Outside diameter		Length(L)		Weight [Kg]	Part number
	[mm]	[in]	[mm]	[ft/in]		
T51 - T51	51	2"	1525	5'	22.0	<b>ER51M51MF-1525</b>
			1830	6'	26.4	<b>ER51M51MF-1830</b>
			3660	12'	52.8	<b>ER51M51MF-3660</b>
			4270	14'	61.6	<b>ER51M51MF-4270</b>

### Coupling sleeve



Thread	Outside diameter(D)		Length(L)		Weight [Kg]	Part number
	[mm]	[in]	[mm]	[in]		
T51 - T51	72	2 7/8"	235	9 1/4"	4.4	<b>CM51</b>
T51 - T51	77	3"	235	9 1/4"	5.5	<b>CM51-2</b>

### Crossover coupling



Thread	Outside diameter(D)		Length(L)		Weight [Kg]	Part number
	[mm]	[in]	[mm]	[in]		
T51 - T45	72	2 7/8"	240	9 1/2"	5.0	<b>CM51M45</b>

# BENCH & LONG HOLE DRILLING EQUIPMENT

## GM60 SERIES (Recommended gauge diameter Ø96 - Ø153)



### GM60 SERIES

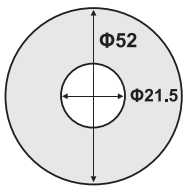
Compared with T51 rods, GM60 rods have

- 38% larger rod cross-section, providing higher penetration rate.
- 10% bigger flushing area, providing more efficient flushing.
- 55% higher bending stiffness, providing straighter holes.

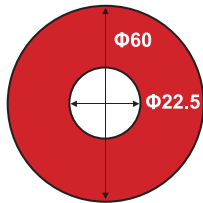
	T51	GM60
Rod Cross Section	100%	138%
Flushing Area	100%	110%
Bending Stiffness	100%	155%

- The GM60 system provides double the penetration rate at half the energy consumed compared with DTH drilling.
- Our top-quality Carbide buttons, formulated and sintered in house.
- Compared with other drilling tool systems, the GM60 system permits a wider hole range using the same rock drill.

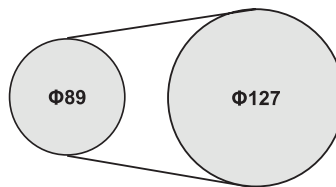
T51 Cross Section



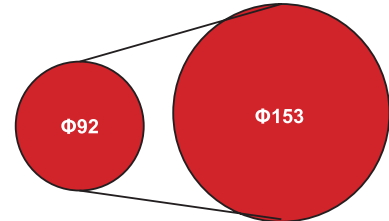
GM60 Cross Section



T51 Hole Range



GM60 Hole Range



### Button bit

#### NORMAL SKIRT

Gauge diameter		Gauge angle[°]	Button x Button dia.[mm]		Flushing hole [mm]	Face design	Weight [Kg]	Part number
[mm]	[in]		Gauge	Face				
92	3 5/8"	35	8X12	6X12	4X11	55	5.6	60GMPVS92BB55M
102	4"	35	8X14	6X14	4X11	55	6.9	60GMPVS102R55M
102	4"	35	8X14	6X14	4X11	55	6.9	60GMPVS102BB55M
115	4 1/2"	35	8X14	8X14	4X11	55	8.4	60GMPVS115R55M
127	5"	35	8X16	4X14 4X16	4X12	55	9.5	60GMPVS127R55M
140	5 1/2"	35	8X16	8X16	4X12	55	11.9	60GMPVS140R55M
140	5 1/2"	35	9X16	9X16	3X14	53	11.9	60GMPVS140R53M
153	6"	35	10X16	3X14 6X16	4X13	5X	15.4	60GMPVS153BB5XM

#### RETRAC SKIRT

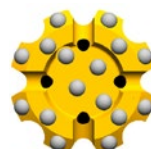
92	3 5/8"	35	8X12	6X12	4X11	55	6.2	60GMPVR92BB55M
102	4"	35	8X14	6X14	4X11	55	7.6	60GMPVR102R55M
112	4 3/8"	35	8X14	8X14	4X11	55	9.1	60GMPVR112R55M
115	4 1/2"	35	8X14	6X14	4X11	55	9.6	60GMPVR115R55M
115	4 1/2"	35	8X14	6X14	4X11	55	9.6	60GMPVR115BB55M
115	4 1/2"	35	9X16	7X14	3X15	23	10.1	60GMPVR115R23MB
121	4 3/4"	35	8X16	8X14	4X12	55	12.1	60GMPVR121BB55M
127	5"	35	8X16	4X14 4X16	4X12	55	13.1	60GMPVR127R55M
127	5"	35	8X16	4X14 4X16	4X12	55	13.1	60GMPVR127BB55M
127	5"	35	9X16	9X14	3X15	23	13.8	60GMPVR127R23M1
140	5 1/2"	35	9X16	9X16	3X14	53	15.2	60GMPVR140R53M
153	6"	35	10X16	3X14 6X16	4X13	5X	18.8	60GMPVR153R5XM



Type 23



Type 53



Type 55

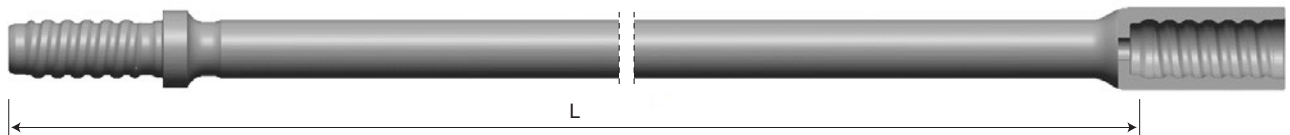


Type 5X

## Male / Female rod

Thread	Outside diameter		Length(L)		Weight [Kg]	Part number
	[mm]	[in]	[mm]	[ft/in]		
GM60 – GM60	60	2 1/4"	3660	12'	74.4	<b>ER60GM60MF-3660</b>
	60	2 1/4"	4270	14'	86.0	<b>ER60GM60MF-4270</b>
	60	2 1/4"	5490	18'	109.3	<b>ER60GM60MF-5490</b>
	60	2 1/4"	6100	20'	121.0	<b>ER60GM60MF-6100</b>

Female end  $\varnothing$ 85mm, Flushing hole  $\varnothing$ 22.5mm.

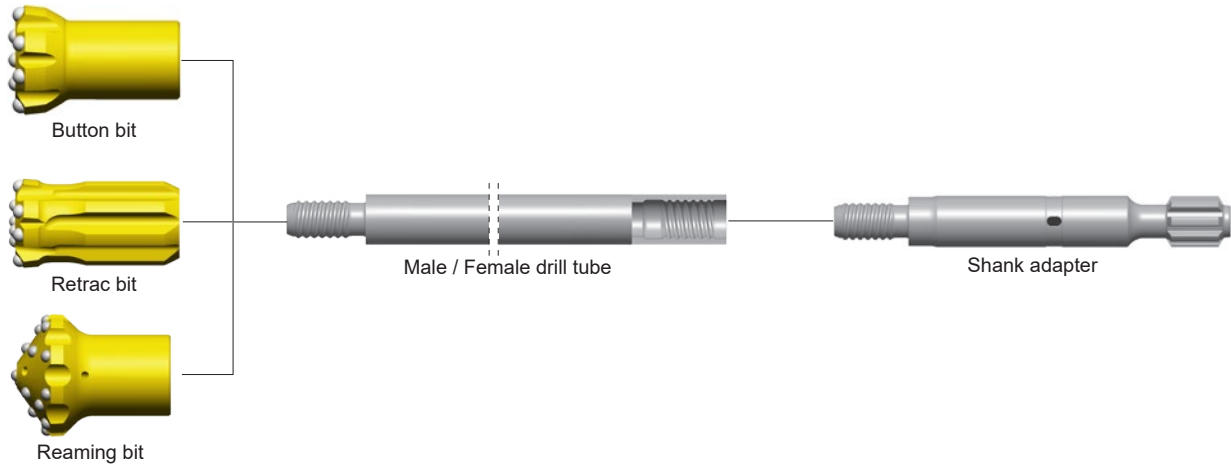


## Shank adapter

Manufacturer	Drifter	Thread	Length(L) [mm]	Flushing tube dia [mm]	Weight [Kg]	Part number
Sandvik/Tamrock	HL1000/ HL1500	GM60	670	SF	13.2	<b>S357GM60SFBG</b>
Sandvik/Tamrock	HL1500	GM60	760	SF	21.3	<b>S283GM60SFCG</b>
Atlas copco	COP2560	GM60	770	SF	14.3	<b>S312GM60SFA</b>
Atlas copco	COP3060MEX	GM60	840	SF	17.3	<b>S399GM60SFB</b>

# TUBE DRILLING EQUIPMENT

## ST58 (2 1/4") SERIES (Recommended gauge diameter Ø89 - Ø127)



Standard item list - CUSTOM BUTTONS AND FLUSHING CONFIGURATIONS ARE AVAILABLE UPON REQUEST  
For details of bit design, please refer to p.16

### Button bit Type 15



Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
89	3 1/2"	35	8×13	6×12	-	2	4.0	58WDPVS89R15M
89	3 1/2"	40	8×12	6×12	-	2	4.0	58WDPVS89R15H
102	4"	35	8×14	6×13	-	2	5.0	58WDPVS102R15M
102	4"	40	8×13	6×13	-	2	4.9	58WDPVS102R15H

### Button bit Type 25



Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
89	3 1/2"	35	8×13	6×12	-	2	3.9	58WDPVS89R25M
102	4"	35	8×14	6×13	-	2	4.9	58WDPVS102R25M
115	4 1/2"	35	8×14	7×13	-	2	6.9	58WDPVS115R25M
127	5"	35	8×16	8×14	-	2	8.9	58WDPVS127R25M

### Button bit Type 23



Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
89	3 1/2"	35	9×12	6×12	-	3	3.9	58WDPVS89R23M
102	4"	35	9×13	6×13	-	3	5.0	58WDPVS102R23M
115	4 1/2"	35	9×13	7×13	-	3	6.9	58WDPVS115R23MS
115	4 1/2"	35	9×14	7×14	-	3	7.0	58WDPVS115R23M
127	5"	35	9×14	7×14	-	3	8.9	58WDPVS127R23MS
127	5"	35	9×16	7×16	-	3	9.0	58WDPVS127R23M

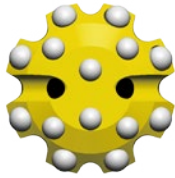
### Button bit Type 55



Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
89	3 1/2"	35	8×12	6×12	-	4	3.8	58WDPVS89R55M
102	4"	35	8×14	6×14	-	4	4.9	58WDPVS102R55M
115	4 1/2"	35	8×14	8×14	-	4	6.9	58WDPVS115R55M
127	5"	35	8×16	4×16,4×14	-	4	8.9	58WDPVS127R55M



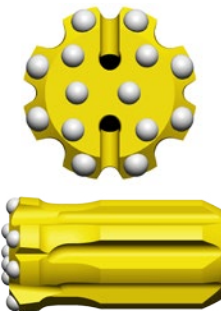
## Button bit Type 85



Gauge diameter		* Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
89	3 1/2"	20-40	8×12	6×12	2	2	3.7	58WDPWS89BB85H
102	4"	20-40	8×13	7×12	-	2	4.8	58WDPVS102BB85H
115	4 1/2"	20-40	8×14	8×12	-	2	6.8	58WDPVS115BB85H
127	5"	20-40	8×14	4×14, 4×12	-	2	8.8	58WDPVS127BB85H

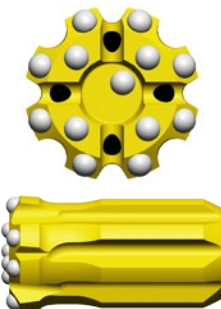
\* Face angle 20°, Gauge angle 40°

## Retrac Button bit Type 25



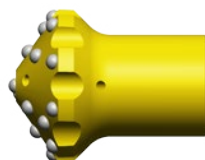
Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
89	3 1/2"	35	8×13	6×12	-	2	5.6	58WDPVR89R25M
102	4"	35	8×14	6×13	-	2	7.8	58WDPVR102R25M
115	4 1/2"	35	8×14	7×13	-	2	10.6	58WDPVR115R25M
127	5"	35	8×16	8×14	-	2	12.8	58WDPVR127R25M

## Retrac Button bit Type 55



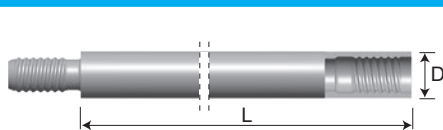
Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
89	3 1/2"	35	8×12	6×12	-	4	5.4	58WDPVR89R55M
102	4"	35	8×14	6×14	-	4	7.6	58WDPVR102R55M
115	4 1/2"	35	8×14	8×14	-	4	10.4	58WDPVR115R55M
127	5"	35	8×16	4×16, 4×14	-	4	12.6	58WDPVR127R55M

## Reaming bit integration model



Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
152	6"	35	9×14	11×14	3	1	11.0	WI58WDP152R-D

## Male / Female drill tube



Thread	Outside diameter(D)		Length(L)		Weight [Kg]	Part number
	[mm]	[in]	[mm]	[ft/in]		
ST58 - ST58	77	3"	1525	5'	34.0	GR77WD58MF-1525
			1830	6'	40.3	GR77WD58MF-1830

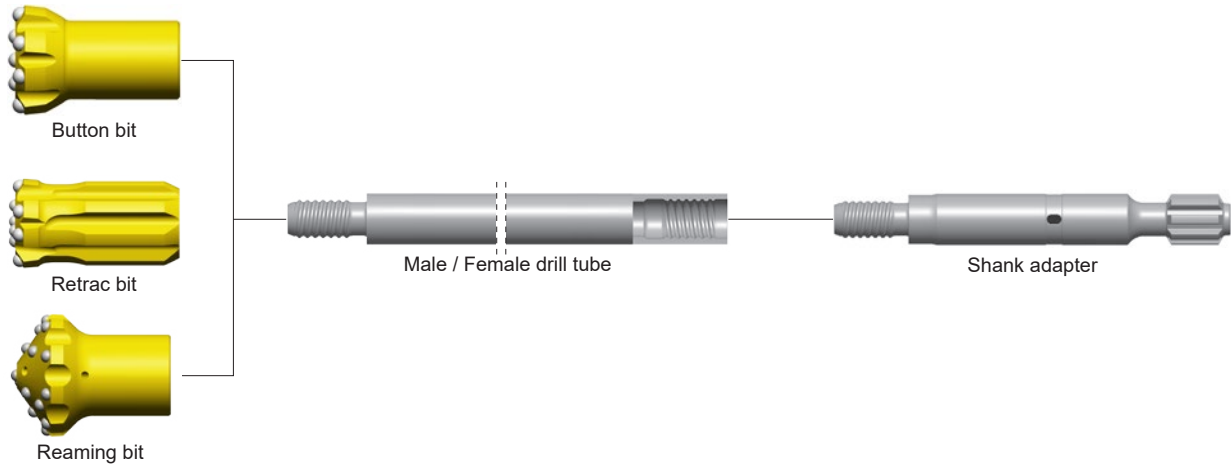
## Recovery pike



Outside diameter(D)		Length(L)		Weight [Kg]	Part number
[mm]	[in]	[mm]	[in]		
78	3"	260	10 1/4"	3.4	FTM-58WD-GR78

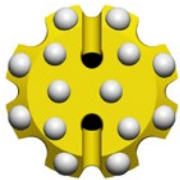
# TUBE DRILLING EQUIPMENT

## ST68 (2 3/4") SERIES (Recommended gauge diameter Ø102 - Ø127)



Standard item list - CUSTOM BUTTONS AND FLUSHING CONFIGURATIONS ARE AVAILABLE UPON REQUEST  
For details of bit design, please refer to p.16

### Button bit Type 25



Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
102	4"	35	8×14	6×13	-	2	5.8	68WDPVS102R25M
115	4 1/2"	35	8×14	7×13	-	2	7.8	68WDPVS115R25M
127	5"	35	8×16	8×14	-	2	10.2	68WDPVS127R25M

### Button bit Type 23



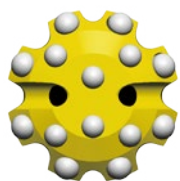
Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
102	4"	35	9×13	6×13	-	3	5.8	68WDPVS102R23M
115	4 1/2"	35	9×13	7×13	-	3	7.8	68WDPVS115R23MS
115	4 1/2"	35	9×14	7×14	-	3	7.9	68WDPVS115R23M
127	5"	35	9×14	7×14	-	3	10.2	68WDPVS127R23MS
127	5"	35	9×16	7×16	-	3	10.3	68WDPVS127R23M

### Button bit Type 55



Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
102	4"	35	8×14	6×14	-	4	5.7	68WDPVS102R55M
115	4 1/2"	35	8×14	8×14	-	4	7.7	68WDPVS115R55M
127	5"	35	8×16	4×16, 4×14	-	4	10.1	68WDPVS127R55M

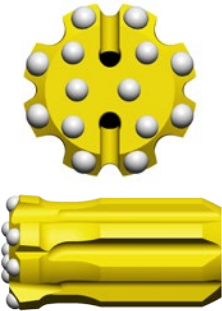
### Button bit Type 85



Gauge diameter		* Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
102	4"	20-40	8×12	7×12	-	2	5.6	68WDPVS102BB85H
115	4 1/2"	20-40	8×14	8×12	-	2	7.6	68WDPVS115BB85H
127	5"	20-40	8×14	4×14, 4×12	-	2	10.0	68WDPVS127BB85H

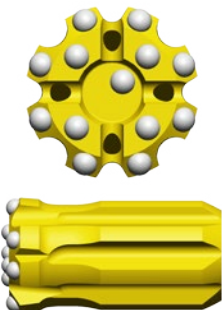
\* Face angle 20°, Gauge angle 40°

### Retrac Button bit Type 25



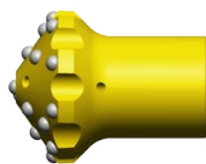
Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
102	4"	35	8×14	6×13	-	2	6.6	<b>68WDPVR102R25M</b>
115	4 1/2"	35	8×14	7×13	-	2	9.4	<b>68WDPVR115R25M</b>
127	5"	35	8×16	8×14	-	2	12.1	<b>68WDPVR127R25M</b>

### Retrac Button bit Type 55



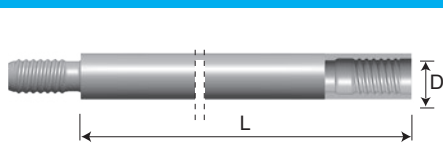
Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
102	4"	35	8×14	6×14	-	4	6.4	<b>68WDPVR102R55M</b>
115	4 1/2"	35	8×14	8×14	-	4	9.2	<b>68WDPVR115R55M</b>
127	5"	35	8×16	4×16,4×14	-	4	11.8	<b>68WDPVR127R55M</b>

### Reaming bit integration model



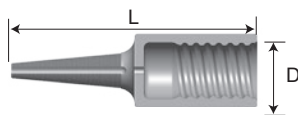
Gauge diameter		Gauge angle [°]	Button × Button dia.[mm]		Flushing hole		Weight [Kg]	Part number
[mm]	[in]		Gauge	Face	Side	Face		
152	6"	35	9×14	11×14	3	1	11.2	<b>WI68WDP152R-D</b>

### Male / Female drill tube



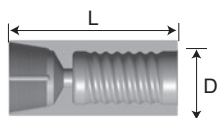
Thread	Outside diameter(D)		Length(L)		Weight [Kg]	Part number
	[mm]	[in]	[mm]	[ft/in]		
ST68 - ST68	87	3 1/2"	1525	5'	39.8	<b>GR87WD68MF-1525</b>
	87	3 1/2"	1830	6'	47.3	<b>GR87WD68MF-1830</b>

### Recovery pike



Outside diameter(D)		Length(L)		Weight [Kg]	Part number
[mm]	[in]	[mm]	[in]		
88	3 1/2"	260	10 1/4"	6.2	<b>FTM-68WD-GR88</b>

### Recovery sleeve



Outside diameter(D)		Length(L)		Weight [Kg]	Part number
[mm]	[in]	[mm]	[in]		
100	4"	225	8 7/8"	7.5	<b>FTF-68WD-GR88</b>